3rd G-ScarS

Scar: Basic Research 1

Chair

Esther Middelkoop

SB1-1

Exploring the Potential of Artificial Intelligence for Scar Evaluation

Fumiaki Shimizu, Naoaki Iwamoto, Miyuki Uehara
Department of Plastic Surgery, Oita University Hospital

We investigated the potential application of artificial intelligence (AI) in the objective evaluation of scars using the JSW Scar Scale, a validated tool commonly used by clinicians to assess erythema, hypertrophy, and red infiltration. To develop the AI model, we trained a convolutional neural network (CNN) on a dataset of clinical photographs collected from a diverse cohort of patients with various types of surgical scars. The model was designed to assign JSW scores based on visible scar characteristics.
Initially, the model was trained on 600 annotated images. At this stage, the agreement rate between the AI-generated scores and those assigned by experienced board-certified plastic surgeons was approximately 80%, indicating substantial concordance. As the number of training images increased to over 1,000, the model's performance improved significantly, achieving agreement rates exceeding 90%. This finding suggests that AI can serve as a reliable and consistent tool for scar evaluation.
Furthermore, we explored the feasibility of using ChatGPT as a diagnostic assistant. By providing structured descriptions of scar features, we evaluated ChatGPT's ability to approximate JSW scores. We report promising preliminary results and discuss potential applications in clinical support and telemedicine contexts.

CURRICULUM VITAE

Education

1999 Graduated from Kumamoto University, School of Medicine

Professional Affiliations

1999 Resident of Plastic Surgery Unit, Department of Dermatology, Oita Medical University
2000 Resident of Department of Plastic Surgery in Kenwakai Otemachi Hospital
2001 Resident of Department of Plastic Surgery in Kobe Children's Hospital
2003 Assistant professor Department of Plastic Surgery, Oita University
2005 Research Fellow Department of Plastic Surgery, Chung Gung Memorial Hospital, Taiwan
2006 Assistant professor Department of Plastic Surgery, Oita University
2012 Associate professor Department of Plastic Surgery, Oita University Hospital
2017 Professor Department of plastic surgery, Oita University Hospital

SB1-2

The AI Scar Lab: From Pixels to Prognosis

Peter Moortgat [1,2]
1 OSCARE, Antwerp, Belgium
2 BridgewAI, Antwerp, Belgium

Artificial intelligence is rapidly becoming an integral part of scar management. On the **clinical side**, AI models now assist physicians in diagnosing scar type, grading severity objectively, and predicting which scars may become pathological – often with accuracy on par with expert judgment. These tools support data-driven decisions on treatment initiation (e.g. identifying high-risk scars early and consistently evaluating therapies.

In **consumer-facing applications**, AI-powered mobile apps and teledermatology platforms are empowering patients to assess and monitor their scars from home, increasing accessibility to expert guidance. Although many emerging tools are still in pilot stages (with need for broader validation), the trend is clear: AI – through computer vision and machine learning – offers **improved sensitivity, consistency, and tracking** in scar management and -assessment across burn scars, keloids, surgical and traumatic scars. Reported performance metrics are encouraging, but continued refinement is needed.

Beyond assessment, AI's role is expanding into treatment personalization and **outcome tracking**, heralding a future of **precision scar care**. By integrating AI at all stages – from initial scar evaluation to prognostication, therapy selection, and follow-up – clinicians and patients can achieve more effective and tailored scar management, ultimately improving functional and aesthetic outcomes for individuals living with scars.

CURRICULUM VITAE

Peter Moortgat graduated as physical therapist in 1985. He specialized in burns- and scar therapies in 1997 and developed expertise in physical scar management. Nowadays he is Research coordinator at OSCARE, a multidisciplinary aftercare and research center in Antwerp, Belgium. He is also Academic Coordinator of Scar Academy, an international educational program on scar therapy. He is executive board member of the Global Scar Society and the European Tissue Repair Society. He is also guest lecturer of QMUL University in London and editorial board member of Scar, Burns and Healing.

His topics of interest are soft-tissue techniques, scar-taping, vacuum-massage, shockwave-therapy, micro-needling, mechanobiology of scarring and integration of AI in scar mitigation.

SB1-3

Bio-engineered skin for scar treatment in reconstructive surgery

Esther Middelkoop [1,2,3], Frederique M Kemme [1,2,3], Martin Meuli [4,5], Clemens Schiestl [4,5,6,7], Fabienne Hartmann-Fritsch [4,8], Bong-Sum Kim [4,9], Ernst Reichmann [4,5,10], Sophie Böttcher-Haberzeth [4,5,6,7], Daniela Marino [8], DenovoSkin Recon Study Group [8]

1 Alliance of Dutch Burn Care, Burn Centre, Red Cross Hospital, Beverwijk, the Netherlands
2 Amsterdam UMC location Vrije Universiteit Amsterdam, Department of Plastic, Reconstructive and Hand Surgery, Amsterdam
3 Amsterdam Movement Sciences (AMS), Tissue Function and Regeneration, Amsterdam UMC, Amsterdam
4 University of Zurich, Zurich, Switzerland
5 Pediatric Burn Center, Children's Skin Center, Department of Surgery, University, Children's Hospital Zurich, University of Zurich, Zurich, Switzerland
6 Department of Surgery, University Children's Hospital Zurich, University of Zurich, Zurich, Switzerland
7 Children's Research Center, University Children's Hospital Zurich, University of Zurich, Zurich, Switzerland
8 CUTISS AG, Schlieren, Switzerland
9 Department of Plastic Surgery and Hand Surgery, Burn Center, University Hospital Zurich, Zurich, Switzerland
10 Tissue Biology Research Unit, Department of Surgery, University Children's Hospital Zurich, University of Zurich, Schlieren, Switzerland

This study **evaluated the safety and efficacy of an autologous bio-engineered dermo-epidermal skin graft, denovoSkin™, compared to autologous STSG, in patients needing scar revision surgery.**
In this prospective, phase II, randomized controlled multicenter trial, patients ≥1 years old with large full-thickness skin defects were included. Two comparable wound areas were randomized to receive denovoSkin™ and STSG. The primary endpoint was the POSAS observer total score at 3 months. Secondary outcomes included other scar quality measures (POSAS, Cutometer, Colormeter), wound healing, adverse events, and ratio covered surface area/donor site area.
Between February 2018 and July 2023, 23 patients were enrolled (mean age 37.4 years; 65% male; 70% with post-burn scars). Median wound closure time was longer for denovoSkin™ (63.0 vs. 28.5 days; $p<0.001$). The ratio of covered surface area to donor site was 8.5 (SD 4.4) for denovoSkin™, and 0.9 (SD 0.2) for STSG ($p<0.001$). No significant difference in infections was found. At 3 months, POSAS observer scores were significantly better for denovoSkin™ (23.4 vs. 27.9; $p=0.008$). At 12 months, denovoSkin™ outperformed STSG on nearly all POSAS Observer items, and showed significantly superior elasticity at 3, 6 and 12 months post grafting.
We conclude that DenovoSkin™ is a safe and effective option for scar revision, limiting donor site and providing favorable long-term skin quality.

CURRICULUM VITAE

Name: Esther Middelkoop
Affiliation: Prof. Dr. Esther Middelkoop
Prof. Skin Regeneration & Wound Healing,
Project Lead Tissue engineering, Alliance of Dutch Burn Centers
Dept. Plastic, Reconstructive & Hand Surgery, Amsterdam Movement Sciences, AUMC

Professor Dr. Esther Middelkoop studied chemistry at the University of Utrecht, and obtained a PhD in biochemistry. She supervises the skin tissue engineering projects of the Alliance of Dutch Burn Centres, and holds a chair in Skin Regeneration and Wound Healing at the Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Plastic, Reconstructive and Hand Surgery in Amsterdam.
Her special research focus is on Tissue Engineered Skin and Skin Replacement Materials, both in basic and in clinical research. Esther Middelkoop published > 200 scientific papers and is co-editor of the Open Access book: Textbook on Scar management. She is active in several scientific societies, editorial board member of Wound Repair and Regeneration and board member of the Global Scar Society.

SB1-4

Is it possible to make newts form scars?

Ikkei Takashimizu, Shunsuke Yuzuriha
Department of Plastic and Reconstructive Surgery, Shinshu University School of medicine

While many pioneers have attempted scarless wound healing, it has yet to be applied in current medicine, and many people suffer from scarring disabilities. However, there is an organism that can easily perform such a difficult mechanism and maintain its ability throughout lifetime. It is the Japanese fire belly newt (newt), an amphibian. Previous studies have shown that newts have a vigorous regenerative capacity and can completely regenerate their skin without scarring.

The newts have a wound-healing mechanism that is not present in humans. It is the wound epithelium. It is characteristic that in humans epithelial cells are the last to cover the wound, whereas in newts they are the first to occur. It has been shown that regeneration occurs as the missing tissue is then produced and replenished. Second, there is less inflammation. Inflammation plays an important role in the wound healing process, but too much inflammation is detrimental, so a balance is required within the tissue. In newts, it has been shown that epithelial cells initially cover the wound surface, resulting in an early reduction of inflammation.

We are studying the inhibition of this wound healing function in newts to create an environment that allows scar formation. One is to inhibit epithelialization so that the wound surface is not covered by epithelium, and also looking at tissue responses to more intense inflammatory responses. We report on whether we have been able to create scars in newts.

CURRICULUM VITAE

Name: Ikkei Takashimizu

-2010		Shinshu University School of Medicine
2010-2012	Resident	Suwa Red Cross Hospital
2012-2016	Clinical Fellow	

・Department of Plastic and Reconstructive Surgery, Shinshu University School of medicine
・Plastic and Reconstructive Surgery, Matsunami General Hospital
・Plastic and Reconstructive Surgery, Suwa Red Cross Hospital

2016-present Assistant Professor
・Department of Plastic and Reconstructive Surgery, Shinshu University School of Medicine

SB1-5

What's new in granulation tissue (GT) formation and resolution?

Alexis Desmoulière
University of Limoges

Wound healing proceeds through three interrelated dynamic phases that temporally overlap: an inflammatory phase, a proliferative phase (GT development and re-epithelialization), and a maturation phase, including scar formation. During GT formation, fibroblasts proliferate and transform into myofibroblasts, becoming contractile and showing significant synthesis and deposition of extracellular matrix. It is generally accepted that GT develops from dermal fibroblasts derived from the wound edges. Recently, it has been shown that numerous different fibroblast populations may participate in this process, in particular fibroblasts located in different fascia layers. Fibroblastic subpopulations that play a role either in regeneration or scar formation have now been characterized. Another interesting point concerns the interaction between GT cells (myofibroblasts and macrophages) and keratinocytes, where exosomes appear to be the major mechanism of dialogue. In addition, mesenchymal stromal cells in adipose tissue deliver messages, via their secretome, that are important for GT development. Skin nerve endings, which are disrupted after wounding, also deliver several factors important for healing and adequate neurovascular interactions are needed for GT development. Finally, myofibroblast activities, particularly contraction, must stop after wound closure to avoid excessive scarring and retractile scar formation. The mechanisms underlying myofibroblast apoptosis remain unclear.

CURRICULUM VITAE

Qualifications:

1987: Ph.D. Sciences, Bordeaux I University.
1982: Pharmaceutical Doctor, Bordeaux II University.

Positions held:

Since 2006: Professor of Physiology, Faculty of Pharmacy, University of Limoges
1993-2006: Researcher (1st class), CNRS (1993-1997 : URA 1459, *Pathologie des Fibroses, Institut Pasteur, Lyon, France* ; 1997-1998 : UPR 412, *Institut de Biologie et Chimie des Protéines, Lyon, France* ; 1998-2006 : *Groupe de Recherches pour l'Étude du Foie, Equipe Mixte INSERM-hospitalo/universitaire E9917, Bordeaux, France*).
1988-1993: Assistant Professor, Department of Pathology, University of Medicine, Geneva (Switzerland).
1987-1988: Director Research & Development, Bio-Productions SA (*Périgueux, France*).
1984-1987: Research fellowship, INSERM (*Unité 8 de Cardiologie, Bordeaux, France*).

Since 2005: Contract to serve in the operational reserve (*Service de Santé des Armées*); atmosphere monitoring in nuclear submarines, control and follow-up of analyses carried out, prevention and crew awareness. Member of a working group on submarine atmosphere.
For these activities, I have been awarded the *médaille de la Défense Nationale* and the *médaille des Services Militaires Volontaires*; more recently, I was promoted to *chevalier de l'ordre national du Mérite*.

SB1-6

Characterization of Mechanoresponsive, Pro-inflammatory Myeloid Cells in Fibrosis and Regeneration

Geoffrey C. Gurtner, MD, FACS

Professor and Chair of Surgery, University of Arizona / Johnson and Johnson Distinguished Professor of Surgery, Emeritus Stanford University

It remains unknown why some organisms are regenerate, and others heal with scar following injury. Even within the same organism, there are differences in the ability of different tissues to regenerate or undergo fibrosis. Most work to date has focused on the fibroblast and myofibroblast as the primary mediators of fibrosis and scarring. However recently, the importance of the inflammatory response has begun to be more fully appreciated. Our laboratory has identified a unique subpopulation of circulating monocytes that are recruited to sites of injury and respond to mechanical stimuli in the area of injury. Importantly, these monocytes appear in the very early phases of wound healing before either fibroblasts or myofibroblasts appear. Single cell transcriptomics has demonstrated that these cells signal extensively to the fibroblast and myofibroblast populations and appear to orchestrate their production of collagen and scar. Blocking these mechanoresponsive monocytes at the initial phases of wound healing can change the trajectory of scarring and fibrosis at late time points. This may be an effective strategy to prevent fibrosis and scar formation in a variety of organs and tissues following injury.

CURRICULUM VITAE

Dr. Geoffrey C. Gurtner is the Chair of the Department of Surgery and Professor of Biomedical Engineering at the University of Arizona. A general and plastic surgeon, Dr. Gurtner was previously the Johnson and Johnson Distinguished Professor of Surgery and Bioengineering (by courtesy) and Materials Science (by courtesy) at Stanford University. Dr. Gurtner is the author of over 400 peer-reviewed publications (h-index 108) and is an Editor for two major textbooks in the field: *Grabb & Smith's Plastic Surgery* and *Plastic Surgery.* Dr. Gurtner was awarded the James Barrett Brown Award in both 2009 and 2010 and has been named "researcher of the year" by the ASPS, AAPS and numerous other professional organizations. Dr. Gurtner runs an NIH and DoD funded laboratory examining how physical stimuli (mechanical and chemical) alter the human response to injury. His lab has received over $30M in funding and has developed multiple new technologies for which Dr. Gurtner has received over 50 issued patents and has over 100 patent applications. Dr. Gurtner has founded several venture backed start-up companies, including Neodyne Biosciences (www.neodynebio.com) and Arresto Biosciences, which was acquired by Gilead (NASDAQ:GILD). Dr. Gurtner was also a founding partner at Tautona Group (www.tautonagroup.com), an early stage life science fund that has created novel biomedical technologies that have been sold to industry leading companies, such as Allergan (NYSE:AGN), Novadaq (NASDAQ:NVDQ), and Acelity/KCI (San Antonio, TX).

3rd G-ScarS

Scar: Device · Material 1

Chair

Hajime Matsumura

SD1-1

Scar-Q evaluation after 3D Bioprinted Graft of AMAHAT for a Skin Defects.

Hajime Matsumura [1], Reina Matsumura [2], Yuichiro Kawai [3], Kazuki Shimada [1], Takako Komiya [1], Miki Fujii [1]

1 Department of Plastic and Reconstructive Surgery, Tokyo Medical University
2 Division of Plastic Surgery, Fukaya Red Cross Hospital, Saitama, Japan.
3 Division of Plastic Surgery, Tsukuba Memorial Hospital, Ibaragi, Japan.

Introduction: Autologous fat grafting is receiving increasing attention in various fields. Furthermore, autologous, minimally manipulated, homologous adipose tissue (AMHAT), created using 3D bioprinting technology, has shown promise in treating chronic wounds. Additionally, the resulting scar is believed to be of high quality.

Purpose: This study aimed to investigate the quality of the scar and the efficacy of AMHAT using 3D bioprinting technology following wide excision for non-melanoma skin cancer, where the skin defect could not be closed using primary suturing.

Methods: Ten consecutive cases were enrolled in this study. A fat patch of AMHAT was created using a 3D bioprinter (Dr INVIVO, ROKIT Healthcare Inc.) and applied to the wound. The time taken for complete wound closure and scar quality six months after surgery using Sar-Q (patient-reported outcome), were assessed.

Results: The area of the skin defects is an average of 2.72 cm^2. Nine of the defects were located on the face. Complete wound closure was achieved in an average of 4.2 weeks. SCAR-Q results were very good (265–300 points), with four patients achieving the maximum score of 300 points.

Conclusion: We confirmed that AMHAT accelerates wound healing and results in minimal scarring with high aesthetic outcomes. This technology is an important option for treating skin defects where aesthetics are a priority, as it avoids the need for additional surgery, such as skin grafts or flaps.

CURRICULUM VITAE

EDUCATION:

M.D.	Tokyo Medical University, Tokyo, Japan	

POSTGRADUATE EDUCATION:

Surgery Residency	Surgery	
	National Hospital Tokyo Medical Center	
	Tokyo, Japan	1987-89
Plastic Surgery	Tokyo Medical University Hospital	
	Tokyo, Japan	1989-1993

FACULTY POSITION:

Professor	
Department of Plastic Surgery	
Tokyo Medical University, Tokyo, Japan	2008-2014
Professor and Chair	
Department of Plastic Surgery	
Tokyo Medical University, Tokyo, Japan	2014-present

HOSPITAL POSITION:

Staff Surgeon	
Tokyo Medical University Hospital	1993-present
Chief of Plastic Surgeon	2014-present

Doctor of Medical Science (PhD)

Tokyo Medical University #1291	1994

BOARD CERTIFICATIONS:

Japan Society of Plastic and Reconstructive Surgery
Japan Society for Surgical Wound Care
Japanese Society for Burn Injuries
Japanese Society for Surgery of the Hand
Japan Society of Cranio-Maxillo-Facial Surgery
Japanese Society for Tissue Transplantation
Fellow of American College of Surgeons

LICENSURE:

Medical License of Japan	No. 304413	1987
Limited Medical License, State of Washington		1995

ORGANIZATIONS:

American College of Surgeons (FACS)
American Burn Association
International Society for Burn Injuries
Asia Pacific Burn Association *(executive board members, President 2019-2021)*
Japan Society of Plastic and Reconstructive Surgery *(vice chair of the oard of Directors)*
Japanese Society for Burn Injuries *(executive board members, President 2020-2021)*
Japanese Society for Surgery of the Hand *(board of trustees)*
Japanese Society of Cranio Maxillofacial Surgery *(board of trustees)*
Japanese Society of Limb Salvage & Podiatric Medicine *(board of trustees)*
Japan Society for Surgical Wound Care *(board of Directors)*
The Japanese Society of Pressure Ulcers *(board of Directors)*

SD1-2

Stromal Derived Scaffolds Induce Adipose and Dermal Tissues

Dennis Orgill
Brigham and Women's Hospital

Stromal derived scaffolds can be derived from decellularization or semisynthetic manufacturing techniques. In both cases, the physicochemical properties of these constructs are critical in allowing a regenerative rather than a scarring process. Porosity, surface chemistry and chemical composition are parameters that can be altered to maximize the regenerative response.

Our 45-year effort has resulted in the clinical translation of laboratory findings into a broad clinical practice in dermal regeneration used in many conditions including burns, diabetic foot ulcers and reconstruction following cancer extrication.

Recently, we have shown that Xenogenic adipose scaffolds, combined with external volume expansion have the potential to regenerate adipose tissues. These combined findings demonstrate the potential of substantial soft tissue reconstruction with minimal or no donor site morbidity and scar reduction.

CURRICULUM VITAE

Name: DENNIS PAUL ORGILL, MD, PHD

Education:

1978	B.S. (Bioengineering), U. OF CALIFORNIA, BERKELEY
1980	S.M. (Mechanical Engineering), MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1983	Ph.D. (Medical Engineering), MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1985	M.D. (Medicine), HARVARD MEDICAL SCHOOL

Postdoctoral Training:

06/85-06/89	Resident in Surgery, Surgery, Brigham and Women's Hospital
07/89-06/90	Chief Resident in Surgery, Surgery, Brigham and Women's Hospital and the V.A. Medical Center, West Roxbury
07/90-06/91	Resident in Plastic Surgery, Plastic Surgery, Brigham and Women's Hospital and Children's Hospital
07/91-06/92	Chief Resident in Plastic Surgery, Plastic Surgery, Brigham and Women's Hospital and Children's Hospital

Faculty Academic Appointments:

1985-1992	Clinical Fellow in Surgery, Harvard Medical School, Boston, MA
1992-1995	Instructor in Surgery, Harvard Medical School, Boston, MA
1995-2000	Assistant Professor of Surgery, Harvard Medical School, Boston, MA
2000-2008	Associate Professor of Surgery, Harvard Medical School, Boston, MA
2008-	Professor of Surgery, Harvard Medical School, Boston, MA

SD1-3

Novel dressing for intermediate depth burns

Tor Chiu
Chinese University of Hong Kong

The challenge in intermediate depth burns is to distinguish those who will heal relatively quickly vs those that will take longer to optimize healing times and risk of scarring.

We had the opportunity to try a novel burns dressing/therapy on a cohort of intermediate depth burns. Burn depth was assessed objectively using a Moor LDI prior to treatment with the novel therapy vs standard therapy.
We present the results of our study.

CURRICULUM VITAE

Tor Chiu graduated from Oxford Medical School with First Class Honours and finally received his doctorate after thirty years. After returning to Hong Kong, he completed his training to become a Specialist in Plastic Surgery. He has published several textbooks with translations into other languages. His main area of interest in Microsurgical Reconstruction and Supermicrosurgery. He is Chief of the Division of Plastic Aesthetic and Reconstructive Surgery at the Chinese University of Hong Kong. He supports Manchester United.

3rd G-ScarS

Keloid: Clinical Practice 1

Chair

Naoki Murao

KC1-1

Integrated Management of Keloid and Hypertrophic Scars: From Surgery to Long-Term Prevention

Teruyuki Dohi [1], Mamiko Tosa [1], Satoshi Akaishi [2], Rei Ogawa [1]

1 Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School, Tokyo, Japan

2 Department of Plastic Surgery, Nippon Medical School Musashi Kosugi Hospital

Keloids and hypertrophic scars are fibroproliferative skin disorders that commonly develop in high-tension areas subjected to repeated mechanical stress from daily movement and posture changes. These lesions, often accompanied by pain, pruritus, and disfigurement, substantially impair patients' quality of life.

At our institution, initial treatment involves corticosteroid tape and intralesional injections. For refractory cases—such as those with repeated infection, poor response to conservative therapy, or contractures—we employ a multimodal approach: minimal excision of fibrotic tissue, tension-reducing sutures based on local stress patterns, and postoperative adjuvant therapies including radiotherapy (for keloids) and steroid tape application.

Postoperative care emphasizes early initiation of steroid tape therapy, adhesive taping for stabilization, and close outpatient follow-up. Patient education to reduce mechanical stress in daily life is also a key component.

As part of our preventive strategy for keloids, we proactively treat acne and folliculitis and, when appropriate, utilize laser hair removal. These combined efforts contribute to reduced recurrence and prevention of new keloid formation over the long term.

This presentation introduces our comprehensive clinical strategy encompassing diagnosis, surgical planning, postoperative care, and prevention, illustrated with representative case examples and clinical experience.

CURRICULUM VITAE

Name: Teruyuki Dohi, M.D., Ph.D.
Current Position: Associate Professor
Department of Plastic, Reconstructive and Aesthetic Surgery
Nippon Medical School, Tokyo, Japan

Education and Training

2005	M.D., Nippon Medical School, Tokyo, Japan
2012–2015	Graduate Research Fellow, Department of Biochemistry and Molecular Biology, Nippon Medical School
2015	Ph.D. in Medical Science, Nippon Medical School, Tokyo, Japan
2016–2018	Visiting Scholar, Department of Surgery, Division of Plastic Surgery, Stanford University School of Medicine, USA

Academic and Clinical Positions

2005	Resident, Nippon Medical School Hospital
2007	Senior Resident, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School
2009	Instructor, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School
2015	Chief, Department of Plastic Surgery, Towa Hospital
2016	Instructor, Nippon Medical School
2018	Clinical Assistant Professor, Nippon Medical School
2019	Assistant Professor, Nippon Medical School
2019–present	Principal Investigator, Keloid Scar Laboratory & Mechanobiology and Mechanotherapy Laboratory, Nippon Medical School
2025–present	Associate Professor, Nippon Medical School

KC1-2

Rare and refractory keloids at uncommon sites with a focus on plantar lesions: a case series from Asian patients

Mamiko Tosa

Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School, Tokyo, Japan

Background

Keloids commonly occur on the chest, shoulders, and lower abdomen, whereas those on the plantar region, toes, hands, genital area, and face are extremely rare. Plantar keloids have been reported almost exclusively in Black patients. These rare-site keloids are clinically significant because they cause pain, functional impairment, and cosmetic concerns, and they are often highly refractory.

Methods

We retrospectively reviewed rare-site keloid cases treated between 2018 and 2024. The cohort included five plantar cases and additional cases on the toes, hands, face, and genital area. Clinical features, histopathology, treatments, and outcomes were analyzed.

Results

Plantar and toe keloids caused pain, walking disability, and shoe-wearing problems. Genital keloids were associated with severe itching and buried normal skin that often developed abscesses, leading to marked quality-of-life impairment. Hand keloids caused functional disability and cosmetic problems, while facial keloids imposed cosmetic and psychological burdens. Treatments combined surgical and conservative approaches, with orthotic devices considered when necessary. Plantar keloids were particularly challenging, as radiotherapy was rarely applicable, further raising therapeutic hurdles.

Conclusion

Although plantar keloids have previously been reported almost exclusively in Black patients, our series demonstrates their occurrence in Asian patients. Rare-site keloids, especially those on the plantar surface, represent highly refractory lesions due to overlapping anatomical, functional, and cosmetic challenges. International sharing of such cases is essential for establishing optimal treatment strategies.

