PJPS
PAKISTAN JOURNAL OF PLASTIC SURGERY
ISSN #: 2307-213X
Volume 8 Number 1 March 2020

CONTENTS

ORIGINAL ARTICLE

A Journey Towards Upper Limb Salvage: Evolving Expertise in Free Tissue Transfer

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ABSTRACT

Background: Free tissue transfer has vastly expanded the reconstructive options which would have been impossible to conceive in the pre-microsurgical era. Retrospective audit help to assess success, evaluate short comings and set future goals in accordance with the international standards; which helpimprove accuracy of decision making and limiting errors; enhance surgical skills of individual clinicians and allocate financial share according to demand.

Material and Method: A retrospective study was conducted and Operation theater record was reviewed for patients undergoing free tissue transfer for upper limb reconstruction, Performa was filled, and the data was compiled by the first author. A total of 87 cases of free tissue transfer surgeries were performed in upper limbat JBRSCfrom July 2015 to November 2017 of which 78 percent were male and 22 percent female patients.

Results: Broadly two main categories including post traumatic or post tumor excision patients required free tissue transfer for upper limb salvage. Most common age bracket of patient is between 26-40yrs. 64 of 87 patients were admitted through emergency. No major complications are encountered except hematoma in six flaps, infection in two and partial flapnecrosis in 3 and major flap necrosis in 1. Smoking remains most common co morbid condition.

Conclusion: With careful preoperative planning, developing surgical skill and vigilant postoperative care the overall success rate can be improved. Good results give positive reinforcement to untiring hard work.

Key words: Reconstruction, Tumor, Flap, Microsurgery, Salvage

Introduction

Reconstruction of hand and upper limb has prgressed over time and major leap was seen during the World War II. However reconstruction of major traumatic injuries of upper limb is still challenging. Progress in knowledge about blood supply of muscle and skin after Taylor's land mark work alongwith improvement in art and science of microsurgical techniques has revolutinized the reconstructive ladder. The reconstructive surgeons have moved to reconsrtuctive tool box which obviates the need to use the reconstuctive ladder to decide about reconstructive requirements of a prticular defect. With the success of first toe-to-thumb transfer in 1960s, the myrid of

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options to reconstruct complex defects of upper extremity have widely expanded.[2] However high energy collisions, firearm injuries, explosions, extrvasation injuries and the industrial accidents continue to challenge the skills of reconstructive surgeon.[10,11]

Industrial revolution has taken its tool in the form of incresaed frequency of upper limb injuries. Wounds resulting from the use of sophisticated automated machines put a major burden on innovative abilities of reconstructive surgeons. Overwhelmed with this burden, the surgeons statred re-considering amputation as an option to manage mangled upper extremities.[1] Body of literature on extremity soft tissue reconstruction is expanding rapidly as an extensive topic because large number of options exist for variety of complex degects involving shoulder, arm, elbow, forearm, wrist, and hand. Most of these defects require well vascualrized flap coverage for resurfacing important structures like tendons, neurovascular structures, bone and to provide supple tissue over joints. [3]

Local and regional flaps have the advanatge of replacing like with like in terms of colour and texture match; however, these flaps may produce donor site morbidity and availabilty of donor tissue is also limited in an already injured limb. Free microvascular tissue transfer is considered suprerior to locoregional flaps due to abundant tissues available and ease of insetting the transferred tissues. [9] Moreover variety of tissues required i.e skin, tendon, bone and nerve can be provided by free flap. This facilitates single stage critical structures. Flow-through free flaps provide added benefit of restoring/improving distal vascularity of the injured limb. Post-operative rehabiltation is also faciltated by free tissue transfer. The downside of free tissue transfer is requirement of highly sophisticated setup of operation rooms, team of surgeons familiar with micrvascular techniques and anaesthesia personells accustomed with anesthetic requirements of patients undergoing free tissue tranfer. .[4]

With the advent and finesse of micro-vascular surgical techniques, the anastomotic success rate has improved to 94-99%5,6. However failure of free tissue transfer can be devastating and occurance of other complications is also formidable. However, timely re-explorations have helped to curb the ruinous outcomes.7,8

This article investigates the complications, survivability, aesthetic and functional outcomes associated with micro vascular free tissue transfer in upper limb reconstruction through an analysis of 87 free tissue transfer cases at our center.

Methodology

Approval of hospital review board was sought to collect retrospective of patients who had reconstruction of complex upper extremity defects with free tissue transfer at Jinnah burn and reconstructive surgery Centre, Lahore from January 2015 to November 2017. Data retrieved from the upper limb Database and operating theatre logbooks identified 87 patients who had free flap reconstructions either after major trauma or tumor resection. Type of the flap was chosen during grand ward round.

Flap markings were done following stnadard described techniques using anatomical land marks and hand held dopller. Flaps were raised using loupe magnidfication to aid in dissection. Arterial anastmosis was done with prolene 9/0 using interrupted suture and triangulation technique. Arterial anastomosis was done before venous anastomosis.

