



The history of facial plastic surgeons

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Abstract: The subspecialty of facial plastic surgery has its origins in otolaryngology but in modern practice is a collaboration of otolaryngologists, plastics surgeons, and maxillo-facial surgeons. The devastation of the World Wars brought unprecedented facial injuries, necessitating urgent advancements in reconstructive surgery. During the war, otolaryngologists such as Sir Harold Gillies, deemed the “father of plastic surgery”, developed ground breaking techniques that laid the foundation for the modern discipline of “Plastic and Reconstructive” surgery. Early surgeons such as Jacques Joseph and John Orlando Roe provided the foundation for the facial plastic surgery evolution during this period. Today, Australia boasts a thriving facial plastic surgery sector, characterized by a blend of reconstructive and aesthetic procedures. The scope of practice for otolaryngologists/facial plastic surgeons in Australia includes rhinoplasty, browlifts, blepharoplasty, facelifts, microvascular reconstruction of the head and neck, craniomaxillofacial trauma reconstruction, facial reanimation and correction of defects in the face after skin cancer resection. Facial plastics surgery is an evolving field through ongoing dialogue between surgeons of different training pathways, based on common historical roots, a shared scientific foundation, and cooperative educational efforts to advance patient care.

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Introduction

Historically, facial plastic surgery, a surgical discipline focused on reconstructing and enhancing facial structures, has experienced a multifaceted evolution, interweaving with societal changes, technological advancements, and shifting aesthetics. Tracing its origins to ancient civilizations, this field has expanded its scope and refined its techniques, becoming an integral part of contemporary healthcare. The subspecialty of facial plastic surgery has its origins in otolaryngology but in modern practice is a collaboration

of otolaryngologists, plastics surgeons, and maxillo-facial surgeons (1,2). The aim of this paper is to provide readers with a historical overview of the foundations of modern-day facial plastic surgery.

Ancient beginnings

The rudimentary origins of facial plastic surgery date back to ancient Egypt and India. The “Edwin Smith Papyrus”, an ancient Egyptian medical text, details surgical techniques

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Figure 1 Plates vi & vii of the Edwin Smith Papyrus at the Rare Book Room, New York Academy of Medicine (open access source: Martin AJ. Academy Papyrus to be Exhibited at the Metropolitan Museum of Art New York, NY, USA: The New York Academy of Medicine; 2005. Available online: https://en.wikipedia.org/wiki/Edwin_Smith_Papyrus) (3).



Figure 2 Printed version of Celsus’ De Medicina from 1700. Reproduced with permission from Kockerling *et al.* (6).

for facial injuries, reflecting early insights into facial reconstruction (Figure 1). Professor James H. Breasted, the Director of the Oriental Institute of the University of Chicago, completed and published a translation of the papyrus in 1930. In 14 of the 27 cases of trauma to the head, described in the Smith Surgical Papyrus, the injury involved only the soft tissues of the scalp, ear, nose, chin or

cheek, or was complicated by a fracture of the nasal bones or maxilla, and caused no “neurological” disturbances (4). The description of reconstructive attempts represents the earliest facial plastic surgery. In ancient India, Sushruta, recognized as the “father of surgery”, authored the “Sushruta Samhita”, detailing diverse surgical techniques, including rhinoplasty and reconstructing the nose using a flap from the forehead, a technique still used today (5).

Greek and roman contributions

In ancient Greece and Rome, prominent physicians like Hippocrates and Galen laid foundational principles for surgery. Aulus Cornelius Celsus’s medical encyclopedia “De Medicina” (c. 25 BC) described methods for repairing facial fractures and deformities, indicating a growing interest in facial restoration (6) (Figure 2).

