

History of Plastic Surgery & Cross Grafting Operations in India*

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It is well known that Plastic Surgery originated in India in Vedic times (2000 to 3500 B.C.). The operations of Rhinoplasty, otoplasty, skin grafting and cross grafting of tissues and organs such as teeth, eyes were performed in India since centuries and are recorded in ancient Indian medical treatise and general literature.

Till recently the golden era of Indian surgery and plastic surgery was almost unknown to the scientists and scholars of the West. German scholars who studied the original texts in Sanskrit and some of the British and French travellers who saw for themselves Indian Plastic Surgery practised during the last one or two centuries revealed the wonders of this speciality to the world. But inspite of that many of us are still in the dark about the achievements of our forefathers.

Why Plastic Surgery originated and India became proficient in Reconstructive Plastic Surgery ?

Necessity is the mother of invention; in olden India, there was plenty of material and hence scope for reconstruction and that led to the birth and growth of the speciality of plastic surgery. Since times immemorial in India crimes and sins were punished with

dismemberment of those parts of the human body which were supposed to be responsible for committing that sin or crime. Thus cutting of nose, ears, hands, feet, tongue, eyes and external sex organs were the punishments awarded to the culprits, thieves, unfaithful wives, defeated enemies, sexual offenders and sinners. These punishments were so frequent and have been practised for so long that even to-day in vernacular the proverbial use of these punishments carries definite meaning to the common man of India (Almast 1966).

In addition to the traumatic causes, there is mention in Indian literature about congenital and inflammatory diseases which now form the problems of plastic surgeons.

PLASTIC SURGERY IN ANCIENT INDIA

1. Rhinoplasty :

(1) Cutting off the nose of Surupnakha by Lakshman in Ramayana is the first record of cutting of nose as punishment. There is no mention in the Epic whether she got her nose reconstructed though it is said her brother, the mighty King Ravana arranged for the reconstruction of her nose by his physicians.

(2) Sushruta (460 B.C.) was the first

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Surgeon and Sushruta Samhita the first book to describe rhinoplasty by rotation flap from the cheek.

(3) Modified Indian forehead flap rhinoplasty was practised in India throughout the centuries by the Koohmar or potters and they had become master in their craft.

been responsible for the later spread of the technique to European countries and U.S.A. (Fig. 1)

The patient was Cowasjee-Mahratta, bullock driver with English army in the war of 1792.

He was made prisoner by Tipoo Sultan who cut off his nose and one



(4) The description of the singular operation in Madras Gazettee 1793 as seen by the two medical officers of East India Company - James Trindlay and Thomas Cruso bears witness to the method and has

of his hands.

He went back and rejoined the Bombay army of East India Company after one year was operated by a Mahratta Surgeon at Kumar near

Poona.

His picture 10 months after operation appeared in the Gazette.

(5) Rhinoplasty in Punjab at Kangra (or old Nagarkote).

Dr. M. S. Randhawa the author of "Kangra valley paintings" who is an authority on the history and culture of Kangra-describes plastic surgery in Kangra as follows :-

"Plastic Surgery is not the sole achievement of western medical science. History of Kangra shows that operations for the restoration of noses were performed for centuries at Kangra. Nose-making at Kangra is said to have originated during the time of Akbar. Cutting of noses and hands was a common form of punishment meted out to criminals particularly thieves. Enraged husbands indulge in this practice even now and take revenge on their faithless wives by cutting their noses to spite their beauty.

Vigne a French traveller met one of the Surgeons named Budhya at Kangra and thus describes the method of performing the operation :- I learned that they first give the patient a sufficient quantity of opium, bhang or wine to render him senseless; they then tap the skin of the forehead above the nose, until a sort of blister arises, from which a piece of skin of the proper shape is then cut and immediately applied as a nose, sewed on and supported with pieces of cotton. The wound is then dressed with an ointment in which blue vitriol (Nila Thotha) is an ingredient, The surgeons practise on the credulity of the

Hindus by telling them that all this is done by favour of the Devi or Spirit who is featureless, and the operation would succeed nowhere else but at Kot Kangra. On my way to and from the place I saw several persons who had been operated on and were returning homewards looking quite proud of their new acquisition; which was, however, but a sorry substitute for the old feature".