Venous anastmosis was done in end-to- end or end-to-side faishon with prolene 9/0. Topical heaprin solution (100 units/ml normal saline) was used for contnious irrigation. Depending on complexity of anatmosis, systemic heparin was used in redo anatmoses during primary surery and in re-explorations. Postoperative care included keeping the patients ICU for at least 24 hours. Low molecular weight heparin and intravenous antibiotics, based on pre operative culture sentivity reports, were administered to all patients till the 7th postoperative day. Standard flap monotring was done with clinical examination and hand held Doppler one hourly for 3 days then 4 hourly for next 3 days. Data collected retrospective included specifics on age of patient, gender, mode ofadmission, mechanism of injury, defect site and size, donor site and choice of flap, vessels used in microvascular anastomosis, comorbid conditions and preoperative medical and surgical history. The perioperative conditions, which included the presence of coronary artery disease (CAD), smoking, hypertension (HTN), DM, and previous cancer treatment (surgery and/or radiation therapy) were noted.

Complications, associated with microvascular free tissue transfer, were noted. The complications included arterial thrombosis, hematoma formation, venous congestion, infection and partial or complete flap loss secondary to arteral or venous compromise. Complications noted at donor site included infection, hematoma formation and wound dehiscence or skin-graft failure.

Results

Eighty seven patinets were operated during the study period. The age range for the patients was 26-40 years with mean age of 32.5 years. There were 68 (78%) males and 20 (22%) were females. 22%. Ninteen 19 (21.8%) patients were smoker. Four patients (4.7%) had diabetes mellitus and 13 patients (14.9 %) were hypertensive. Patients admitted through emergency department were 64 (73.5%) and through outpatient department were 23 (26.4%). Fourty three patients (49%) had road traffic accident cases, 24 patients (27%) had machine injury and 6 patients (7%) had tumors. Fifty three (61 %) flaps were used for forearm defects, 19 (22 %) were used for hand and 14 (17 %) were for arm defects.

ALT (Antero lateral thigh flap) 40 flap most commonly done flap in upper limb region, followed by latissimus dorsi flap 21, scapular 15, gracillis flap 4, free fibula 5 and 2 gastrocnemius flaps done.

All flaps were assessed one hourly by hand held doppler and clinical evaluation by on call doctor as well as nurse on duty for 3 days, then monitoring of flap done 4 hourly by doppler as well as clinicallyat least 3 days in the first week of surgery. Subcutaneous clexane 40mg BD given for 5 days with overlap of tab loprin 75mg od for total 14 days was our departmental protocol of anticoagulation. IV antibiotics &analgesia given for fist 4- 5 days according to pain threshold of patient.Patients were rehydrated with ringer lactate according to weight and output of patient.

For initial 24 hrs patient remained in HDU then shifted to ward .Post op CBC is mandatory in every free flap patient. Patientswere kept NPO for ist 24 hrs then allowed to sips of clear fluid for next day followed by solid intake in next day.

Of the three (3.4%) flaps lost, one flap was lost due to venous congestion, one due to arterial occlusion, and 1 due to infections within one week after surgery. Re-

exploration was done in 2 flaps with only one flap being salvaged. Hematoma was noted in 6, which was drained immediately, infection in 2 patients, 1 managed with debridement other with daily dressings . Partial flap necrosis seen in 3 and major flap necrosis in 1 patient only.It was noted in cases of failed and compromised flaps from that in a relatively high proportion of patients with intraoperative difficulties of flap perfusion .

Donor site complications were observed in 8 patients. Partial graft loss was noted in 5 patients whereas 3 patients had wound dehescience. Howeve these patients were managed conservatively with regular dressing changes and wounds healed byb secodary intention.

Table 1: Summary of flaps performed and the outcomes.

Flap performed	Frequency	Successful	Failed	Percentage successful
Anterior lateral thigh	40	40		100 %
Latissimus dorsi flap	21	20	1	95.2%
Scapular flap	15	14	2	93.3%
Free fibula flap	5	5		100%
Gracilis muscle flap	4	4		100%
Gastrocnemius flap	2	2		100%
Total	**87**	**85**		**97.7%**

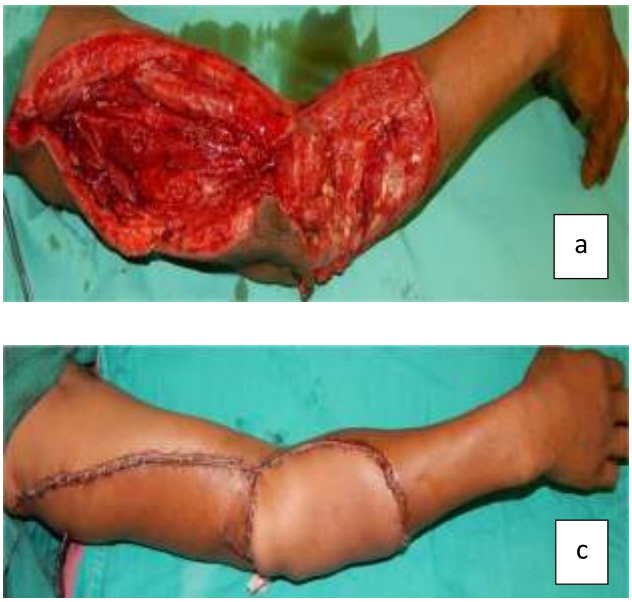

Figure 1 (a). Initial wound after debridement (b).ALT flap dissection (C). Insetting of flap in defect.