Middle ages to renaissance

During the Middle Ages, progress in facial plastic surgery was stifled due to the prohibition of human dissections, but surgical treatises from the Byzantine era showcased advancements in wound suturing and flap techniques (7). This included therapeutic management of facial nerve dysfunction and reconstructive surgery of the head and neck. The Renaissance period revitalized interest in anatomy, with physicians like Gaspare Tagliacozzi. In the 1580s, Gaspare Tagliacozzi [1545–1599], a young professor in surgery and anatomy at the University of Bologna, Italy, was the only one to carry out reconstructions of the nose and other missing parts of the face, utilizing arm flaps for nasal reconstruction, a precursor to modern grafting techniques (8,9).

The pivotal 19th century

Although the Indian method of a forehead flap was introduced to Europe in 1794, it wasn’t until the 19th century that significant advancements in anaesthesia and antiseptics, laid the groundwork for such techniques to be widely adopted as the primary flap for total and subtotal nasal reconstruction (10). Pioneers like John Orlando Roe and Jacques Joseph performed innovative rhinoplasty and otoplasty, developing techniques that minimized scarring and prioritized aesthetics (11-13). Joseph’s principles of preserving form and function continue to influence modern facial plastic surgery (11).



Figure 3 Jacques Joseph [1865–1934], a pioneering German surgeon, is often heralded as the “Father of Modern Aesthetic Surgery”. In 1916, he was appointed head of the newly founded Department of Facial Plastic Surgery at the Ear, Nose and Throat Clinic at the Charité by the Prussian Ministry of Education and Cultural Affairs. Reprinted with permission from Mary Ann Liebert, Inc. (14).

Jacques Joseph: the father of modern aesthetic surgery

Jacques Joseph [1865–1934], a pioneering German surgeon, is often heralded as the “Father of Modern Aesthetic Surgery”. His ground breaking work in rhinoplasty and reconstructive surgery laid the foundation for the modern field of plastic surgery, shaping its principles and techniques (Figure 3).

Early life and career

Born Jakob Lewin Joseph in Königsberg, Prussia, Jacques Joseph was destined for a career in medicine. After receiving his medical degree, Joseph began his journey into surgical practice in Berlin, where he cultivated an interest in orthopaedic and facial surgery (12). His passion for improving patients’ quality of life, particularly those with facial deformities, became the driving force behind his pioneering work in aesthetic surgery.

The birth of modern rhinoplasty

One of Joseph’s most significant contributions to the field of plastic surgery is his work on rhinoplasty, the surgical modification of the nose. Before Joseph, the surgery primarily aimed at repairing injuries or deformities, but

Joseph saw its potential for aesthetic alteration. In 1896, he performed the first documented elective rhinoplasty, marking the birth of aesthetic rhinoplasty (12,15-17). In 1916, he was appointed head of the newly founded Department of Facial Plastic Surgery at the Ear, Nose and Throat Clinic at the Charité by the Prussian Ministry of Education and Cultural Affairs.

Joseph published “Nasenplastik und sonstige Gesichtsplastik”, a seminal work where he detailed his techniques, principles, and numerous case studies on rhinoplasty and other facial surgeries (18). His meticulous documentation, attention to detail, and emphasis on post-operative care established the foundational principles that continue to influence modern rhinoplasty.

Joseph’s practice was not just about surgical technique; he placed immense emphasis on the ethical aspects of aesthetic surgery. He believed in the psychological benefits of reconstructive and aesthetic procedures, acknowledging the profound impact on a patient’s self-esteem and mental well-being. Joseph was dedicated to enhancing the lives of his patients, advocating for thorough consultations to understand their needs and ensure realistic expectations.

Beyond rhinoplasty, Jacques Joseph developed several innovative surgical techniques, particularly in orthognathic surgery, which involves the correction of deformities of the jaw and face (16). His pioneering work in this field offered new possibilities for correcting congenital and acquired deformities, significantly impacting craniofacial surgery (Figure 4).

Dr. Joseph’s legacy and influence

Joseph’s commitment to teaching and knowledge-sharing allowed his techniques and principles to be disseminated widely. His influence reached across borders, shaping the practices of many surgeons, including Sir Harold Gillies, the father of modern plastic surgery and an otolaryngologist himself, who acknowledged Joseph’s influence on his work (11,14).