The author (1966) made an 'on the spot' inquiry about Rhinoplasty in Kangra. Dina Nath Kanghiara Hakim; the last survivor of the family of Nose Surgeons of Kangra, however, said that the description of Rhinoplasty given by Vigne is totally wrong, and seems to be a record of the version of "man in the street". He then described in detail the classical forehead flap INDIAN METHOD practised by him and his forefathers.

(6) Rhinoplasty in Junagadh :

The first work on Rhinoplasty in India was published in 1889 by Tribhovandas Moti Chand Shah, the then Chief Medical Officer of Junagadh. He described over a hundred cases treated by him during a period of 4 years and gave minute operative details. The book is illustrated by diagrams and by pre-operative and post-operative photographs of patients. In his book Shah expressed preference for the forehead flap rhinoplasty and mentioned its advantages. It is said Tribhovan Shah did more than 400 rhinoplasties and had become so well known in the region that his name became a legend, a part of the folklore of the region, there being a saying "Kalu" (the local dacoit) cuts

the nose and Tribhovan reconstructs it."

The work of Tribhovan Das Shah is probably the largest individual series of reconstructive rhinoplasty published in 1900.

II Otoplasty and Cheiloplasty

These operations are described by Sushruta to be performed by rotation flap from the cheek. In ears, reconstruction of lobule is described by this technique.

III Skin grafting :-

The first record of free skin graft again is credited to India. The Komhars (potters) about 200 B.C. made use of free full thickness skin-graft from the buttocks. A section of skin was excised with its subcutaneous fat-after beating up the part with wooden sandal to cause local swelling-possibly with the idea of facilitating dissection. The removed skin was immediately united to the defect with a secret paste, the main constituent of which was probably "fuller's earth".

IV Pedicle Graft

In a historical review of Pedicle flaps, during the Patiala Conference of Plastic Surgeons of India (1965) Dr. K. S. Goleria pointed out that "the credit for being the first to conceive and execute operations involving the use of pedicle flaps goes to Surgeons of ancient India. Sushruta Samhita compiled by the great sage Sushruta approximately 600 years before the Christian Era contains to our knowledge, the first record of the use of pedicle flaps in the world literature. In describing the reconstruction of a destroyed ear lobule Sushruta says in Sanskrit Sloka :

"Gundadutab taye mansen Sanubandhen

Jivata Karanpalim palestu Kuryanilira
Khaya Shashtrabitu"

Which is translated as follows :

"In one without the ear lobule; the lobule of the ear should be reconstructed from a piece of flesh of the cheek kept living by its continuity to the cheek, after sacrificing the edges of the defect by one who knows the technique."

The use of the words "Sanubhandhen Jivata" (the same living by continuity) is an unmistakable reference to a pedicle." Sushruta also describe the technique of rhinoplasty by rotation pedicle flap from the cheek.

"Sushruta strictly adhering to tradition attributes the origin of his work to LORD DHANWANTRI. He seems well aware of the contributions of his teachers and predecessors and lays no claim to originality. He merely describes the practice prevailing at his times. We can only conclude that the origin and the originator of this procedure belong to the distant past, the past before Sushruta".

In Ashtanga Hridayans compiled by Vagbhat in the 4th Century, the author attributes the origin of work to his ancestral teacher Maharshi Atreya of Taxilla and describes in detail the steps of Rhinoplasty by a rotation flap from the cheek.

V Auto-Grafting, Transplantation and Cross-Grafting Operation in Ancient India

About ten years back Sir Harold Gillies, the founder of modern plastic surgery in a lecture at All India Surgeons' Conference

at Nagpur in the year 1957 pointed out to the possibility of auto-grafting of amputated fingers and toes and outlined the suggested technique of operation. Soon after a large number of successful operations were reported and the procedure is now a recognised one.