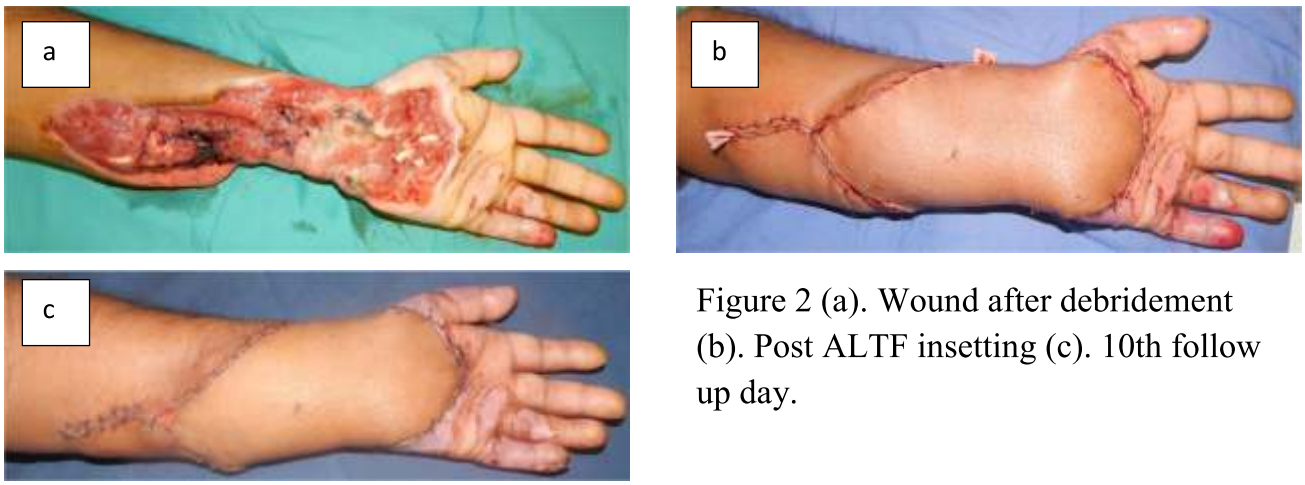

Figure 2 (a). Wound after debridement (b). Post ALTF insetting (c). 10th follow up day.

Discussion

Outcome of management of complex woundsof upper extremity have been tranformed with the use of free tissue transfers. Wounds once considered to end up in subotimal outcome, are now manged successfully with good surgical outcomes [12,13,14]. Limb salvage in advanced tumours involving upper extremity has become a reality with the use of free flaps. State of the art reconstruction of complex defects has resulted in restoration of form, function and aesthetics. However, in many developing countries, the surgical practice of microsurgery has failed to keep pace with complexity of defects. However such countries face the incresaing burden of defects rrquiring composite reconstruction that can be accomplished with the use free tissue transfer. The docile nature of progress in microvascular surgery is attributable to suboptimal trainng opportunities and lack of requisite equipment to carry out the surgeries. However, the results of current study show that microvascular sugery can be performed successfully with basic surgical instuments such as loupes. Outcome of microvascular anastmosis with the use of loupes and microscope is comparable.[15,16,17] As the saying goes " practice makes a man perfect"; anybody keen to learn the basic techniques of microvascular surgery can do so free in any center where it is frequently practiced.

Antrelateral thigh flap was done in one third of study population. The flap was used for hand and forearm reconstruction. It provides large surface area,with soft reliable vascular pedicle. The flap is noted to be effective in large and extensive defects. Although 80% perforator needs intramuscular dissection, but with ALTF two team approach can easily be commenced. Large surface, optimum thickness, long pedicle with large caliber vessels of Latissimus dorsi muscle along with availabilty of skin component, make it first choice for wounds with extensive soft tissue loss . Funtional reconstruction is also possible if nerve is harvetsed with the flap and coaptated with suitable donor nrerve. [18,19,20.]

Four patinets, requring bone replcement, had fibula oseocutaneous. The majority of these were for forearm bony defect. In limited number of four cases, we did not find the circulation of skin paddle as reliable for flap monitoring. Gracilis flap was used for pan plexus injury patients, while

gastrocnemius flaps were used for functionalreconstruction of flexors of hand .