Joseph’s emphasis on the psychological impact of aesthetic surgery and his patient-centric approach have left a lasting mark on the field. The ethical guidelines and principles he advocated for continue to shape the way surgeons interact with and treat their patients (11,14).

Dr. John Orlando Roe

Another notable pioneer in facial plastic surgery was John Orlando Roe [1848–1915], a prominent American surgeon,

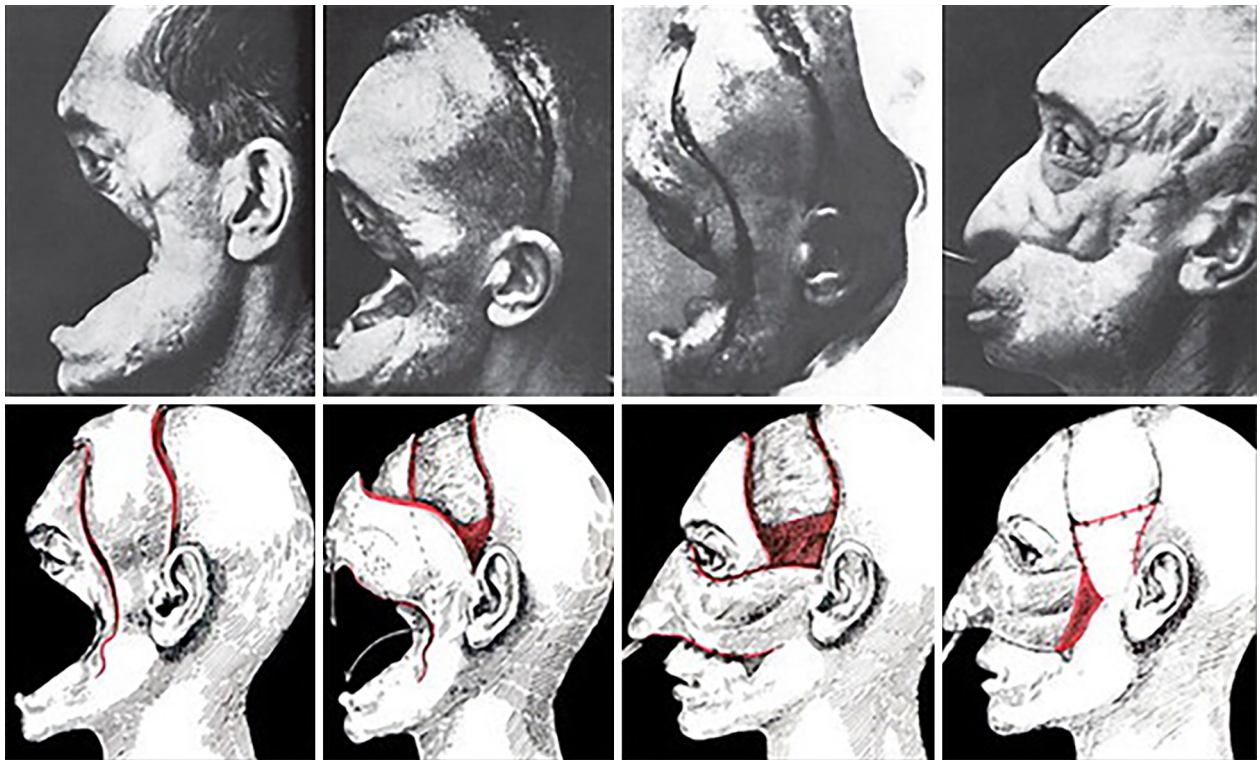


Figure 4 Photographs and illustrations from the case of Musafar Ipar, a man with severe wound defect in the face from an injury received in World War I. This case is a well-documented example of the great surgical experience of Jacques Joseph, MD, and his achieved results. Reprinted with permission from Mary Ann Liebert, Inc. (14).