Recent work in U.S.A., Europe and China on autografting of accidentally amputated limbs proves that not in the very distant future these operations would be successfully performed in the routine traumatic surgical practice. Out of half dozen cases attempted in U.S.A., three have met with successful autografting of the limbs. When that was first done, it was a news for everybody and even Magazines like Reader's Digest published the story of the successful grafting back of the upper limb of the boy who amputated the same in a railway accident. More than nine successful cases have been reported from China recently (Horn, 1966).

These instances clearly point out the direction and goal whither surgery is heading for! With the advances in traumatology, vascular anastomosis, nerve suture, orthopaedics and reconstructive plastic surgery; before long autografting of limbs would be a common place procedure.

Let us now look back to ancient India and its achievements in this field as recorded in olden Vedic, Puranic medical texts, folklore, religion and general literature. Apart from the text books, general literature throws sidelights on the conditions, nature and practice of surgery in ancient times. There are anecdotes in the early Vedic and epic

literature as well as in later classical literature from which we might suppose that the science was well cultivated and the Indian surgeon performed daring operations and was full of resource and initiative. These anecdotes are elaborated often by imagination but it may be conceded that for the imagination to work some facts must serve as the basic data for inspiration.

(a) Auto-Grafting of Hands and Feet

(i) Story of Bhagat Puran Lal of Sialkot.

Raja Salewan of Sialkot (now West Pakistan) ordered for the cutting off the hands and feet of his young son Puran Bhagat on the false report, of ill-behaviour, from Puran's stepmother.

Puran was taken to a jungle by the 'Jallads', his hands and feet were chopped off and he was thrown in a well nearby to die of starvation and drowning. Achhran, Puran's mother, was hurt very badly, her pleas had no effects on the Raja; so she went to the jungle and collected the amputated hands and feet of her son, put these carefully in a cloth and preserved these in a golden box which she kept hidden somewhere, where she could go from time to time and had a look at these and remember her beloved son.

Bhagat Puran did not die in the well in which he was thrown. There was the "Life giving herb" in that well and Puran lived on the leaves of that herb for 12 years in that well, and his wounds healed quickly with that herb.

12 years later, it so happened that a saint Guru Gorakh Nath happened to come to that jungle with his disciples. He sent

one of them to the well with a pitcher to draw water. But when from inside the well Puran talked and requested to be taken out, the disciples were frightened and called their Guru to the well. So Puran was brought out of the well. He told the whole story to the Guru: who restored his hands and feet to normal by grafting back the original hands and feet stored in the golden box by Puran's mother. Guru did all his due to his supernatural powers. Puran became a perfect man again. When his mother visited the place where she had kept the hands and feet of her son she was perplexed to find those missing. She got a dream that her son had been restored to normal with those hands and feet. But she would not believe in her dream. Rest of the story is not relevant here.

But it all compares well with the recent trends in the auto-grafting of fingers, toes, hands and sometimes full limbs. Who could have believed Puran's story if the modern advances in surgery had not shown that it was all possible. As a matter of fact what we know, what we can do and achieve is much less, rather just a fraction of what is possible and will be possible in the times to come.

Certain questions arise from this story. Firstly, was the golden box a special preserving bank kept underground? Secondly was the herb responsible for reunion and establishment of vitality and circulation after autografting after 12 years. Today we call even 12 hours too late for successful anastomosis. Thirdly, was Guru Gorakh

Nath and his team a special reconstructive surgical team?

Answers to these questions provide enough food for thought.

RE-ATTACHMENT OF SEVERED HANDS OF JAI DEV

(ii) It is said that when the hands of Jaidev, who wrote "Geet Govind" in the praise of 'Govinda', were cut, these were sutured back successfully by the Lord Vishnu Himself.

(b) TRANSPLANTATION OR TRANSFER OF EMBRYOS.

Recent successful experimental work on prevention and treatment of congenital abnormalities of the foetus by operating on the foetus after operative removal of the same from mother's womb and replacement after correction of the deformity and then closure of the uterus and later delivery of the baby normally per vagina in due course; throws much light on the future possibilities of intrauterine procedures on the foetus in the gravid uterus. Review of ancient Indian literature brings one to the conclusion that such operations were a regular feature in those days.