CURRICULUM VITAE

- Graduated from Nippon Medical School, Japan in 1992
- Appointed Lecturer, Department of Plastic and Reconstructive Surgery, Nippon Medical School Musashi Kosugi Hospital in 2008
- Appointed Associate Professor, Department of Plastic and Reconstructive Surgery, Nippon Medical School Hospital in 2018
- Appointed Specially Appointed Professor, Department of Plastic and Reconstructive Surgery, Nippon Medical School Hospital in 2021

KC1-3

Treatment outcomes for ear keloids

Satoko Yamawaki [1], Osamu Horio [2], Yoshio Yamawaki [1]

1 Hyogo Prefectural Amagasaki General Medical Center
2 Horio Plastic Clinic

Ear keloids are common in young patients. Whether postsurgical radiation treatment is necessary is unclear. We retrospectively analyzed the treatment outcomes of ear keloids at our institution.
Materials and methods: Between 2016 and 2024, 33 patients underwent keloid excision. Of these, 22 patients who underwent follow-up for >6 months were included in this study. We analyzed the treatment outcomes in relation to the age distribution, radiation treatment, and ear site.
Results: Ten patients experienced keloid recurrence. The age distribution did not differ between the recurrence and non-recurrence groups. Earlobe keloids were a lower recurrence rate than helix keloids. Of the eight patients who underwent radiation treatment at a dose of 15 Gy, none experienced recurrence. Recurrence was observed in 71% of patients who did not undergo radiation treatment. Two patients experienced keloid recurrence after its excision and a second excision with postoperative radiation, with no subsequent disease recurrence.
Discussion: Ear keloids have better treatment outcomes than keloids at other sites. We previously demonstrated a recurrence rate of 0% for radiation-treated ear keloids. This study demonstrated a high recurrence rate of 71% in patients who did not receive radiation therapy. Ear helix keloids have a higher recurrence rate than earlobe keloids. Based on these results, radiation treatment is recommended for ear keloids, particularly those that occurring in the helix.

CURRICULUM VITAE

EDUCATION

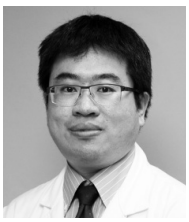
1988-1994	Kochi Medical School
2010-2014	Department of Plastic and Reconstructive Surgery, Kyoto University Graduate School of Medicine

EMPLOYMENT

1994-1995	Clinical Resident, Department of Plastic and Reconstructive Surgery, Kyoto University Graduate School of Medicine
1995-1997	Clinical Fellow, Dep. of Plastic and Reconstructive Surgery, Kyoto Katsura Hospital
1997-1998	Clinical Fellow, Dep. of Plastic and Reconstructive Surgery, Japanese Red Cross Kyoto Daini Hospital
1999-2001	Research Student, Plastic Surgery Group, Dep. of Otorhinolaryngology, Kochi Medical School, Kochi
2001-2003	Clinical Fellow, Dep. of Plastic Surgery, Takeda General Hospital, Kyoto
2003-2006	Instructor, Dep. of Plastic and Reconstructive Surgery, Kyoto University Graduate School of Medicine
2006-2007	Director, Dep. of Plastic and Reconstructive Surgery, Kusatsu General Hospital, Shiga
2007-2010	Assistant Professor, Dep. of Plastic and Reconstructive Surgery, Kyoto University Graduate School of Medicine
2014-2015	Director, Dep. of Plastic Surgery, Takeda General Hospital, Kyoto
2016-2020	Director, Dep. of Plastic Surgery, Japanese Red Cross Fukui Hospital, Fukui
2021-2024	Deputy Director, Dep. of Plastic and Reconstructive Surgery, Osaka Red Cross Hospital
2024-	Director, Dep. of Plastic and Reconstructive Surgery, Hyogo Prefectural Amagasaki General Medical Center

KC1-4

Risk factors of keloid recurrence: a single-center experience in Taiwan



Chia Hsuan Tsai
Chang Gung Memorial Hospital

Background:
Keloid is a fibroproliferative disorder with high recurrence rate. Surgical excision with adjuvant radiation therapy is one of the most effective treatment, but the risk factors for recurrence in these patients remain unclear.
Objective: To identify risk factors associated with keloid recurrence in patients undergoing surgery with adjuvant radiation therapy in a single institution in Taiwan.
Methods: We retrospectively collected keloid patients who underwent keloid excision with adjuvant radiation therapy during September 2018 to December 2022 in Chang Gung Memorial Hospital, Keelung, Taiwan. A total of 178 patients with 180 keloids were included. Keloid characteristics, and operative variables were obtained from medical records. The main outcome was keloid recurrence, defined as any elevation at the newly created scar of surgery.
Results: Of the 180 keloids, recurrence occurred in 37 keloids (20.6 %). In recurrence group, keloids located more at high-tension area, namely anterior chest, shoulder-scapular, suprapubic, and lower jaw (p = 0.022). The causes of keloids in this group were significantly more likely to be unknown (p = 0.044). In multivariate analysis, no independent risk factor was identified.
Conclusion: No independent risk factors for keloid recurrence were found in patient receiving excision and adjuvant radiation therapy. Further study with larger sample size and longer follow-up is necessary to determine risk factors for keloid recurrence.

CURRICULUM VITAE

Name：蔡嘉軒 / Chia Hsuan Tsai

Education：

1999/09-2006/06	Medicine, Chung Shan Medical University, Taichung

Post-Graduate Education：

2014-2022	M.S. Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University
2017-2018	Clinical fellow, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School, Tokyo, Japan

Academic Appointment:

2015/08	Instructor, Department of Plastic and Reconstructive Surgery, Chang Gung Memorial Hospital, Keelung branch and Chang Gung University, Keelung

Employment Record：

2006/08-2008/07	Resident, Department of Surgery Chang Gung Memorial Hospital, Linkou Branch, Taoyuan
2008/08-2012/07	Resident, Department of Plastic and Reconstruction Surgery Chang Gung Memorial Hospital, Linkou Branch, Taoyuan
2012/08-Current	Attending, Division of Plastic and Reconstructive Surgery, Department of Surgery, Chang Gung Memorial Hospital, Keelung branch, Keelung
2017/09-2018/08	Clinical fellow, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School, Tokyo, Japan
2018/09-Current	Chief of Division of Plastic and Reconstructive Surgery, Department of Surgery, Chang Gung Memorial Hospital, Keelung branch, Keelung

3rd G-ScarS

Scar: Clinical Practice 1

Chair

Satoko Yamawaki

SC1-1

Balancing Oncologic Safety and Cosmetic Outcome in Skin Cancer Surgery

Mi Ryung Roh
Yonsei University College of Medicine

Facial skin cancer surgery requires a balance between complete tumor removal and preservation of aesthetic and functional outcomes. Wide local excision (WLE) is a standard approach with predetermined margins but may lead to excessive tissue loss in cosmetically sensitive areas. Mohs micrographic surgery (MMS) allows real-time margin assessment and tissue conservation, making it particularly beneficial for high-risk or facial lesions.

Post-excisional reconstruction depends on defect size, location, and skin laxity. Local flaps are often preferred for better color and texture match, while skin grafts are useful when flap options are limited. Selecting the appropriate reconstructive method is key to minimizing deformity and maintaining facial harmony.

Scar formation is a common concern after facial surgery. Early postoperative laser therapy, including fractional and pulsed dye lasers, has shown efficacy in improving scar texture, pigmentation, and pliability. Integrating laser treatment into postoperative care can significantly enhance cosmetic outcomes and patient satisfaction.

An individualized, multidisciplinary approach ensures both oncologic safety and optimal aesthetic recovery in facial skin cancer management.

CURRICULUM VITAE

Name: Mi Ryung Roh

Current Position:
Professor, Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea

Education:

1996-2002	Yonsei University College of Medicine (MD), Seoul, Korea
2007-2011	Yonsei University College of Medicine (PhD), Seoul, Korea

Training and Fellowship Appointments:

2003-2007	Dermatology residency, Yonsei University Medical Center, Seoul, Korea
2007-2009	Dermatologic Surgery Fellowship, Yonsei University Medical Center, Seoul, Korea

Faculty Appointment:

2012-2022	Assistant & Associate professor, Dermatology, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea
2014-2016	Visiting Professor, Harvard Medical School, MGH, Wellman Center for Photomedicine, MA, USA
2022-Current	Professor, Dermatology, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea

Memberships:

2003-Current	Korean Dermatological Association
2007-Current	Korean Society of Dermatologic Surgery, Korean Society of Skin Cancer
2016-Current	Associate Editor, British Journal of Dermatology

SC1-2

Wound management in head and neck reconstruction

Minoru Sakuraba, Takayuki Honda, Aya Onodera, Nobuyuki Mitsuhashi
Department of Plastic and Reconstructive Surgery, Iwate Medical University

The use of tape as a preventive therapy for hypertrophic scars is widely employed after suture removal following fresh wound closure. In our institution, postoperative taping was generally not applied to the neck region in most patients. However, the flap donor site was treated with tape as a preventive therapy for three months in all patients. We conducted a retrospective chart analysis to assess the development of hypertrophic scars or scar keloids after head and neck reconstruction, as discussed during the last G-ScarS meeting.

Additionally, we performed follow-up evaluations on the last reported group of 67 patients who underwent head and neck reconstruction with free flaps to assess hypertrophic scar or keloid formation. Scar formation was evaluated in the head and neck region as well as at the flap donor site.

Follow-up was possible in 19 of these 67 patients, with a mean follow-up period of six years. In the initial study and this follow-up, hypertrophic scars in the head and neck were observed in 3 and 2 cases, respectively. Hypertrophic scars at the flap donor site were observed in 8 and 3 cases in each study, respectively.

The development of hypertrophic scars in the head and neck region was relatively uncommon compared to the flap donor site. Hypertrophic scars at the flap donor site tended to diminish over time.

CURRICULUM VITAE

Present Status: Professor
Department of Plastic and Reconstructive Surgery, Iwate Medical University

Education and Professional Experience:

1990	Awarded the degree of M.D. at the Hirosaki University School of Medicine.
1990-1992	Primary Resident at the Yamagata Prefectural Central Hospital
1992-1994	Resident at the Department of Plastic and Reconstructive Surgery, Hirosaki University School of Medicine
1994	Awarded the degree of Ph.D. for a thesis entitled “Lattice-like collagen fiber meshwork in the iris stroma of the cat: a possible mechanism to generate the tension directed towards the iris root which is required for papillary dilatation in the sympathectomized eye” at the First Division of Anatomy, Hirosaki University, School of Medicine
1995-1997	Senior Resident at the Yamagata Prefectural Central Hospital.
1997-1998	Senior Resident at the National Cancer Center Hospital East, Chiba.
1999-2006	Staff surgeon at the Division of Plastic and Reconstructive Surgery, National Cancer Center Hospital East, Chiba
2003	Post graduate Training, Gent University (Belgium) Department of Plastic and Reconstructive Surgery
2006-Aug.2016	Department Chief, Department of Plastic and Reconstructive Surgery, National Cancer Center Hospital East, Chiba
Sep.2016-present	Professor, Department of Plastic and Reconstructive Surgery, Iwate Medical University

Membership of academic societies in good standing:
The Japanese Society of Plastic and Reconstructive Surgery, council member
The Japanese Society of Reconstructive Microsurgery, council member
The Japan Society for Head and Neck Cancer, council member
The Japan Society of Cranio-Maxillo-Facial Surgery
The Japanese Society for Surgery of the Hand
The Japan Society of Clinical Oncology, council member
World Society of Reconstructive Microsurgery, Active member
Microsurgery, Editorial board

Awards: Tamiya-memorial award, 2009

SC1-3

Wound scar prevention and remodeling of formed scars via active intervention to achieve nearly invisible scar

Wei Liu, MD, PhD

Department of Plastic and Reconstructive Surgery, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine

Scar prevention is an old topic and fetal scarless wound healing has been the major approach of basic research for decades. Due to the sake of the complicated mechanism, clinical translation is hardly achieved from this approach. With the increasing need of cosmetic effect, patients with a wound/scar become strongly demand "a socially invisible scar", so that they can return to the society for a normal life. To achieve this, the author has developed an interventive tissue remodeling approach to actively intervene the early wound healing process or remodel a formed scar using drug, laser, invasive subdivision or punch surgery to fundamentally change the healing process or tissue structure of a formed scar, so that to remodel them into a near "normal-looking" skin. This topic will introduce the common techniques of interventive tissue remodeling techniques and present rich clinical cases to demonstrate the feasibility of such an approach, therefore to enrich the strategies and methods for scar prevention and treatment.

CURRICULUM VITAE

Wei LIU, MD, PhD. Dr. Liu graduated from Shanghai Second Medical University in 1983 with a MD degree and graduated from University of Arkansas for Medical Science in 1998 with a PhD degree followed by two year postdoctoral training focusing on wound healing and scarring at Institute of Reconstructive Plastic Surgery, New York University Medical School. He returned to China in 2000. Currently, he is a Professor of Plastic Surgery of Shanghai Jiao Tong University School of Medicine, and Adjunct Professor of Biomedical Engineering of Shanghai Jiao Tong University. He served as Associate Directors of National Tissue Engineering Center of China and Shanghai Research Institute of Plastic and Reconstructive Surgery. Dr. Liu was standing committee member of Chinese Society of Biomaterials and Chinese Society of Tissue Engineering, Vice President of Chinese Society of Tissue Engineering and Regenerative Medicine. Dr. is currently the Vice President of Chinese Society of Scar Medicine, Chair of the Committee of Development and Translation of Scar prevention and Treatment Technology. Dr. Liu is the authors of more than 100 original articles published in international journals, the contributor of several international tissue engineering text books. Dr. Liu has been an editorial member of Scar, Burns and Healing (SAGE), Biomaterials, Journal of Tissue Engineering and Regenerative Medicine, Biomedical Materials, and Tissue Engineering. He has presented more than 30 invited speeches at various international conferences, including TERMIS-AP and TERMIS-EU chapter meeting and TERMIS-World Congress. Dr. Liu is the organizer of 8th TESI Annual meeting and 2013 TERMIS-AP meeting, is a Member-in large of TERMIS-AP, Member of International Union of Societies of Biomaterials Science and Engineering (IUSBSE). Dr. Liu's clinical work specializes in scar treatment with focus on keloid and cosmetic scar revision and laser therapy. He is one of the founding members of Scar Club based on Monpellier, France, the Founding member of Asian Scar Society and the Founding member of G-Scar. Dr. Liu was the Conference President of The First G-Scar World Congress held in Shanghai in October 2018, the co-Presidents of the Fifth International Keloid Symposium in Shanghai June 2025. In the past decades, Dr. Liu was invited to give lectures on scar research and treatment in the conferences of Scar Club in Montpellier, G-Scar meeting in Shanghai and Tokyo, Japanese Scar Meeting in Tokyo, International PSRC meeting in Tokyo and Asian Scar Society Meetings in Shanghai, Hongkong and Indonesia, and the 2nd, 4th and 5th International Keloid Symposium.

SC1-4

Surgical Management of Deep Fascial Layers To Decrease Scaring

Mohammed Al azrak
Plastic Surgery Department, Fayoum General Hospital, EGYPT

Cutaneous scaring can result from varieties of situations,causing disfigurement with a functional & psychological implications on patient's life.Proper surgical intervention should be started early,to decrease scaring.The characteristic variations in cutaneous & deep layers affected by previous trauma or surgery,mandate assessment of geometry of the (wound/scar) & surrounding zone.The changes of scarry area is affected by progress in the healing process & the tension exerted due to traction by surrounding (deep ligaments,adhesions, fascial connections) & contraction of surrounding deep muscles & nearby joint movement.In each lesion(wound/scar) ,essential measurement was done & analysis of the surrounding area to elucidate tension sources & directions.The applied surgical technique depended on key elements of dealing with the zones surrounding of the lesion & deep to it,to control tension.Basic surgical steps: separation & lamillation of deep fascial/fibrofatty layers after release of all connections with skin. Performing persistent repair (as drapping with tight closure,double breasting).This resulted in transmission of the highst tension point deeply,leaving a superficial fabby cutaneous layer with mantained low tension for a duration upto two months.314cases of facial wounds & scars were done by this technique,showed complete healing with less scarring as compared to traditional layered closure method,regarding scar width and morphology.(photos & vedios demonistration included in lecture)

CURRICULUM VITAE

Dr. Mohammed Al azrak
MBBCh, MSc, PhD, FEBOPRAS, FACS
Plastic Surgery Consultant, EGYPT

Graduated in Faculty of Medicine Cairo University in Egypt, where I got my MBBCh, and spent my internship in Cairo University hospitals. Obtained my M.Sc. degree (Cairo University) in surgical reconstruction of face and neck scar contractures and Ph.D. (Cairo University) in perforator flaps for reconstruction of facial defects. European board certified in plastic surgery FEBOPRAS and Fellow of American College of Surgeons FACS. Trained and Certified in General Surgery as well as Plastic Surgery. Founder and Head of Plastic Surgery Department in Fayoum General Hospital in Egypt, which is the biggest department in the governorate including Burn Unit and different plastic surgery subspecialties as microsurgery and maxillofacial surgeries ,also hosting trainee in National Fellowship Programme for certification in plastic surgery. Member in many scientific societies as, ESPRS,ESPRAS,WSRM,EMBC,EBA,EAFPRS. Perform wide varieties of surgical operations with Main practice and research interest is Wound healing ,Burn ,Scar management & Facial Surgeries.

SC1-5

SCAR IN RECONSTRUCTIVE AND AESTHETIC SURGERY: MY INTEGRATED APPROACH FOR FITZPATRICK TYPE IV–V

Loelita M. Lumintang, MD., Sp.B.P.R.E., Subsp.E.L. (K)., FICS, AAAM

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Background

In reconstructive and aesthetic plastic surgery, scars often define the true outcome of an operation. Beyond restoring function or closing defects, patients expect scars that are acceptable, harmonious, and aesthetically pleasing. Over time, this awareness has shaped my perspective on scar management as a process that extends across the entire surgical journey.

Objective

To share my integrated approach in preventing and managing scars, combining surgical precision with evidence-based adjunctive therapies, and to demonstrate how this pathway can improve both functional and aesthetic results.

Methods

My approach is structured across three stages: (1) *Preoperative planning*—considering patient-specific factors, skin characteristics, and natural tension lines to anticipate scar evolution; (2) *Intraoperative techniques*—emphasizing atraumatic tissue handling, careful suture selection, precise wound approximation, and tension-free closure; and (3) *Postoperative care*—applying a combination of interventions such as silicone therapy, compression, corticosteroids, botulinum toxin, growth factor therapies, and laser modalities.

Findings

Through consistent application of this integrated pathway, I observed that scars can be actively guided rather than left to chance. Patients benefited from improved scar texture, pliability, and overall appearance, while functional outcomes were preserved. Recent innovations, particularly in postoperative technologies, further enhanced these results, making scars less visible and more harmonious with surrounding tissues.

Conclusion

My experience suggests that scar management should be viewed as a continuum rather than a single intervention. An integrated approach—linking careful planning, meticulous surgical execution, and comprehensive postoperative care—enables surgeons to restore function while also refining aesthetic quality. This synergy elevates the standard of care and consistently delivers outcomes that meet both surgical and patient expectations.

Keywords: Scar, Reconstructive Surgery, Aesthetic Surgery, Scar Management, Integrated Approach

20th JSW

膵の切開・合併症予防を考える！

司会
小川　　令, 谷村　　悟

1

婦人科腹腔鏡手術後に外科的介入を要した臍部合併症の検討

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【背景】
臍窩は血管分布が乏しい瘢痕組織で構成されており、婦人科をはじめとした腹腔鏡手術では、第一穿刺部位として使用されることが多い。これは低侵襲性と整容性の両面で利点があるためである。一方で、臍は血流が少ないために創傷治癒遅延や感染の遷延といった創部合併症を起こしやすく、場合によっては保存的治療での改善が得られず、外科的な介入が必要となることがある。とくに術中に組織の損傷や異物の遺残があった場合には、慢性的な排膿や肉芽、感染、瘢痕拘縮などを生じやすい。今回私たちは、婦人科腹腔鏡手術後に臍部合併症を発症し、形成外科的治療を要した症例について後方視的に解析し、臨床的特徴や治療方針について検討した。
【方法】
2015年1月から2022年8月までに当院で婦人科腹腔鏡手術を受けた患者のうち、術後に臍部合併症を発症し、形成外科による外科的治療が行われた14例を対象とした。対象症例の年齢、基礎疾患、BMI、術式、合併症の種類、発症時期、治療内容、病理所見、術後経過について後方視的に調査・分析を行った。
【結果】
対象は全例40～60代の女性で、術式は腹腔鏡下子宮全摘術、卵巣摘出術、筋腫核出術などであった。主な臍部合併症は、局所感染、肥厚性瘢痕、異所性子宮内膜症、瘻孔形成、臍部壊死などであった。術後5～14日目頃に症状が出現し、初期対応として抗菌薬や処置などの保存的治療が施行されたが、改善が得られなかった症例であり、形成外科的介入が実施された。手術内容としては、デブリードマン、腫瘍性病変の切除、瘢痕拘縮形成、局所皮弁を用いた臍形成術などが行われた。病理組織学的には、肥厚性瘢痕を呈した症例の約90%に炎症性変化（上皮嚢腫、肉芽腫、膿瘍形成など）が確認された。術後経過は全例で良好であり、整容的にも患者満足度の高い結果が得られた。
【考察】
今回の症例の多くでは、腹腔鏡手術中の皮膚・上皮成分や腫瘍成分の埋入、または術後の創部管理不良が合併症発症の一因と考えられた。臍部は整容的にも重要な部位であり、軽度の症状であっても慢性化することで患者のQOLに大きく影響を及ぼす可能性がある。今回の報告では、合併症の発生頻度は約0.49%と低率であったが、自然治癒が期待できず、外科的対応を要する症例が多かった点は重要である。術中は臍部の取り扱いに十分注意し、皮膚・皮下組織への過度な圧迫や損傷を避けることが予防的観点からも求められる。また、臍部に異常がみられた場合には、早期に形成外科へ紹介することが治癒促進と整容的改善につながると考えられる。
【結論】
婦人科腹腔鏡手術後に生じた臍部合併症は、軽度であっても放置すると慢性化し、整容的・機能的な障害につながることがある。形成外科との連携による早期の外科的介入は、良好な治療成績と患者満足度の向上に寄与する。今後は予防と術後管理の両面から、包括的な対応体制の構築が求められる。

略歴

1991年3月　東北大学医学部卒業
1991年6月　山形県長井市立病院一般外科研修医
1994年5月　慶應義塾大学形成外科学教室入局
1999年1月　平塚市民病院形成外科医長
2003年4月　NHO東京医療センター形成外科科長
2007年5月　NHO東京医療センター・再生医療研究室室長（併任）
2011年4月　東京医療保健大学臨床教授
2022年4月　NHO東京医療センター・産業保健室長、房再建センター長（併任）
日本形成外科学会専門医、皮膚腫瘍外科専門医、日本創傷外科学会専門医、日本再生医療認定医、日本創傷治癒学会評議員、日本創傷外科学会評議員、日本レーザー医学会評議員

2

臍ケロイドの問題点と治療方法

村尾　尚規
国家公務員共済組合連合会　斗南病院　形成外科

腹腔鏡手術後患者の0.9 %にケロイドが発生する、という報告がある。腹腔鏡手術は従来の開腹手術と比較して低侵襲であり、術後瘢痕が臍に隠れるという利点がある。しかし、一旦臍部の切開創がケロイド化し臍窩がケロイドに覆われてしまうと、整容性が損なわれる、貯留した老廃物によって感染・炎症が引き起こされるなどの問題を生じ、治療に難渋する。
臍ケロイドを外科的に切除すると、切除後にケロイドが再発するリスクがあり、電子線照射などの術後補助療法が必須となる。ケロイド切除後に単純縫縮すると臍窩が消失してしまう症例では、皮弁形成術による臍の再建のため臍近傍の皮膚の追加切開を要し、追加切開部にもケロイド発生のリスクがある。ケロイド切除、臍再建、術後電子線照射によって治療された症例に、ケロイドが再発した場合や、再度の腹腔鏡手術が行われ臍部の切開創が再度ケロイド化した場合、電子線照射や臍再建は難しく、適応可能な治療選択肢が限られたものになる。
よって、臍ケロイドの外科的治療に際しては、整容性に加え、ケロイド再発時や再度の腹腔鏡手術後のケロイド発生を見据え、治療選択肢を残すことを考慮する必要がある。演者はケロイド内部分切除、術後ステロイド局所注射による治療を行っている。ケロイド内を切開し、縫合時に緊張がかからない程度まで、及び拘縮が解除されケロイドに覆われていた臍窩側壁の正常皮膚が露出するまで、切開部両側の皮弁下の瘢痕の減量または皮弁のトリミングの要領で部分切除を行う。創縁の皮膚は一部を最深部にアンカリングしながら縫合する。残存ケロイドの縮小を目的に抜糸後よりステロイドの局所注射を2週間おきに5回行い、5回終了時点で瘢痕の隆起・結節が残る場合は1ヶ月おきの局所注射を継続する。演者は2020年以降本法を適応しており、術後2年を超えた時点で軽度の隆起、硬結程度の再発が見られた症例があったが、ステロイド局所注射で保存的に治療可能であった。本法は繰り返し適応可能な治療法であり、臍周囲の追加切開による臍再建は不要であるため、再発時の治療選択肢が残り、臍部の再切開による再腹腔鏡手術も可能である。また、正常な臍窩皮膚が多く残っている程、臍窩の自然な凹みが再現でき、整容的にも満足できる結果が得られやすいと考えている。

略歴

学歴、主な職歴

1997年　3月　北海道大学医学部医学科　卒業
2013年　3月　北海道大学大学院医学研究科形成外科学専攻博士課程　修了
2013年10月　北海道大学病院　形成外科　助教
2017年12月　北海道大学病院　形成外科　診療講師
2019年　1月　北海道大学病院　形成外科　講師
2019年　2月　北海道大学病院　形成外科　診療准教授
2020年　4月　国家公務員共済組合連合会　斗南病院　形成外科　科長　および
　　北海道大学病院　形成外科　客員臨床准教授

資格

日本形成外科学会専門医、日本形成外科学会形成外科領域指導医
日本創傷外科学会専門医
日本熱傷学会認定熱傷専門医
日本がん治療認定医機構がん治療認定医
日本形成外科学会皮膚腫瘍外科分野指導医

