International Surgery Journal
Deskit P et al. Int Surg J. 2020 Feb;7(2):433-439
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20200293

Original Research Article

Plastic surgery in Ladakh: a novel initiative in trans Himalaya of India

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Received: 27 November 2019
Revised: 09 January 2020
Accepted: 10 January 2020

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ABSTRACT

Background: The super speciality care is not available in remote places in India. But the service of the plastic surgery can be taken to the remote district hospital by arranging plastic surgery camps thereby resulting in service to the poor, capacity building of the local doctors and infrastructure development of the remote hospital.
Methods: It is a retrospective study, in which the author analysed the feasibility, management, difficulties and achievement of week long, annual plastic surgery camp in remote set up of a district hospital of Ladakh over three year from 2017 to 2019.
Results: A total of 341 patients were included in this study of which 108 underwent various surgical interventions. The youngest operated was 5 months old and oldest was 86 years. Wide spectrum of deformity were seen and operated upon. Complication developed in only six patients (5.5%) which were managed successfully at Leh only. The immediate and long term follow-up result show no difference in surgical result as compared to those compared operated outside with negligible financial burden.
Conclusions: Keeping in view the positive outcome, it is argued through this paper that such camps should be replicated in other remote locations all over India.

Keywords: Camps, District hospital, Rural India, Plastic surgery

INTRODUCTION

The health system in India is not uniform, while the health sector in cities provides world class treatment to the urban dweller, the less privileged people living in village and remote town does not have the means and resource to spend for availing super specialty care. Not only in India, but world over about two billion people lack access to basic surgical services.[1-3] Even when services are accessed, their safety, timeliness and outcome are suboptimale.[4] A Report published in Lancet global health and foreign affairs New York stated that about 143 million surgeries are needed annually tin developing countries to avert death and disability.[4,5]

Plastic surgery is one such super speciality which can take care of 66 percent of all the measured surgical disease DALYS.[2,4,6] This deformity are due to trauma, infection, malignancy and congenital anomalies.[6,7]

In cities people have money and means to defy even normal physiological changes also, like age related changes of wrinkles and sagging of skin etc. People in village and remote places are living with congenital and acquired deformity which are not only physically challenging but are associated with severe emotional and psychological trauma.[8]

In order to overcome such disparity the autonomous hill development council of Ladakh, health department of

Leh in collaboration with a NGO called 'Ashoka Mission' has done great effort to bring super speciality care from government hospital of Delhi to the remote, high altitude region of Ladakh, which remain cut off from rest of India for 5 months of year due to snowfall. As a result, only a few patients could afford to go out of Ladakh for plastic surgery due to various constrains like high airfare, logistics problems, language barriers and ignorance.

In this novel initiative started about eight years back, both the authors has been involved since its inception.

In this study we are publishing the experience of past three years of the annual plastic surgery camp.

The aim of this study is to outline the feasibility, arrangement, achievement and difficulties of such camp in last three years. And above all we hope to inspire and stimulate the super specialists in big cities to start thinking about such venture so that not only would it be a professionally and emotionally satisfying but would be contributing to capacity building of local doctors and staffs.

METHODS

This is a retrospective study carried out at Government SNM hospital Leh, the only referral district hospital catering to the whole Ladakh. In this study, analysis of the feasibility of performing plastic surgery outside multispecialty hospital of big cities by the visiting volunteering plastic surgeon in collaboration with the local surgeons, were studied.

Arrangement required for such camps, spectrum of various deformity and ailments requiring plastic surgery prevalent in the region, and outcome including difficulties as well as the achievement of such camp were studied from the year 2017 to 2019. Cost effectiveness of such ventures for the patients was also highlighted.

The patients included were the entire patient from Leh, Kargil and Zanskar region who needed plastic surgery consultation and surgery.

This camp is organised in collaboration with the Ladakh autonomous hill development council, health department Leh and the NGO. Due ethical clearance is provided by the district ethical committee headed by the CEO of the hill council.

The camp is held annually in the month of September. The travel and accommodation of the visiting super specialist is supported by the NGO. In order to get maximum participation service of mass media (local radio, TV)/ASHA worker and peripheral doctors are sought. The patients are screened and shortlisted, those requiring surgery are worked up, which include baseline investigation and preanaesthetic checkup. Patients are counselled about the possible correction required and expected outcome.