Figure 5 John Orlando Roe [1848–1915], an otolaryngologist from Rochester, New York, is by many considered the true father of aesthetic rhinoplasty. Reprinted with permission from Mary Ann Liebert, Inc. (19).

best known for being a pioneer in the field of plastic surgery, particularly rhinoplasty (19) (*Figure 5*). Special note is made of John Orlando Roe, an otolaryngologist from Rochester, New York, as many considered him as the true father of aesthetic rhinoplasty—in contrast to the claims assigned to Jacques Joseph of Berlin. Roe’s significant contribution to facial plastic surgery was his development of techniques for the correction of the nasal deformity known as “pug nose” or “saddle nose” (13). The famous Maurice Cottle, paid tribute to him in 1964 as a ‘pioneer in modern rhinoplasty’ (20).

In 1887, Roe presented a paper titled “The Deformity Termed Pug Nose and Its Correction, by a Simple Operation” to the Medical Society of the State of New York. This work marked a major advancement in the field of cosmetic surgery. Roe’s technique focused on making incisions inside the nose to avoid external scars, a method that influenced future approaches in plastic and cosmetic surgery. At a time when such surgeries were still



Figure 6 Preoperative (A) and postoperative (B) photographs of a nasal hump reduction from Roe's 1891 article. Reprinted with permission from Mary Ann Liebert, Inc. (19).

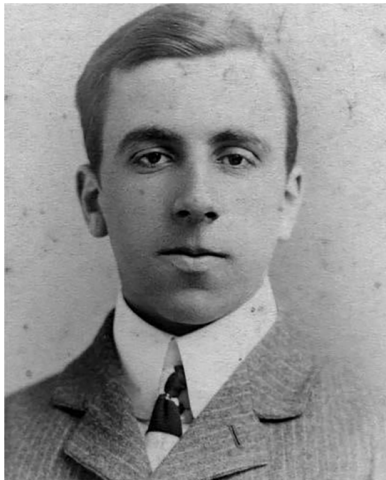


Figure 7 Harold Gillies as an undergraduate at Gonville & Caius College, Cambridge (courtesy: British Association of Plastic Surgeons). Reprinted with permission from SAGE publications (22).

controversial, Roe is famous for his quote:

“How much valuable talent (bad) been...buried from human eyes, lost to the world and society by reason of embarrassment... caused by the conscious, or in some cases, unconscious influence of some physical infirmity or deformity or unsightly blemish.”

Roe was also notable for his work in other areas of surgery and his commitment to improving surgical

techniques and photographic documentation. His 1891 article included the use of preoperative and postoperative photographs to document his findings (19) (*Figure 6*). His contributions were not limited to rhinoplasty; he also worked on improving methods in otolaryngology (ear, nose, and throat medicine) and general surgery, making him a key figure in the history of medical advancements in this area.

World wars and reconstructive imperatives

The devastation of the World Wars brought unprecedented facial injuries, necessitating urgent advancements in reconstructive surgery. During the war, otolaryngologists such as Sir Harold Gillies, deemed the “father of plastic surgery”, developed innovative techniques, including the tubed pedicle flap, to address extensive facial injuries sustained by soldiers. Gillies’ work laid the foundation for facial plastic surgery, and eventually the discipline of plastic surgery, by emphasizing meticulous planning, grafting, and a multidisciplinary approach (21).

Sir Harold Gillies: a pioneer in plastic and reconstructive surgery

Sir Harold Delf Gillies, born in Dunedin, New Zealand, in 1882, is revered as the “father of plastic surgery” (*Figure 7*). His innovative surgical techniques and reconstructive

procedures, and commitment to the well-being of patients during and after the First World War laid the foundation for modern plastic and reconstructive surgery (15,23). Gillies' pioneering work has had an enduring impact, shaping the field and influencing generations of surgeons.