Perioperative monitoring of the flap was probably the biggest challenge in doing free flaps in different setup. Although we have a dedicated team of our junior doctors and nurses round the clock. Monitoring was based on clinical examination and audible hand held doppler. Compare to our failure rates (3.3%) , Klosterman T et al analyzed 136 free flap reconstructive cases at a tertiary care academic program over 20 years with 7.4% failure[21] while Kim H et al analyzed 150 head and neck free flaps with anterolateral thigh flaps over 9 years with overall failure rate of 9.3%.[22]

The incidence of hematoma formation was high in patients who received intravenous injection of heparin. The hematoma resulted in compression of the veins leading to venous congestion. Topical irrigation of heparin on the other hand seems to be a safe procedure.

In conclusion, good outcome can be expected with use of free flaps even with limited resources. Adhering to basic principles of microvascular surgery and use of surgical loupes can bring about acceptable outcome. Involvement of other disciplines like orthpedics early in the course of management can make mjor diffrence in outcome. Members of multidisciplinary team must be familiar with their strenghts and limitations; and should be supportive to each other.. They should have adequate training in micro- surgery before starting on the surgeries. The training can be imparted through fellowship programs or by faculty exchange programs. Beginers should use flaps which are easy to raise and have vascular pedicles of adequate length and caliber. This can be followed by use of newer flaps and advanced to use of perforator based flaps. Paying attention to details while raising the flap, sharp focus on anastmosis and carefully observing the flap on table and in the postopertaive period remain the mjor caveats of successful outcome. The saying that “flaps are lost on the table” is probably truer in such an environment than anywhere else. The team must also learn to support each other in the event of flap failure and regroup again to try again, for that is the only sure way of being perfect with free flaps.

Conclusion

With careful preoperative planning, developing surgical skill and vigilant postoperative care the overall success rate can be improved. Audit and research work allows departmental accountability and helps to highlight shortcomings and ways to overcome them. Regular audits are required to keep surveillance. Good results give positive reinforcement to untiring hard work. More parameters can be evaluated for further rectification of mistakes.

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ORIGINAL ARTICLE

Outcomes of Reduction Mammoplasty: Improvement in Symptoms of Macromastia

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ABSTRACT

Background: Breast hypertrophy, is a physically and psychologically disabling condition. It is the cause of a myriad of physical signs and symptoms to the patient, including neck and back pain, mastalgia and skin problems. Reduction mammoplasty is the surgical treatment of choice for this debilitating condition, and effectively improves patients' symptoms. This study aimed to share our experience of patients undergoing reduction mammoplasty for macromastia with respect to improvement of their physical symptoms.

Material and Methods: The relevant data of all patients who had reduction mammaplasty at Dept. of Plastic Surgery, Services Hospital, Lahore between January 2013 to December 2016 was retrospectively reviewed. Patient demographics, hypertrophy associated symptoms, procedure details and post procedure symptom improvement were recorded and analyzed.

Results: A total of 41 patients were included in this study. The average age at the time of reduction was 32 years. The average body mass index was 24.2kg/m^2. The average weight of the excision specimen was 1070g for the right and 1060g for the left breast. 5 patients had wound dehiscence, 3 patients had epidermolysis of the NAC, and 1 patient had partial necrosis of the NAC

Conclusion: Reduction mammoplasty effectively alleviates physical symptoms related to excessively large breasts.

Key words: Macromastia, Reduction Mammoplasty

Introduction

Breast hypertrophy is the consequence of a rare connective tissue disease that results in an excessive increase in breast size.The exact mechanism of its development is not well understood. Genetics, and an increased sensitivity to female hormones is thought to play a role[1,2]. It can be classified as gestational (onset in pregnancy), Juvenile (onset at puberty triggered by sex hormones), drug-induced, and Idiopathic. In the literature, different cut-off values have been stated to define the norms, as well as to define what constitutes gigantomastia. The most commonly used systems classify the excessive growth with respect to the amount of breast tissue requiring reduction. Excessive breast tissue <1500 grams per breast is termed macromastia. Where the excess breast tissue amounts to >1500 grams per breast it is labelled as gigantomastia.[3]

Reduction mammoplasty is the surgical treatment for enlarged breasts. Several different surgical techniques are described in textbooks for breast reduction in macromastia. All of these share a basic

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common principle, in that the NAC is carried on a pedicle of tissue, and a pre-planned quantity of breast glandular tissue is excised. The techniques differ in the type of pedicle utilized and is named accordingly[3-5].In the cases of gigantomastia, breast amputation, with free NAC graft is frequently utilized. Though this technique is versatile in leaving behind the desired amount and shape of breast tissue, often the nipple graft does not produce an aesthetically pleasing result. Many surgeons advocate use of superio-medial pedicle as a safe and effective option for breast reduction in gigantomastia.

Excessively large breasts cause many functional problems for the patient, that can considerably affect quality of life. Some common symptoms are mastalgia, back, shoulder and neck pain, pruritis and skin maceration on or under the breast[6,7] The increased weight of the breast creates an unpleasant downward pull on the soft tissue structures ofthe upper torso.[8], It has been demonstrated that breast hypertrophy causes demonstrable disturbances to spinal angles and gait in women living with this condition[9].