Each year the camp last for seven days during which OPD and surgeries are carried out simultaneously. Over three years 341 patients were seen, 108 patients were operated upon in this three year. Wide spectrum of surgery was performed ranging from excision of nevus to correction of birth defect like cleft lip, cleft palate to complex procedure like construction of cartilaginous frame work for microtia to various flap cover for non-healing wound and tissue loss. Follow up, post-operative care and physiotherapy were provided by the local team.

RESULTS

A total of 341 patients were seen from 2017 to 2019 (Figure 1). Of these 212 (62.17%) patients were male and 129 (37.82) were female. Out of 341 patients 108 (31.67%) patients were subjected to various plastic surgical interventions over three years (Table 1 and Figure 1).

The youngest patients seen was one day old baby born with cleft lip and the youngest operated upon was 5 months old baby with unilateral incomplete cleft lip. The oldest patient seen was 86 years old man with non-healing wound leg with verrucous lesion over the periphery of the wound. The median age group was 45.5 years old.

The disease and deformity spectrum requiring surgery were varied (Figure 2), 45 patients (41.66%) had congenital deformity, 55 patients (50.92%) had deformity secondary to acquired causes like trauma (23%), infection (5.5%) malignancy (8.3%) and others 8% causes. Others deformity (8.3%) was mainly deformity like keloid and nevus. Increased incidence of keloid is due to the fact that Ladakhi belong to Caucasian race.

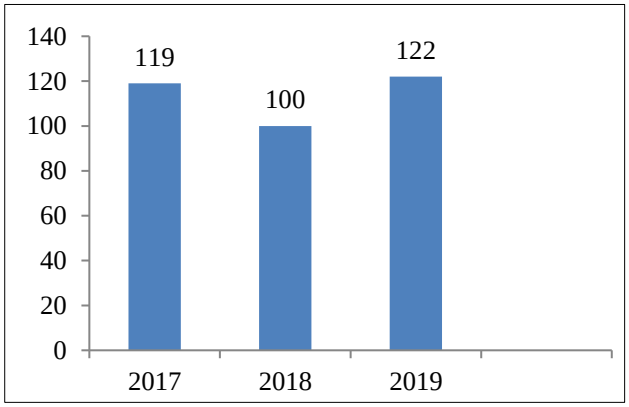

Figure 1: Number of patients attended in camps during 2017-2019.

Table 1: Distribution of anatomical part and surgeries performed during the camp (2017-2019).

Anatomical part /diagnosis	Number and surgery performed
Scalp	2
Scalp necrosis (post dog bite)	Debridement and split thickness grafting- 1
Nonhealing wound scalp	Scar revision- 1
Eye	4
Bilateral entropion	Anatomical repair- 1
Post inflammatory ectropion	Repair by VY plasty- 1
Drooping of eyelid	Blepharoplasty- 1
Ectropion upper eyelid.	VY plasty- 1
Nose	5
Cleft nasal deformity	Rhinoplasty (neglected case in elderly male)- 1
Cleft nasal deformity	Rhinoplasty- 1
Scar nasal alae	Revision of scar by Z plasty- 1
Mole nose	Excision- 1
	Removal of implant nose- 1
Cheek	7
Verruca vulgaris	Excision- 2
Melanocytic naevi	Excision- 1
Scar face	Scar revision with removal of retained foreign material- 2
Plexiform neurofibroma	Excision- 1
Plexiform neurofibroma	Debulking- 1
Ear	5
Microtia	Reconstruction of the cartilaginous framework- 1
Crumpled ear repair	Anatomical correction- 1
Other congenital anamolies	Anatomical correction- 1
Keloid ear	Excision-2
Lip surgery	15
Cleft lip	Cheiloplasty- 10
Malignancy of lip	Wide local excision- 1
Ectropion lip	Debulking- 1
Scar lip	Revision of scar- 3
Alveolar bone grafting maxilla	2
Alveolar defect (post cleft palate)	3
Cleft palate	10
Neck	5
Post burn contracture neck release /STSG	4
Post burn contracture neck release/ Z plasty	1
Axillary contracture (post burn)	2
Hand surgery	20
Post burn contracture- finger	Release followed by Z plasty/STSG- 10
Haemangioma finger	Exicision- 1
Soft tissue swelling finger	Excision- 3
Camptodactly	Release by Z plasty- 2
Congenital constriction band	Release- 1
Syndactactyly	Release followed by STSG - 2
Supernumerary finger	Excision- 1
Wrist post burn contracture	Release followed by grafting- 2
Post burn contracture popliteal fossa	Release by grafting- 2
Bilateral pubertal gynaecomastia	Reduction- 1
Lower Limb	5
Large keloid ankle	Excision- 2
Haemangioma foot	Excision- 1
Nonhealing wound leg	Debridement followed by STSG- 1

Continued.