3

なぜ臍を切るのか？　―臍底の解剖―

谷村　悟[1], 草開　妙[1], 山本　健太[2], 小川　令[3]

1 富山県立中央病院　産婦人科
2 福井県立病院　産婦人科
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腹腔鏡手術においてはまず臍底にアプローチしトロッカーを留置することが一般的である。気腹針を刺してCO_2で腹部を膨満させた後に、あるいは開腹のように切開し腹腔内に入ったことを直視してから留置するなど様々な方法があるが、安全性に有意差はないとされている。ただし腹腔内癒着が疑われる場合にも対応しやすいことから婦人科領域では多くはオープン法（切開・直視）が選択されている。
臍を選ぶ理由は皮下脂肪が無く、腹腔内まで最短距離で到達できるとされているからである。一方、肥満例などでは脂肪層に入り込み難渋するケースもあり、腸管損傷を含む0.1％程度の合併症が報告されている。また、この手技は専攻医などが行うことが多いがしばしば時間を要することもあった。しかし、これらの問題解決のために学ぼうとしても教科書に臍の構造はほぼ記載がなかった。そこで私たちは腹腔鏡カメラによる臍構造の観察を試みた。臍底には皮下脂肪がないものの、腹膜前脂肪は正中の方が多かった。また、臍底では筋膜が小さく欠損しており腹膜がテント上に吊り上がり、付着している可能性を見出した。このような解剖は臍帯の名残として説明可能と思われた。また一部の肥満例では腹膜前脂肪がヘルニアのように臍底に盛り上がっているケースも見受けられた。このような解剖を理解した上での臍オープン法は時間の短縮につながった。
臍底には筋膜欠損部と腹膜付着があり、腹腔内アプローチには最短である。そのため形成外科医からケロイドのリスク指摘を受けながら、また一部の患者から不満を聞きながらも臍底切開が継続されてきた。この二律背反を解決するためにFlip法を考案するに至った。

略歴

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母子医療センター長・産婦人科部長

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2006年　富山県立中央病院産婦人科　医長
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4

臍底部を切らずに臍底から入る新たなアプローチ
―安全性と整容性を実現するFLIP法―

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【目的】
腹腔鏡手術の導入部位として臍は最も一般的であり、中でも皮下脂肪が少なく解剖学的にも安全とされる臍底部に縦切開を加えるオープン法が広く用いられている。しかし、臍底部は胎児期の臍帯血管入口部の瘢痕組織であり、血流が乏しいことから創傷治癒に不利で、複雑な構造から正確な縫合が困難な部位でもある。このためSSI（手術部位感染）や臍の変形、ケロイド、表皮嚢腫といった創部関連のトラブルがしばしば報告されている。つまり、臍底切開は安全性には優れるものの整容性や創傷治癒の観点では課題が多く、患者満足度にも影響を及ぼす可能性がある。
そこで我々は、臍底部を切開せずに臍底から腹腔内に進入する新たなアプローチとして「FLIP法」を考案し、その有用性について検討した。
【方法】
FLIP法では、臍底ではなく臍輪に皮膚切開を加え、臍を反転させるように剥離して臍底部に到達し、従来通りオープン法で腹腔内に進入する。皮膚切開は基本的に横切開とし、標本摘出などで開創範囲を広げる必要がある場合には縦切開とした。2024年10月から2025年4月までに当院で腹腔鏡下手術を行い、外来で術後評価を行った105例を対象とし、臍底切開群（80例）とFLIP法施行群（25例）に分類して、術後の疼痛（NRS）および臍創部の整容性・満足度に関するアンケートを実施した。
【成績】
両群ともに重篤な術後合併症は認めなかった。FLIP群は臍底切開群に比べ平均年齢およびBMIが有意に低く（p<0.01）、これはケロイドや肥厚性瘢痕のリスク因子となる若年患者を中心にFLIP法を適用した結果であると考えられた。臍底切開群では6例（7.5%）にSSIを認めた。疼痛に関しては、安静時・動作時のNRS平均値に有意差はなく（0.4 vs 0.3, p=0.5；0.8 vs 0.8, p=1.0）、FLIP法により痛みが増加することはなかった。整容性に関する満足度は、臍底切開群（58例）で平均9.1点（SD1.8）、FLIP群（21例）では9.8点（SD0.5）と、FLIP群で有意に高かった（p<0.01）。特に臍底切開群では、SSIや疼痛、肥厚性瘢痕を認めた症例で満足度が顕著に低下する傾向が見られた。一方、FLIP群ではSSIの発症は1例もなく、外見的な臍変形や表皮迷入による表皮嚢腫も認めなかった。
【結論】
FLIP法は、従来の臍底切開法と同等の安全性を保ちつつ、瘢痕組織である臍底部を直接切開せずにアプローチすることで、創部の整容性を高め、創傷治癒に有利な環境を提供できる。疼痛は臍底縦切開法と同等であり、満足度においては優れる結果が得られた。また、理論上は表皮嚢腫や臍変形、ケロイド、SSIといった合併症のリスクを低減できる術式であり、今後、臍創部の整容性を重視するさらなる低侵襲手術の選択肢となり得る。

略歴

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5

“トラブルゼロ”を目指す臍創管理 ～とある婦人科医の実践報告～

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鏡視下手術における臍創の管理は、整容性を保ち、かつ、創感染やケロイドなどの創トラブルを回避する上で重要な課題である。婦人科領域では、術後の臍部感染や瘢痕形成が一定の頻度で報告されており、特に臍創に関しては開創法や閉創法、創管理法が整容性および合併症リスクに直結する。
筆者はこれまで、腹腔内操作の低侵襲性を最優先とする一方で、臍部の整容性保持と術後合併症の予防にも独自の工夫を重ねてきた。長時間におよんだ難症例を含む数多くの腹腔鏡手術を行ってきたが、臍部感染を来した症例はこれまで一例もなく、ケロイド化に至った症例も極めて稀である。
本報告では、以下のような筆者の実践的手法とその背景にある考え方を共有する。

- 臍輪径がトロッカー径に対して小さい症例では、臍輪内に創を完全に収めようとすることで組織に過剰な張力がかかり、創部トラブルの一因となりうる。そのため、整容性を損なわない範囲で臍輪を軽度に超える切開を許容している。
- 臍の自然な形態を維持するため、皮下構造の温存を重視し、縦切開と最小限の皮下剥離を基本としている。解剖学的には側臍靱帯の走行や胎児期の臍の位置関係を参考に、臍底が骨盤側へ自然に沈み込むような形態復元を意識している。
- 術中・術後の乾燥による表層壊死（dry necrosis）を予防する目的で、創部には軟膏（ゲンタシン軟膏など）を十分量塗布し、創周囲の湿潤環境を維持している。
- 閉創時には筋膜縫合後、その縫合糸と臍底部の真皮とを同時に結紮することで、臍底部を沈ませて自然な凹みを再現している。ただし、表皮が皮下に縫い込まれると術後皮下で角化が起こることにより感染リスクが高まる事が懸念されるため、臍底を沈ませる前に表皮の切開部の大部分を表皮が皮下に縫い込まれないように縫合しておき、その後臍底を沈み込ませている。
- 術後管理として、臍部に軟膏塗布後、綿球を設置し、粘着性透明創傷被覆･保護材（例:テガダーム ™）で密封。注射器を用いて臍部の空気を抜去することで軽度の陰圧環境を作り、自然な臍の沈降と軽度ドレナージ効果の両立を図っている。

これらの工夫はいずれも、術後の瘢痕形成や整容性低下のリスクを抑えることを目的としたものであり、標準化された術式ではないものの、実臨床に即した応用的手法として一定の有効性を実感している。
本報告は、一婦人科医として日々の診療の中で実践してきた、創管理へのいわば「我流」の取り組みであり、創傷治癒の専門家による系統的な検証や評価を経たものではない。ゆえに本研究会のような専門的議論の場において、臨床現場の視点からの一提案としてご批評・ご意見を頂ければ幸いである。

略歴

【学歴・職歴】
2002年　熊本大学医学部 卒業
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宮崎県立宮崎病院、沖縄県立八重山病院、田川市立病院、北九州市立医療センター、松山赤十字病院を経て、
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【専門領域】
腹腔鏡／ロボット手術、深部子宮内膜症

20th JSW

会長講演

司会

貴志　和生

会長講演

ケロイド・肥厚性瘢痕治療の変遷と今後の展望

土佐　泰祥
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瘢痕・ケロイド治療研究会は2006年9月3日に第1回目が日本医科大学形成外科百束比古先生と日本医科大学放射線科宮下次廣先生のお二人の発起人により発足した。今年がちょうど20回目の節目の年になる。会発足から9年目には「JSW Scar Scale（JSS）2015（ケロイド・肥厚性瘢痕分類・評価表）」を提示し、12年目には、「ケロイド・肥厚性瘢痕診断治療指針2018」が出版されて、診断や治療法について、世界中で共有し標準化できるようにと、本研究会から発信してきている。
我々は、一生涯を通じて、体表の怪我を一度も経験しない人は皆無である。そして、その皮膚損傷によって生じる「傷あと」は、組織挫滅の程度や創閉鎖の方法、その治療に携わった医療従事者の知識・経験などによって「傷あと」の経過に違いを生じてくる。特に、ケロイド体質と呼ばれる因子の有無や程度は、その「傷あと」からのケロイド・肥厚性瘢痕の発症に影響を及ぼすことが多い。虫刺され程度でも体表の傷を契機に、その傷跡が赤く光沢を有し、掻痒や疼痛を伴った醜状の隆起性病変を呈する場合がある。
ケロイド・肥厚性瘢痕の活動性が強く、持続している場合には、患者さんにとって肉体的・精神的な苦痛を伴うことになり、その軽減のために早期の治療プランの呈示と治療開始が必須なこととなる。その治療法は、外科的治療法と、非外科的治療法（内服薬療法、外用療法、シリコーン材料貼付、トリアムシノロン局所注射療法、圧迫療法、電子線照射療法など）があり、演者は時代とともにその治療法の変遷をみてきた世代の形成外科医の一人である。現在実臨床では、これらの治療を適宜組み合わせていく集学的治療により改善率が以前に比べて向上してきている。
病態解明については、分子生物学的な研究が世界中で進行中であり、多方面からのアプローチがなされてきているが、動物実験モデルが作成できないこともあり、未だに不明瞭な点が多い。
本講演では、演者の経験に加え、教室で現在ヒト以外で進められている研究にも言及したい。
基礎と臨床の両輪がバランスをとり上手く作用し合うことで未知の病態の解明、新たな治療法の導きとなることを期待している。

略歴

1979年3月　東京都立西高等学校卒
1986年3月　昭和大学（現昭和医科大学）医学部卒
1990年3月　昭和大学（現昭和医科大学）大学院 医学研究科修了
1990年4月　帝京大学医学部形成外科 外来医長
1993年7月　米国 Harvard Medical School/Massachusetts General Hospital, Research Fellow
2009年4月　昭和大学（現昭和医科大学）准教授
2015年7月　米国 The Ohio State University, Department of Plastic Surgery, Visiting Professor
2021年4月　昭和大学（現昭和医科大学）教授
2021年5月　慶應義塾大学形成外科学非常勤講師
2022年4月　慶應義塾大学形成外科学特任准教授

1995年　The 50th American Society for Surgery of the Hand, Sumner L. Koch Award受賞
2006年　昭和医学会学術奨励賞受賞
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3rd G-ScarS

Keloid: Basic Research 1

Chair

Chao-Kai Hsu

KB1-1

Vascular Perspective on the Pathogenesis of Keloid Scars

Yusaku Saijo, Teruyuki Dohi, Rei Ogawa
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Keloids are fibroproliferative disorders of the skin that cause significant reductions in patients' quality of life due to disfigurement, contracture, pain, and pruritus. Although current treatments such as surgical excision, postoperative radiotherapy, and corticosteroid therapy are widely used, recurrence remains common and therapeutic outcomes are often unsatisfactory. Therefore, a deeper understanding of the mechanisms underlying keloid formation is essential for developing more effective treatment and prevention strategies.

Keloids develop through the wound healing process following injury or surgery, gradually expanding beyond the original wound margins. The wound healing process consists of the hemostasis, inflammation, proliferation, and remodeling phases; however, most previous studies have focused on the proliferative phase. In contrast, we hypothesized that keloid formation may begin abnormally during the hemostatic phase, and we initiated our investigation based on this idea.

We focused on fibrinogen, a plasma protein synthesized in the liver. Upon vascular injury, fibrinogen leaks into the extravascular space and forms a fibrin clot. In both wound healing and malignancy, extravascular fibrinogen is eventually replaced by collagen, suggesting that the presence of fibrinogen in the extracellular matrix is a predictive marker for future collagen deposition.

Our analysis revealed that in keloid tissue, vascular permeability in the superficial dermis is increased, leading to extravasation of fibrinogen. Moreover, we identified the presence of glomeruloid bodies, a distinct vascular structure typically observed in malignant tumors, within these regions.

These findings suggest that collagen fibers in keloids may originate around superficial dermal vessels, progressively accumulating over time to form the characteristic lesion.

This study proposes a novel pathogenic model that reinterprets keloid development from the perspective of vascular structural abnormalities.

CURRICULUM VITAE

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2022-2023	Resident, The Department of Plastic Surgery, Nippon Medical School Musashikosugi Hospital
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KB1-2

Increased expression of the PIEZO2 mechanoreceptor in fibroblasts and endothelial cells of keloids

Shinsuke Akita [1], Sanae Ikehara [2], Masahiro Kiuchi [3], Kota Kokubo [3], Kazuhiko Azuma [2], Syouta Ohki [2], Hiroyuki Matsuyama [2], Joceline Theda Kadarman [1,2], Yohei Hosokawa [2,4], Yoshihiro Akimoto [5], Yosuke Inaba [6], Hideki Hanaoka [6], Nobuyuki Mitsukawa [1], Kiyoshi Hirahara [3,7], Toshinori Nakayama [3,7], Yuzuru Ikehara [2]

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Chronic lymphedema and keloids share a common underlying mechanism characterized by fibrous proliferation. However, the factors promoting fibroblast proliferation differ between the two conditions, with osmotic extracellular fluid contributing to chronic lymphedema and mechanical stimulation playing a role in keloids. We focused on this distinction to better understand the nature of pathogenic fibroblasts in keloids by systematically comparing gene expression between these two conditions.

Results showed that the expression level of the pressure sensor PIEZO2 was significantly higher in keloids, and its expression exhibited strong correlations with COL1A2 ($r = 0.9252$, $p < 0.001$) and POSTN ($r = 0.9118$, $p < 0.001$). Importantly, PIEZO2 expression levels were significantly higher in recurrent keloids compared to non-recurrent keloids ($p = 0.032$). Furthermore, in three keloid cases identified as having a high recurrence risk using the Japan Scar Workshop Scar Scale, gene expression analysis at the single-cell level revealed a new subset of fibroblasts expressing PIEZO2 (PIEZO2hi Fibroblast). PIEZO2hi Fibroblast enhanced extracellular matrix collagen production signaling.

They notably clustered in areas characterized by the active proliferation of vascular and lymphatic endothelial cell phenotypes. Taken together, we propose that PIEZO2- positive cells are responsible for the pathology of keloid formation in interaction with mesenchymal stem cells.

CURRICULUM VITAE

Shinsuke Akita MD, PhD,

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Dr. Shinsuke Akita is an Associate Professor at Chiba University Hospital, Chiba, Japan. A leading expert in reconstructive microsurgery and surgical treatments for lymphedema.

Dr. Akita has authored over 150 peer-reviewed publications and received numerous prestigious awards, including the Young Researcher's Award of Japan Society of Plastic and Reconstructive Surgery (2013 and 2016).

He is the chair of the Education Committee of the Asian Federation of Plastic, Reconstructive, and Aesthetic Surgery, and serves as a director of the Japan-France Medical Association, contributing to international exchange.

KB1-3

Multiscale Mechanobiology of Keloid Pathogenesis

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Keloids are fibroproliferative skin disorders driven by a combination of genetic predisposition and mechanical stimulation from daily physical activity. This study aims to elucidate the mechanobiological mechanisms of keloid development through a multiscale analytical approach.

We conducted in vivo assessments of skin strain, stiffness, and thickness at keloid-prone sites, identifying region-specific mechanical profiles linked to posture-related changes. Using three-dimensional tissue clearing and high-resolution imaging, we visualized vascular architecture within keloid lesions. These findings suggest that sustained mechanical stress—particularly from posture-induced tissue extension—may cause structural alterations in local vasculature and surrounding tissue, potentially contributing to keloid formation.

To investigate cellular heterogeneity and intercellular interactions, we performed single-cell RNA sequencing (scRNA-seq) of keloid tissue. Ongoing analyses using disease-specific iPSC-derived models aim to uncover novel insights into cellular properties and mechanical responsiveness, further deepening our understanding of keloid pathophysiology.

This presentation highlights recent findings and future directions from integrated tissue-to-single-cell analyses, advancing mechanobiological insight into keloid pathogenesis.

CURRICULUM VITAE

Name: Teruyuki Dohi, M.D., Ph.D.
Current Position: Associate Professor
Department of Plastic, Reconstructive and Aesthetic Surgery
Nippon Medical School, Tokyo, Japan

Education and Training

2005	M.D., Nippon Medical School, Tokyo, Japan
2012–2015	Graduate Research Fellow, Department of Biochemistry and Molecular Biology, Nippon Medical School
2015	Ph.D. in Medical Science, Nippon Medical School, Tokyo, Japan
2016–2018	Visiting Scholar, Department of Surgery, Division of Plastic Surgery, Stanford University School of Medicine, USA

Academic and Clinical Positions

2005	Resident, Nippon Medical School Hospital
2007	Senior Resident, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School
2009	Instructor, Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School
2015	Chief, Department of Plastic Surgery, Towa Hospital
2016	Instructor, Nippon Medical School
2018	Clinical Assistant Professor, Nippon Medical School
2019	Assistant Professor, Nippon Medical School
2019–present	Principal Investigator, Keloid Scar Laboratory & Mechanobiology and Mechanotherapy Laboratory, Nippon Medical School
2025–present	Associate Professor, Nippon Medical School

KB1-4

Keloids: From Cellular Heterogeneity to Precision Medicine

Chao-Kai Hsu

Department of Dermatology, College of Medicine, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan

The molecular mechanisms underlying keloid formation and therapeutic resistance have long remained poorly understood, hindering the development of effective treatments. Recent advances in single-cell RNA sequencing (scRNA-seq) and spatial transcriptomics (ST) have uncovered striking cellular heterogeneity within keloid tissues, identifying distinct subpopulations of myofibroblasts, Schwann cells, endothelial cells, and immune lineages that were previously obscured by bulk sequencing. These discoveries provide unprecedented insight into the cellular networks driving keloid pathogenesis and highlight novel therapeutic targets for precision medicine. This presentation will explore how these molecular advances are reshaping our understanding of keloid biology, examine their translational potential, and highlight emerging targeted therapies that hold promise for improving outcomes in patients suffering from this psychologically and physically debilitating disease.

CURRICULUM VITAE

Chao-Kai Hsu, M.D., Ph.D.
Professor
Department of Dermatology, College of Medicine,
National Cheng Kung University

BIOGRAPHY

Dr. Chao-Kai Hsu is a Professor in the Department of Dermatology and Director of the Genetic Center at National Cheng Kung University Hospital (NCKUH) in Tainan, Taiwan. He completed his dermatology residency at NCKUH and earned a PhD from the Institute of Clinical Medicine at National Cheng Kung University. Dr. Hsu's international experience includes research fellowships at Hokkaido University Graduate School of Medicine, Japan (2008), and St John's Institute of Dermatology, UK (2014-2016). In 2018, he was awarded a Diploma in Dermatopathology by the International Committee for Dermatopathology. Dr. Hsu specializes in dermatopathology and molecular genetics, with his research focusing on challenging and rare skin conditions, particularly epidermolysis bullosa (EB) and keloids. His work combines clinical expertise with cutting-edge research to advance understanding and treatment of complex dermatological disorders.

AWARD

1. Selected as “Dermatologists and Dermatological Researchers in the World 世界の皮膚科学者 (286)" by "Nishinihon Journal of Dermatology", 2024
2. Distinguished Contribution Award in National Cheng Kung University Hospital, 2018, 2022
3. Ta-You Wu Memorial Award, National Science and Technology Council, Taiwan, 2019
4. Presentation Award (First Prize) of Royal Society of Medicine, London, UK, 2015

KB1-5

Fibroproliferative conditions: the 3R approach bridging fibrosis and tumors with keloid as the hub

Chenyu Huang [1,2], Yue Shao [2], Jianbo Bai [2], Yi Zhao [1,2], Rei Ogawa [3]

1 Beijing Tsinghua Changgung Hospital
2 Tsinghua University
3 Nippon Medical School

Soft-tissue fibroproliferative conditions (FPCs) affect many organs. All demonstrate the accumulation of (myo)fibroblasts and extracellular matrix. Currently, FPCs are classified according to the affected body site/organ. To promote research into the etiological mechanisms that drive pathological FPCs, we propose a new, more clin-ically grounded, FPC classification that is based on the intent and severity of the fibroproliferation. There are three categories: responsive, replacement, and recon-structive FPCs. Reconstructive FPCs (e.g., keloids) have quasi-neoplastic behaviors, including local invasiveness, and serve as a bridge between fibrosis and cancers. Comparisons of reconstructive FPCs to both cancers and the other FPC categories may help elucidate their pathogenic cellular properties, microenvironmental components, and intracellular-signaling mechanisms. Thus, the new FPC classification may promote research in the fibrosis field.

CURRICULUM VITAE

EDUCATION

2004/9-2007/7	Peking Union Medical College & Tsinghua University, Ph.D.
1999/9-2002/7	Institute of Traumatology and Orthopedics & Peking University, M.Sc.
1994/9-1999/7	Capital Medical University, M.D.

PROFESSIONAL EXPERIENCE

2002	Resident, Beijing Jishuitan Hospital, Beijing, China
2008	Attending Physician, Meitan General Hospital, Beijing, China
2009	Visiting Scholar, Nippon Medical School Hospital, Tokyo, Japan
2011	Associate Chief Physician, Meitan General Hospital, Beijing, China
2013	Postdoc, Brigham and Women's Hospital, Boston, US
2014	Associate Chief Physician, Beijing Tsinghua Changgung Hospital, Beijing, China
2019	Associate Professor, Tsinghua University, Beijing, China
2022-Present	Chief Physician, Beijing Tsinghua Changgung Hospital, Beijing, China

PUBLICATIONS (selected)

1. Huang C*, Shao Y*, Bai J, Zhao Y, Ogawa R. Fibroproliferative conditions: the 3R approach bridging fibrosis and tumors. ***Trends Mol Med.*** 2025 Apr 22:S1471-4914(25)00060-7.
2. Chen T, Zhang B, Xie H, Huang C*, Wu Q*. GRHL2 regulates keratinocyte EMT-MET dynamics and scar formation during cutaneous wound healing. ***Cell Death & Dis*** 2024;15(10):748.
3. Liu L, Yu H, Long Y, You Z, Ogawa R, Du Y*, Huang C*. Asporin inhibits collagen matrix-mediated intercellular mechanocommunications between fibroblasts during keloid progression. ***FASEB J.*** 2021;35(7):e21705.
4. Yu H, You Z, Yan X, Liu W, Nan Z, Xing D, Huang C*, Du Y*. TGase-enhanced microtissue assembly in 3D- printed-template-scaffold (3D-MAPS) for large tissue defect reparation. ***Adv Healthc Mater.*** 2020;9(18): e2000531.
5. Huang C*, Liu L, You Z, Zhao Y, Dong J, Du Y, Ogawa R. Endothelial dysfunction and mechanobiology in pathological cutaneous scarring: lessons learned from soft tissue fibrosis. ***Br J Dermatol.*** 2017;177(5):1248-1255.
6. Huang C, Holfeld J, Schaden W, Orgill D, Ogawa R*. Mechanotherapy: revisiting physical therapy and recruiting mechanobiology for a new era in medicine. ***Trends Mol Med.*** 2013;19(9):555-64.

KB1-6

An important role of keloid nodule in metabolic activity

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1 Department of Plastic and Reconstructive Surgery, Saiseikai Suita Hospital
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Background: We reported that keloid tissue exhibited high ATP levels even after around 10 years, perhaps due to anaerobic glycolysis and reported keloid nodules had such specific structures that higher expression of autophagy proteins and glycolytic markers in the fibroblasts was observed in the central zone (CZ) in the nodule than in marginal zone (MZ).
Patients and Methods: (1) 57 nodules were randomly chosen and divided into four groups of disease duration. Immunohistochemical analyses were performed. (2) 179 nodules were chosen to identify glycolytic enzymes, autophagic markers. Western blot and qRT-PCR tests were performed microRNA.
Results: (1) The area of each nodule increased for 2 to 4 years, then graphically represented by an approximately horizontal line. The ratio of total nodule area/dermis area increased as disease duration lengthened. The nodule number/dermis area ration rose approximately with advancing disease duration. (2) The expression of the autophagic and glycolytic were significantly higher in the CZ than in the MZ. PKM2 expression was higher in the CZ than in the MZ. The qRT-PCR analysis showed that miR-133b-3p was moderately downregulated in the keloids compared with the normal skin tissue.
Discussion: Keloid nodules play a key role in energy metabolic activity for continuous growth. The Warburg effect occurred in nodules. In the CZ, PKM2-positive fibroblasts produced lactate. MiR-133b-3p was predicted to control the Warburg effect in keloids.

CURRICULUM VITAE

Name: Professor Emeritus Koichi Ueda MD., PhD

1992	Assistant of Plastic Surgery under directorship of Prof. Tajima
1999~2000	Visiting research fellow, Department of Human Anatomy and Genetics in University of Oxford
2004	Professor of Plastic and Reconstructive Surgery in Osaka Medical College
2015	Congress President of Japanese Society of Cranio-Maxillo-Facial Surgery
2021	Congress President of Japanese Cleft Palate Association
2022	Congress President of the 14th World Congress of the ICPF Congress President of Japan Society of Plastic and Reconstructive Surgery
2024	Professor Emeritus of Plastic and Reconstructive Surgery in Osaka Medical and Pharmaceutical University, Department of Plastic and Reconstructive Surgery of Saiseikai Suita Hospital, Osaka Japan

Honorary Member of the Japanese Society of Plastic and Reconstructive Surgery,
Active Member of World Society for Reconstructive Microsurgery,
Associate Member of International Society of Cranio- facial Surgery

3rd G-ScarS

Keloid: Clinical Practice 2

Chair

Mamiko Tosa

KC2-1

Keloid scar recurrence: a review of current definitions

Ioannis Goutos
Queen Mary University of London

Keloid scars represent a complex pathological entity. A variety of therapeutic approaches are available aiming to minimise recurrence. Nevertheless, recurrence is not well defined in the literature, which poses challenges for both research and clinical practice.
A literature review of three databases was performed within the last decade and relevant papers were analysed on the exact definition of recurrence. In broad terms these can be divided into physician assessment, patient reported outcomes, objective scar characteristics and variable combinations of the above.
There is clear lack of a standardized and widely accepted definition of keloid recurrence and steps towards an integrated definition will be proposed.