Harold Delf Gillies was initially drawn to a career in dentistry before transitioning to medicine. His journey in medicine began at Gonville and Caius College, Cambridge, and later at St Bartholomew's Hospital in London, where he received his medical education as an otolaryngologist. After completing his medical degree, he joined the Royal Army Medical Corps during World War I, where his interest in reconstructive surgery was kindled, inspired by the pressing need to treat soldiers with severe facial injuries (22). A chance meeting with Hippolyte Morestin, a French surgeon known for his work on jaw injuries, during World War I, became the catalyst for Gillies's profound interest in reconstructive surgery.

Contributions during World War I

World War I was a watershed moment in the evolution of medicine, especially for reconstructive surgery, owing to the numerous soldiers returning from the battlefield with severe facial injuries. Recognizing the urgent need for specialized care, Gillies was instrumental in establishing the Queen's Hospital in Sidcup, Kent, dedicated to facial repairs. It was here that Gillies, along with his multidisciplinary team, laid the foundation for modern plastic surgery. Queen's Hospital was a specialized centre for plastic surgery, where he treated thousands of wounded soldiers (22,24).

Groundbreaking techniques

Gillies pioneered several reconstructive techniques that remain integral to plastic surgery. One of his key innovations was the development of the "tubed pedicle" flap, a technique that involved using tissue from a healthy part of the body to reconstruct damaged areas while maintaining blood supply to optimize healing (21,25). This technique laid the groundwork for subsequent advancements in tissue transfer and grafting (*Figure 8*).

Gillies' pioneering work laid the foundation for the field of plastic and reconstructive surgery, influencing generations of surgeons worldwide. His principles of meticulous planning, preserving form and function, and prioritizing patients' psychological well-being continue to guide the practice of plastic surgery. His commitment to innovation and education resulted in the training of a

new generation of surgeons, ensuring the continuation and advancement of his ground breaking work (22,26) (*Figure 9*). Sir Harold Gilles, as an otolaryngologist, is widely recognized by plastic surgeons and the broader surgical community, as the founder of the modern subspecialty now known as plastic and reconstructive surgery (27).

Gillies co-authored the seminal work, "Plastic Surgery of the Face", detailing his innovative techniques and case studies, providing a comprehensive resource for facial plastic surgeons (*Figure 10*). This publication contributed significantly to the academic development of plastic surgery as a distinct medical specialty (28).

Later life and honors

After World War I, Gillies continued his work in plastic and reconstructive surgery, contributing to advancements in gender-affirming surgeries and craniofacial surgery. For his dedicated service and pioneering contributions to medicine, he was knighted in 1930. Sir Harold Gillies continued to practice and teach until his passing in 1960, leaving behind a legacy of innovation and compassionate care (22). His innovative techniques, commitment to holistic patient care, and dedication to education have shaped the practice of plastic surgery, earning him enduring recognition as the "father of plastic surgery". In 1961, the Council of the British Association of Plastic Surgeons instituted an appeal to establish a memorial to Sir Harold Gillies—The Gillies Lecture (29).

Post World War II, the focus of facial plastic surgeons shifted from reconstructive to aesthetic surgery, reflecting societal shifts and evolving beauty ideals. Innovations in rhinoplasty, facelifts, and eyelid surgery emerged, with American otolaryngology surgeons, such as Jack Anderson, contributing to the refinement of techniques and aesthetic principles (30,31).

Ethical considerations and regulation

The proliferation of facial plastic surgery necessitated robust ethical frameworks and regulations to safeguard patient welfare. Medical associations, such as the American Board of Facial Plastic and Reconstructive Surgery (ABFPRS) and the Australasian Academy of Facial Plastic Surgery (AAFPS), established guidelines and certification processes to ensure the ethical practice and competence of surgeons (1). Recent cosmetic surgeon reforms in Australia, while mostly to regulate poorly trained practitioners, has