Anatomical part /diagnosis	Number and surgery performed
Verrucous lesion leg with squamous cell Carcinoma	Wide local excision followed by grafting- 1
Penis	2
Post burn penile contracture	release/closure with local rotation flap -1
Glandular hypospadius	flip flap repair -1
Malignancy of skin	Managed by wide local excision followed by split thickness grafting/ local fasciocuatneous flap- 7
Flaps (limbs)	9
Nonhealing traumatic ulcer sole	Perforator based flap- 1
Post burn contracture hand	Groin flap- 1
Post burn contracture hand	Groin flap-1
Post burn contracture hand	Radial artety based flap-1
Machine injury hand	Posterior interosseus artery based flap- 1
RTA/nonhealing wound hand	Posterior interosseus artery based flap- 1
RTA/non healing wound ankle	Wound closure by local rotation flap- 1
RTA/nonhealing wound leg	Cross leg flap- 1
Operated case of cleft palate/alveolar fistula	Closure of fistula by buccal mucosa flap- 1

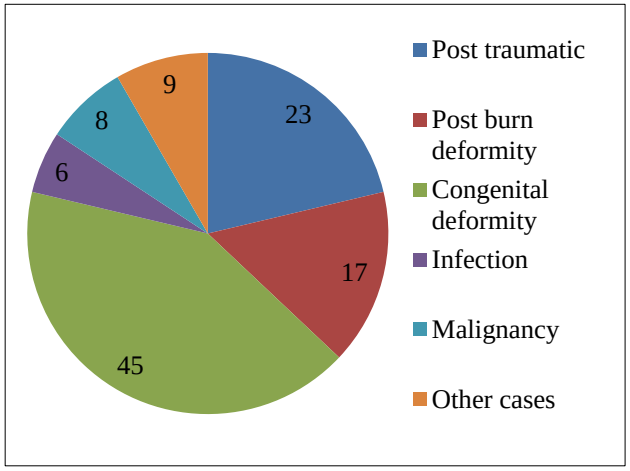

Figure 2: Distribution of various deformity requiring plastic surgery.

This increased in incidence of post traumatic deformity (23%) like contracture and non healing wounds were due to poor management of primary wound as the access to medical care is restricted due to remoteness of the place. Physiotherapy post injury and burn are not even heard of in villages.

Malignancy of skin (8.3%) was very commonly observed as the region is at very high altitude with high UV radiation and these lesions manifested as noduloulcerative lesion, pigmented nodule and ulcerative lesion.

Complication was observed only in 6 (5.5%) patients (Table 2). Postoperative care including immediate and delayed follow up like detachment of pedicles in flap was provided by the local team. All the complications were managed at Leh without requiring the patients to be shifted to Delhi.

Table 2: Management of complications.

Diagnosis	Procedure performed	Complication	Management
5 months old cleft lip	Cheiloplasty	Delayed reversal from anaesthesia	Managed by correction of hypothermia
Post burn contracture hand	Released followed by groin flap cover	Necrosis of flap around the edges	Debridement/dressing and revision of flap
Verrucous lesion leg	Wide local excision/STSG	Wound infection/ graft loss	Debridement/redo grafting
Post electric burn penile scarring and contracture	Release of scar/wound closure by local random flap	Urethral fistula	Dressing and prolonged catheterisation.
RTA/loss of tissue dorsum of hand	Debridement and closure by posterior interosseus artery flap	Partial necrosis of flap	Debridement/dressing/healing by secondary intention
Road traffic accident, non healing wound right ankle	Debridement and wound closure by local advancement flap	Wound infection	Daily dressing

Table 3: Patients referred from Leh and reasons of referral.

Diagnosis	Reason
Cleft lip	Paediatric anaesthesia
Cleft palate	Associated congenital anamolies
Large malanocytic naevus	Skin expander
Brachial plexuses injury	MRI
Asymmetrical breast	Breast implant
Post acne scar	Laser
Post burn contracture neck	HBsAg positive. Very high viral load
Post burn alopecia 60% scalp	Skin transplant

Only 8 patients (7.4%) requiring surgery were referral to Delhi and the reason and conditions for referral is depicted in (Table 3). Another byproduct of such camp is the capacity building of local surgeon and OT staff nurses and physiotherapist. The authors since then have managed more than 33 cases requiring plastic surgery at Leh and at sub district hospital Nubra (Table 3).