CURRICULUM VITAE

Mr Ioannis Goutos is an academic plastic surgeon specialising in scar management and holds a Reader title in Cutaneous Scar Management at Queen Mary University of London. His career commenced at the Royal London Hospital (Barts Health), where he led the development of the Trust burn facility and expanded the long-established tertiary scar management service.

He undertook his surgical training in the London and Oxford regions achieving several accolades and completed fellowship programmes in the Indian subcontinent, South America, and the Orient. In his clinical practice, he is the Clinical Director of the London Scar Clinic, a multidisciplinary team dedicated to the care of patients with scar related concerns.

With his lifelong commitment to research and education, he extends his surgical role through the position of the Director of Plastic Surgery Academic programmes at Queen Mary University of London (QMUL).

KC2-2

The value of laser technologies in keloid care pathways

Ioannis Goutos
Queen Mary University of London

A plethora of therapeutic approaches are available for the clinical management of keloidal scarring. Laser modalities are increasingly popular and form part of many national and international guidelines for scar treatment.
A large number of literature reports fail to report long term outcomes and do not make a clear differentiation between hypertrophic and keloidal scars in patient cohorts as part of their methodology.
This work describes the author's experience using laser and energy based devices in keloid scar management pathways over the last decade, covering vascular, resurfacing as well as pigment specific approaches.

CURRICULUM VITAE

Mr Ioannis Goutos is an academic plastic surgeon specialising in scar management and holds a Reader title in Cutaneous Scar Management at Queen Mary University of London. His career commenced at the Royal London Hospital (Barts Health), where he led the development of the Trust burn facility and expanded the long-established tertiary scar management service.

He undertook his surgical training in the London and Oxford regions achieving several accolades and completed fellowship programmes in the Indian subcontinent, South America, and the Orient. In his clinical practice, he is the Clinical Director of the London Scar Clinic, a multidisciplinary team dedicated to the care of patients with scar related concerns.

With his lifelong commitment to research and education, he extends his surgical role through the position of the Director of Plastic Surgery Academic programmes at Queen Mary University of London (QMUL).

KC2-3

Vascular Involvement of Keloids: A Basis for Therapy

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Keloid, often recognized as the most severe form of collagen fibroplasia, also exhibit characteristics of a vascular lesion due to aberrant vascularization. This abstract explores the role of this unusual vascularity in keloid pathogenesis and clinical presentation. Keloid lesions are characterized by a dense, irregular network of blood vessels that contribute to their persistent growth and inflammation. The excessive and disorganized angiogenesis, driven by an imbalance of pro- and anti-angiogenic factors, distinguishes keloids from normal scars. This aberrant vascularization leads to increased blood flow and oxygenation, creating a microenvironment that supports the proliferation of fibroblasts and the overproduction of collagen. The macroscopic appearance of keloids, including their raised, erythematous, and often pruritic nature, is a direct result of this rich vascular supply.
Clinically, the vascular component of keloids can be assessed using various methods. Doppler ultrasound effectively measures blood flow and vessel density within the lesion, providing a quantitative assessment of its activity. Additionally, advanced technologies such as laser speckle contrast imaging and dermoscopy offer non-invasive ways to visualize the microvasculature. Histological examination remains the gold standard, revealing numerous, dilated, and thick-walled blood vessels alongside the characteristic haphazardly arranged collagen bundles. Understanding the vascular nature of keloids is crucial for developing targeted therapies that inhibit angiogenesis and disrupt the pro-fibrotic microenvironment, offering a more effective approach to treatment and prevention. The recognition of keloids as a vascular lesion opens up new avenues for treatment and research, moving beyond solely addressing collagen overproduction.

Keywords: Keloid, Cicatrix, Fibroplasia, Vascularization, Angiogenesis, Doppler Ultrasonography, Histology, Collagen.

CURRICULUM VITAE

WORK EXPERIENCE
Chairman, Indonesian Clinical Training & Education Center (ICTEC)- CMH/FMUI
2010 - 2025
National Secretary, International Society of Aesthetic Plastic Surgery (ISAPS)
2015-present
Member of Educational Council, International Society of Aesthetic Plastic Surgery (ISAPS)
2018-present
Member of Communication and Public Relations Committee, International Society of Aesthetic Plastic Surgery (ISAPS)
2020-present
Director of International Affair, Indonesian Society of Plastic Reconstructive & Aesthetic Surgeons (InaPRAS)
President, Asia Pacific Society of Scar Medicine (APSSM)

EDUCATION & TRAINING
Hand and Microsurgery Fellowship
Buncke Clinic, California, USA
2003
Reconstructive Microsurgery Fellowship
M.D. Anderson Cancer Centre, Texas, USA
2002
Plastic and Reconstructive Surgery Fellowship
Interplast, (R.A.C.S.) Melbourne, Australia
2000
Plastic and Reconstructive Surgery
Universitas Indonesia, Jakarta, Indonesia
2000
Medical Doctor
Universitas Airlangga, Surabaya, Indonesia
1991

KC2-4

Integrative approach to dissect keloid mechanism and optimize the therapeutic effect.

Wei Liu, MD, PhD

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Keloid is a challenging disease boasting a high recurrence rate after various therapies. This situation has remained largely unchanged over the past decades. The most likely reason is that keloid is commonly regarded as a pure skin lesion, and all efforts in mechanistic and therapeutic investigations are solely targeted at keloid tissue/cells. In contrast, traditional Chinese medicine views all diseases as the results of an imbalanced internal environment of individuals or an imbalance between individuals and their external environments. An optimal therapy should involve restoring the balance along with targeted treatment.

With this in mind, we hypothesize that an imbalanced microenvironment is the key factor interacting with vulnerable skin cells to initiate keloid development and lead to its recurrence. To prove this, we have conducted a series of investigations on potential contributing factors to keloid constitution, including the effects of lifestyle, food types and nutrition, biorhythm disturbances, gut microbes and metabolic abnormalities, inflammatory status and hormonal fluctuations, psychological stress, and climate influence. Preliminary results reveal that these environmental factors do contribute to keloid constitution, making individuals prone to keloid development and recurrence. Based on this, an integrated approach has been employed to adjust and restore the normal balance of the internal and external environments of afflicted patients, such as through food and lifestyle adjustments, stress relief, the use of anti-inflammatory drugs, and Chinese herbal medicine. Interestingly, with the restoration of environmental balance, traditional local therapies, such as surgery, radiotherapy, and drug injection, achieve better outcomes in terms of reducing recurrence and enhancing the cure rate. This talk will provide an overview of the concept, recent advancements, experimental supportive evidence, and clinical outcomes.

CURRICULUM VITAE

Wei LIU, MD, PhD. Dr. Liu graduated from Shanghai Second Medical University in 1983 with a MD degree and graduated from University of Arkansas for Medical Science in 1998 with a PhD degree followed by two year postdoctoral training focusing on wound healing and scarring at Institute of Reconstructive Plastic Surgery, New York University Medical School. He returned to China in 2000. Currently, he is a Professor of Plastic Surgery of Shanghai Jiao Tong University School of Medicine, and Adjunct Professor of Biomedical Engineering of Shanghai Jiao Tong University. He served as Associate Directors of National Tissue Engineering Center of China and Shanghai Research Institute of Plastic and Reconstructive Surgery. Dr. Liu was standing committee member of Chinese Society of Biomaterials and Chinese Society of Tissue Engineering, Vice President of Chinese Society of Tissue Engineering and Regenerative Medicine. Dr. is currently the Vice President of Chinese Society of Scar Medicine, Chair of the Committee of Development and Translation of Scar prevention and Treatment Technology. Dr. Liu is the authors of more than 100 original articles published in international journals, the contributor of several international tissue engineering text books. Dr. Liu has been an editorial member of Scar, Burns and Healing (SAGE), Biomaterials, Journal of Tissue Engineering and Regenerative Medicine, Biomedical Materials, and Tissue Engineering. He has presented more than 30 invited speeches at various international conferences, including TERMIS-AP and TERMIS-EU chapter meeting and TERMIS-World Congress. Dr. Liu is the organizer of 8th TESI Annual meeting and 2013 TERMIS-AP meeting, is a Member-in large of TERMIS-AP, Member of International Union of Societies of Biomaterials Science and Engineering (IUSBSE). Dr. Liu's clinical work specializes in scar treatment with focus on keloid and cosmetic scar revision and laser therapy. He is one of the founding members of Scar Club based on Monpellier, France, the Founding member of Asian Scar Society and the Founding member of G-Scar. Dr. Liu was the Conference President of The First G-Scar World Congress held in Shanghai in October 2018, the co-Presidents of the Fifth International Keloid Symposium in Shanghai June 2025. In the past decades, Dr. Liu was invited to give lectures on scar research and treatment in the conferences of Scar Club in Montpellier, G-Scar meeting in Shanghai and Tokyo, Japanese Scar Meeting in Tokyo, International PSRC meeting in Tokyo and Asian Scar Society Meetings in Shanghai, Hongkong and Indonesia, and the 2nd, 4th and 5th International Keloid Symposium.

KC2-5

Use of punch biopsy procedure to treat large sized or wide-spread keloids

Wei Liu, MD, PhD

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Background: Tissue punch was originally used in tissue biopsy for pathological examination. In China, dermatological surgeons were the first ones to apply this technique to keloid surgical treatment. Surgical excision and wound closure were routinely employed to keloid surgery, but is not feasible for spreading or large-sized keloid surgery.

Method: More than 30 cases of keloid patients were involved. Most cases present as multiple keloid lesions over one area or as a spreading lesion over large areas of the body. Under local anesthesia, the keloids were punched with the hole diameter between 2-5 mm and the hole distance between 2-5mm depending on the thickness of the keloid. 5-FU and steroid injection were usually combined with the punch surgery. Post-surgical irradiation was usually applied to the punch site at 3 or 4 days after the surgery.

Results: keloids were well responded to the treatment by exhibiting as a flattened and softened skin lesion with significantly reduced erythema, thickness, pain and itching. In the facial area, post-surgical CO_2 laser treatment also significantly improves the aesthetic outcome of the treated skin lesion. Particularly, some large sized keloids that resist to drug injection treatment became completely healed with this procedure. Also, the wide-spread keloids that were not possible to be surgically excised were well treated and healed.

Conclusion: This procedure represents a novel procedure as an alternative surgery method to treat the most difficult keloids that are not feasible by drug injection or routine surgical excision.

CURRICULUM VITAE

Wei LIU, MD, PhD. Dr. Liu graduated from Shanghai Second Medical University in 1983 with a MD degree and graduated from University of Arkansas for Medical Science in 1998 with a PhD degree followed by two year postdoctoral training focusing on wound healing and scarring at Institute of Reconstructive Plastic Surgery, New York University Medical School. He returned to China in 2000. Currently, he is a Professor of Plastic Surgery of Shanghai Jiao Tong University School of Medicine, and Adjunct Professor of Biomedical Engineering of Shanghai Jiao Tong University. He served as Associate Directors of National Tissue Engineering Center of China and Shanghai Research Institute of Plastic and Reconstructive Surgery. Dr. Liu was standing committee member of Chinese Society of Biomaterials and Chinese Society of Tissue Engineering, Vice President of Chinese Society of Tissue Engineering and Regenerative Medicine. Dr. is currently the Vice President of Chinese Society of Scar Medicine, Chair of the Committee of Development and Translation of Scar prevention and Treatment Technology. Dr. Liu is the authors of more than 100 original articles published in international journals, the contributor of several international tissue engineering text books. Dr. Liu has been an editorial member of Scar, Burns and Healing (SAGE), Biomaterials, Journal of Tissue Engineering and Regenerative Medicine, Biomedical Materials, and Tissue Engineering. He has presented more than 30 invited speeches at various international conferences, including TERMIS-AP and TERMIS-EU chapter meeting and TERMIS-World Congress. Dr. Liu is the organizer of 8th TESI Annual meeting and 2013 TERMIS-AP meeting, is a Member-in large of TERMIS-AP, Member of International Union of Societies of Biomaterials Science and Engineering (IUSBSE). Dr. Liu's clinical work specializes in scar treatment with focus on keloid and cosmetic scar revision and laser therapy. He is one of the founding members of Scar Club based on Monpellier, France, the Founding member of Asian Scar Society and the Founding member of G-Scar. Dr. Liu was the Conference President of The First G-Scar World Congress held in Shanghai in October 2018, the co-Presidents of the Fifth International Keloid Symposium in Shanghai June 2025. In the past decades, Dr. Liu was invited to give lectures on scar research and treatment in the conferences of Scar Club in Montpellier, G-Scar meeting in Shanghai and Tokyo, Japanese Scar Meeting in Tokyo, International PSRC meeting in Tokyo and Asian Scar Society Meetings in Shanghai, Hongkong and Indonesia, and the 2nd, 4th and 5th International Keloid Symposium.

KC2-6

MANAGEMENT LARGE KELOID SCAR WITH COMBINATION SUPERFICIAL RADIATION THERAPY AND SKIN GRAFT

Vu Quang Vinh MD, PhD
Vietnam National Burn Hospital

Keloid treatment is always challenge with plastic surgeons in the wold. However, keloid scar in post burn patients to develop lager than primary keloid scar. It is not only affection about patient's cosmetic but also affect function. Nowadays, conventional method for large keloid scar such as skin graft, flap are failed because keloid scar to reoccurred and destroy both recipient, donor site. Now, in our Plastic and Reconstructive Centre 30 patients large keloid scar to be applied process as three day for radiation superficial therapy with total 18 Gy, day 4 using split full thickness skin graft. Result, patients to be obtained both cosmetically and functionally, keloid is controlled with follow up 18 months.

CURRICULUM VITAE

Full name: VU QUANG VINH.

Position: Vice Director of Vietnam National Burn Hospital
Head of Faculty of Plastic and Reconstructive surgery- MMU
Vice President of Vietnam Society of Aesthetic Plastic Surgery
Vice President of Vietnam Society of Burn

EDUCATION BACKGROUND

- From 1987 to 1993: General medical doctor student in Hanoi medical university.
- From 1993 to 2001: Resident in National Institute of Burn of department of plastic and reconstructive surgery.
- From 1996-1997: Preliminary training of plastic and reconstructive, aesthetic surgery in Hanoi medical university.
- From 2001 to March, 2006: PhD student in Nippon Medical School Japan (Sponsor by a famous Professor Hiko Hyakusoku).
- From March, 2006 up to now: MD, PhD in National Institute Of Burn department plastic and reconstructive surgery
- From September 2010 up to now vice president of Vietnam association of Plastic and reconstructive surgery.
- From 2016: Professor and Head of Central of Plastic and Reconstructive Surgery of National Hospital Of Burn.

WORKING EXPERIENCE

- Microsurgery: DIEPA breast reconstruction, penis reconstruction, facial reconstruction, finger replantation.. etc..
- Burn scar reconstruction: Contracture scar, hypertropic scar, keloid scar treatment..etc..
- Aesthetic plastic surgery: Blepharoplasty, aesthetic surgery of the neck and face..etc..

3rd G-ScarS

Scar: Clinical Practice 2

Chair

Mi Ryung Roh

SC2-1

The role of autologous skin cell suspension in scar minimisation and established scar treatment.

Fiona Wood
Burns Service of Western Australia

The time to healing is fundamental with a longer time to heal driving a poorer scar outcome. In acute skin wounds the introduction of an autologous non-cultured expanded cell suspension harvested from a non injured site has the effect of reestablishing the epidermal layer with the potential to shorten the time to heal and therefore influence scar outcome.
In the treatment of the established scar the characteristics of the scar causing the symptoms need to be considered. Is the scar keloid, hypertrophic, normotrophic or atrophic? Is the colour of the scar mismatched due to vascularity or pigment? The role of an autologous non-cultured expanded cell suspension harvested from a non-scarred skin matched body site in resurfacing has the potential to modulate the scar hypertrophy and reintroduce appropriate pigment improving scar outcome.
The experience of the use of the ReCell skin cell harvesting device in > 5000 patients will be presented and discussed.

CURRICULUM VITAE

Professor Fiona Wood MBBS BSc FRCS FRACS AM ,
Winthrop Professor Fiona Wood University of Western Australia is a Plastic & Reconstructive Surgeon specialising in the field of burn care, trauma and scar reconstruction.
As Director of the WA Burns Service of Western Australia since 1991 she is consultant surgeon at both the South Metropolitan Heath Service, Fiona Stanley Hospital and the Child and Adolescent Health Service, Perth Children's Hospital.
As director of burns research she leads an interdisciplinary team with broad collaboration focused on translation to improve clinical outcomes and has received grant funding in excess of 12m.
She has dedicated her life to the treatment of those suffering from burn injury and ensuring that the quality of the scar outcome is worth the pain of survival. Prof Wood has translated into clinical practise a number of initiatives from injury prevention, first aid and pre-hospital care, to the improvements in the care related to infection control, pain relief, fluid resuscitation, wound healing, surgical intervention and scar management.
She has been the recipient of the 2003 Australian Medical Association 'Contribution to Medicine' Award and an Order of Australia Medal for work with Bali bombing victims. As a National Living Treasure and Australian Citizen of the Year in 2004. she received the honour of being named Australian of the Year in 2005.
Fiona and Marie Stoner, co-founders of Clinical Cell Culture, now Avitamedical, won the 2005 Clunies Ross Award for their contributions to Medical Science in Australia.
She has impact beyond burn injury into the broader health system and community as exemplified by, clinical lead for innovation, a member of the Australian National Science and technology Council, and a board member of the Royal Flying Doctors.

SC2-2

Optimal timing for Cutaneous Scar treatment: A comprehensive approach

Mi Ryung Roh
Yonsei University College of Medicine

Cutaneous scars, resulting from wounds or skin conditions, can have significant physical and psychological implications. While treatment options exist, the optimal timing for initiating scar treatment remains a subject of debate.

Early Intervention: Promoting Optimal Healing

Early treatment focuses on promoting optimal wound healing to minimize scar formation. Proper wound management, including cleaning, disinfection, and appropriate dressings, reduces infection risks. Early application of silicone gels, sheeting, or moisturizures modulates collagen production and hydration, improving scar appearance. Pressure garments distribute forces, reducing tension and excessive scar tissue. Non-invasive procedures such as laser therapy and IPL target redness, pigmentation irregularities, and promote collagen remodeling.

Comprehensive Approach: Timing and Individualization

A comprehensive approach considers timing and individual factors. Scar location, type, size, and individual healing capacity vary, necessitating tailored treatment plans.

Therefore, otimal timing for cutaneous scar treatment depends on scar development stage, type, and individual factors. Early intervention focuses on promoting optimal wound healing, while delayed intervention addresses established scars. A comprehensive approach, considering timing and individualization, ensures the best possible outcomes.

CURRICULUM VITAE

Name: Mi Ryung Roh

Current Position:
Professor, Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea

Education:

1996-2002	Yonsei University College of Medicine (MD), Seoul, Korea
2007-2011	Yonsei University College of Medicine (PhD), Seoul, Korea

Training and Fellowship Appointments:

2003-2007	Dermatology residency, Yonsei University Medical Center, Seoul, Korea
2007-2009	Dermatologic Surgery Fellowship, Yonsei University Medical Center, Seoul, Korea

Faculty Appointment:

2012-2022	Assistant & Associate professor, Dermatology, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea
2014-2016	Visiting Professor, Harvard Medical School, MGH, Wellman Center for Photomedicine, MA, USA
2022-Current	Professor, Dermatology, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea

Memberships:

2003-Current	Korean Dermatological Association
2007-Current	Korean Society of Dermatologic Surgery, Korean Society of Skin Cancer
2016-Current	Associate Editor, British Journal of Dermatology

SC2-3

Low-Temperature Atmospheric Pressure Plasma: A New Frontier in Scar Prevention and Treatment

Apirag Chuangsuwanich, M.D. [1,2], **Pitawan Rachata, M.D.** [2]

1 Division of plastic surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok Thailand

2 Mae Fau Luang University Medical Center Hospital, Chiang Rai, Thailand

Background: Scarring—particularly hypertrophic and keloid phenotypes—remains a major clinical and psychosocial burden with incomplete responses to current modalities (silicone, corticosteroids, laser/energy devices, pressure therapy, surgery). Low-temperature atmospheric pressure plasma (LTP/CAP) has emerged as a non-thermal, bioactive technology that may modulate early wound healing and subsequent scar formation.

Content: This talk synthesizes mechanistic, preclinical, and early clinical evidence for LTP/CAP in scar prevention and treatment. We review how plasma-generated reactive oxygen and nitrogen species (ROS/RNS), transient electric fields, and UV/charged particles can (1) reduce bioburden, (2) temper excessive inflammation, (3) promote angiogenesis and re-epithelialization, and (4) influence fibroblast–myofibroblast dynamics and collagen remodeling—mechanistic levers that plausibly translate to thinner, more pliable scars. Device archetypes (DBD vs. jet), dose parameters (power, frequency, exposure time, treatment interval), and safety considerations (thermal limits, ozone/NOx, ocular protection) are summarized in practical terms for clinicians. We position LTP/CAP as a potential adjunct to established therapies, outlining combinational pathways with silicone, fractional lasers, microneedling, and intralesional agents.

Innovation & Implementation: The session proposes a clinical research roadmap: prioritized indications (burns, surgical incisions at high risk, early hypertrophic change), standardized outcome measures (POSAS, Vancouver Scar Scale, ultrasound elastography), and trial designs moving from prevention-focused peri-incisional protocols to treatment trials for established scars. Operational considerations for resource-limited settings, training, cost, and sustainability (short treatment times, reusable handpieces/consumables) are discussed, with an emphasis on multidisciplinary collaboration among surgeons, dermatologists, physicists, and biomedical engineers.

Conclusion: LTP/CAP is a promising, mechanistically grounded technology with the potential to shift scar care from reactive treatment to proactive modulation of healing. While confirmatory human trials are needed, current data justify carefully designed clinical adoption studies and combination strategies that could materially improve scar outcomes.

CURRICULUM VITAE

Education

Certificate of Clinical Fellow in Plastic Surgery from Presbyterian Hospital, University of Pittsburgh 1992
Board of Plastic Surgery (Thai) Siriraj Hospital from Thai Medical council 1982
Board of Surgery (Thai) Siriraj hospital from Thai Medical council 1984
M.D. Siriraj Hospital 1977

Professional organization

Chief of division of Plastic Surgery, Department of Surgery Faculty of Medicine Siriraj Hospital Mahidol University
President of Burn and Wound healing Association (Thailand) 2016-2020
President of the Society of Aesthetic Plastic Surgeons of Thailand 2012-2014
President of the Society of Plastic and Reconstructive Surgeons of Thailand 2009-2013
President of the Society of Micro-vascular Surgeons of Thailand
Editorial board member of Aesthetic Surgery Journal
President of the Society of Plastic and Reconstructive Surgeons of Thailand 2019 to 2021
President of Royal Colleague of Surgeons of Thailand 2022 to 2024
Acting director of Mae fah Luang University Medical Center Hospital

SC2-4

Understanding the Multifaceted Impact of Scars with Patient-Reported Outcome Measures

Whitney Quong [1,2], Cornelia Borkhoff [1], Aaron Drucker [1], Joel Fish [1], Teruyuki Dohi [2], Rei Ogawa [2]

1 University of Toronto
2 Nippon Medical School

Scars - particularly pathologic scars such as hypertrophic and keloid scars - can have multifaceted and enduring effects on patients. Beyond visible disfigurement, they are often associated with pain, itch, restricted mobility, and significant psychosocial consequences, including anxiety, low self-esteem, and social withdrawal. Despite these wide-ranging impacts, traditional scar assessments have historically relied on clinician-reported outcomes that may underrepresent the patient's perspective and overall quality of life.
Patient-reported outcome measures (PROMs) are increasingly recognized as essential tools for capturing the lived experience of those affected by scarring. The SCAR-Q, a rigorously validated PROM, assesses scars across three key domains: appearance, symptoms, and psychosocial impact. By centering the patient's voice, it enables a more comprehensive and meaningful evaluation of treatment outcomes.
In this talk, we will explore the multidimensional burden of scarring, the evolving role of PROMs in scar evaluation, and present findings from our recent study using the SCAR-Q to assess the effectiveness of steroid tape for pathologic scar management. Our results demonstrated significant improvements across all SCAR-Q domains following treatment, suggesting steroid tape is a promising, non-invasive therapy. This work highlights the dual importance of innovative treatment approaches and patient-centered assessment tools in advancing scar care.

CURRICULUM VITAE

EDUCATION

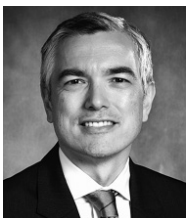
PLASTIC SURGERY TRAINING — 2016 – present
- Division of Plastic & Reconstructive Surgery, University of Toronto
- Clinician Investigator Program/Surgeon-Scientist Training Program Trainee

DOCTOR OF PHILOSOPHY — 2018 – 2025
- Institute of Medical Science, University of Toronto

DOCTOR OF MEDICINE — 2012 – 2016
- University of British Columbia

BACHELOR OF SCIENCE (HONOURS) PHYSIOLOGY, WITH MINOR IN PSYCHOLOGY — 2008 – 2012
- University of British Columbia

SC2-5



Color match revisited: why tissue match is a better concept.