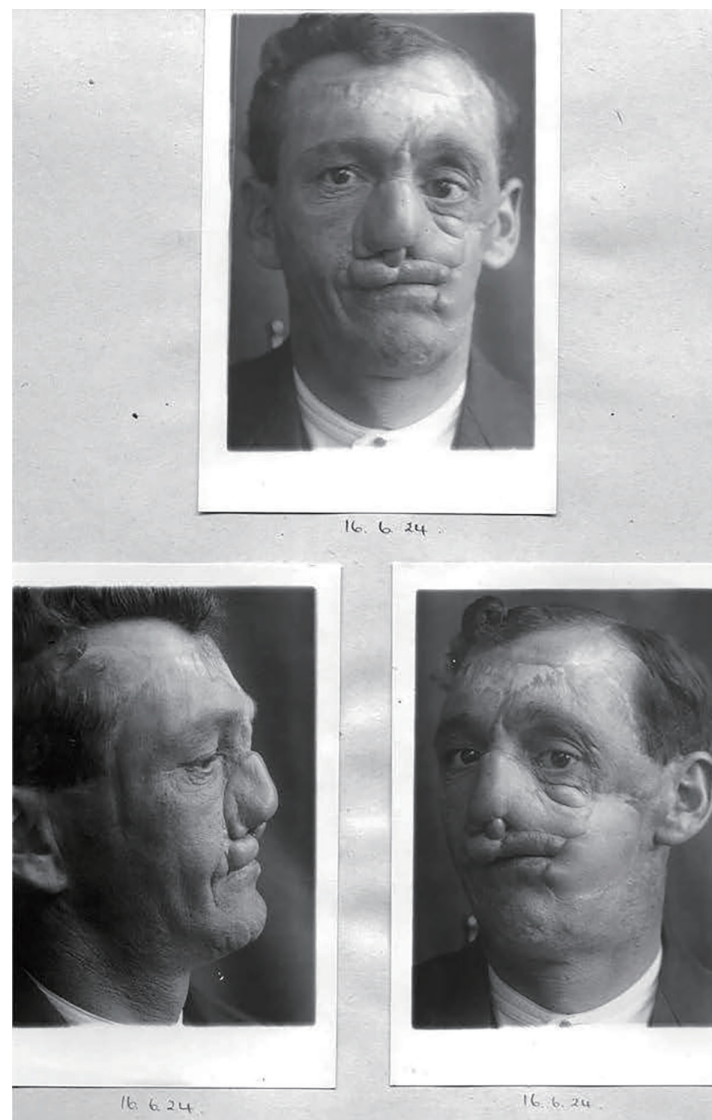


Figure 8 Photograph of Lt Stacey, RND, annotated by Gillies to show stages in the operative procedures. Reprinted with permission from SAGE publications (22).

been established to create greater emphasis on well-being and holistic involvement by other medical professionals. Although many procedures that facial plastic surgeons perform have functional aspects and don't fall within these guidelines, aesthetic-only surgical practice now aims to involve the primary care practitioner, instigate cooling off periods, and enforce advertisement guidelines (32).

The 21st century and personalized medicine

The 21st century ushered in an era of personalized

medicine and regenerative techniques in facial plastic surgery. Advances in stem cell therapy and 3D printing have enabled personalized treatment plans and the development of custom implants and grafts (33). The integration of artificial intelligence and virtual reality in surgical planning and patient consultations will refine outcomes and enhance patient experiences (34).

Facial plastic surgery has witnessed a global expansion, with culturally sensitive approaches becoming imperative. Surgeons adapt techniques to cater to diverse ethnic backgrounds and beauty ideals, emphasizing the importance