In the present study, we share our experience of symptom improvement in patients undergoing reduction mammoplasty for symptomatic breast hypertrophy

Material and Methods

A retrospective review of all patients with macromastia who underwent reduction mammoplasty at Dept. of Plastic Surgery, Services Hospital, Lahore between January 2013 to December 2016 was performed.

Exclusion Criteria:

Patients with resection weights of <500 grams per breast.

After obtaining informed consent, an extensive chart review was performed. Patient demographics including age, weight, and BMI were recorded. Resection weight (measured per-operatively) were recorded for each side. Post-operatively complications, specifically wound dehiscence and NAC appearance were noted. All patients completed at least 6 months of follow-up. Incidence of commonly reported symptoms was assessed and recorded. The presence of these same symptoms was inquired for after surgery. All data was entered on excel sheets and analyzed using SPSS v 20.

Results

A total of 41 patients were included in this study. The average age at the time of reduction was 32 years. The average body mass index was 24.2kg/m^2.

25 patients underwent inferior pedicle breast reduction, and 16 patients underwent supero-medial pedicle technique. The per-operative resection parameters are depicted in table 1.

There were 5 incidences of wound dehiscence, 4 of NAC epidermolysis and 1 of partial necrosis of the NAC. The details are depicted in table 2

Anxiety, neck, shoulder and upper back pain along with skin pathologies were the most frequently reported symptoms. Presence of these same symptoms was inquired 6 months after surgery. There was a marked reduction in occurrence of these symptoms (Table 3).

	Mean Resection weight (grams)		
	Inferior pedicle	**Superomedial pedicle**	**Overall**
Right breast	880	1370	1070
Left breast	850	1390	1060

Table 1: resection parameters

N	Complication	Management
4	NAC epidermolysis (1 unilateral, 3 bilateral)	Conservative
1	Partial NAC necrosis, (unilateral)	Conservative
5	Wound dehiscence	4 managed conservatively 1 required wound closure under LA

Table 2: complications and their management

	Pre-operatively n(%)	**Post-operatively** n(%)
Anxiety	24(58)	3 (7)
Shoulder pain	35 (85)	6 (14)
Neck/upper back pain	37 (90)	8 (20)
Breast related skin problems	28 (68)	6 (14)

Table 3: Symptoms before and after surgery

Discussion

Large breasts are a source of psychosocial embarrassment for the patient. More importantly they are the cause of many physical symptoms[1-2]. Symptoms vary in severity, and include upper back and neck pain, shoulder pain, painful shoulder grooves, poor posture, mastalgia, and intertrigo of inframammary region[9]. The increased overall mass of the breast produces a downward and potentially painful drag on the nerves and muscles of the upper back.[6,7] including the greater and lesser occipital nerves as reported by Mosser et al.[8].

Breast enlargement is treated surgically with reduction mammoplasty which results in both improvement in physical symptoms as well as in psychosocial well-being as shown by our study. Other studies have also demonstrated high post-operative satisfaction rates with this procedure.[9,10]

The mean age and BMI in this group of females was 32 years and 23.2kg/m^2 respectively, and these values are comparable to those seen in other studies[12].

Mean overall resection weight (measured to the nearest 10g) were 1070 gm and 1060g for the right and left breasts, respectively. Higher mean resection weights were achievable using the superomedial technique. The reason is that the surgeon is more likely to opt for this technique with relatively larger breasts that will likely require a larger resection.

There were 10 incidences of post-operative complications in 7 patients. 4 patients had superficial NAC epidermolysis. All improved significantly with conservative management. I patient had partial nerosis of

NAC. This patient had an excessively large breast, falling under the category of gigantomastia. This too was managed conservatively. Of the 5 patients who had wound dehiscence, only one required re-repair under local anesthesia. The remaining 4 were minor and managed conservatively.

Significant improvement in symptoms were seen following reduction mammaplasty especially shoulder, neck and upper back pain.

Conclusion

Reduction mammoplasty is the treatment of choice for patients with symptomatic macromastia and effectively alleviates the physical symptoms of this condition.

