

Plastic Surgery Training In India – Past, Present And Future

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Abstract

Plastic surgery training in India traces its roots back to 600 B.C when Sushruta laid the foundations of this speciality. Today almost 65 years after the first plastic surgical unit was established in India, the speciality has expanded and evolved rapidly but faces many challenges as it grows further. This article aims to highlight the strengths and weaknesses of plastic surgical training in India compared with the rest of the world. It also suggests improvements in the existing training curriculum so that the future residents would be better equipped to deal with the rigours and demands of modern-day plastic surgery. There must be adequate funding to set up centres of excellence of teaching and research and incentives to attract the brightest minds as faculty to lead this process of change. Standardisation of plastic surgery training curricula and frequent interaction between centers of different countries would help ensure that the speciality would grow further and provide a firm foundation for the future.

Keywords: Plastic surgery; Training in India.

Introduction

Plastic surgery training in India has its origins many centuries ago when Sushruta (600 B.C) began laying the building blocks of what we now know as the speciality of Plastic and Reconstructive Surgery. He lived 150 years before Hippocrates and is described as the Father of Plastic surgery. He published his treatise known as 'Sushruta

Samhita' in 600 B.C which is probably the oldest textbook of surgery in the world. In this book, he describes 120 surgical instruments, 300 surgical procedures and classifies human surgery into 8 categories. The pupils who trained under him were called 'Saushrutas' and the duration of this training was a minimum of 6 years. Before they began their training they had to undertake a solemn oath (similar to the present day Hippocratic oath). Surgical skills were taught to the 'Saushrutas' by assisting in live surgeries and practising on experimental modules like making skin incisions on vegetables (watermelon, bitter gourd), probing in worm-eaten wood and various other models (Fig. 1).¹



Fig. 1: Figure shows 'Saushrutas', trainee surgeons engaged in simulation surgical exercises.

Sushruta described various surgical techniques like the cheek flap, repair of the torn earlobe, piercing of earlobe, repair of accidental lip injuries and congenital cleft lip, skin grafting, classification of burns, wound care and wound healing. He also described the cheek flap for nasal reconstruction which is sometimes also known as “Indian rhinoplasty”, he used a leaf as a template for the nasal defect. Then he would incise the and raise the cheek flap and inset over the defect, the flap division would be done a few weeks later.^{1,2}

Later, classical cheek flap rhinoplasty of Sushruta was modified to the forehead flap in the 14th century. This was then popularized by Tribhovandas Motichand Shah who published it in 1889. He described more than a hundred cases treated by him in 4 years and gave minute operative details and discussed the advantages of Indian forehead rhinoplasty.^{2,3}

The modern-day plastic surgery training in India traces its origin to the 1950s when Dr C Balakrishnan setup the first plastic surgery unit in Nagpur. Since then, the speciality has had a tremendous growth but the present-day training has not evolved to keep pace with the challenges that lie ahead. The integrative approach to training in plastic surgery is increasingly being adopted worldwide as this entails a more focused approach towards training in plastic surgery and allows maximum exposure towards all the sub-specialities of plastic surgery. Hence, this had led to a change in the educational goals of the training programmes throughout the world.⁴ The present training in plastic surgery in India is in a stage of flux and must be more in sync with the demands and aspirations of the current crop of residents and teachers. This article aims to highlight the deficiencies in plastic surgery training in India and hopes to provide some solutions that may positively impact the trainees and the faculty.

Discussion

Plastic surgery in modern India owes its development to Sir Harold Gillies, Eric Peet and B.K. Rank who helped set up the first maxillofacial unit in India in 1945. Dr C. Balakrishnan was the first plastic surgery trainee in India and in 1947 he was sent to the U.K for higher training. He was trained by none other than, Sir Harold Gillies (Father of Modern Plastic surgery) and Professor T. P. Kilner. In 1950, Dr C. Balakrishnan returned to India and joined Government medical college, Nagpur. However, it was only in 1958, the first plastic surgery unit in India was established at

Nagpur with Dr C. Balakrishnan as the head of the department. Sir Gillies contributed in the development and growth of these units by conducting live surgical demonstrations, lectures and in 1957, he inaugurated the first meeting of the association of plastic surgeons of India (APSI).^{2,5} Another plastic surgery unit was established at the Armed.