Such camp are also used as opportunity to educate the masses about various condition pertinent to skin and deformity by arranging impromptu talk and talk show by the visiting plastic surgeon on local radio and T.V. Important topic included were do and don't during burn accident, preventing and identifying skin cancer, dealing with child born with cleft lip and palate etc.

Difficulties observed during the camp

- The turnover of the operated cases could have been far more but for limited resource like operating instrument, and manpower in the district hospital.
- It was challenging to operate on children less than 2 years as paediatric anaesthetist was not available.
- It was challenging to do flap surgeries in local especially male as the blood viscosity was very high as most of them had haemoglobin level more than 15 gm% due to high altitude induced polycythemia. These patients were put on to be given mannitol and antiplatelet aggregator and sustained release aspirin.
- One day after arrival is lost for acclimatization of the visiting surgeon.

Outcome

341 patients were attended. Of them 108 were operated upon. 8 patients referred to higher centres and 33 plastic surgery cases done by the local surgeon after the camp.

The postoperative complication rate of 5.5% with no mortality is the highlight of the camp. All the complications were managed at Leh without having to refer them to Delhi. Also keeping in view the financial burden incurred on these patients for surgery which were negligible as the entire cost of surgery and medicine were borne by the health department Leh make the entire programme a huge success. Invaluable training and confidence instilled in local surgeon and staff due to exposure to various procedure was a huge benefit. Infrastructure development of hospital took place in the form of procurement of articles like bipolar cautery and monitoring devices from various untied funds of hospital. Thus, the camp were definitely a stepping stone for achieving the goal of safe surgery and anaesthesia for all as proposed by lancet commission. Not to mention the capacity building of the local surgeon and hospital staff which was priceless.

Table 4: List of cases done by local team after the camp, over last three years.

Cases	Numbers
Split skin grafting for various reason	5
Cross finger flap for trauma finger	1
Supragluteal flap for pressure sore	1
Bicep femoris VY flap for ischial pressure sore	2
VY advancement flap for trauma thumb	1
Limberg flap for pilonidal sinus	1
VY advancement flap for bcc face	2
Camptodactyly	1
Z plasty for post traumatic contracture finger	3
Post inflammatory ectropion release f/b FTG	1
Soft tissue swelling palm. Excision F/B FTG	1
Post burn non healing wound groin	1
Excision of melanocytic neavus	3
Malignancy of skin (face, limb)	10
Total	33

DISCUSSION

Surgery is considered to be a neglected stepchild of global public health. Although disease treatable by surgery remains a major killer of world's poor. Major financers of health worldwide do not consider surgical diseases as a priority.[9] Surgical disease is among the top 15 cause of disability and surgical condition account for 15% of total disability adjusted life year lost world wide.[1,10] Studies have shown that 5 billion people worldwide are still lacking access to safe surgery and anaesthesia.[7] This burden of surgical ailment and lack of surgical service is maximum in the developing countries. For example in China and India there is less than 1/10th of plastic surgeon per million people and understanding this lacunae in surgical service the Lancet commission has set a target of 80% coverage of safe surgery and anaesthesia access by the year 2030.[7,11]

Figure 3: Visual glimpse of some of the cases (A) redo cleft lip, (B) RTA with non healing wound ankle, (C) microtia, (D) post burn contracture (release by two previous flap surgery), (E) posterior interosseous flap for machine injury hand, (F) cleft lip repaired.