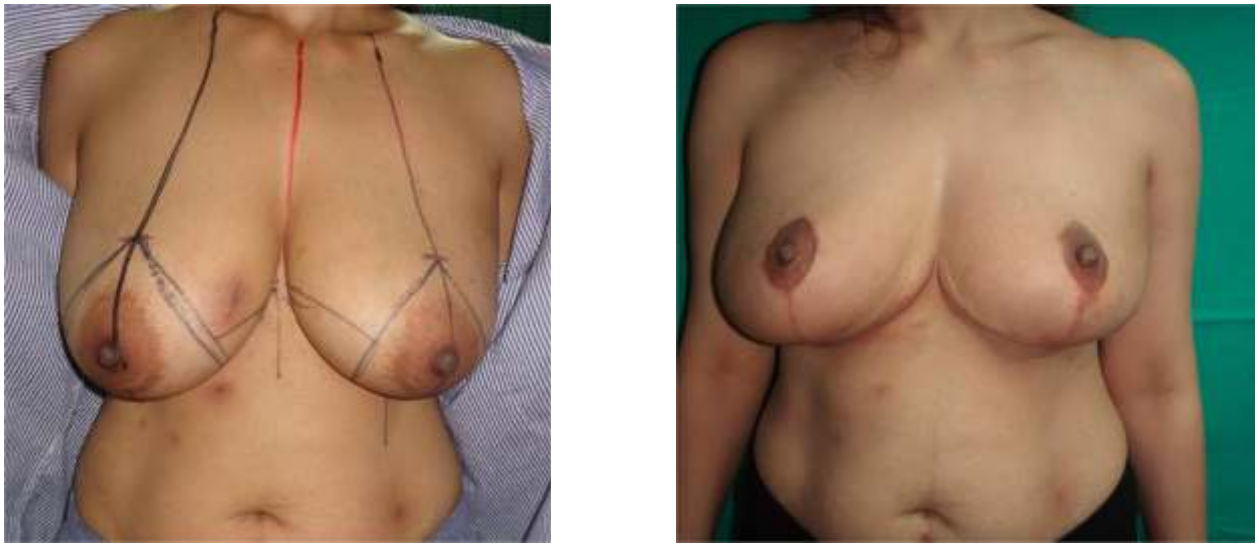

Figure 1a and 1b: pre & post-operative pictures of a 36 year old patient who underwent inferior pedicle breast reduction

Figure 2a & 2b: Pre- and post-operative pictures of a patient who underwent supero-medial pedicle breast reduction

Fig 3a & 3b: pre- & 2 months post-operative pictures of patient who underwent breast reduction with supero-medial pedicle. She developed right partial nipple necrosis. This was managed conservatively, however, she was left with a smaller NAC on the affected side.

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ORIGINAL ARTICLE

Acute Free Flaps in Upper Limb and Hand Trauma

Farhan Ahmed Eitezaz, Mamoon Rashid, Adeela Hussain Khan, Saad-Ur-Rehman, Aqsa Akhtar

ABSTRACT

Objective/Purpose: To present our experience of managing hand and upper limb trauma defects with acute free flaps.

Study Design: Descriptive case series.

Place and Duration of Study: The study was held at the department of Plastic and Reconstructive Surgery between Jan 2012 and Jan 2018.

Material and Methods: A total of 30 patients were operated on for reconstruction of upper limb and hand trauma defects with acute free flaps. The major etiologies were traffic accidents, crush injuries and electric burns. All defects produced after trauma and burns (electric burns) were included in this study. Patients with toe to hand transfers were excluded from this study. X-rays were used to determine underlying fractures of the hand and long bones of the upper extremity in cases of trauma.

Results: 30 patients were included in this study. Age range was 12 to 65years. Mean follow up time was 6 months. Post-operatively 8 patients suffered complications. Two patients had a partial loss of skin graft in the flap area. Wound dehiscence was seen at the donor site in two patients and at the recipient site in two patient. Two patients had graft loss in the donor area. All managed conservatively with daily dressingsNo mortality or flap loss was recordedin our series.

Conclusion: Acute free flaps are safe and provide reliable and immediate coverage restoring optimal hand function. Aggressive post operative physiotherapy and rehabilitation is essential for restoration of function.

Key words: Acute free flaps, emergency free flaps, Latissimus dorsi flap, anterolateral thigh flap

Introduction

Free tissue transfer has evolved in the last few decades after first being described by Taylor et al in 1973(1). Although it was done for lower extremity, the technique was added to the armamentarium for hand and upper limb coverage. The upper limb and especially hand, being a marvel of human development, is unfortunately exposed to trauma resulting in severe injuries. Majority of defects result from road traffic accidents and electric burns. These injuries more often than not also involve the upper limb. Traditionally injuries are treated with multiple debridements, frequent dressing changes followed by regional and local flaps such as the abdominal flap, groin flap, reverse radial forearm flap and posterior interosseous artery flap and many more.

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Upper limb being a very specialized organ requires salvage and reconstruction. Mathes And Nahai (2) recommend considering both the form and function in upper limb reconstruction as well as safety. Free tissue transfer encourages radical debridement after trauma, wound excision after infection and burns. Debridement starts with lavage with copious amount of normal saline, followed by removal of all dead, devitalized tissues under tourniquet control and loupe magnification. The aim of debridement is to be satisfied that the plastic surgeon is only leaving healthy and viable tissue behind. Plastic Surgeons today adopt a more aggressive approach in upper limb debridement as compared to the lower extremity. This has resulted in increased number of free flaps to manage injuries of the upper extremity early and in a single stage. Many free flaps have been proposed for reconstruction. The anterolateral thigh flap being considered the workhorse flap for upper extremity salvage and reconstruction. The reconstruction with early free tissue transfer within the first week after injury results in improved recovery, better wound closure, lower infection rates and fracture healing(3, 4).The goal this study is to present our series of immediate free flaps for the reconstruction of acute and complex hand and upper limb defects.