Forces Military Hospital in Pune by Maj. BR Sukh who along with Dr C. Balakrishnan was the first plastic surgery trainees in India.⁶

In 1964, N. H. Antia set up another plastic surgery unit at J.J. Hospital, Mumbai. Antia and Buch performed the world’s first microvascular free flap when they transferred a superficial inferior epigastric artery free flap for a facial defect.⁷ Subsequently, more units were established all over India and today the field has made giant leaps such that each state has at least two-three plastic surgery units all over the country. Today the speciality has grown by leaps and bounds such that there are more than two thousand board-certified plastic surgeons in the country.

In India, to get into a career of plastic surgery the minimum requirement is a bachelor of medicine and surgery (MBBS). There are two pathways to enter into plastic surgery training - Independent programme and the Integrated programme. The independent programme is of three years duration and on completion, M. Ch degree (Magister Chirurgiae or Master of Surgery) is awarded. The candidate who desires to obtain an M. Ch degree in plastic surgery must have completed an M.S or DNB degree in general surgery. The other pathway - an integrated programme is started soon after completion of MBBS and is conducted by the national board of examinations (NBE). This is a six year programme - the first three months are spent in the parent plastic surgical unit to know the basics of plastic surgery. The next twelve months are to be spent in general surgery to learn the basics of surgery. In the second year of this programme, the candidate then rotates in the various subspecialities of surgery for 9-12 months. After the completion of his rotations, he returns to the parent plastic surgery unit to finish his training there for another four years. The syllabus for plastic surgery training in India includes the following areas -Principles and Basic Sciences, Aesthetic surgery, Breast surgery, Pediatric Plastic Surgery, Head and Neck, Trunk and Lower Extremity, Hand Surgery and Burns. The course curriculum includes -weekly case presentations & discussions, seminars, journal club and grand round presentation. A clinical audit is

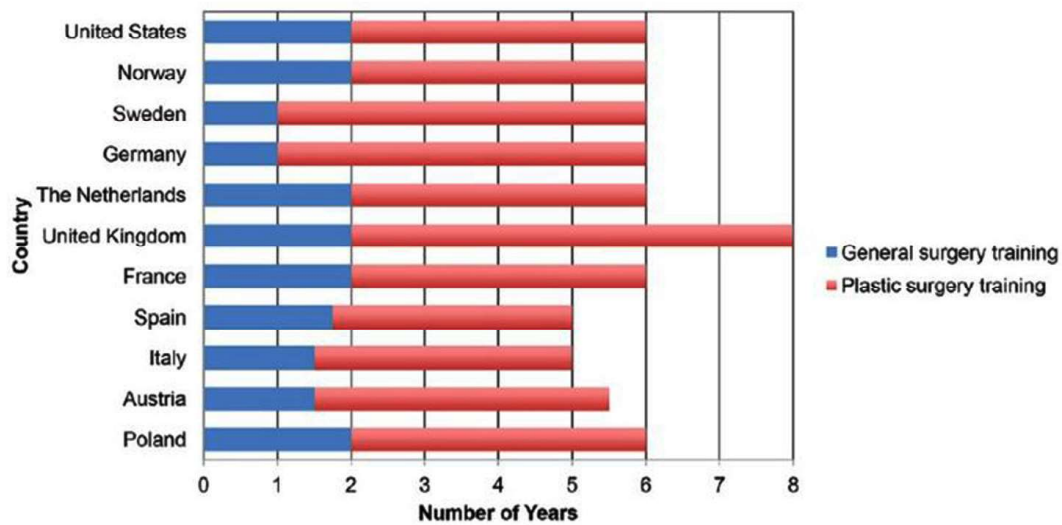


Fig. 2: Figure shows the duration of plastic surgery training in India and the rest of the world. Courtesy of 'Kamali P, van Paridon MW, Ibrahim AM, Paul MA, Winters HA, Martinot-Duquennoy V, Noah EM, Pallua N, Lin SJ. Plastic Surgery Training Worldwide: Part 1. The United States and Europe. *Plast Reconstr Surg Glob Open*. 2016 Mar 17;4(3):e641'.