EXAMPLES : (i) *Transplantation or cross-grafting of embryos :*

(a) *Birth of Lord Mahavira* (The prophet God of Jain faith).

In svetambara version of Lord Mahavira's birth-which speaks of a transfer of embryos, the "Acharanga" says :-

"Here, forsooth, in the continent of Tembudvipa in Bharat Varsha (India), the

southern part of it, in the Brahmanical part of the place *Kundapura* he took the form of an embryo in the womb of Devananda of the Jalandhrayana Gotra wife of the Brahmana Rishabhadatta of the Gotra Kodala.

Then in the 3rd month of the rainy season, the fifth fortnight, the dark fortnight of Aswina month on its thirteenth day, while the moon was in conjugation with uttaraphalguni, after the lapse of eighty third day current the compassionate God Indra reflecting on what was the established custom (with regard to the birth of the Tirthankaras- (prophets) removed the embryo from the southern Brahmanical part of the place Kundapura to the northern Kshatriya part of the same place, rejecting the unclean matter, lodged the foetus in the womb of Trisala of the Vashishta Gotra wife of the Kshatriya Siddhartha of the Kashyapa gotra of the clan of Jnatris.

In exchange Indra lodged the foetus of the Kshatriyani Trisala in the womb of Devananda of Jalandhrayana gotra..."

This legend is found not only in Acharanga but also in *Kalpa Sutra* and many other books.

In the "Bhagwati" mother sutra of Svetambara Jain can on two references throw further light on the question of transfer of embryo,

(i) In staka V Uddesa IV in reply to a question regarding the *possibility* and *procedure* of the change of embryo Lord Mahavira declared that a change of embryo was possible and states his position regarding the procedure by which the change might take place,

but omitted to mention about the change of his own embryo.

(ii) Again in staka IX Adhesa XXXIII there is reference to the visit to Mahavira's camp of the Brahmana Rishabhadatta and his wife Devananda. On the sight of Mahavira, Devananda had a sudden maternal emotion and milk started coming out of her breast (what about the modern mothers who feed out of bottles!). Asked by his chief disciple Gautama to explain the reason for the unusual occurrence Mahavira plainly stated that Devananda was his mother.

(iii) Crossgrafting Operation in Ancient India

1. Celestial Surgeons—Twin Brothers

Ashwani Devatas :

Of all the Gods in ancient Indian (Vedic) pantheon, the twins, Ashwani riding on horses, outshine others as healers, succouring and relieving the suffering and the sick, in peace and war. They are said to have performed the following medical and surgical cures:-

- (a) Brought about the reunion of the head of Brahma when it was severed by Bhairava.
- (b) Treated Indra for stiffness or paralysis of arm.
- (c) Rejuvenated old decrepit Rishi Chyavana.
- (d) Gave an *iron leg* to a woman called Vispala who lost her leg in a battle.
- (e) Saved a Rishi thrown into a fiery pit and restored him to youth and strength.
- (f) Restored *eyes* to Regraswa.
- (g) Treated Pushan for diseases of the teeth and

(h) Crossgrafting of head in case of their Guru Dadhyanchi.