Materials and Methods:

This study (descriptive case series) was conducted in the Department of Plastic and Reconstructive Surgery from 2012 to 2018. Consecutive non-probability sampling was done. A total of 30 patients were operated on for reconstruction of the hand and upper limb defects with acute free flaps.The major etiologies were traffic accidents, crush injuries and electric burns. All defects produced after trauma, and electric burns were included in this study. Patients with toe to hand transfers were excluded from this study. X-rays were used to determine underlying fractures of the hand and long bones of the upper extremity in cases of trauma. Fitness for surgery was obtained in the light of investigations.

Technique of Debridement:

Under tourniquet control and loupe magnification, nonviableskin, subcutaneous tissue and underlying muscle was debrided and excised till healthy bleeding was achieved. Fixation of associated fractures was the next step. Hemostasis was done and then it was decided per-operatively to either provide immediate coverage with a free flap or apply negative pressure(VAC) dressing and then assess the wound within the next 24hours and then plan reconstruction within the next 5 days. Strict hand elevation was advised after reconstruction.

Patients were discharged on the 5th post-operative day after free flap reconstruction and then asked for 1st followup after 5 days of the date of discharge. On the first follow-up the patient was evaluated for flap viability, wound infection, donor site hematoma/ seroma formation, graft loss at donor site and wound dehiscence. Demographic data including age, sex, etiology of defect/wound and healing. After removal of stitches patients were referred to physiotherapist for rehabilitation. Mean was calculated for variables like age, gender, the location of hand and upper limb defect and the post-operative complications (graft loss, wound infection/dehiscence, hematoma/seroma and flap loss and

necrosis. All the results were presented in the form of percentages and frequencies.

Case Report 1:

A 25 years old male presented with a crush injury of his right hand following a road traffic accident. There loss of soft tissue of the dorsum of the hand extending over the thumb base (Fig-1). There were also associated metacarpal fractures. Extensive debridement and k-wiring of the metacarpals was done followed by VAC dressing (Fig-2). A second relook was done after 24 hours and the defect was reconstructed with a free ALT flap (Fig 3-5).

Fig 1- Contaminated wound right hand with metacarpal fractures

Fig 2- After debridement, K-wire fixation of metacarpals fractures and VAC dressing

Fig 3- Right sided ALTF

Fig 4- After flap inset

Fig 5- Late follow up showing well healed flap and improved functional outcome

Case Report 2:

A 38 years male presented with high voltage electric burn to his right elbow extending proximally in to the arm and distally into the forearm (Fig 6-7). The distal pulses were not palpable leading an ischaemic distal upper extremity and hand. Patient was immediately taken to the OR and radical debridement was done till viable healthy tissue was seen. The debridement required excision of a segment of the brachial artery at the elbow. The defect was immediately reconstructed and blood flow to the hand was restored with a flow through anterolateral thigh flap (Fig 8-9).

Fig 6- Ischaemic left hand and burn

Fig 7- Close up view of burn wound

Fig -8 Immediate post op after inset of flow through ALT flap

Fig-9 - Late follow-up showing well healed flap

Case Report 3:

A 12 years old girl suffered a road traffic injury leading to injury to her right hand and forearm. There was extensive soft tissue loss and after debridement led to defects over the dorsum of the hand and the extensor aspect of her forearm (Fig-10). She underwent radical debridement (Fig 11-12) and VAC dressing for 24 hours followed by a free latissimus dorsi flap and skin graft (Fig 13-14).

Fig 10- Injured hand after wound lavage

Fig11- Hand wound after initial debidement

Fig 12- Forearm wound after debridement

Fig 13- Immediate post op after free Lat. Dorsi flap

Fig 14- Early follow-up picture showing healed flap

Case Report 4:

A 55 years old male presented to blast injury to his left hand with loss soft tissue over the volar and dorsal aspect of hand (Fig 15-17). Loss of distal phalanx of the thumb and index finger. There was also loss of the little finger as well. He underwent radical debridement and dressing. A second relook was done within 48 hours followed by reconstruction with free ALT flap (Fig 18-19).

Fig 15-Injured hand after wound lavage

Fig 16 – After initial debridement (Volar aspect)

Fig 17- After initial debridement (dorsal aspect)