conducted once in a month. All candidates enrolled in MCh or DNB plastic surgery course have to maintain a surgical logbook and submit a thesis at the end of their course which will be evaluated. Trainees are also encouraged to attend at least one national conference and present at least one paper and poster at a national or state level conference. Trainees are also given guidance to submit at least one journal paper publication. Besides this, trainees are encouraged to attend a microsurgical anastomosis course.⁸

After completing training in plastic surgery, what are the further options available? Nowadays in this era of super-specialisation of the medical field, it would be prudent for the freshly passed out plastic surgeon to focus his interest into one or two core areas of plastic surgery. There are many fellowships available in India and abroad depending on individual interest. In India, the coveted fellowships include - Hand and microsurgery fellowship in Ganga Hospital, Coimbatore, Oncoplastic fellowship in TATA memorial hospital, Mumbai and Aesthetic surgery fellowship by Maharashtra University of Health Sciences (MUHS). Besides this, fresh pass-outs can join the government or private medical colleges as faculty, private clinics or hospitals and can even start their private practice or group practice.

When we compare plastic surgery training in India with the rest of the world - the average duration of plastic surgery training in the world is six years (including general surgery training) which is the same as in India (Fig. 2). The average age at which a trainee starts his plastic surgery residency

in the world is 24-30 years of age which is similar to that in India. The duration of work hours per week for plastic surgery trainees averages 40-80 hours in the world which compares with the Indian working hours.⁹

Plastic surgery training in India is at a crossroads, with increasing sub-specialisation and expansion of our field coupled with encroachments from other specialities. As it evolves and expands further, numerous challenges must be addressed if it is to remain relevant. The current training programmes in India is heavily biased towards trauma and reconstruction with little or no exposure to cosmetic surgery. Most plastic surgeon rookies who enter into private practice or work in corporate hospital face an increasing demand for aesthetic surgeries which not only are income-generating but also add a touch of glamour and sheen to the hospital. A study conducted in 2010-2013 found that cosmetic surgery would grow at a compound annual growth rate of 31%.¹⁰

A study by Khare et al found that most trainees and fresh pass-outs would like to focus on the following core areas for their future practice - aesthetic surgery (38.7%) and microsurgery (32.6%). Only 9.1% of the respondents (fresh pass-outs in plastic surgery) felt the current training system is adequate in producing plastic surgeons with enough skills. An overwhelming 81.8% felt that their training programme in plastic surgery was inadequate.¹⁰ In this study, suggestions put forward to improve the current state of affairs included - an interdepartmentalexchange of students, the involvement of senior accomplished