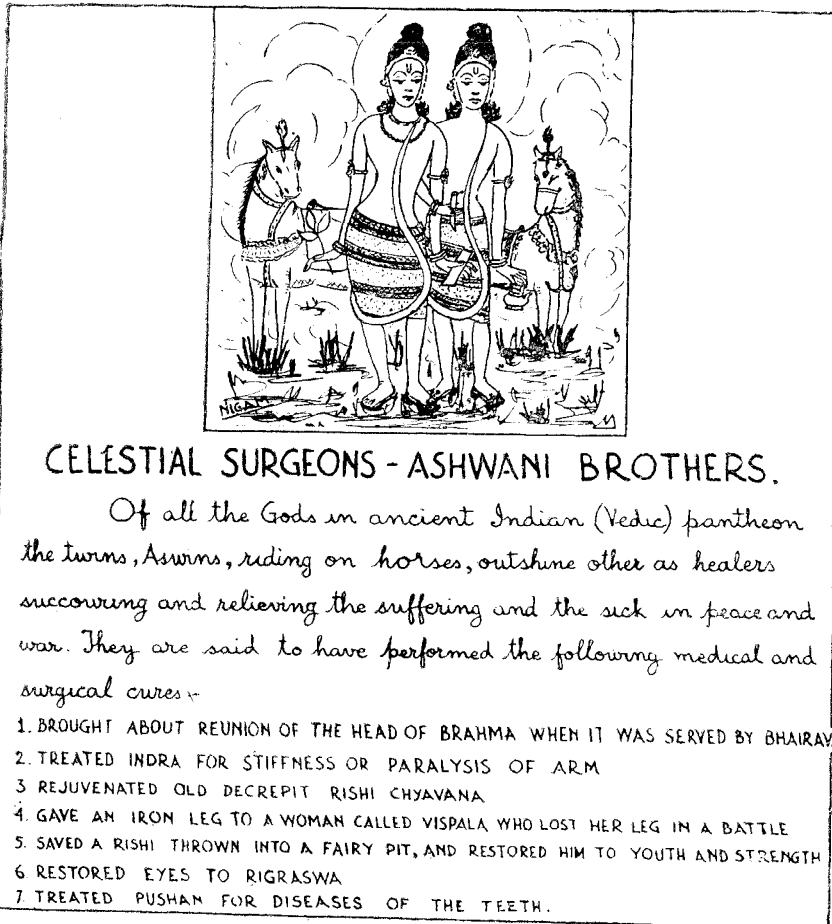
2. Cross-Grafting of Head

As recorded in Rigveda Indra had taught the science of surgery to the sage Dadhyanchi with the condition that he would not teach it further to anyone else, and if he did not keep up his promise he was liable to be beheaded as punishment.

Ashwani Kumars : The twin brother—
(Fig. 2) physicians who learnt medicine

But they remembered the punishment their teacher was likely to get for having taught them the science of surgery. So when they became expert in the surgical science and skill, they took off the head of the teacher and preserved it carefully; temporarily transplanting skilfully the head of a horse on their teacher. They had learnt and mastered the technique of replacing and transplanting the heads.

In the meantime Indra came to know



(Ayurveda) from Daksha Prajapathi and who were later authors of books on medicine and surgery, went to Dadhyanchi and prevailed upon the sage to impart his knowledge of surgery to them.

that the sage Dadhyanchi had broken his promise; so in rage Indra struck off the sage's head. But that was the Equine head which the Ashwani Kumars had transplanted on the sage. Now, the Ashwani brothers being

exceedingly proficient in surgery rejoined the original head of the sage which had been carefully preserved. They thus restored the normal life and appearance to their teacher. This feat excited universal approbation and Ashwani Brothers were in great demand for transplantation operations. There are innumerable other instances narrated to substantiate these views. The twin brothers had done transplantation of the eyes, teeth and other organs.

Re-birth of Lord Ganesha, whose human head was chopped off by his father Lord Shiva in anger, and later replaced by the head of a baby elephant is a well known example of crossgrafting of head in Puranic literature. Lord Ganesha had the power to restore eyes to the blind, physical form to the lepers and fertility to infertile couple, and he is of charitable nature because he gives money to the poor as is shown by the couplet "Andhan ko Ankh det, Kohran ko kaya—Banjhan ko Putar det, Nirdhan ko Maya".

Compare with the modern operations of keratoplasty for the blind, reconstructive plastic surgical procedures in leprosy and possibility of transplantation of gonads or current operations on testes, ovaries, tubes and vas for sterility. Also mentioned in Shiva Purana we find instances of auto-grafting of head as well as of transplantation of a head of a goat to Daksha, whose head was cut off and destroyed by Lord Shiva in rage on the death of his consort Satti, who was the daughter of Daksha, and was insulted by her father, because she came uninvi-

ted to a Yagya ceremony. During the same outrageous episode heads of many other men were chopped off by the attendants of Lord Shiva but since these heads were available those were sutured back as such and needed no replacement.