Mark Fisher MD FACS

Director, Bayview Adult Burn Center, Associate Professor of Plastic Surgery, Johns Hopkins University

The surgeon who evaluates their reconstructive outcome often refers to color match as an important outcome. By color match we intuitively think of a static combination of tone (dark vs light) and color. Although color match in this traditional sense is well represented in existing scar evaluation instruments, the concept is actually quite limited and indeed potentially misleading. With respect to 'color', reconstructive scar outcomes of the highest quality achieve much more than static similarity of tone and color. This includes match with respect to:

1. melanin concentration (tone)
2. overall color
3. translucence vs opacity of deeper pigmented layers
4. similarity through active motion

Hence a reconstruction that achieves #1 and #2 alone may not achieve truly good color match. Broadening our evaluation to include color match with other aspects of comprehensive tissue-matching should be considered as we will explore through a series of cases.

CURRICULUM VITAE

Dr. Fisher is the Director of the Johns Hopkins Adult Burn Center at the Bayview Medical Center in Baltimore. As burn center director, he leads the clinical, educational, and research efforts of the center. The burn center serves the state of Maryland as the only ABA-accredited burn center with an annual volume of over 700 burns and over 100 ICU admissions. With the capability of achieving reconstructive outcomes of the highest quality, the center also provides care for patients with reconstructive needs nationally and internationally.

Educational Background:

1. Duke University, Plastic Surgery Residency
2. Galveston Shriners Hospital for Burns, Burn Fellowship
3. Hospital for Sick Children Toronto, Craniofacial Fellowship

Clinical Focus

As a fellowship trained burn surgeon, plastic surgeon, and craniofacial surgeon, Dr. Fisher has a broad practice including acute and reconstructive burn surgery, microsurgery, craniofacial surgery, and general plastic surgery.

Research Focus:

Through collaborations across the department of plastic surgery, the current areas of focus include:

1. Translational approaches to burn wound healing
2. Burn disaster system development
3. Cranial reconstruction

Education Focus:

Dr. Fisher is heavily engaged in burn reconstruction education having founded the ABA Burn Reconstruction Symposium and through his ongoing efforts with Interburns.

3rd G-ScarS

Scar: Device · Material 2

Chair

Paul van Zuijlen

SD2-1

State-of-the-art laser treatment for scars

TARO KONO
Tokai University School of Medicine

State-of-the-art laser treatment for scars has significantly evolved with the advent of novel wavelengths and delivery technologies. Among them, the 2910 nm glass fiber laser represents a new frontier in non-ablative resurfacing. This wavelength targets water with high absorption efficiency, enabling precise dermal remodeling while minimizing epidermal injury. In addition, focal point technology allows energy to be concentrated at specific depths within the dermis, promoting neocollagenesis and scar texture improvement with reduced downtime. Recent clinical applications demonstrate favorable outcomes in hypertrophic, atrophic, and post-surgical scars. Compared to traditional fractional ablative lasers, the 2910 nm laser system offers a superior balance between efficacy and safety. This abstract highlights the mechanism, clinical utility, and future potential of combining 2910 nm wavelength with focal point delivery in the modern treatment of scars.

CURRICULUM VITAE

Taro Kono, M.D., PhD.

Dr. Taro Kono obtained his M.D. at the Faculty of Medicine of the Kagoshima University in Japan in 1993. He completed his professional training in the Department of Plastic & Reconstructive Surgery of the Tokyo Women's Medical University from 1993 to 1995 and the Department of Surgery of the Metropolitan General Hospital from 1995 – 1997. He obtained his PhD. at Tokyo Women's Medical University in 2007. He is a President of Japanese Society of Surgical Dermatology, a director of Japanese Society for Laser Surgery and Medicine, Japanese Society of Aesthetic Plastic Surgery, Japanese Society of Hemangiomas and Vascular Lesions. He is an associate editor of Lasers in Medical Science and Laser Surgery and Medicine, a manuscript reviewer of 18 international journals. He is now professor at the Department of Plastic Surgery of the Tokai University in Japan and a visiting professor of Nippon University.

University Education/Graduate:
Faculty of Medicine, Kagoshima University (1984-1993)
Degree: M.D. PhD : Tokyo Women's Medical University (24/2/2006)

Current Position
Professor (2021-)
Department of Plastic Surgery of the Tokai University School of Medicine in Japan
Visiting professor (2016-)
Department of Plastic Surgery of the Nippon University in Japan

Membership Societies:
President of Japanese Society of Surgical Dermatology
Board of Japanese Society of Laser Surgery and Medicine
Board of Japan Society of Aesthetic Plastic Surgery
Board of Japan Society of Hemangiomas
Board of Japan Society of Medical Artmake
Councilor of Japan Society of Plastic and Reconstructive Surgery
Councilor of Japan Society of Aesthetic Dermatology
Councilor of Japanese Society of Laser Surgery and Medicine
Councilor of Japanese Society of Hemangiomas and Vascular Lesions
Fellow of American Society of Laser Surgery and Medicine
Member of International Confederation for Plastic, Reconstructive, and Aesthetic Surgery
Member of Japan Society of Plastic and Reconstructive Surgery as a specialist
Member of Japanese Society for Burn Injuries as a specialist
Member of clinical research as an instructor

SD2-2

Fractional lasers and possible combinations for the treatment of challenging scars

Gerd G Gauglitz
Dept. of Dermatology and Allergy, Ludwig-Maximilian University Munich

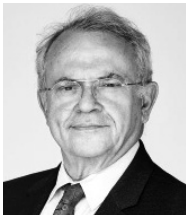
Challenging scars, including atrophic, hypertrophic, and traumatic types, often prove resistant to conventional therapies, necessitating more advanced treatment approaches. Fractional laser technologies have emerged as effective tools for scar remodeling by stimulating dermal remodeling while minimizing downtime. Recently, hybrid lasers have also shown promise, particularly in the treatment of atrophic and traumatic scars. Furthermore, combining fractional lasers with adjunctive therapies—such as corticosteroids, 5-Fluorouracil (5-FU), platelet-rich plasma (PRP), amino acids, or Poly-L-lactic acid — can enhance outcomes by targeting multiple pathophysiological pathways. Early post-injury intervention and individualized treatment protocols further optimize results. Despite encouraging evidence, standardized guidelines remain limited, highlighting the need for additional controlled trials. The integration of fractional lasers into multimodal treatment regimens represents a paradigm shift in the management of complex scars, offering both functional and aesthetic benefits. However, while functional improvements may be objectively measured, aesthetic outcomes are largely subjective and depend on patient expectations, presenting an ongoing challenge in patient communication.

CURRICULUM VITAE

Gerd G. Gauglitz, MD, MMS has completed his medical trainings and specialization in dermatology and dermatosurgery at the National University of Singapore (NUS), the University of Texas Medical Branch (UTMB) and the Ludwig Maximilian University (LMU) in Munich, where he was employed as Associated Professor and supervised the department of aesthetic dermatology and laser medicine. Since 2018, he owns a clinic specialized on dermatology, dermatosurgery and aesthetic medicine in Munich. Next to his focus on minmal invasive aesthetic procedures Prof. Gauglitz has dedicated his clinical and scientific work to treatments of excessive and atrophic scarring. Prof. Gauglitz is a well-known speaker and faculty member at numerous national and international congresses, the author of more than 300 publications in leading journals and text books related to his specialities and served as the Past-president of the German Society of Dermatosurgery (DGDC) and board member of the German Society of Dermatology.

SD2-3

Potential improvements in scar management: a 2025 update



Luc Téot MD, PhD
Medical Director Cicat Occitanie

Scars are still in the obscure part of the medical science. In spite of multiple developmenst concerning prevention and treatment of hypertrophoc and/or keloids, the knowledge of these innovations remain extremely unknown in the medical population.
This difficulty to diffuse the right messages and adapted solutions is multifactorial. The heterogeneity of the actors limit the capacity of proposing a pathway of care adapted to each stage of the scar. This is why the GScars has established and largely spread a textbook in scar management under an open source format. (2 Millions downloads)
Prevention would oblige surgeons and dermatosurgeons to take care of the post operative period for a long period of months, which is not done everywhere.
A consensus guideline exist among specialists coming from different disciplines. A better transversality would help to propose a large panel of complementary techniques, going from injections to lasers, physiotherapy and surgery. It appears, like in wound healing , that a corpus of specialised nurses could be trained to check and detect pathological scarring in its early stage. Local actors like pharmacists or GP could also warn a difficult situation and ask for advices.
The development of a telemedicine based service is encouraged, like in dermatology, open to all requiring professionnal experts, who will diagnose the cause of the pathology and give advices to caregivers and patients, all along an adapted chain of specialists, depending on the teleconsultation.
The development of a GScar International Database is an option, concentrating case reports open to Artificial Intelligence determining with the adpated algorithms the best possible pathway of care, depending on the Fitzpatrick classification, the socio economical status of the patient and the availability of medical paramedical solutions. Resaerch is still needed to better understand the physiopahology of pathological scarring in all the different parts of the world.

CURRICULUM VITAE

Diplomas:
- MD (1980)
- PhD (1992)

Titles:
Internat des Hôpitaux Montpellier 1974., Médaille d'or de l'internat 1979., Chef de clinique - Assistant des Hôpitaux 1982, Ass Prof 1988.

Qualifications:
Qualified specialist in General Surgery: 1986.
Qualified specialist in Orthopedics and Traumatology : 1988.
Qualified in Plastic surgery : 1991.

Societies
Founding member of the French WHS, the Academy of Wound Technology, the Scar Club
Past President of:
- the European Tissue Repair Society (2002-2004)
- the World Union of Wound Healing Societies (2004-2008)

SD2-4

Drug and Device Approaches to Promote Scarless Healing in Humans

Geoffrey C. Gurtner, MD, FACS

Professor and Chair of Surgery, University of Arizona / Johnson and Johnson Distinguished Professor of Surgery, Emeritus Stanford University

Wound healing is a complex biological process involving hemostasis, inflammation, proliferation, and remodeling. While this orchestrated response is essential for tissue repair, dysregulated healing often culminates in scar formation, characterized by fibrosis and loss of physiological tissue architecture. Scar formation impairs both aesthetic and functional outcomes, posing significant clinical challenges. We previously identified mechanical signaling, specifically through the Focal Adhesion Kinase (FAK) pathway, as a critical regulator of wound healing and fibrosis across various disease states. Elevated mechanical signaling drives fibrosis and scarring, whereas targeted manipulation of this pathway either by device or pharmacologic approaches blocks these adverse effects. We have performed extensive preclinical and clinical studies to demonstrate the potential of these interventions to minimize scarring, promote regenerative healing, and restore dermal architecture.

CURRICULUM VITAE

Dr. Geoffrey C. Gurtner is the Chair of the Department of Surgery and Professor of Biomedical Engineering at the University of Arizona. A general and plastic surgeon, Dr. Gurtner was previously the Johnson and Johnson Distinguished Professor of Surgery and Bioengineering (by courtesy) and Materials Science (by courtesy) at Stanford University. Dr. Gurtner is the author of over 400 peer-reviewed publications (h-index 108) and is an Editor for two major textbooks in the field: *Grabb & Smith's Plastic Surgery* and *Plastic Surgery.* Dr. Gurtner was awarded the James Barrett Brown Award in both 2009 and 2010 and has been named "researcher of the year" by the ASPS, AAPS and numerous other professional organizations. Dr. Gurtner runs an NIH and DoD funded laboratory examining how physical stimuli (mechanical and chemical) alter the human response to injury. His lab has received over $30M in funding and has developed multiple new technologies for which Dr. Gurtner has received over 50 issued patents and has over 100 patent applications. Dr. Gurtner has founded several venture backed start-up companies, including Neodyne Biosciences (www.neodynebio.com) and Arresto Biosciences, which was acquired by Gilead (NASDAQ:GILD). Dr. Gurtner was also a founding partner at Tautona Group (www.tautonagroup.com), an early stage life science fund that has created novel biomedical technologies that have been sold to industry leading companies, such as Allergan (NYSE:AGN), Novadaq (NASDAQ:NVDQ), and Acelity/KCI (San Antonio, TX).

SD2-5

Dermal skin substitutes in burn care: future directions to scar-free wound healing

Paul van Zuijlen, Anna van den Bosch, Robin Verwilligen, Kees vd Vlies, Eelke Bosma, Anouk Pijpe, Esther Middelkoop, TZO group

Plastic surgeon and Medical director of the Burn Center of the Red Cross Hospital, Beverwijk, The Netherlands.

The aim of this study is to determine the present and future position of dermal skin substitutes in burn care, and identify challenges and opportunities to further enhance this field.

A mixed-method study was performed and included an international survey, a systematic review and meta-analyses, and two innovation projects targeted at developing a treatment algorithm and decision aid for the application of dermal substitutes in acute burn care.

Two thirds of 148 included international experts acknowledged the efficacy of dermal substitutes. However, they reported experienced barriers in terms of costs and contamination risk, and emphasised the absence of clear indications and treatment protocols. Efficacy was confirmed by a meta-analyses on 31 comparative trials which highlighted improved scar quality in burn patients despite a slightly delayed wound healing. Extraction of indications from 190 studies revealed that wound depth was the primary indication for dermal substitute use. No age or burn/scar location thresholds were identified. Contraindications include wound infections and allergies to matrix components. Limited data exist on use in patients with comorbidities. Based on these data, a treatment algorithm was developed. To enhance implementation and shared-decision making, a decision aid was created in co-design with patients and clinical professionals.

Despite proven efficacy in trials, dermal substitutes lack a firm footing in treatment protocols, with clear indications still undefined. Opportunities lie in the use of science-based implementation strategies, real-world data, cost-effectiveness studies, and patient perspectives. Lessons from the biomaterial journey could be applied in future developments such as bioengineered skin products.

Key words: skin substitutes, scar formation, implementation
Topic: Scars

CURRICULUM VITAE

Prof. Paul van Zuijlen M.D. Ph.D.

Paul van Zuijlen is a plastic surgeon, medical director of the Burn Center of the Red Cross Hospital, Beverwijk, professor of Burn Care, member of the Executive Committee of the European Burn Association and chairman of the Executive Board of the Alliance for Dutch Burn Care.
In his current clinical practice and research, he focuses on acute burns, complex wounds, reconstructive surgery and scar revisions with an eye for innovation and implementation of new treatments such as tissue engineering. He is challenged by the complex puzzle of scar formation and wound healing and combining clinical and basic science with mathematical modeling (AI) to work on a better understanding of causes and treatments.
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SD2-6

Clinical efficacy of the Magpie-bridge Microskin Grafting in treating fine line scars

Yixin Zhang, MD, PhD

Professor, Department of Plastic and Reconstructive Surgery, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University, School of Medicine

Objective To evaluate the clinical efficacy of the Magpie-bridge Microskin Grafting (hereinafter briefly referred to as Magpie-bridge surgery) in treating fine line scars (FLS).

Methods This study was a retrospective cohort study. From October 2022 to December 2023, 37 FLS patients were treated with the Magpie-bridge surgery at the Department of Plastic and Reconstructive Surgery of Shanghai Ninth People's Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, including 9 males and 28 females, aged 25 (17, 36) years. All scars were <2 mm in width and 1–10 cm in length before surgery. An electric dermatome was used to excise scar tissue at intervals to form wounds and harvest microskin grafts of the same size and thickness as the removed scar tissue from behind the ear or armpit top area. The microskin grafts were implanted at the wound sites and fixed with tension reducing adhesive tape. The donor areas were treated with normal dressing change. Twelve months after the first surgery, the efficacy based on the degree of reduction in scar white area compared with that before the first surgery was evaluated, and the treatment effectiveness rate was calculated. Before the first surgery and 12 months after the first surgery, the melanin score of the scar area and the surrounding normal skin area was evaluated through a skin imaging analysis system, and the melanin score difference between the surrounding normal skin area of scar and the scar area was calculated. The white scar tissue that was not removed during the first surgery (hereinafter referred to as untreated scar tissue) and tissue from the site of scar removal and microskin transplantation at 12 months after surgery (hereinafter referred to as the recipient skin tissue at 12 months after the first surgery) were collected from 6 patients of the aforementioned group seeking better therapeutic outcomes. The tissue structure, melanin quantity and distribution were observed by hematoxylin eosin staining and Masson-Fontana staining, and the activity of tyrosinase positive melanocytes was observed by immunofluorescence staining.

Results At 12 months after the first surgery, the efficacy evaluation results showed that 24 cases were cured, 11 cases improved, and respectively 1 case was ineffective or the condition worsened, yielding a 94.6% (35/37) treatment effectiveness rate. The melanin score difference between the surrounding normal skin area of scar and the scar area was 0.45 (0.10, 1.65) at 12 months after the first surgery, which was significantly less than 2.50 (1.40, 5.96) before the first surgery ($Z = -5.02$, $P < 0.05$). Six patients had untreated scar tissue with flat epidermis and a flat junction between dermis and epidermis; the collagen fiber bundles in the dermis were thick and single parallel; no hair follicles or other skin appendages were observed; the basal layer of the epidermis showed deposition of melanin particles, but no extensive depigmentation was observed. Compared with those of untreated scar tissue, the epidermal thickness increased, and epidermal protrusions appeared at the junction of dermis and epidermis of the recipient skin tissue at 12 months after the first surgery; hair follicles and sebaceous gland appendages were visible, and collagen fibers in the dermis were arranged vertically and horizontally in an orderly manner; the basal layer of the epidermis showed deposition of melanin particles, and the melanin content increased per unit area of tissue. Tyrosinase positive melanocytes mainly located at the basal layer of the epidermis in untreated scar tissue and in the recipient skin tissue 12 months after the first surgery, with normal cell activity and no significant difference.

Conclusions It is confirmed by subjective and objective indicators that the Magpie-bridge surgery can significantly improve the appearance of FLS in patients, with definite therapeutic effects and clinical promotion value; the improvement of FLS appearance by Magpie-bridge surgery may be related to the increase of melanin content per unit area and the normalization of tissue structure.

CURRICULUM VITAE

Professor, Chief Physician, Doctoral Supervisor,
Administrative Deputy Director, Department of Plastic and Reconstructive Surgery,
Chief, Division of Reconstructive Microsurgery
Chief, Division of Scar Comprehensive Treatment
Shanghai Ninth People's Hospital,
Shanghai Jiao Tong University, School of Medicine.

Shanghai Outstanding Academic Leader,
Shanghai Excellent Technology Research Leader.
2018, Godina Award, American Society for Reconstructive Microsurgery (ASRM) .

3rd G-ScarS

Oral Presentations 1-8

Oral Presentations 1　Chair: Geoffrey C. Gurtner
Oral Presentations 2　Chair: Ioannis Goutos
Oral Presentations 3　Chair: TARO KONO
Oral Presentations 4　Chair: Fumiaki Shimizu
Oral Presentations 5　Chair: Alexis Desmoulière
Oral Presentations 6　Chair: Noriko Aramaki
Oral Presentations 7　Chair: Peter Moortgat
Oral Presentations 8　Chair: Teruyuki Dohi

O1-1

Understanding of scar in Formulas for Fifty two Diseases and by physicians throughout history

Tian Yi [1], Zhou Rongxian [2], Luo Jian [3]

1 The Second Affiliated Hospital of Hunan University of Chinese Medicine
2 Hunan University of Chinese Medicine
3 Hunan Academy of Chinese Medicine

The understanding of "ban (scar)" in Chinese Medicine (CM) has a long history. As early as the medical book Wu Shi Er Bing Fang (Formulas for Fifty-two Diseases) unearthed from the Mawangdui Han Tombs, there are detailed records of scar prevention and treatment. This is the earliest extant classic introducing the prevention and treatment of scars, providing an important theoretical basis for later physicians. The book discussed traumatic, old, and burn scars in detail, proposing combined treatments using medicinal herbs and other therapies. It emphasized integrated internal and external therapy, demonstrating significant efficacy in reducing scar formation. Building on the Wu Shi Er Bing Fang (Formulas for Fifty-two Diseases), later physicians continuously refined the therapeutic system of scars through theoretical innovations and practical experience, diversifying treatment methods and improving the precision of medicinal selections. Modern medicine has drawn valuable insights from this book, particularly in the treatment of traumatic, old, and burn scars. It has guided the development of CM-based scar treatment products, and provided theoretical support and practical evidence for contemporary medical practices.

O1-2

The 1st white paper on scar prevention and treatment for China HCP

Xiaoqing FEI

Alliance I&SA

Background

Pathological scarring arises from dysregulated collagen during healing, causing aesthetic and functional impairments. Current interventions (injections and lasers) remain limited by efficacy, safety and adherence challenges. In China, inconsistent practices and a lack of holistic, full-cycle management guidelines further complicate scar care.

Objective

To provide evidence-based recommendations for standardized, full-cycle scar management (from prevention to treatment) to shift practice from empirical to consistent, high-quality care.

Methods

A mixed-methods approach integrated insights from expert interviews and a survey of 432 physicians. 9 real-world cases illustrated the efficacy of silicone-based therapies across varied scar types and patient profiles.

Results

Expert consensus endorsed silicone-based products as gold standard of scar management. A “prevention over treatment” paradigm, stressing early intervention and holistic strategies addressing both symptoms and function is advocated. High-quality silicone products (e.g., Kelo-Cote®) are recommended for proven safety and efficacy, supporting a standardized national framework.

Conclusion

By synthesizing scar epidemiology, pathogenesis, and clinical evidence, silicone-based therapies as essential to full-cycle scar management are established. Its practical algorithms aim to lower pathological scarring incidence, enhance patient outcomes and standardize multidisciplinary scar care across China.

O1-3

EVALUATION OF SILICONE PRESSURE BANDAGE (GELZONE) IN THE PREVENTION POST-BURN SCAR

Phan Thi Thuc Trang
Vietnam National Burn Hospital

Burn injuries, especially deep burns, are associated with prolonged wound healing and a high risk of scar formation. The primary goals of scar management are to reduce pain, itching, and thickness of scars. A preliminary evaluation of the effectiveness of silicone pressure dressing (Gelzone) in preventing post-burn scars carried out on 30 patients , follow up 12 months with results: The mean VAS pain score significantly decreased from 6.8 ± 1.5 before treatment to 1.3 ± 1.4 at 6 months ($p<0.001$).Vancouver Scar Scale parameters, including pigmentation, vascularity, pliability, and height, showed statistically significant improvement after treatment, particularly at 6 and 12 months ($p<0.001$). Using silicon pressure bandage (Gelzone) has combined the effects of pressure and silicon, suitable for joint movement.

O1-4

Comparing The Assisted Delivery of Topical vs Intralesional Corticosteroids for Scar Management

Narottama Tunjung [1], Sheila Oklia [2], Indira Saraswati Sanjaya [2], Nandita Melati Putri [2]

1 Division of Plastic Reconstructive and Aesthetic Surgery, Department of Surgery, Universitas Indonesia Hospital, Faculty of Medicine Universitas Indonesia, Depok, Indonesia
2 Division of Plastic Reconstructive and Aesthetic Surgery, Department of Surgery, Dr. Cipto Mangunkusumo National Referral Hospital, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia

Aim: Scars are challenging to treat due to their high recurrence rates and the invasive nature of conventional therapies. While intralesional corticosteroid injections are commonly used, they are painful and associated with local side effects. Assisted delivery methods were used to enhance topical corticosteroid absorption, offering a potentially less invasive alternative. This study aims to compare the efficacy and tolerability of assisted delivery of topical versus intralesional corticosteroids.
Method: A systematic review and meta-analysis were conducted using PubMed, Cochrane, and ScienceDirect databases with the search terms "Keloid," "Hypertrophic Scar," and "Corticosteroid". Primary outcomes were post-treatment Vancouver Scar Scale (VSS) scores and pain level; the secondary outcomes were scar volume and thickness, and reported side effects.
Result: Data from 70 patients showed the pooled mean difference in VSS scores between topical and intralesional groups was 0.26 (95% CI: -0.88 to 1.41; P = 0.65), indicating no significant difference in scar improvement. However, pain scores were significantly lower in the topical corticosteroid group, with a pooled mean difference of -2.36 (95% CI: -3.79 to -0.92; P = 0.001).
Conclusion: Assisted delivery of topical corticosteroids provides scar outcomes comparable to intralesional injections but with significantly less pain. It may serve as a less invasive alternative treatment.

O1-5

The application of a dynamic comprehensive treatment and prevention strategy for keloids.

Zha Ru, Yu Wu
The Third Affiliated Hospital of Sun Yat-Sen University

Keloid is a pathological disease of dermal fibrosis, showing tumor-like growth characteristics, which brings significant burdens to patients. The pathological features of keloid make the recurrence rate high, which is still a challenge. A dynamic comprehensive treatment and prevention strategy has been accredited by professionals in the field.
Currently, our department's strategy for keloid places surgery at the first step. Adequate tension reduction suturing and primary healing are the primary steps to prevent recurrence. After the surgery, medical linear accelerator radiotherapy are arranged as soon as possible within 24 hours. Current follow-up indicates that the combined treatment of surgery and radiotherapy significantly reduces the recurrence rate of keloid. However, for patients who undergo skin or flap transplantation to repair the wound after surgery, the radiotherapy plan is still needs to be jointly studied. In addition, we provide postoperative education for patients with keloid and hypertrophic scar, use physical treatments such as reduction and compression, and conduct regular follow-ups. If redness appears on the scar surface or capillary vessels are visible after the surgery, we will cooperate with the IPL laser treatment.
The comprehensive prevention and treatment of keloid requires the long-term joint efforts of doctors and patients. At the same time, multi-department collaboration is needed.

O1-6

Aesthetic Full-Process Management of Auricular Keloids: Integrating Innovative ABC Surgery

Xiaomei Han
The Fourth Hospital of Hebei Medical University, China

Aesthetic outcomes are increasingly valued in auricular keloid treatment, yet standardized management frameworks remain limited. This work introduces an Aesthetic Full-Process Management Model for Auricular Keloids, integrating the innovative ABC surgical technique within a patient-centered approach. The model spans three phases-preoperative assessment, intraoperative optimization, and postoperative management-forming a closed-loop treatment process.
A key feature is the Four-Color Aesthetic Evaluation System, a structured tool that standardizes evaluation, supports shared goal-setting, and anchors postoperative tracking.
Preoperatively, a three-dimensional assessment-covering structural contour, emotional expectations, and recurrence risk-builds consensus between physician and patient. Intraoperatively, tailored ABC techniques optimize lesion excision while preserving auricular contour. Postoperative management combines medical interventions (radiotherapy, pressure therapy), patient self-care (compression, wound care), and emotional-aesthetic feedback to monitor satisfaction and guide ongoing care. A structured postoperative checkpoint enables outcome reassessment against preoperative goals, supporting dynamic feedback and adjustments.
This model fosters physician-patient co-creation, integrates structural and emotional outcomes, and provides an aesthetic-driven framework to optimize auricular keloid treatment.