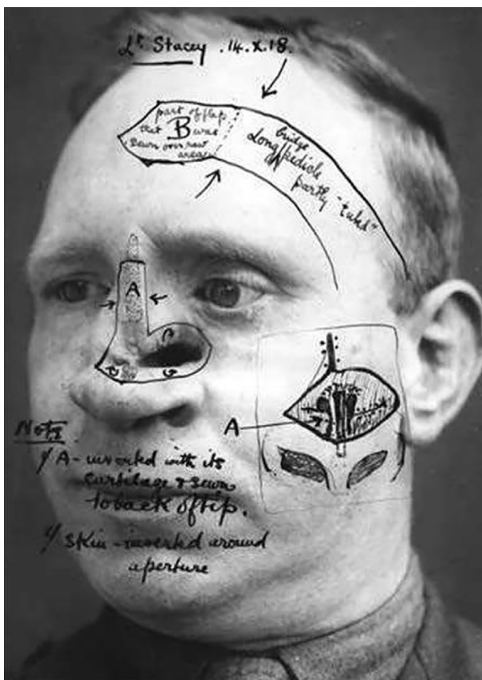


Figure 9 Sir Howard Gilles pioneering facial reconstructive work. Pte Thomas: final photographs, 1924 Reprinted with permission from SAGE publications (22).

of cultural competence, individualized patient care and outcome assessment (35).

Facial plastic surgery in Australia

The practice of facial plastic surgery in Australia has journeyed through an evolution, intricately woven into the nation’s war history. From its preliminary inception, influenced by local pioneers, to the establishment of a distinct identity. Despite political divisions, facial plastic surgery in Australia narrates a tale of progress, innovation, and adaptation to societal needs and ethical norms.

In the early 20th century, as Australia was burgeoning as a nation, the medical community was keenly attuned to the international developments in surgery. Australian surgeons were privy to the transformative techniques pioneered by surgeons like Sir Harold Gillies during World War I, ensuring his surgical legacy lived on.

Impact of the world wars

Much like the rest of the world, the advent of the World Wars marked a significant turning point for plastic surgery in Australia. The exigencies of war necessitated rapid advancements in reconstructive techniques to address the myriad facial injuries sustained by soldiers. During this time, notable Australian surgeons emerged, contributing significantly to the field. Sir Benjamin Rank, a distinguished figure, played a pivotal role in establishing plastic surgery as a recognized specialty in Australia, laying the foundation for the development of facial plastic surgery.

Benjamin Rank was an Australian, trained by the otolaryngologist Sir Harold Gillies, who in the 1940s governed the Royal Melbourne Hospital, which was the first plastic surgery unit within Australia. It was in 1956 that plastic surgery was acknowledged by the Royal Australasian College of Surgeons as a separate specialty craft group of plastic surgery. In 1973, Sir Benjamin Rank gave the Gilles lecture, “Tides and Eddies of Plastic Surgery”, for the British Association of Plastic Surgeons (29).

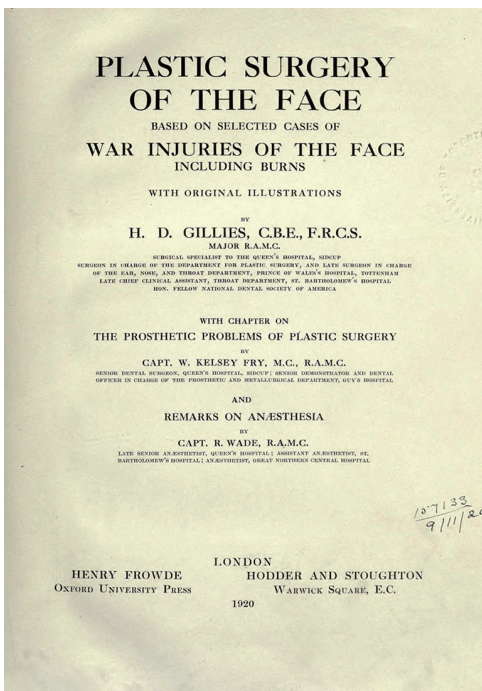


Figure 10 Sir Howard Gillies’ 1920 seminal work, “Plastic Surgery of the Face”, detailing his innovative techniques and case studies, providing a comprehensive resource for plastic surgeons (28).

Post-war era and specialization

In the post-war era, the focus of plastic surgery in Australia gradually shifted from predominantly reconstructive to encompassing aesthetic enhancements. The establishment of the Australian Society of Otolaryngology Head & Neck Surgery in 1950 and the Australian Society of Plastic

Surgeons in 1971 was a monumental step in fostering education, research, and specialization in the field. This period saw Australian surgeons undertaking specialized training, often travelling abroad to learn from renowned international experts and subsequently bringing back invaluable knowledge and skills.

