FUTURE DIRECTIONS

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Anatomical discoveries, such as a detailed understanding of the blood supply to the skin as well as technical and engineering innovations that brought about microsurgery , have enabled the field of reconstructive plastic surgery to blossom. As populations age and life expectancies continue to improve, the demand for reconstructive surgery , particularly among the elderly popula tion for chronic degenerative and neoplastic conditions, will continue apace. The key to the next phase of reconstructive plastic surgery advances will likely be a combined approach across multiple scientific and surgical disciplines. T he scientific areas that will lead to significant breakthroughs include wound healing, bioengineering, cancer treatment and immunotolerance for vascularised allotransplantation. Recent discoveries of the genetic, epigenetic and molecular mechanisms that under lie conditions such as craniosynostosis, cleft lip and palate, Dupuytren’s disease and delayed wound healing now Baron Guillaume Dupuytren , 1777–1835, Surgeon in Chief, Hôtel-Dieu, Paris, France. interventions. Bioengineering and tissue engineering will certainly play a major role in modern reconstruction; for example, smart tissue expansion for cleft palate reconstruction and biocompatible sca ff olds that simultaneously pr omote in situ tissue regeneration as well as deliver treatment by eluting antibiotics or chemotherapeutic agents for musculoskeletal and cancer reconstruction. Furthermore, as the cultural and political landscapes evolve, new areas of reconstructive surgery have emerged, including gender-a ffi rming surgery . One of the most exciting areas of reconstructive plastic surgery has been the increasing success of vascularised composite allotransplantation, including of the face and upper limb. Outcomes are expected to continue to improve with better understanding of immunological tolerance and increasing social acceptance of the donation of body parts. The field of robotic surgery continues to expand. It is par - ticularly useful to assist in surgical approaches where access is limited, such as cleft surgery . The latest devices are able to eliminate hand tremor, increase dexterity and range of motion, provide haptic feedback and thr ee-dimensional views that assist greatly in challenging dissections, and have been successfully adopted in oncological head and neck reconstruction. Reconstructive plastic surgery is unique in its creativity , breadth and variety of reconstructive techniques. While this a ff ords the specialty powerful means to serve the patient, it does also mean the practice of evidence-based surgery is challenging. There are often numerous techniques to treat the same conditions with a lack of high-quality evidence. Moreover, there are often situations where surgery may be technically feasible but not in the best interest of the patient. - For example, patients with complex multifragmentary open tibiofibular fractures and neurovascular compromise may have a better quality of life with a below-knee amputation than with a salvage reconstruction with free tissue transfer. Hence, well-designed pragmatic clinical trials and the development of rigorous tools to capture the most relevant data, such as patient-reported outcome measures, together with the building of large-scale clinical research networks at both national and international levels will be crucial to drive complex shared decision making between surgeon and patient. - FUTURE DIRECTIONS

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