O2-1

Scar Management from the Perspective of Appearance Care

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In recent years, appearance care has been increasingly emphasized as a supportive intervention for cancer survivors. While there are established approaches for addressing alopecia, skin disorders, and nail changes caused by chemotherapy and radiotherapy, standardized protocols for appearance care following surgical treatment remain lacking.
This presentation introduces the appearance care strategies and scar management practices currently implemented at our institution.
Information Delivery: We provide guidance on appearance care with the motto, "Care should be accessible anytime, anywhere, from anyone," ensuring that all patients can receive support seamlessly.
Consultation at Appearance Care Unit: Specialized staff engage directly with patients to address concerns and suggest appropriate management strategies. Scar treatment is classified into four categories based on wound healing phases: (1) prevention, (2) immature scars, (3) mature scars, and (4) keloid/hypertrophic scars.
Treatment: Patients are encouraged to make informed choices and undergo treatments they select themselves.
Follow-up: We offer ongoing follow-up and guidance tailored to the patient's condition.
Surgical scars are an integral part of appearance care and should be managed by wound care professionals. Providing timely and appropriate interventions may improve the quality of life for cancer survivors, and further investigation and standardization of such practices are warranted.

O2-2

HYDROCORTISONE CREAM WITH TRANSPARENT DRESSING AND CORTICOSTEROID INJECTION FOR SCAR TREATMENT

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Background: Steroid tape (Eclar® plaster) is one of the main treatment for scars. However, it is not available in Indonesia and thus, an alternative treatment is necessary. This series demonstrate the use of corticosteroid injections combined with hydrocortisone 2.5% cream under a transparent dressing as an alternative first line treatment for scars.
Methods: This case series presents 24 cases with hypertrophic scars or keloids. For a period of 6-12 months, each patient was given 2.5% hydrocortisone cream once a day covered by a transparent dressing. The patients also received steroid injections for area with stiff scars. The evaluation tools were the Vancouver Scar Scale (VSS) and the Patient and Observer Scar Assessment Scale (POSAS). Adverse effects were also recorded.
Results: All patients experienced significant improvements in scar characteristics, including decreased height and redness, and increased softness, as measured by VSS and POSAS. Patients reported high satisfaction with the treatment, as well as ease of use and comfort. Two patients were recorded having skin irritation due to the use of transparent dressing.
Conclusion: The use of corticosteroid injections with hydrocortisone cream application under a transparent dressing is promising to be an effective alternative to steroid tape for managing hypertrophic scars and keloids. This therapy can be used for existing keloids and hypertrophic scars and can also prevent recurrence in cases of excised keloids.

O2-3

Tunneling Injection of 5-FU/Steroid for Keloids: Retrospective Analysis of 82 Cases

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Keloids are benign fibroproliferative disorders characterized by raised dermal lesions extending beyond the original wound margins. They often cause pain, itching, and significant aesthetic concerns, adversely impacting patients' quality of life. Although intralesional triamcinolone acetonide (TAC) injection remains a first-line treatment, a high recurrence rate and potential adverse effects prompt the need for alternative strategies. We retrospectively reviewed patient records from January 2017 to June 2025, focusing on individuals with refractory keloids unresponsive to repeated TAC injections or laser therapy. These patients received intralesional 5-fluorouracil (5-FU, 45 mg/mL) combined with TAC (4 mg/mL) administered via a tunneling technique. We analyzed patient demographics, treatment efficacy, tolerability, and safety profile. A total of 82 cases were identified, comprising 49 male and 33 female patients aged 17-74 years. Commonly affected sites included the chest, back, shoulders, and mandible. After 3–4 sessions, significant reductions in lesion size, erythema, and thickness were observed. No recurrence or major side effects were noted; only transient dark purpuric changes and occasional injection-site necrosis occurred, both of which resolved spontaneously. The intralesional combination of 5-FU and TAC via a tunneling technique appears to be an effective and safe therapy for managing refractory keloids.

O2-4

Multimodal Management of Auricular Keloid in a Young Female in Low-Income Setting: A Case Report

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Southern Philippines Medical Center

Keloids are challenging to treat due to their tendency for recurrence, especially in tension-prone sites like the auricle. We present a case of a 20-year-old female with a progressively enlarging auricular keloid following ear piercing. A multimodal strategy was employed, including intralesional corticosteroid injections (triamcinolone acetonide), core excision with flap repair, fractional CO_2 laser therapy, and compression using magnet clips. Histopathology confirmed the keloid diagnosis.

The lesion demonstrated excellent clinical improvement with no evidence of recurrence during the follow-up period. Dermoscopic findings supported the diagnosis, showing telangiectasia, uniform erythema, and absent follicular openings. The multimodal approach addressed both fibroblast overactivity and mechanical tension, contributing to the favorable outcome. At the most recent follow-up, continued compression therapy was advised to further minimize the risk of recurrence. This case highlights the efficacy of combining surgical, pharmacologic, and physical modalities to reduce recurrence and optimize cosmetic results in auricular keloid management.

O2-5

Application of continuous W-shaped incision in surgical treatment of depressed scars

Kevin Ho
Kevin Clinic

Objective: Study the design method and therapeutic effect of continuous W-shaped surgical incisions in the treatment of depressed scars, providing a summary and further guidance for clinical treatment.
Method: Thirty-two patients with facial depressed scars who underwent surgical treatment at our hospital from February 2022 to December 2024 were selected and randomly divided into a control group and an observation group, with 16 patients in each group. The control group underwent scar tissue excision and suturing using a simple curved incision, while the observation group underwent excision and suturing using a continuous W-shaped incision. The treatment effects of the two groups were compared.
Results: The total effective rate of treatment in the observation group was higher than that in the control group ($P<0.05$). After treatment, the modified Vancouver Scar Scale (mVSS) scores, scar thickness, and scar blood perfusion in the observation group were all lower than those in the control group ($P<0.05$). There was no statistically significant difference in the total incidence of adverse reactions between the two groups ($P>0.05$).
Conclusion: In the surgical treatment of depressed scars, selecting a continuous W-shaped incision can enhance the therapeutic effect, reduce the formation of postoperative recurrence of depression, minimize the degree of contracture, promote the restoration of local skin smoothness, and prevent scar hyperplasia.
Keywords: continuous W-shaped incision; depressed scar; surgical treatment;

O2-6

The clinical effecacy of Trephine Excision with Superficial Radiation Therapy for Keloid Treatment

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Objective: To evaluate the clinical efficacy, safety profile, and complication rates of a combined approach using trephine excision and superficial radiation therapy (SRT) for the treatment of non-infected, non-mushroom-shaped, and non-web-shaped keloids.
Methods: In this prospective study, 82 consecutive patients with qualifying keloids were treated between January 2020 and June 2023. The treatment protocol consisted of trephine excision followed by SRT administration within 24 hours postoperatively. Punch diameters (2-4 mm) were carefully selected based on individual lesion thickness. All patients received intralesional compound betamethasone injections either preoperatively or intraoperatively. SRT was delivered in 5 fractionated doses (total dose: 16-20 Gy) at 5-7 day intervals. Patients were followed for 12 months with assessment of: (1) keloid recurrence rates, (2) patient satisfaction using a Visual Analogue Scale (VAS), (3) scar quality via Vancouver Scar Scale (VSS), and (4) treatment-related complications.
Results: At 12-month follow-up, statistically significant improvements were observed in both scar quality (mean VSS: 3.2 ± 1.1 vs baseline 8.5 ± 1.3 , $p<0.01$) and patient satisfaction (mean VAS: 8.7 ± 1.2, $p<0.01$). The recurrence rate was remarkably low at 3.6% (3/82 cases). Treatment was well-tolerated with no instances of severe radiation dermatitis or postoperative infections. Minor complications included the need for repeat excision in thicker keloids (>4 mm) and delayed wound healing, each occurring in 2.4% of cases.
Conclusion: The combination of trephine excision and SRT demonstrates excellent efficacy and safety for keloid management, offering: (1) low recurrence rates, (2) significant aesthetic improvement, and (3) high patient satisfaction. This approach appears particularly advantageous for treating multiple small-to-medium sized lesions located in cosmetically sensitive or hair-bearing areas. The favorable safety profile and clinical outcomes support its consideration as a first-line treatment option for eligible keloid patients.
Keywords: Keloid; Trephine/Punch Excision; Superficial Radiation Therapy (SRT); Recurrence Rate; Vancouver Scar Scale

O3-1

Laser-Assisted Scar Refinement Following Mohs Surgery for Facial Skin Cancers: A Case Series

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Background: Mohs micrographic surgery (MMS) offers high cure rates and maximal tissue preservation for facial non-melanoma skin cancers. However, scarring in cosmetically sensitive areas remains a concern, especially in darker skin types such as Filipino skin, which are more prone to hypertrophic scars and hyperpigmentation. Early laser intervention is emerging as a strategy to improve scar outcomes.
Objective: To illustrate early aesthetic outcomes of sequential pulsed dye laser (PDL) and fractional ablative CO? laser treatment for post-surgical scar refinement in patients who underwent MMS for facial basal cell carcinoma at the Southern Philippines Medical Center (SPMC).
Methods: This case series includes four patients with facial basal cell carcinoma treated with MMS at SPMC. All underwent scar revision with PDL (595 nm; 10 mm spot size, 0.45 ms pulse duration, 4 mJ fluence) and fractional CO? laser (36 mJ energy, depth 1, density 18) starting after suture removal. Outcomes were assessed via standardized photographs and physician evaluation.
Results: All patients showed visible improvement in scar texture, pigmentation, and contour. Laser therapy was well tolerated and contributed to improved cosmetic healing in high-visibility areas.
Conclusion: Early combined PDL and CO? laser treatment following MMS appears safe and promising for optimizing facial scar healing. Larger studies are needed to confirm its efficacy.

O3-2

Upper Lip Scar Treatment: Integration of Energy-Based and Surgical Techniques - 57 Patients study

Wei-Chao Huang
WeE plastic and cosmetic clinic

Upper lip scars resulting from trauma, burns, or surgical procedures cause significant aesthetic problems. This study evaluated the effectiveness of integrated energy-based and surgical approaches for upper lip scar.
57 patients with upper lip scars was conducted. Scars were classified as vermillion-involved (21.1%) or non-vermillion involved (78.9%). Treatment modalities included energy-based therapies (UP CO2 laser, IPL, Nd-Yag Pico laser), superficial radiation therapy and surgical techniques (microskin grafting, scar revision, Z-plasty). Combination therapies were employed for complex cases. Outcomes were assessed using standardized photography, and patient satisfaction scores.
The cohort comprised 44 females (77.2%) and 13 males (22.8%) with mean age 30.8 ± 9.6 years. Overall treatment success rate was 77.2% (44/57 patients). Combination therapy achieved higher success rates (83.3%) compared to single-modality treatments. 4 out 57 patients required the additional SRT. Mean improvement rate was 66.5% among patients with quantifiable data (n=23). Complications included UP CO2 laser activation in 4 patients (7.0%).
Integrated energy-based and surgical approaches provide effective treatment for upper lip scars. Vermillion involvement-based classification guides optimal treatment selection. Combination therapies achieve superior outcomes with high patient satisfaction. The treatment protocol demonstrates excellent safety profile with sustainable long-term results.

O3-3

Development of a Novel Wound Healing Material: Silk-Elastin® Wound Healing material

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Silk elastin (SE) is a temperature-responsive recombinant protein with repetitive silk fibroin and elastin sequences. Its aqueous solution irreversibly gels at 37° C. SE's healing potential of SE has been studied in preclinical and clinical settings. In a mouse pressure ulcer model, SE promoted granulation tissue formation and suppressed bacterial growth. To enhance its clinical usability, a silk-elastin sponge (SES) was developed. Statistical analysis confirmed that its granulation-promoting effect was comparable to that of SE solution. A mouse wound model comparing SES and collagen sponge (CS) showed SES significantly enhanced macrophage infiltration, epithelialization, and neovascularization. Based on these findings, a physician-initiated clinical trial in 2018 involved six patients with refractory lower-limb skin ulcers. Two patients withdrew because of local inflammation, but four patients completed the trial without adverse events, demonstrating safety. In 2021, a company-sponsored multicenter trial evaluated SES in 20 chronic and five acute wound cases. Among chronic cases, 90% (95% CI: 68.3–98.8%) achieved closure or closure-ready status by day 14. Pharmaceutical approval as "Silk-Elastin® Wound Healing material" is expected in May 2025 for acute and chronic wounds. This may offer a new option for wounds resistant to current treatments and help prevent hypertrophic scars. Future research directions are discussed.

O3-4

Therapeutic Potential of CD82^{high} UC-MSC on Hypertrophic Scar Formation

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Background: Hypertrophic scarring severely impairs skin function and aesthetics, posing clinical challenges. Heterogeneity among human umbilical cord-derived mesenchymal stem cells (UC-MSCs) limits their therapeutic efficacy. Identifying potent subpopulations is crucial for effective treatments.
Methods: Sc-RNA seq identified CD82 as a marker of a therapeutically potent UC-MSC subpopulation. CD82^high UC-MSCs were isolated by flow cytometry, and their anti-fibrotic and immunomodulatory secretome was characterized via proteomics. Therapeutic efficacy was evaluated in a mechanically stretched murine hypertrophic scar model by assessing scar thickness, collagen deposition, and fibrosis-associated marker expression. RNA sequencing of treated tissues was conducted to explore underlying mechanisms.
Results: The CD82^high UC-MSCs demonstrated superior anti-fibrotic effects, secreting elevated levels of anti-fibrotic cytokines and growth factors compared to CD82^low and unsorted cells. In vivo, CD82^high UC-MSC treatment significantly reduced scar thickness and collagen accumulation. Transcriptomic analyses indicated CD82^high cells modulate critical pathways involved in extracellular matrix remodeling, inflammation resolution, and fibrosis suppression.
Conclusion: CD82^high UC-MSCs effectively attenuate hypertrophic scarring through paracrine and matrix-regulatory mechanisms, offering a promising precision therapy for fibrotic skin disorders.

O3-5

Silencing RNA microneedle patches versus silicone sheets in reducing post-surgical scars: a RCT

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Background: Excessive fibrotic scar tissue, such as hypertrophic scars or keloids, is a common complication of wound healing, with no proven preventive treatments.
Aim: To assess the efficacy of dissolving microneedle patches delivering siRNA targeting SPARC mRNA in reducing post-surgical scar volume, compared to silicone sheets.
Methods: In an 8-week, single-blinded, intra-individually controlled randomized trial, patients with 2-week-old surgical wounds had each half of their scar treated with either daily siRNA microneedle patches or silicone sheets. Scar volume was measured using high-resolution 3D scanning at baseline (day 0), day 30, and day 60.
Results: At day 30, the side of scars treated by siRNA patch had a lower geometric mean volume (0.79mm^3) and a 10.70% greater mean volume reduction than silicone-treated scars. By day 60, siRNA-treated side had significantly lower scar volumes (8.88mm^3 vs. 12.77mm^3; $p = 0.005$), higher mean percentage reduction of volumes from baseline (83.78% vs. 74.11%), and were 36.1% smaller compared to the side treated with the silicone sheet.
Conclusion: These results demonstrate that siRNA microneedle patches significantly reduce scar volume compared to silicone sheets, supporting their potential as a safe, effective, and non-invasive method for post-surgical scar prevention through transdermal gene silencing.

O3-6

Reconstruction of Full-Thickness Skin Using Cultured Dermis and Cultured Epidermal Autografts

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Purpose: Skin defects cause significant physical and psychosocial challenges. Regenerative medicine and cell-based strategies are being explored to overcome this. In prior work, we developed scaffold-free dermal tissue from human dermal fibroblast (HDF) using a net-mold platform, promoting healing in full-thickness mouse wounds. Here, we aimed to engineer full-thickness skin by combining this cultured dermis with a cultured epidermal autograft (CEA) and testing it in immunodeficient mice.
Methods: HDF spheroids were formed on ultra-low attachment (ULA) plates and fused into continuous dermal-like tissue without added extracellular matrix. CEA, prepared via Green's method, was layered onto the dermis. The construct was cultured at the air-liquid interface (ALI) for 1 day, then grafted subcutaneously into nude mice. Tissues were collected on day 7 and examined histologically before and after grafting.
Results: 1 day after the ALI culture, both the dermal and the epidermal layers were observed in HE staining and pan-cytokeratin staining. A full-thickness skin structure was also observed 7 days after grafting in HE staining and AZAN staining.
Conclusion: Full-thickness skin was constructed using cultured dermis and CEA.

O3-7

Multilayer Human ADSC Sheets Accelerate Wound Healing in Normal and Diabetic Cutaneous Wounds

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Introduction: Adipose derived stromal cells (ADSCs) offer promise for chronic wound therapy but are limited by low engraftment and short persistence. We investigated multilayer human ADSC (hADSC) sheets for their effects on wound healing and macrophage polarization.
Methods: hADSC sheets were derived from human adipose tissue and characterized by histology and RNA seq. Full-thickness 8 mm dorsal wounds were created in C57BL/6J and BKS.Cg +Lepr^db/+Lepr^db mice, followed by topical application of α-MEM (control), hADSC suspension, or hADSC sheet. Wound tissues harvested on days 7, 14, and 21 underwent H&E, Azan, anti-human nucleoli, CD31, CD68, and CD163 staining. Macrophage polarization gene expression was quantified by RT PCR on days 3, 7, and 14.
Results: RNA-seq revealed pathways related to tissue repair, angiogenesis, and M2 polarization enriched in hADSC sheets. Both ADSC formats accelerated wound closure versus control; however, sheets further reduced residual wound area on day 7 and significantly increased neo-epithelial length, granulation-tissue area, and microvessel density on day 14. Sheet delivered cells persisted ≥7 days and recruited more M2 macrophages than suspensions.
Conclusion: Multilayer hADSC sheets extend cell retention, enhance M2 polarization, and improve epithelialization, granulation tissue formation, and angiogenesis beyond that achieved with cell suspensions, supporting their use for chronic-wound treatment.

O3-8

Upper Eyelid Scar Treatment:Integration of Surgical and Non-Surgical Approaches for Optimal Outcomes

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Post-blepharoplasty and trauma, producing uneven surface, depressed scars and hypertrophic scars. This study evaluates treatment strategies for eyelid scars.
44 patients with upper eyelid scars were treated using individualized approaches. Scars were classified by morphology (raised, flat, depressed, atrophic) and treated according to the four-type four-color classification system. Treatment selection was based on scar morphology, patient expectations, and functional requirements. Non-surgical treatments comprised UP CO2 laser resurfacing, PRP, and corticosteroid injections. Surgical treatments included revision blepharoplasty, micro-skin grafting, fat grafting and acellular dermal matrix placement. Combination therapies were employed for complex cases.
Among 44 patients (average 31.2 years) and 39 completed follow-up, overall success rate was 84.6%. Combination therapy achieved the highest success rate (87.5%), and ultra-pulse CO2 laser monotherapy (78.1%). Excellent results were achieved in 46.2% of patients. No major complications occurred.
Successful upper eyelid scar treatment requires individualized approaches integrating surgical and non-surgical modalities. Ultra-pulse CO2 laser resurfacing is effective for mild to moderate scars, while combination therapy provides superior outcomes for complex cases.The integration of multiple treatment modalities achieves superior aesthetic and functional results compared to single-modality interventions.

O4-1

SCAR-LAST: A Multidimensional Classification of Persistent Scar Concerns in Post-Healing Scars

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Background: Postoperative scars evolve significantly over time, particularly during the early phase after surgery. However, existing scar assessment tools often conflate different healing stages and fail to adequately capture long-term outcomes. To overcome these limitations, we proposed and developed a novel classification system—SCAR-LAST—which specifically targets persistent scar-related concerns following the completion of the healing process.
Methods: SCAR-LAST comprises eight domains: Subjective symptoms, Color, Architecture, Rigidity, Luster, Aesthetic self-perception, Social self-perception, and Tolerance. These domains were derived from clinical experience and refined from key elements of existing scar assessment tools such as SCAR-Q. Each domain is assessed independently, allowing for a structured and nuanced evaluation of long-term scar characteristics spanning physical and psychosocial dimensions.
Results: Applying SCAR-LAST enabled clear identification and stratification of residual scar features. Although patients had similar scars, dominant traits varied—such as color change or psychosocial impact.
Discussion: Defining these persistent concerns allows clinicians to tailor treatment strategies for each axis. SCAR-LAST helps distinguish temporary postoperative changes from true long-term issues, and facilitates targeted care, team communication, and outcome comparison. Further work will focus on quantifying each domain for objective evaluation.

O4-2

SCARLET: A Novel Method for Scar Assessment Using Color Quantification

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Background:
Many scar assessment methods are affected by evaluator subjectivity and patient psychological factors. A simple and objective method has not been widely established. To address this, we developed SCARLET (Scar Color Assessment and Rating via Lab Evaluation Technique), which quantifies scar color differences using direct measurement.
Methods:
The scar (test site) and surrounding normal skin (control site) were measured using a spectrocolorimeter (BIC Skin Color Meter Max). Values in the L*a*b* color space were used to calculate color difference (Δ E*ab), indicating visual contrast. Measurements were repeated under consistent lighting to ensure reliability.
Results:
SCARLET enabled quantification of scar color and calculation of color difference. However, highly raised or narrow scars were difficult to measure accurately due to device limitations.
Discussion:
Scar color quantification allows objective visualization of scar visibility. SCARLET may serve as a useful tool for comparing treatments and aligning expectations between patients and clinicians. Future work includes adapting the method to photographic data and comparing devices.

O4-3

Assessment of Breast Reconstruction Scars Using SCAR-Q_J and MSS

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Background: Most scar assessment tools are objective and physician-rated. We developed the Japanese version of SCAR-Q (S-QJ) to capture patient-reported outcomes (PROs) for surgical scars. This study compared patient-reported and physician-rated evaluations in implant-based and autologous breast reconstruction.
Methods: Patients undergoing reconstruction at our institution with 1–5 years of follow-up were included: 50 implant-based cases (26 lateral radial [MB], 24 inframammary fold [IB]) and 27 autologous cases (12 latissimus dorsi flap [LD], 15 Deep Inferior Epigastric Perforator flap [DIEP]). Patients completed the S-QJ; two physicians evaluated scars using the Manchester Scar Scale (MSS).
Results: In implant-based reconstruction, MB patients reported significantly better S-QJ scores for appearance, psychosocial impact, and total scores than IB, while MSS showed no differences. In autologous reconstruction, LD flaps had higher S-QJ scores for reconstructed breast appearance compared with DIEP flap, with no donor-site difference. MSS scores were similar for reconstructed breasts, but LD flap donor sites had better color and total scores.
Conclusions: Patients preferred lateral margin scars for implants and dorsal donor sites for autologous reconstruction. Physicians underestimated patient-perceived differences, particularly in scar color. Incorporating PROs such as S-QJ is essential for evaluating scars and informing reconstructive decisions.

O4-4

The study of Japanese version of the LIBRE-Profile SF, a social participation for burn survivors

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Introduction: Major burn injuries have a huge impact on survivors' health related quality of life due to scar formation. This study aims to develop a Japanese version of the Life Impact Burn Recovery Evaluation Profile Short Form (LIBRE Profile-SF) to measure social participation among burn survivors in Japan.
Methods: The translation followed the Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes Measures. After the draft of Japanese version was developed, cognitive debriefing interviews were conducted with 10 burn survivors. Participants were aged 18 years or older, resided in Japan, could understand Japanese, and had sustained burns covering 5%–20% of total body surface area or affecting the face, hands, feet, or perineum.
Results: Several points were discussed during the Japanese translation process. Cognitive debriefing interviews were conducted, with 50% female participants and 50% of the participants being 65 years or older.. Feedback highlighted difficulties in understanding double negative expressions and literal translations.
Conclusions: In the development phase, participants reported difficulties understanding the text, despite the translation aiming to preserve original meaning. As a next step, the reliability and validity of this questionnaire will be evaluated psychometrically with 100 participants.

O4-5

Four-Color Aesthetic Evaluation System for Auricular Keloids

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Effective aesthetic management of auricular keloids requires structured tools to align patient expectations, guide treatment decisions, and dynamically evaluate outcomes. This work introduces the Four-Color Aesthetic Evaluation System-a visualized, structured framework that supports aesthetic-oriented full-process management and facilitates standardized communication and outcome tracking.
The system classifies auricular keloids into four levels-Black, Red, Orange, and Green-based on auricular structural integrity, deformity severity, and aesthetic presentation. Preoperatively, it guides shared goal-setting and risk communication between physicians and patients, ensuring aligned expectations regarding achievable outcomes. Intraoperatively, the system informs surgical planning and target setting.
Postoperatively, the system provides a closed-loop feedback mechanism by integrating objective structural outcomes, subjective patient satisfaction, emotional response, and physician recommendations across the same four-level framework. This enables dynamic assessment of whether aesthetic goals are met and supports individualized treatment adjustments.
Initially applied to auricular keloids, the Four-Color Aesthetic Evaluation System bridges preoperative and postoperative communication, enhances patient-centered aesthetic care, and offers potential scalability to other scar management and aesthetic treatment contexts.

O4-6

4 Type 4 Color Classification for Facial Scar Assessment and Treatment Guidance

Wei-Chao Huang
WeE plastic and cosmetic clinic

Facial scars cause aesthetic and functional concerns for patients. We propose a four-type four-color classification optimizing facial scar assessment and treatment decisions.
248 facial patients received scar treatmen. Scars were classified morphologically as raised, flat, depressed, or atrophic, and chromatically as black, red, hypopigmented, or depigmented.Raised scars (hypertrophic, keloid) were treated with IPL, CO2 laser, KTP, corticosteroids, 5-fluorouracil, needle RF, injection ablation, and superficial radiation therapy. Flat scars received needling and micro-skin grafting. Red scars were controlled with IPL and KTP. Hypopigmentation was treated with UP CO2 laser or micro-skin grafting. Depressed scars were treated with fat grafting, PLLA, PDLLA, allogeneic or autologous dermal grafts.
The 4 × 4 scar assessment system demonstrated high efficacy in scar management for short facial scars. For existing scars less than 5 cm or 3 × 3 square cm, combination therapies including lasers, surgical procedures. Keloid scar treatment with corticosteroids, 5-FU, and radiation therapy was essential. 62% of patients were treated with multiple sessions until satisfied results were achieved. The 4 type 4 color classification enabled individualized treatment, improving patient satisfaction and treatment outcomes.
4 type 4 color classification-based method provides treatment guidance. Clinical assessment tools and individualized multimodal treatment is crucial for optimal outcomes.