Facial plastic surgery is a well-established training pathway with contributions from both otolaryngology and plastic surgery programs. In Australia, and indeed internationally, surgical training in facial plastic surgery encompasses techniques prescribed by each speciality's respective governing body. At times throughout recent years in Australia, political infighting has obscured the common history and values that surgeons practicing facial plastic surgery have been the beneficiaries of. Today's needs and yesterday's lessons dictate that appropriate action demands the collaborative effort between specialist groups to ensure the welfare of patients seeking our expertise (1).

Ethical considerations and regulation

The rapid evolution of facial plastic surgery in Australia necessitated stringent ethical considerations and regulations to safeguard patient well-being. The Australian Society of Plastic Surgeons and the Royal Australasian College of Surgeons played a pivotal role in establishing guidelines, standards, and accreditation processes to ensure the ethical practice of facial plastic surgery.

The medical community in Australia engaged in ongoing discourse on the ethical implications of aesthetic surgery, addressing issues such as body dysmorphic disorder, informed consent, and the impact of societal pressures on individual's choices regarding cosmetic enhancements. These discussions underscored the importance of a holistic and patient-centric approach, prioritizing psychological well-being alongside physical outcomes. Recent changes to the provision of "cosmetic" surgery reflect some of these values (32).

Indigenous communities and cultural sensitivity

A unique aspect of facial plastic surgery in Australia is the interaction with the Indigenous communities. The practice in these communities often revolves around addressing congenital conditions and trauma-related injuries. The medical community has striven to foster culturally sensitive approaches, acknowledging the diverse needs and perspectives of Indigenous Australians.

Efforts have been made to improve access to facial plastic

surgery services for Indigenous communities, recognizing the disparities in healthcare availability. These initiatives underline the commitment to equitable healthcare and the adaptation of facial plastic surgery practices to the diverse Australian demographic.

Current landscape and future prospects

Today, Australia boasts a thriving facial plastic surgery sector, characterized by a blend of reconstructive and aesthetic procedures. It encompasses both reconstructive and cosmetic components. The scope of practice for facial plastic surgeons in Australia include rhinoplasty, browlifts, blepharoplasty, facelifts, microvascular reconstruction of the head and neck, craniomaxillofacial trauma reconstruction, facial reanimation and correction of defects in the face after skin cancer resection (36). Facial plastic surgery also encompasses the use of injectable fillers, neural modulators such as Botulinum Toxin A (BOTOX, Allergan Pharmaceuticals, Westport, Ireland), lasers, and other rejuvenation techniques. The field continues to evolve, with a focus on minimally invasive techniques, personalized treatments, and advancements in regenerative medicine and 3D printing (33).

The Australian facial plastic surgery community remains engaged with international developments, contributing to global knowledge through research and innovation. The future holds promising possibilities, with ongoing exploration of stem cell therapy, biocompatible materials, and artificial intelligence in surgical planning and execution. The pace of medical knowledge expansion is faster now than ever before. As a stand-alone field, Facial plastic surgery needs to evolve with an ongoing dialogue between surgeons, of different training pathways, based on common historical roots, a shared scientific foundation, and cooperative educational efforts to heal differences between speciality groups and advance patient care.

Conclusions

Facial plastic surgery's history is a testament to human ingenuity and adaptability, evolving from rudimentary practices to sophisticated medical artistry. Ancient civilizations' foundational work, wartime imperatives, technological innovations, and ethical considerations have collectively shaped the field. The speciality's evolution reflects societal shifts, advancing medical knowledge, and the perennial quest for aesthetic and functional refinement.

From the foundational influences of surgeons during the World Wars to the establishment of a distinct identity (“Facial Plastic Surgery”), the journey reflects the nation’s commitment to innovation, ethical practice, and the diverse needs of its population.

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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