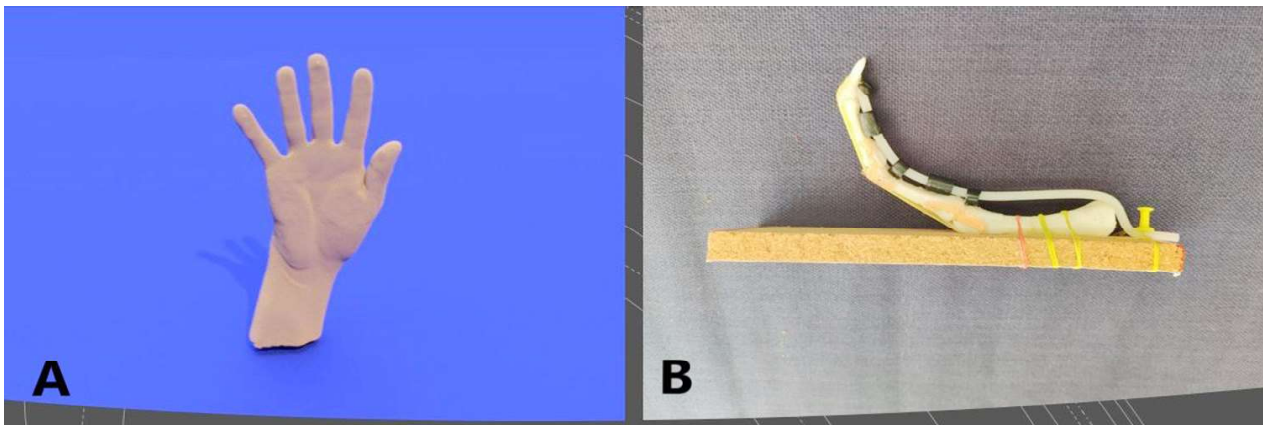


Fig. 3: (A) - 3D printed hand model. (B) - 3D printed hand model for flexor tendon surgical repair.

private practitioners in the training and teaching process. This would allow adequate exposure to all the sub-specialities of plastic surgery, especially in aesthetic surgery. Another suggestion put forward is to structure the selection process of plastic surgery trainees, to attract the best, brightest, scientific minds from medical schools. But, to accomplish this, plastic surgery education must be introduced into the undergraduate curriculum so that medicos would learn the basics of wound healing, suturing skills, wound repair techniques (flaps and grafts). This would inculcate in them an inherent desire and interest to pursue plastic surgery as a career.^{10,11,12}

There is a worldwide trend towards the integrated programme of plastic surgery training. This would involve a reduced broad speciality general surgery training duration (12-18 months) and followed by 4-5 years of focused plastic surgery training. In the initial years, the trainees must be encouraged to acquire skills in microsurgery and clinical lab research skills. Towards the last two years of the programme, there must be consolidation and development of surgical acumen in all the core areas of plastic surgery hand and microsurgery, craniofacial, paediatric, lower extremity, breast reconstruction and cosmetic surgery.¹²

Another area that must be reformed is the standard of teaching, the concept of “training the trainers” must be implemented through periodic workshops, seminars and evaluation of trainers by a central or state regulatory plastic surgery body. The teaching of trainees must be supportive, nurturing and should encourage constructive criticisms and feedback.¹³

There must be an overhaul in the current evaluation system of plastic surgery trainees which is mainly theoretical and knowledge based. It should be both competence and knowledge based evaluation. The optimal course curriculum in plastic surgery should include exposure to principles and

practices of plastic surgery, impart theoretical knowledge, promote surgical skill acquisition and enhancement. The final evaluation must include knowledge based tests and competency-based tests through the performance of index procedures which will add more credibility to these exams and enhance the confidence of the trainees and the trainers.¹³

The speciality of plastic surgery must be autonomously regulated, with adequate government and private funding to attract the best talent as faculty to train the trainees and setup well-equipped laboratories to promote research. The future training programmes can also include a ‘back to the dissection lab’ concept whereby trainees are encouraged to go to anatomy dissection labs to refresh their anatomical knowledge and at the same time simulate flap harvest techniques on cadavers. The use of 3D printed models as training simulation aids for the trainees would help them in acquiring surgical skill and mastery (Figure – 3). Microsurgery labs must be made mandatory in every accredited department for plastic surgery training.

Conclusion

The current state of plastic surgery training in India needs to be in sync with the hope and aspirations of the trainees so that they may be better equipped to handle challenges and demands of the rapidly expanding health sector. There is much scope for improvement in training so that the trainee will have an all-round exposure to all sub-specialities of plastic surgery, in addition to focused training in one or two core areas of his/her interest. The integrated approach to training with added focus in plastic surgery is now being adopted worldwide.

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Conflict of Interest: None

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