And whithar goes surgery to-day? We seem to head towards the era of tissue and organ transplantation in the modern times and experts in vascular, nerve, tendon, muscles, bones and other tissues grafting and suture would be the need of the day.

VII Reconstructive Surgery in Leprosy

Reconstructive procedures for the restoration of functions and form to the deformed hands of lepers in the recent years were first undertaken in South India about 15 years back. Plastic surgery on the face to improve the looks of healed leprosy patients and thus enable them to mix in the society without being spotted as lepers was also started at Poona in India in the year 1955. These operations are now being carried out all over the world and have brought the most needed help and hope to the sufferers from the most dreaded disease leprosy.

Now let us look back to olden India. Leprosy has been known as 'Kusht Roga' or 'Maharoga' in India since ages. In the prayers offered to Lord Ganesh (cited above) has been attributed the power to heal and restore physical form to lepers. Instances of healing of lepers by Lord Christ as mentioned in Holy Bible are well known to Westeners. Some critics have cast doubt whether thr leprosy which Lord Christ was

able to heal was the same as modern leprosy. In Indian literature, not in the distant past (1500 A.D. later) there are instances of healing of lepers by Guru Nanak; and Guru Amar Dass as described below not only healed leper Prema of his disease but also restored his physical disabilities.

Prema the Leper Cured by Guru Amar Das

Prema was a leper and *had lost his limbs and had become crippled*. He heard about the Guru (Guru Amar Dass—Jyoti of Guru Nanak) and came all the way *crawling* to Govindwal where Guru Amar Dass lived. He stayed at a little distance from the Guru's Darbar but where he could listen the hymns sung by the congregation. Some of the disciples fed him and looked after him. One day he was called by the Guru and *given a bath*.

Prema was *cured not only of his leprosy, but he got his limbs also restored*, as he uttered "Sat Nam Waheguru" as directed by the master.

The Guru then looked at him gracefully and Prema was transformed. He was named Murari and the Guru also got him married into a good family. He was then sent out as one of the *itinerant preacher* of the Guru's gospel.

Forehead Rhinoplasty for Chronic Ulcerative Disease of Nose at Kangra

Hakim Dina Nath described that instances of cut-noses amongst the local Kangra district population were extremely rare. But patients with chronic ulcers of nose

which resulted in destruction of nose and healing in a period of 6 to 7 years, after the onset of disease; reported for reconstructive rhinoplasty and were successfully operated upon by the same Forehead-flap Rhinoplasty which was employed at Kangra for repair of traumatic loss nose. Leprosy and syphilis lead to chronic ulceration, depression and sometimes total destruction of nose. Lepromatous ulcers take about 6 to 7 years to heal. Leprosy is prevalent in Kangra and there is Leprasorium at Palampur (Kangra). The credit of reconstruction of leprosy nose (and syphilitic too—because the Hakims did not differentiate between these two and labelled these cases as (Purana Nazla), goes to Kanghaira's of Kangra who have been carrying out the Rhinoplasty by forehead flap for cut and for destroyed noses since the times of Akbar and Shahjahan (16th Century A.D.) which can be verified from their records; though they claim to practise this family art since the war of Kurukshetra i.e. Mahabharata, which is about 2000 B.C.

It may, therefore, be surmised that the problem of leprosy received the full attention of ancient medieval saints and medical men, as of the modern Indian Surgeons, and our fore-fathers were in the forefront in rehabilitation of lepers, and we are following their footsteps in caring for these unfortunate sufferers.

Conclusion

The author has tried to go in to details of some of the instances of plastic reconstructive procedures and grafting of parts, organs and tissues of body as recorded in Ayurvedic

Medical Texts, general literature and folklore. The purpose has been to look back and look into the possibilities for such work

in the modern times and provide food for thought to the learned readers.

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