O4-7

Quantitative Color Analysis of 2D Photographs to Objectively Assess Keloid Hardness

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Nippon Medical School Hospital

Objective

Keloid hardness is a key indicator of disease activity, but its assessment is subjective. This study aimed to validate an objective method by correlating image features from 2D clinical photos with physical hardness measured by an indentometer.

Methods

In this prospective study of 19 keloids from 15 patients on steroid therapy, hardness was measured on lesions and adjacent skin via indentometer (Indentometer® IDM800). The difference in their average values served as the objective variable. After luminance normalization (CLAHE) of the photos, the raised boundary was defined as the ROI. A set of features were extracted, including color (Lab space), texture (GLCM, LBP), and complexity (Fractal Dimension), and correlated with the hardness difference using Pearson's coefficient.

Results

Color-based features showed the strongest association with hardness. The mean Lab a* value (degree of redness) had the highest correlation with the hardness difference ($r = 0.41$, $p = 0.077$). The standard deviation of a* (uniformity of redness) showed the next highest correlation ($r = 0.38$, $p = 0.109$). Other texture features were weakly correlated.

Conclusion

Color information from 2D photos, particularly the degree and uniformity of redness, shows promise as an indicator of keloid hardness. As hardness is a crucial marker of disease activity, this method has the potential to provide a non-invasive, quantitative index to support clinical assessment and track treatment response.

O5-1

Integrated multi-omics reveals DNA methylation driven keloid osteochondrogenic differentiation

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Keloids are characterized by aberrant activation of developmental pathways, particularly those associated with osteochondrogenic differentiation, yet the epigenetic mechanisms driving this phenotype remain poorly understood. Emerging evidence suggests that DNA methylation may regulate these aberrant pathways in fibrotic diseases. In this study, we performed genome-wide DNA methylation and transcriptomic profiling on both keloid tissues and primary fibroblasts, alongside normal controls. Our data reveal widespread DNA hypermethylation in keloid tissues, with enrichment in osteochondrogenic differentiation genes such as COMP and POSTN. Integrated multi-omics analysis demonstrated that these epigenetic alterations contribute to the activation of osteochondrogenic pathways. Notably, primary keloid fibroblasts partially retain this hypermethylated signature and exhibit upregulation of osteochondrogenic gene expression. Treatment with DAC effectively reversed pro-fibrotic gene expression, suppressed osteochondrogenic differentiation signatures, and inhibited fibroblast proliferation and migration. These findings indicate that DNA methylation plays a critical role in keloid pathogenesis by promoting osteochondrogenic reprogramming and support the potential epigenetic therapy for keloid treatment.

O5-2

Microbiome dysbiosis dominated by *Rhodococcus* occurs in keloids

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***Objective*:** This study aims to investigate the presence of microbiome dysbiosis in keloids and its potential correlation with keloid formation.
***Methods*: A total of** 35 keloid and 36 normal skin (NS) samples were collected, and the keloid severity was evaluated using Vancouver Scar Scale (VSS) score. The microbiota in the tissues was assessed by 16S rRNA sequencing, followed by an investigation into the correlation between microbiota and clinic indices . And flow cytometry was used to analyze the proportion of T cells in keloids and NS tissues.
***Results*:** The richness of the bacteria community in keloid was significantly reduced than that in NS. Additionally, the microbiota composition in keloid was different from that in NS. At the genus level, *Rhodococcus* was the d ominant species in keloid . *Acinetobacter*, was also found to be positively correlated with keloid formation. Furthermore, *Rhodococcus* demonstrated a higher predictive value for keloid severity than *Acinetobacter*. The proportion of CD4+ and CD8+T cells in keloid scar tissues was also significantly decreased compared with NS.
***Conclusion*:** Microbiome dysbiosis occurring in keloids was dominated by *Rhodococcus*, which may be correlated with the reduction of CD4+ and CD8+T cells. Targeting microbiome dysbiosis may be a prospective approach future keloid management.
Keywords: Microbiome dysbiosis; *Keloid;* Inflammation; **Vancouver Scar score** *; Rhodococcus*

O5-3

The role and mechanism of iron overload and ferroptosis in keloid fibroblasts

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Objective: To investigate iron content and transferrin receptor 1 (TfR1) expression in keloid tissues and assess the effects of Erastin-induced ferroptosis and its inhibition by Ferrostatin-1 (Fer-1) in keloid fibroblasts (KFBs).
Methods: Keloid and normal skin tissues (n=6 each) were analyzed for iron content and TfR1 expression via kits and Western blotting. Primary KFBs and normal fibroblasts (NFBs) were cultured. A KFB ferroptosis model was established using Erastin, and appropriate concentrations of Erastin and Fer-1 were determined by CCK-8 assay. Cells were divided into five groups: NFB, control, Erastin (0.6 μmol/L), Fer-1 (1 μmol/L), and Erastin+Fer-1. Cell migration (scratch assay), Fe^{2+}, MDA, ROS levels, and expression of TfR1, GPx4, SLC7A11, α-SMA, and COL-1 were assessed by Western blot and immunofluorescence.
Results: Keloid tissues showed higher iron content and TfR1 expression than normal skin ($P<0.01$). Erastin reduced KFB viability (IC_{50} = 0.61 μmol/L), while Fer-1 showed no cytotoxicity. Erastin impaired KFB migration and increased Fe^{2+}, ROS, and MDA levels, which were reversed by Fer-1 ($P<0.01$). Erastin downregulated GPx4 and SLC7A11 while upregulating TfR1, α-SMA, and COL-1; Fer-1 reversed these changes ($P<0.01$). Immunofluorescence confirmed cytoplasmic TfR1 upregulation by Erastin and nuclear/cytoplasmic GPx4 restoration by Fer-1.
Conclusion: Keloids exhibit iron overload and elevated TfR1 expression. Erastin promotes ferroptosis and fibrosis in KFBs, while Fer-1 mitigates these effects by reducing oxidative stress and iron accumulation.
Keywords: Keloid; Fibroblasts; Ferroptosis; Iron overload; ROS; Lipid peroxidation

O5-4

Single-Cell Transcriptomic Profiling of Keloids: Implications from the Human Skin Fibroblast Atlas

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Fibroblasts are a heterogeneous cell population that exhibit diverse functional states, particularly under pathological conditions such as keloids. Understanding the clustering and behavior of these fibroblast subtypes may offer valuable insights into the treatment and prevention of keloid formation. In this study, we conducted single-cell RNA sequencing on lesional (n = 3) , regressed (n = 1), and adjacent non-lesional (n = 3) skin from keloid patients, as well as healthy skin from control subjects (n = 2). Cell populations were annotated using canonical markers, and fibroblast subtypes were further classified based on the unified human skin fibroblast atlas (https://celltype.info/). We identified nine fibroblast subpopulations, including two distinct myofibroblast clusters enriched in keloid tissue. These clusters expressed *ASPN*, *POSTN*, and *SPARC* and *MDK*, and were enriched for genes linked to mechanical stimulation, ossification, and extracellular matrix production, yet differed in mitochondrial activity and stress response. Trajectory analysis suggested that the high-activity myofibroblast cluster represents a transitional state leading to an osteogenic lineage, and is distinct from the lineage comprising the fibroblasts in regressed, non-lesional, and healthy skin. This study presents a high-resolution atlas of fibroblast states in keloids and highlights molecular drivers of fibrosis, offering potential targets for therapeutic intervention.

O6-1

CD206$^+$ Macrophages in Wound Repair: Crosstalk with Fibroblasts as a Key Regenerative Axis

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Background: Cutaneous wound healing requires dynamic interactions between immune and stromal cells. CD206$^+$ macrophages have been implicated in tissue repair, but their role in fibroblast regulation remains unclear.
Methods: We used a macrophage-specific depletion model (Mrc1-DTR mice) combined with single-cell RNA sequencing to examine how CD206$^+$ macrophages modulate fibroblast activity. Wound closure, fibroblast subsets, and cell–cell interactions were analyzed, and rescue experiments with PDGF-AA were performed.
Results: Loss of CD206$^+$ macrophages delayed wound closure, prolonged inflammation, and reduced granulation tissue. Single-cell profiling revealed depletion of Gpnmb^{hi} fibroblasts enriched in En1, essential for extracellular matrix deposition. Interaction analysis identified PDGF-A–PDGFRA signaling as the major communication axis. Immunostaining confirmed CD206$^+$ macrophages as a key PDGF-A source and PDGFRA expression on Gpnmb^{hi} fibroblasts. PDGF-AA application restored fibroblast proliferation and improved healing in macrophage-depleted wounds. Human keloid samples showed co-localization of CD206$^+$ macrophages and EN1$^+$ fibroblasts, linking this axis to scar pathology.
Conclusion: CD206$^+$ macrophages support wound repair by activating Gpnmb^{hi} fibroblasts via PDGF-A. This macrophage–fibroblast circuit represents a potential therapeutic target for impaired healing and scar-related disorders.

O6-2

Gelsolin from macrophages promotes fibroblast migration in skin wound healing

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Inflammation is essential for skin wound healing; however, prolonged inflammation can delay the healing process. We previously identified gelsolin as a novel regulator of the NLRP3 inflammasome, a multiprotein complex that triggers inflammatory responses and induces pyroptotic cell death. Here, we investigated the role of macrophage-derived gelsolin in skin wound healing.
Full-thickness skin wounds were created on the backs of macrophage-specific gelsolin knockout (LysM-Cre: Gsn$^{fl/fl}$) and control (Gsn$^{fl/fl}$) mice. Histological analysis revealed that LysM-Cre: Gsn$^{fl/fl}$ mice showed reduced infiltration of αSMA$^+$ and Col1a1$^+$ fibroblasts in granulation tissue on days 7 and 21 post-wounding.
Multiplex immunohistochemistry showed that gelsolin was predominantly expressed in F4/80$^+$ macrophages, which were recruited to the wound surface from day 1 to 3. These cells accumulated at the wound edge by day 5 and activated caspase-1. NLRP3 inflammasome activation in vitro induced bone marrow–derived macrophages to release gelsolin extracellularly, suggesting that macrophage-derived gelsolin may contribute to wound healing.
Gelsolin promoted fibroblast migration in vitro, which was suppressed by JNK, p38, or Akt inhibitors. Topical gelsolin application enhanced fibroblast infiltration and granulation tissue formation.
In human keloid tissue, gelsolin$^+$ macrophages were found surrounding αSMA$^+$ fibroblasts, implying that targeting gelsolin may offer a potential approach for scar modulation.

O6-3

Effect of Pleiotrophin on dermal collagen fiber structure

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【Objective】 Pleiotrophin is a secreted growth factor expressed in various tissues, including the nervous system. This study examined its effects on dermal structure.

【Methods】 Fresh dermal tissue with epidermis removed was obtained from the eyelids of four Japanese women aged 61–91 years. Within 2–3 hours of collection, skin fragments were cultured at the air-liquid interface. Pleiotrophin was added to the medium and incubated at 37° C with 5% CO_2 for 7 days, with daily medium changes. Collagen fiber structure was analyzed using two-photon excitation and scanning electron microscopy. Gene expression in skin-derived fibroblasts was also examined.

【Results】 Two-photon microscopy showed that collagen fiber orientation improved significantly with Pleiotrophin. Scanning electron microscopy revealed reduced degenerated fibers and increased dense, gently curved new fibers. In fibroblasts, extracellular matrix-related genes and secreted factors including growth factors were upregulated.

【Discussion】 Pleiotrophin may improve collagen structure by reducing denatured fibers and promoting organized regeneration. As immature collagen appears during wound healing, Pleiotrophin may enhance scar quality and support aging skin repair. Further long-term and in vivo studies are needed for therapeutic development.

O6-4

In Vivo Analysis of Skin Biomechanical Properties Under Dynamic Conditions in the Forearm and Hand

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Background

Proper regulation of skin tension is critical to prevent abnormal scarring. Scar tissue is stiff and inextensible, leading to stress concentration when aligned with high-tension directions, increasing hypertrophy risk. Traditional models like Langer, Kraissl lines and RSTLs are mainly based on cadaveric/static conditions and fail to reflect dynamic tension changes during daily movements. This study aims to quantify skin tension and stiffness under realistic, movement-based conditions.

Methods

Ten healthy adults were enrolled. Sixty-two sites on the forearm and radial-dorsal sides of the thumb/index finger were marked with stamps. Skin stretch/contraction ratios and stiffness were measured using VECTRA®H2 3D imaging and Indentometer® IDM 400. The forearm was assessed in four postures, including anatomical and three functional positions; the fingers in three each.

Results

Significant changes in skin extensibility and stiffness occurred around joints. The maximum stretch direction was often oblique to the bone axis. Bony prominences showed increased stiffness, while mid-forearm changes were minimal. Radial-volar wrist demonstrated marked stretching; dorsal wrist increased contraction.

Conclusion

Dynamic skin biomechanics should aid incision planning. Incisions should ideally cross high-tension directions. This is the first in vivo study to assess these properties under movement-based conditions, offering insights for optimizing incision design and reducing scar risk.

O6-5

Cross-Species scRNA Analysis Reveals Mechanosensitive Pathways Targets for Pathological Scarring

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The mechanisms driving the development of pathological scars—hypertrophic scars and keloids—remain incompletely defined. The absence of an animal model that accurately replicates human scar complexity hampers translational research and delays the development of effective therapies. Here, we performed cross-species single-cell RNA sequencing (scRNA-seq) analysis using human skin datasets (normal skin, scar, hypertrophic scar, keloid) and a murine wound model subjected to mechanical traction. In mice, dorsal split-thickness wounds were exposed to incremental tensile force of 4 mm every 2 days (totalling 28 mm over 14 days); sham controls bore the device without tension. Our results showed that hypertrophic scars were enriched with fibroblasts, while keloids displayed increased vascular endothelial cells and hyperactive fibroblast signaling. In mice, mechanical loading intensified inflammation, increased extracellular matrix deposition, and reduced keratinocyte populations. Pathway analysis revealed conserved fibrosis-associated signaling, notably semaphorin-related pathways (SEMA3A, SEMA5A). Schwann cells emerged as novel contributors to fibrotic crosstalk. Our findings demonstrate that the murine mechanical traction model recapitulates key molecular features of both hypertrophic scars and keloids. This model provides a valuable translational platform, enabling investigation of mechanobiology and accelerating targeted anti-fibrotic therapy development.

O6-6

PhGs from Cistanche tubulosa inhibit HS formation via TGF- β 1/Smad and MAPK signaling pathways

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Purpose: Hypertrophic scars (HS) may cause aesthetic and functional disorders and bring great physical and mental pain to patients. Phenylethanol glycoside and its monomers play significant roles in the treatment of hepatic fibrosis through inhibiting transforming growth factor - β1 (TGF - β1) signaling. Here, two Phenylethanol Glycosides from Cistanche tubulosa (CPhGs) and its monomers were applied to detect their mechanistic effects on human hypertrophic scar fibroblasts (HSFbs) in vitro. Methods and Results: Flow cytometry showed that these agents arrested HSFbs at G0 - G1 phase and promoted apoptosis after 24 - h treatment. In addition, different concentrations of CPhGs and its monomers inhibited the migration ability and TGF - β1 - induced proliferation of HSFbs, and also significantly decreased TGF - β1 - induced high - level expression of fibrosis - related markers. CPhGs and its monomers increased Smad7, inhibited Smad2/3, enhanced p - ERK and p - JNK, and decreased p - p38 in a concentration - dependent manner. Importantly, various concentrations of these agents decreased Bcl - 2 expression, but up - regulated Cleaved - caspase - 3 and Bax expression, and gradually increased LC3 - II/LC3 - I expression. Conclusion: In conclusion, CPhGs and its monomers alleviated HS by inhibiting fibrosis - related molecules, suppressing HSFbs proliferation and migration via TGF - β1/Smad, MAPK pathways and autophagy, indicating their potential in HS treatment.

O6-7

Verbascoside Inhibits Hypertrophic Scar Fibroblasts via TGF- β 1/Smads Pathway

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Background: Hypertrophic scar formation is characterized by excessive fibroblast proliferation and extracellular matrix deposition. This study aimed to investigate the anti-fibrotic effects and underlying mechanism of Verbascoside (VER) on human hypertrophic scar fibroblasts (HSFbs), with a focus on the TGF-β1/Smads signaling pathway.
Methods: Primary HSFbs (p3–6) were cultured in vitro. The IC_{50} of VER was determined via CCK8 assay. Cells were treated with 40 or 80 μg/mL VER. Cell migration was assessed using scratch assays; cell cycle distribution and apoptosis were evaluated by flow cytometry. To simulate a fibrotic environment, cells were treated with 5 ng/mL TGF-β1, and grouped as follows: Control, TGF-β1 only (Model), TGF-β1 + 40 μg/mL VER, and TGF-β1 + 80 μg/mL VER. Cell morphology, proliferation (CCK8), mRNA (qRT-PCR), and protein levels (Western blotting) of Smad2, Smad3, and COL1A1 were measured.
Results: VER significantly inhibited HSFb migration and induced G0/G1 cell cycle arrest. The IC_{50} of VER was 79.54 μg/mL. High-dose VER markedly promoted apoptosis ($P<0.01$). TGF-β1 (5 ng/mL) enhanced HSFb proliferation, while VER reversed this effect in a dose-dependent manner ($P<0.001$). VER downregulated Smad2, Smad3, and COL1A1 expression at both mRNA and protein levels. Notably, high-dose VER significantly suppressed phosphorylation of Smad2/3 and COL1A1 protein ($P<0.05$).
Conclusion: Verbascoside exerts anti-fibrotic effects on HSFbs by inhibiting their proliferation and activation through modulation of the TGF-β1/Smads signaling pathway, suggesting its potential as a therapeutic agent for hypertrophic scar management.
Keywords: Hypertrophic scar fibroblasts, Verbascoside, TGF-β1/Smads pathway, fibrosis, proliferation inhibition

O7-1

Safety and efficacy of nintedanib for generalized keloid: A NonRandomized Clinical Trial

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Background: Keloids are benign skin tumors characterized by fibroblast overproliferation, ECM disorganization, and angiogenesis. Generalized keloids, involving multiple anatomical sites, are more challenging to treat. Conventional therapies often have high recurrence and adverse effects. Nintedanib, an oral multi-target tyrosine kinase inhibitor approved for fibrotic lung diseases, blocks VEGFR, PDGFR, and FGFR pathways and shows promise in fibrosis-related skin disorders. This study assessed the safety and efficacy of systemic nintedanib in generalized keloids.
Methods: In this non-randomized, open-label trial, patients received nintedanib for 8 weeks at either low dose (150 mg qd) or high dose (150 mg bid). The primary endpoint was change in Vancouver Scar Scale (VSS) scores; secondary outcomes included VAS for pain/itch, DLQI, and POSAS. Safety was monitored throughout.
Results: Both groups showed significant VSS improvement. Only the high-dose group had significant VAS reduction. Subgroup analysis revealed improved vascularity and itch in the high-dose group ($P < 0.05$). DLQI and POSAS remained unchanged. Nintedanib was well tolerated with no severe adverse events.
Conclusion: Nintedanib, especially at higher doses, may improve scar features and symptoms in generalized keloids, supporting further clinical investigation.

O7-2

Trephination + CO2 laser + pingyangmycin effectively treats toe keloids in pediatric patients.

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Introduction: Toe keloids in pediatric patients are rarely reported. And there is almost no one method considered completely effective in this disease and often along with recurrence.This study aims to evaluate the efficacy and safety of a combined treatment approach consisting of trephination, CO2 fractional laser therapy, and local pingyangmycin injections for pediatric patients with toe keloids following syndactyly separation surgery.
Methods: This retrospective study was carried out in the Dermatology Department of Shenzhen Children's Hospital and Department of Dermatologic Surgery and Dermatologic Oncology, Southern Medical University of Dermatology Hospital. Pediatric patients with toe keloids post-syndactyly separation surgery, confirmed by pathological examination, who had previously received trephination combined with CO2 fractional laser therapy and local pingyangmycin solution injections between January 2022 and January 2023 were included. Outcome measures included The Vancouver Scar Scale (VSS),Paired t-tests were used to statistically compare VSS scores before and after treatment.
Results: At baseline,the mean VSS score for the 10 keloid areas was 10.7 ± 1.34.After the final treatment,the score significantly reduced to 5.2 ± 2.35, indicating a marked improvement ($P<0.01$).
Conclusions: Combined application of trephination, CO_2 fractional laser therapy, and pingyangmycin solution injections demonstrates significant efficacy for treating toe keloids in pediatric patients, offering a promising therapeutic strategy for this challenging condition.

O7-3

Immediate injection of BTA after keloid revision to prevent keloid recurrence: a prospective study

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Introduction: Keloid scars recur in 10–30 % of cases despite excision + radiotherapy. Botulinum toxin A (BTA) decreases fibroblast activity and wound tension, suggesting prophylactic value.
Methods: Prospective split-scar double-blind RCT. Adults ≥ 20 y with symmetrical progressive keloids ≥ 4 cm underwent revision; one scar half received intradermal BTA 8 U cm^{-1} (≤ 100 U), the contralateral half equal-volume saline. All patients received standard postoperative radiotherapy. Primary outcome: 12-month recurrence. Secondary outcomes: VSS, POSAS, Cutometer elasticity, and pain VAS to 1 y.
Results: Twenty-eight patients (21 female, 36.4 ± 10.5 y) were enrolled; 26 completed follow-up. Twelve-month recurrence was 15.3 % on both BTA and saline sides. No inter-side differences were detected for VSS, POSAS, Cutometer, or pain. No BTA-related adverse events occurred.
Discussion: A single immediate BTA dose conferred no advantage over saline when combined with excision + radiotherapy; limited drug duration, premature timing, and the dominant radiotherapy effect may explain the neutral result. Delayed or repeated dosing merits investigation.
Conclusion: Immediate intradermal BTA after keloid excision fails to reduce 1-year recurrence or improve scar quality; routine adjuvant use is not recommended.

O7-4

The Clinical Efficacy of Punch Excision Combined with Stereotactic Radiotherapy for Keloid Treatment

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Background and Objective: Keloids, characterized by excessive fibroblast proliferation, present significant therapeutic challenges. This study evaluated the efficacy of punch excision combined with stereotactic radiotherapy (PE+SRT) for keloid management. **Methods:** Fifty-four patients (treated October 2022–December 2023) were allocated to: Control Group 1 (stereotactic radiotherapy alone, n=18), Control Group 2 (punch excision alone, n=18), or Observation Group (PE followed by SRT initiated within 24h post-excision and delivered daily for 5 days, n=18). Treatment outcomes were assessed via Vancouver Scar Scale (VSS) at 6- and 12-month follow-ups, with adverse events monitored throughout. **Results:** All patients achieved primary wound healing. At 12 months, significant VSS reductions occurred in all groups versus baseline ($P<0.05$). The Observation Group demonstrated superior efficacy (100%) compared to Control Group 1 (72.2%) and Control Group 2 (88.9%) ($P<0.05$), with no significant adverse events reported. **Conclusion:** PE+SRT is a safe, highly effective therapeutic strategy for keloids with minimal complications.

O7-5

Bleomycin Injection+Punch Excision+X-ray Radiotherapy for Medium-Large Keloids: Retrospective Study

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Background: Keloids are benign hyperproliferative growths caused by abnormal wound healing, significantly affecting quality of life. Treatment is challenging due to high recurrence and resistance, especially in medium-to-large keloids. Combination therapies are recommended, but optimal protocols are unclear. This study compares bleomycin versus triamcinolone combined with punch excision and superficial X-ray radiotherapy (SXRT).

Methods: A retrospective analysis of 69 patients (137 keloids) was conducted. All underwent punch excision with intralesional bleomycin or triamcinolone, followed by 4 SXRT sessions. Outcomes were assessed using the Vancouver Scar Scale at baseline and 12 months, alongside recurrence rates, satisfaction, and adverse events. Data were analyzed using SPSS 26.0 ($P<0.05$).

Results: Both groups showed significant VSS improvement ($P<0.05$). The bleomycin group had higher response rates (82.5%vs.60.0%) and satisfaction ($P < 0.05$), with fewer adverse events ($P<0.05$): ulceration (2 cases), hyperpigmentation (5 cases). The triamcinolone group had more adverse effects: ulceration (1), telangiectasia (5), hyperpigmentation (4), and hypopigmentation (6). Recurrence rates were low (bleomycin:1.16%; triamcinolone:3.92%, $P>0.05$).

Conclusions: Bleomycin combined with punch excision and SXRT provides superior scar improvement, fewer pigmentary/telangiectatic complications, and higher satisfaction than triamcinolone, supporting its use for medium-to-large keloids.

O7-6

Toe Keloids Following Syndactyly Surgery Successfully Treated with Skin Graft and Deprodone Propionate Plaster: A Case Report

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Background:
Toe keloids are rare and present significant management challenges due to the limited soft tissue coverage, high mobility, and risk of recurrence. Conventional approaches include surgical excision, corticosteroid injection, and pressure therapy; however, outcomes are often suboptimal. The use of deprodone propionate plaster, a topical steroid preparation designed for sustained delivery and high dermal penetration, offers a potential noninvasive adjunct to surgical treatment. This report presents a rare case of extensive toe keloids following syndactyly surgery, successfully managed with excision, skin grafting, and deprodone propionate plaster.

Case Presentation:
A 1-year-old Caucasian boy was referred to our hospital for evaluation of keloids developing after syndactyly correction. The keloids involved the first to fourth toes, with progressive thickening and discomfort. Because the family was relocating to Japan, the decision was made to defer surgery until the child turned two years old. During the waiting period, deprodone propionate plaster was applied regularly to control inflammation and slow progression.

At two years of age, after adequate suppression of inflammation, the patient underwent surgical excision of the keloid under general anesthesia. Rectangular local flaps were designed at the second and third toe web spaces to divide the keloid tissue and recreate the interdigital separation. Areas that could not be primarily closed on the second, third, and fourth toes were reconstructed using full-thickness skin grafts harvested from the left inguinal region. The grafts were secured using tie-over dressings. Ten days postoperatively, the dressings were removed, and full graft take was confirmed.