In this direction various outreach programme has been initiated. However relatively most successful outreach programme have been plastic surgery camps. The long tradition of international service and the humanitarian importance of this discipline is now stronger than before.[5] Besides plastic surgical services are relatively lost cost and safer than other super speciality since it is mostly a surface surgery and does not require high end laboratories and support system like ICU.[6] Of the measured surgical DALY 66% are due to injuries, malignancy or congenital anomalies, these three categories are frequently treated by plastic surgeon.[3]

Keeping in view the above factors various outreach programme and plastic surgery NGOs have been founded with aim to provide plastic surgery service to developing courtiers. ReSurg previously Interplast, Operation Smile, Smile train are some examples. Most of them are funded and initiated by foreign organisation.[7,12,13]

In our study we could only see one outreach initiated by Indians plastic surgeon from government medical college Jabalpur who have taken plastic surgery to the interior of Madhya Pradesh.[14]

Beside attending to the burden of patients, lately the major emphasis has been given by such outreach programme to building care centres, which aim at sustainability, quality and capacity building of the local health care system through education, training and financial support to develop the infrastructure so that they become self sufficient.[15]

Our paper aim to stimulate Indian surgeon to do more surgical outreach programme following the diagonal ways of development of global surgery where by not only are we able to treat specific surgical problem with the help of visiting missionary (vertical way) but also ensuring continuity of such process and developing the local infrastructure and system, while minimising the potential flaws. Following these principles of global surgical outreach, safe and cost-free access to surgical care was provided by the Ladakh hill council, the NGO and the participant in this camp which include super specialist from New Delhi and local doctor and staff.

CONCLUSION

With the objective of making safe surgery and anaesthesia accessible to everyone, the plastic surgery camp held every year in district hospital of Leh should serve as a role model for other such venture to be carried out in all the rural and remote district of India. In fact, the medical colleges of every state in India should adopt one such district hospital so that super speciality care reaches the door step of all poor and neglected.

ACKNOWLEDGEMENTS

Authors would like to thanks Super Specialist team of AIIMS and Ashoka Mission for conducting such camps in the remote region of Ladakh.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Mather CD, Loncar D. Projection of global mortality and burden of disease from 2002-2030. PLOS Med. 2006;3(11):2011-30.
2. Rose J, Weiser T, Hider P, Wilson L, Greun R. Estimated need for surgery worldwide based on prevalence of disease: A modelling strategy for the WHO Global Health Estimate. Lancet. 2015;3(52).
3. Ozgediz D, Jamison D, Cherian M, Mc Queen K. The burden of surgical condition and access to surgical care in low amid middle income countries. Bull World Health Org. 2008;86:646-7.
4. Meara JG, Greenberg SL. Global surgery as an equal partner in health, no longer the neglected stepchild. Lancet Global Health. 2015;3:1-2.
5. Garret L. The challenge of global health. Foreign Affairs. NY; 2007;86:14.
6. Semer NB, Sullivan SR, Meara JG. Plastic surgery and global health:how plastic surgery impact the

global burden of surgical disease. J Plast Reconstr Aesthet Surg. 2010;63:1244-8.
7. Chung K. Plastic and reconstructive surgery in global health; let Reconstruct Global Surgery. Plast Reconstructive Surg Glob Open. 2017;5(4);1273.
8. Fadeyibi IO, Coker OA, Zacchariah MP, Fasawe A, Ademiluyi SA. Psychosocial effect of cleft lip and palate on Nigerians: the Ikejs Lagos experience. J Plast Surg Hand Surg. 2012;46:13-8.
9. Paul E Farmer, Jim Y Kim. Surgery and global health. A view from beyond the OR. World J Surg. 2008;32(4):533-6.
10. Debas HT, Gosselin R, Mc Cord CE. Surgery In Disease control priorities in developing countries, 2nd edition. oxford university press: New York; 2006: 1245-1260.
11. Meera J, Leather A, Hagander L, Alkire B, Alonso N. Global Surgery 2030; Evidence and Solution for achieving Health welfare and economic development. Lancet. 2015;8,386(9993):569-624.
12. Wood B, Chilgar RM, Chen HC, Nicoli F. GIVE Me 5 Foundation: A Plastic Surgery Charity Mission Helping to Enhance the Surgical Management of Limb Deformities in Rural India. Inter J Orthoplastic Surg. 2018;1(3):94-100.
13. J-Pa NN, Grieb L, Gruhi K, Preisser SP. Interplast: five years of Cochin Project. Eur J Plast Surg. 1998;21:71-81.
14. Agarwal P, Kain R, Raina VK. Plastic Surgery in rural area: A report. Indian J Plastic Surg. 2005;38(1):30-3.
15. Zbar RI, Rai SM, Dingman DL. Establishing cleft malformation surgery in developing nations: A model for the new millennium. Plast Reconstr Surg. 2000;106;886-9.

Cite this article as: Deskit P, Srivastava RK. Plastic surgery in Ladakh: a novel initiative in trans Himalaya of India. Int Surg J 2020;7:433-9.