Postoperatively, the wounds were treated with antibiotic and steroid ointments until complete epithelialization. Two weeks after surgery, once the entire area had epithelialized, deprodone propionate plaster was reintroduced and in particular applied to the toes. This prevented re-adhesion of the interdigital spaces and provided continuous anti-inflammatory and antiproliferative effects.

Outcomes:
The patient's postoperative recovery was uneventful. At two years of follow-up, the inflammation had nearly resolved, and no recurrence of keloid tissue was observed. The treatment area of the deprodone propionate plaster was gradually reduced over time as the skin condition stabilized. The overall functional and aesthetic outcomes were excellent, with preservation of toe separation and no limitation in movement. The case demonstrates that combination therapy—surgical excision with full-thickness skin grafting followed by topical steroid plaster—can provide sustained control of keloid activity even in challenging locations such as the toes.

Discussion:
Keloids following syndactyly release are seldom reported, possibly due to the rarity of syndactyly in conjunction with a strong keloidal tendency. The toes pose unique challenges for scar management because mechanical stress, occlusion, and limited vascularity contribute to recurrence risk. In pediatric cases, these challenges are compounded by compliance issues and growth-related tissue changes.

In this case, timing and multimodal therapy were critical to success. Delaying surgery until inflammatory activity was reduced minimized the risk of postoperative exacerbation. Full-thickness grafting provided durable coverage and minimized contracture formation. The adjunctive use of deprodone propionate plaster proved particularly valuable: its sustained corticosteroid delivery helped suppress fibroblast proliferation and collagen deposition, both central to keloid pathophysiology.

Topical steroid plasters are advantageous in pediatric populations because they allow noninvasive, localized, and controlled administration compared with intralesional injections, which may be painful and require repeated sedation. Moreover, the flexibility and adhesive strength of the plaster ensured consistent application even in areas of motion such as the toes. The success of this therapy supports its inclusion as a postoperative maintenance strategy to prevent recurrence in high-risk anatomical sites.

A review of previous literature reveals that reports of keloid formation following syndactyly release are extremely limited, and no published studies have described management with deprodone propionate plaster. This case, therefore, contributes novel clinical evidence supporting its efficacy in postsurgical toe keloids. The combination of timely surgical intervention, appropriate flap and graft selection, and adjunctive topical steroid therapy produced an optimal long-term result without adverse effects.

Conclusion:
This report presents the first documented case of toe keloids following syndactyly surgery successfully treated with surgical excision, full-thickness skin grafting, and deprodone propionate plaster. The favorable long-term outcome highlights the importance of comprehensive, staged management that integrates inflammation control before and after surgery. Deprodone propionate plaster may serve as a valuable adjunctive therapy for pediatric keloids, particularly in areas prone to tension and friction.

O8-1

初診時に瘢痕拘縮を認めていた左眉毛部結節性筋膜炎の１例

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（目的）結節性筋膜炎は若年成人の上肢、体幹、頭頸部に順に多いとされる。今回初診時から瘢痕拘縮を伴う眉毛部の結節性筋膜炎に対して摘出術と２回の修正術を行い良好な結果を得たため報告する。（方法）患者は40代男性。１ヶ月前より左眉毛部皮下に腫瘤を自覚し近医皮膚科を受診した。腫瘤は徐々に増大し眉毛の偏位および陥凹を認め、前医皮膚科を紹介受診した。腫瘤は30mm大で弾性軟、境界明瞭、MRIでは結節性筋膜炎などが疑われた。前医の部分切除生検と、当科の部分切除生検では結節性筋膜炎が疑われたが確定診断に至らず摘出術を施行した。病理組織診断は結節性筋膜炎であった。一部断端陽性だったが患者とも相談し経過観察の方針とした。術後２年で局所再発は認めず、眉毛部陥凹に対して左鼠径部から真皮脂肪移植術と、術後１年４ヶ月後に眉毛偏位に対してＺ形成術を行った。（結果）現在術後３年６ヶ月時点で局所再発は認めず、眉毛の偏位および陥凹は改善している。（考察）結節性筋膜炎は渉猟し得た限り本邦の眉毛部に発生した報告は２例と稀である。明確な治療指針はなく本症例は外科的切除を行った。さらに眉毛部の瘢痕拘縮に対して真皮脂肪移植術、Ｚ形成術を行い良好な治療成績を得た。

O8-2

Axillary Contracture of Burn Injury Treated with a Medial Brachial Perforator Flap: A Case Report

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A 58-year-old man sustained thermal burns involving 11% of total body surface area to the upper back, right upper arm, and face after sparks from welding ignited his clothing. Debridement and split-thickness skin grafting were performed on day 8 post-injury. Fourteen months after surgery, the patient experienced scar contracture on the right axilla, resulting in restricted shoulder mobility of 110 degrees for both flexion and abduction. To release the contracture, a skin-pedicled flap including a perforator branch of the brachial artery was used. Postoperatively, shoulder range of motion improved to 160 degrees flexion and 180 degrees abduction. This case suggests that a medial brachial perforator flap is effective for axillary scar contracture release.

O8-3

Butterfly-wings dermal-fat flap technique for adhesive post-tracheostomy scars

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Tracheostomy is required in various situations to secure airway. Prolonged tracheostomy or infection sometimes leads to trachea-to-skin adhesion with depressed scar. In severe cases, adhesion of trachea to the cervical skin is so tight that the patients suffer pain in phonation and swallowing. Because of the pain, the patients only can speak brokenly and weakly. They complain that a meal takes a long time. These symptoms are difficult to resolve with conventional methods, which often ends up with re-adhesion, due to the lack of subcutaneous tissue.
We present a simple technique using dermal-fat flaps to prevent re-adhesion and improve function. Under local anesthesia, a spindle-shaped area with horizontal axis including the post-tracheostomy scar is deepithelialized. Incisions are made around the area, and bilateral flaps, with dermis and subcutaneous fat were raised like butterfly wings. The central part was left untouched to keep base for the blood supply. The dermal-fat flaps were turned over and folded one on the other, atop of the trachea. Adjacent area was undermined, and the defect is covered primarily over the folded dermal-fat flaps. The sutured line aligned with the relaxed skin tension line of the neck.
This method is effective in both restoring subcutaneous volume and relieving trachea-to-skin adhesion. It is a simple yet effective procedure with high degree of patient satisfaction.

O8-4

Evaluation of Physicochemical Properties and Biocompatibility of Collagen Sponge

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Skin is the largest organ of the human body, playing a fundamental role in regulating the body's internal balance and protecting against external traumas. As the principal component of skin, collagen has always been a research hotspot in the field of skin wounds due to its advantages of low antigenicity, high biocompatibility and superior bioactivity. The present study investigated the collagen sponges crosslinked with 1-ethyl-3-(3-dimethyl aminopropyl) carbodiimide (EDC)/N-hydroxysuccinimide (NHS)-crosslinking. The physicochemical properties of collagen sponges before and after crosslinking were evaluated through scanning electron microscopy (SEM), water absorption capacity, and resistance to collagenase digestion. The results demonstrate that crosslinking significantly preserves and optimizes the porous structure of collagen. Furthermore, crosslinked samples exhibit higher water absorption compared to non-crosslinked counterparts. In vitro assessments involving fluorescence-labeled cells seeded on crosslinked collagen sponges, which confirmed that material's non-toxicity and its ability to promote cell proliferation and adhesion. This work establishes that EDC/NHS-crosslinked collagen sponges, as wound dressings, can effectively absorb exudate, maintain a moist wound microenvironment, facilitate cell migration and growth, and exhibit strong potential to accelerate wound healing.

O8-5

COMBINATION OF D-LIMONENE OIL, NAPHTHA PETROLEUM, ISOPARAFFIN ON ADHESIVE REMOVER: RESEARCH PROPOSAL

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Background: D-limonene is an effective and environmentally friendly solvent that can break down sticky residues from adhesives. This material is non-allergenic and has a pleasant aroma. Naphtha petroleum is a very effective and relatively safe solvent without the use of industrial chemicals to removing tough adhesives, tar, oils, and sticky residues. Isoparaffin is a petroleum-derived solvent, low aromatic, and environmentally friendly solvent used in industrial and consumer applications as a safer alternative to harsh solvents. The combination of these three solvents is used as a safe and non-allergic adhesive remover so it can reduce the possibility of scarring when removing the dressing.

Objective: The combination of d-limonene oil, naphtha petroleum and issoparaffin used topically as an adhesive remover has great potential has not been established.

Methods: Preliminary studies will be conducted by processing each material followed by screening of phytochemical and physicochemical properties. The results will lead the researchers to compare the results of the combination of the three materials, alcohol swab, and natrium chloride 0,9% with the control group.

Keywords: d-lemonene oil, naphtha petroleum, isoparaffin, adhesive remover

O8-6

Infraorbital vs Subciliary:Comparative Analysis of Surgical Approach for Infra Rima Orbital Fracture

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Introduction: Surgical repair of infraorbital rim fractures can be performed via infraorbital or subciliary incisions. Both approaches provide fracture access but differ in aesthetic and functional outcomes. Evaluating complications through scar formation and contracture marked by the occurrence of ectropion.

Methods: This observational study included 14 patients treated with either approach over 6 months. Postoperative complications were assessed using the Vancouver Scar Scale (VSS) and an Ectropion Grading Scale (EGS) by Moe and Linder. Normality was tested with Shapiro-Wilk. Independent t-test compared VSS scores, and appropriate tests compared ectropion severity. Analysis was done using SPSS, with $p < 0.05$ as significant.

Results: In the span of 6 months, this study recruited 14 subjects for further analysis. Infraorbital approach showed no significant difference in VSS (1.8 ± 0.92 vs 1.7 ± 0.41, $p=0.164$) and EGS ($p=0.21$). However, sub ciliary approach tends to have higher incidence of moderate ectropion severity.

Conclusion: Infraorbital and sub ciliary approach did not differ significantly in complication rate of scarring and ectropion incidence.

Keywords: Infraorbital, Sub ciliary, Complication, Facial Fracture

O8-7

Reverse Domino Grafting: Salvaging Full-Thickness Skin Graft in a Pediatric Hand Burn Contracture

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Several techniques for harvesting skin grafts from uncommon sites have been reported, including reharvesting split-thickness graft (STG), salvaging a full-thickness graft (FTG) from free flap, and the reused skin-graft technique for chronic gluteal hidradenitis suppurativa.

We present a case of a 19-year-old slender male with a hand burn contracture from infancy. He reported neuropathic pain and hyperpigmentation on the palm of the right hand. Surgery was performed to release the contracture, and FTG was harvested from the plantar foot. We covered the defect of the skin in the plantar with graft scar tissue from the right hand, which had originally been harvested from the groin during infancy. No comorbidities were observed at the 6-month follow-up.

This secondary use of previously grafted FTG may reduce donor site morbidity compared to the traditional domino grafting technique. This approach may be especially valuable for patients with limited redundant skin, but it could still be applied more broadly in general.

This method can be considered when primary closure of the donor site is not feasible. It may be particularly useful in hand reconstruction, as illustrated by the present case. We refer to this technique as the “Reverse Domino Grafting Technique”.

O8-8

Investigation of Therapeutic or Preventive Effect of ASC on Radiation Induced Capsular Contracture

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Jichi Medical University

Capsular contracture is one of the most common complication in Implant-based breast reconstruction, and it tends to become more frequent and severe when patient undergoes radiotherapy. With the trend of expanding indications for postmastectomy radiotherapy, the risks of capsular contracture become higher. On the other hand, adipose-derived stem cells have attracted attention for their anti-fibrosis effects, such as their therapeutic effect on pulmonary fibrosis. They are theoretically able to suppress or alleviate the formation of capsular contracture around implant. Therefore, we want to use a mouse model to investigate this.24 black mice were used in this research, mini-Implant were placed under the muscle. All mice and they were randomly assigned into 4 groups. A 20 days 2Gy daily irradiation and fellowing ASC treatment were given. 6 month after treatment, we calculate the average thickness of the capsule, the mean thickness in vehicle group is thicker than that in control group. and the mean thickness of capsule in ASC treated group is lower than that in control group and vehicle group regardless of the injection method, which suggest that radiation exposure can cause thickening of the capsule and this thickening caused by irradiation can be reversed by ASC treatment. Besides, by using bioluminescence imaging to track the transplanted ASC, we found that intraperitoneally injected ASC successfully migrated around the implant and colonized.

20th JSW

一般演題 1・2

一般演題 1 (1 ～ 4)　　座長：岡部　圭介

一般演題 2 (5 ～ 10)　　座長：荒牧　典子

1
ケロイドにおける掻痒と神経・免疫の関係

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ケロイドは整容面のみならず、制御困難な掻痒によりQOLを著しく低下させる。我々は、発症部位による掻痒の違いに着目し、前胸部および耳ケロイドを対象に、組織学的および遺伝子発現解析を行った。前胸部ケロイドでは、境界部にCD3陽性T細胞の浸潤と毛包破壊像を認めた。CD1a陽性ランゲルハンス細胞は両部位とも表皮内に多く分布していた。PGP9.5陽性神経線維は前胸部ケロイド辺縁に有意に増加し、耳ケロイドでは有意に少なかった。IL-4、IL-13発現は両者で中心より辺縁で高い傾向を示し、SPは前胸部辺縁で高く、耳では少数のみが検出可能だった。掻痒を伴う前胸部ケロイドでは、ランゲルハンス細胞と神経線維の増加に加え、Th2サイトカインおよびSP発現の亢進がみられた。一方、掻痒のない耳ケロイドでは、これらの一部のみで、全てが揃う症例はなかった。以上より、ケロイドの掻痒には神経・免疫の相互作用が関与する可能性が示唆された。

2
ケロイド由来線維芽細胞のミトコンドリア呼吸と解糖系の代謝機能の検討

Kenta Ikushima, Kazuhide Mineda, Yoshiro Abe, Yutaro Yamashita, Mai Nakagawa, Makoto Mizuguchi, Mariko Nishioka, Kurumi Kitamura, Ichiro Hashimoto

Tokushima University

【背景】我々の先行研究ではケロイド由来線維芽細胞(KF)は正常皮膚線維芽細胞(NF)よりもミトコンドリア環状DNAをコードする13種類の遺伝子発現量が低く、ミトコンドリアに異常がある事が推察された。そこで本研究ではKFのミトコンドリア呼吸と解糖系の機能を検討した。【目的】通常条件とTGFβ1刺激下でのKFとNFでミトコンドリア呼吸を示す酸素消費速度(OCR)、解糖系のプロトン流出速度 (glyco PER)、総エネルギー需要を示すTotal ATP 産生速度を評価した。【方法】NF及びKFを2.0×10^4cells/wellで播種し、リアルタイム細胞外フラックスアナライザーで測定した。刺激にはTGFβ1を培地に溶解し24時間後に同様の試験を行った。【結果】通常条件ではKFはNFと比べて基礎呼吸、最大呼吸、予備呼吸能が低値で、解糖予備能は有意に高値であった。TGFβ1刺激によりKF、NFともglicoATP(解糖系のATP産生)が著明に増加し、Total ATP 産生速度が増加した。KFはNFと比べてTGFβ1刺激によるglicoATPの増加率が高かった。【考察】KFはNFよりミトコンドリアの代謝が低く、代償として解糖系予備能が高いことが示唆された。さらにKFはTGFβ1刺激下でのエネルギー代謝において嫌気性呼吸による代償が著しく、ケロイド形成との関連性が考えられた。

3
巨大な耳垂部ケロイドと肥満細胞の検討

中島　由佳理, 高柳　里穂, 荒牧　典子, 岡部　圭介, 貴志　和生
慶応義塾大学医学部形成外科

ケロイドや肥厚性瘢痕の組織には炎症細胞が多く存在することは一般的に明らかである。今回、病変が耳垂を超えるような巨大なケロイドの組織学的観察を行い、関連因子を検討する。
外科的切除の適応となった耳垂部ケロイドを対象とし各種染色を施行した。また当研究室ケロイド組織のシングルセル解析データから肥満細胞について一部解析を行なった。
巨大な耳垂部ケロイドの背景因子としてBMI25以上の肥満を認めた。病理学的診断ではいずれも「ケロイド組織」であったが、追加染色で観察を行ったところ、トルイジンブルー染色にて巨大な組織では脱顆粒した肥満細胞を通常より多数認めた。またシングルセル解析ではケロイド重症度によって肥満細胞内でのいくつかの遺伝子発現に差を認めた。
肥満細胞は特異的IgE抗体と結合すると、分泌顆粒が細胞表面へと輸送されケミカルメディエーターを放出する脱顆粒反応を生じる。それらが局所の炎症反応を促進し、線維芽細胞の活性化や細胞外基質の合成も促進され線維化を引き起こす。脱顆粒した肥満細胞が多数であると巨大なケロイドが形成される可能性が示唆された。

4
新規治療法開発を目指したケロイドのシングルセル解析

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【目的】ケロイドは皮膚損傷を契機に発症する難治性の線維増殖性疾患であり、整容面に加えて掻痒感や疼痛、潰瘍等を引き起こし患者のQOLを著しく損なう。その分子機構は未解明であり、新規治療法開発のための病態解明が求められる。本研究ではケロイドに対しsingle-cell RNA sequencing（scRNA-seq）を行い、得られたデータに基づく分子病態の解析を行った。
【方法】4名のケロイド患者より、ケロイド組織および隣接正常皮膚を採取しscRNA-seqを実施した。得られた候補分子Aについて、患者組織での発現を確認し、in vitroでも検証を行った。
【結果】scRNA-seqにより24の細胞群を同定し、cell communication解析からinteractionの増加がみられる分子Aを特定した。分子Aはケロイド組織で高発現しており、特に表皮基底部や真皮乳頭層で強い発現を認めた。線維芽細胞に分子Aを添加するとACTA2、COL1A1、FN1などの線維化マーカーが顕著に上昇した。
【考察】分子Aはケロイド組織において有意な高発現を示し、in vitroで線維化を誘導する働きがある可能性が示唆された。今後、阻害的アプローチやメカニカルストレスとの関係も含め、さらなる解析を進める予定である。

5

美容開業医の瘢痕治療①
－ 手術とレーザーを併用する瘢痕ケア －

YUKI NISHIKAWA
Smile Clinic

【はじめに】
当院では瘢痕性状に応じて手術治療とレーザーを組み合わせた治療を提供している。各治療の位置付けおよび組み合わせ治療の意義を供述する。
【治療内容】
手術治療：一般形成外科の手法に準じ切除手術およびZ-W形成術を行う。
レーザー機材と設定：
サイノシュアー社製ICON、Ｅｒ GrassYAG1540nm波長
ピン構造レンズ、70mJ/mB、パルス幅15ms
【治療方法】
抜糸後3週よりレーザー治療を開始。他院手術後の症例では可及的早期の開始とする。
麻酔は外用麻酔を使用。インターバル2週5回1クールとし2-3クール継続する。
【症例と結果】
症例と経過を供覧する。術後の瘢痕増生を抑制し3ヶ月程度で発赤消退と早期の軟化が認められ、成熟促進が得られたと考える。術前経過よりケロイドを疑う1例も同様に改善。外傷痕の症例では陥凹の改善も得られている。
ダウンタイムとして照射後2日間程度の発赤と微小な痂疲が生じていた。色素沈着はアフターケアにて改善。
【考察】
受傷後早期のレーザー治療は瘢痕増殖を抑制し有用なアフターケアとなる。成熟促進によるダウンタイム短縮や軽減のみならず成熟後の色素欠損の回避効果が得られる。
今後も検証を継続し報告する。

6

美容開業医の瘢痕治療②
フラクショナルレーザーを組み合わせた瘢痕ケア

YUKI NISHIKAWA
Smile Clinic

【はじめに】
レーザーをマイクロスポットに分散するフラクショナル照射はニキビ跡や妊娠線の治療にも用いられ、面状に組織を剥削するのではなく、立体的な間引きを行う治療原理である。瘢痕の減量効果と表皮の入れ替えによる“ぼかし効果”が得られる。当院では瘢痕性状に応じて手術治療と複数のフラクショナルレーザーを組みあわせた治療を提供している。
【レーザー機材と特性】
使用機材①サイノシュアー社製ICON：ErGrassYAG1540nm波長
ピン構造レンズ、70mJ/mB、15msで照射
使用機材②ジェイシス社製EdgeONE：炭酸ガスレーザー
15-20mJ/ｍB　カバー率10％で照射
肥厚を認める瘢痕や受傷後早期の増殖過程にある瘢痕には機材①を優先する。機材②は成熟瘢痕および機材①治療にて軟化が得られた瘢痕を対象とする。
【症例】
リストカット痕、陥凹変形のある外傷性瘢痕、陳旧性瘢痕（色素欠損）の治療経過を供覧する。
【考察】
瘢痕には様々な形態があるが、肥厚のある瘢痕では成熟促進から醜状痕の回避を可能にする。成熟瘢痕では色素欠損の縮小が得られている。改善効果および患者満足度を高めるには瘢痕状態の見定めと、治療に特性を理解し状態に応じた適切な治療の選択が肝要と考える。

7

Facial Artery Musculomucosal flapを用いた咽頭形成の一例

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【背景】
悪性リンパ腫の化学療法後は病変部に狭窄を来すことがある。今回、上咽頭狭窄に対して、Facial Artery Musculomucosal flap（FAMM flap）を用いて咽頭形成を行った1症例を経験したため報告する。
【症例】
51歳女性。副鼻腔、ワルダイエル扁頭輪、頚部リンパ節の腫脹を認め、当院血液内科で、びまん性大細胞型B細胞リンパ腫と診断された。化学療法後腫瘍は縮小したが、鼻咽腔狭窄症状が著明となった。上咽頭拘縮が原因と考えられ、耳鼻咽喉科で狭窄部を単純切開したが再狭窄し、当科を紹介受診した。狭窄部の切開、Z形成と粘膜移植を行ったが再狭窄し、両側FAMM flapによる咽頭形成を行った。術後鼻咽腔狭窄症状は改善し現在まで再狭窄を認めていない。
【考察】
悪性リンパ腫の化学療法後に声門、気管、消化管に狭窄を来した報告は存在するが、咽頭狭窄を来し複数回の外科的加療を要した症例は渉猟しえた限り認めなかった。顔面動脈を血管茎としたFAMM flapは口唇形成などへの利用が報告されている。本症例においてFAMM flapの使用は、咽頭の複雑な三次元構造の再建や機能温存に配慮し、十分な血流と容量を有する組織を補填し、強固な拘縮を解除するために非常に有効であったと考えられた。

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50年に渡るケロイド拡大により陰茎周囲絞扼となった一例

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【背景】ケロイドは元の損傷範囲を超えてその周囲の正常皮膚へと拡大し、長年にわたって成長し続けることが特徴である。今回我々は50年前に後腹膜腫瘍の切除を行い、背部の手術瘢痕から陰茎周囲まで拡大した重症ケロイドの稀な症例の手術治療を経験した。【方法】68歳の男性。当科にてこれまでに合計11回の手術治療を行ってきたがケロイドが再発していた。周術期の体位制限などの苦痛から、以後は手術を希望せず、最近10年以上は保存的治療を継続されていた。しかし今回、陰茎がケロイドに覆われて埋没・絞扼を起こしていたため、嵌頓の予防と生活の質改善のために早期の治療介入を必要とした。陰茎周囲の絞扼輪に対してmultiple Zを用いた拘縮解除を行なった。【結果】術後6か月において陰茎周囲の拘縮は解除されており、排尿障害や疼痛および陰茎周囲の清潔環境は改善された。【考察】形成外科診療においてケロイド・瘢痕の症例はよく目にするが本症例のように50年に渡り拡大し続け、さらに背部の手術創から陰茎絞扼を起こすまで成長するものは非常に珍しい。multiple Zにおける拘縮解除は低侵襲かつ効果的であり、正常組織に新たな傷を付けないという面においても有用であった。

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熱傷後の頸部瘢痕拘縮に対し鎖骨上皮弁を用いた２例

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【目的】熱傷後に生じた頸部瘢痕拘縮に対して、鎖骨上皮弁を用いて良好な可動域の改善が得られたため報告する。【方法】症例は68歳女性と72歳男性。いずれも広範囲熱傷に対して遊離植皮術を施行し、上皮化は得られたものの、前頸部可動域制限を生じた。全身麻酔下に拘縮を解除し、鎖骨上皮弁を組織欠損部に充填した。【結果】2症例とも皮弁は完全生着した。いずれも頸部伸展域が改善し、患者は満足された。【考察】今回のような面状で広頸筋を巻き込む頸部瘢痕拘縮の場合は、十分な大きさの皮弁による欠損組織の充填が必要である。鎖骨上皮弁は薄くしなやかな有茎皮弁で、植皮を併用すれば幅7cm, 長さ18㎝程度のサイズで挙上可能とされる。また、挙上は簡便で血流は安定しており、頭頚部皮膚とのカラーマッチも良好である。２症例はともにレジデントが執刀したが、比較的短い手術時間で拘縮解除に十分な大きさの皮弁を得ることができ、術後の運動制限が不要で患者の苦痛が少なく、整容面においても優れていた。以上より、鎖骨上皮弁は前頸部の瘢痕拘縮症例に対してよい適応になると考えられた。

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顔面陥凹変形を手術で修正した６症例の検討

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【はじめに】顔面の陥凹変形は原因は様々であるが、自然治癒が望めずに形成外科を受診することが多い。顔面の陥凹変形に対し、治療を行った経験を報告する。
【症例】10歳から57歳の男性１名女性５名に手術を行った。原因は外傷５名、膠原病１名であった。手術は真皮脂肪移植が４例、脂肪注入が２例、そのうち１例がリジェネラマイクログラフトを同時に行った。
【結果】全例で改善を認めた。2例に追加処置を行った。
【考察】外傷性瘢痕５例については１回目の手術時に術後の脂肪吸収も考慮してある程度オーバーボリュームに真皮脂肪移植後、脂肪移植後していたため、陥凹変形はほとんど目立たなくなっていた。追加処置をした２症例はいずれも頭蓋骨の陥凹も伴っていたため、脂肪が吸収された際に他の症例より目立った可能性が高い。皮膚エリテマトーデスの１例は皮膚の萎縮が原因となっており、１回目の手術後の満足度は高いが、今後病状の進行と共に追加の処置が必要となる可能性が高い。