Fig 18- All wounds covered after Free ALT flap

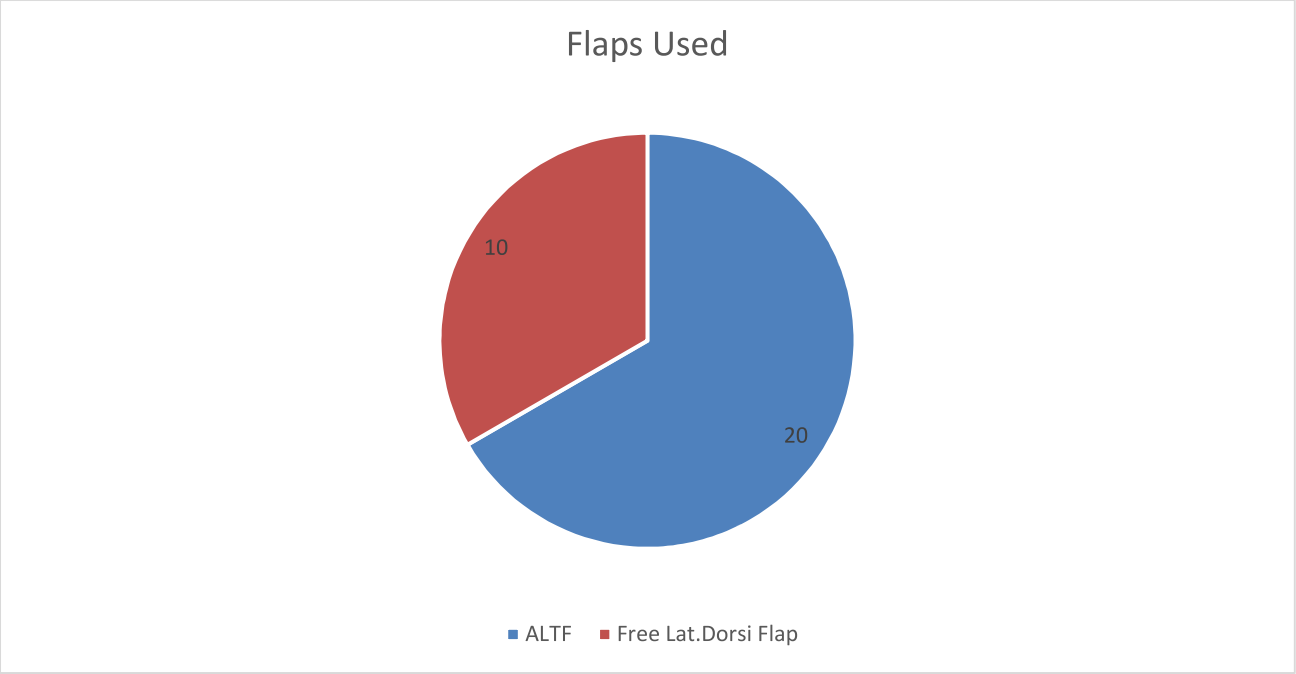
Fig-19- Late post op showing healed flap with improving functional outcome

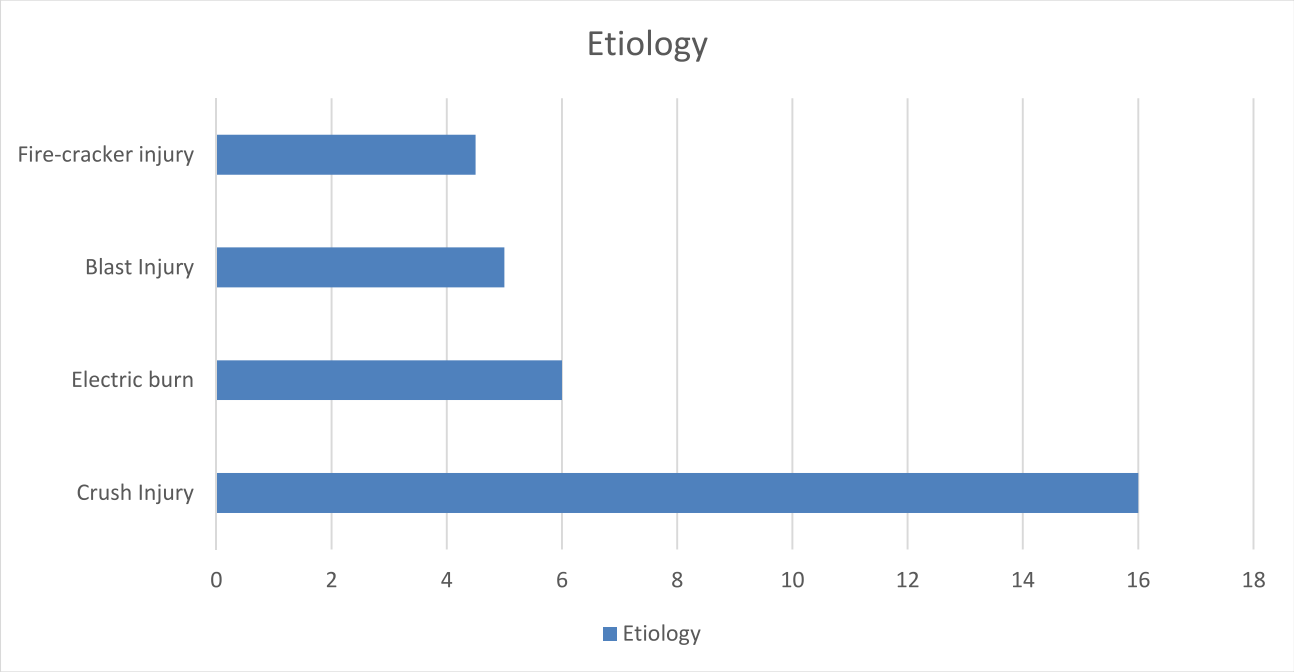
Results

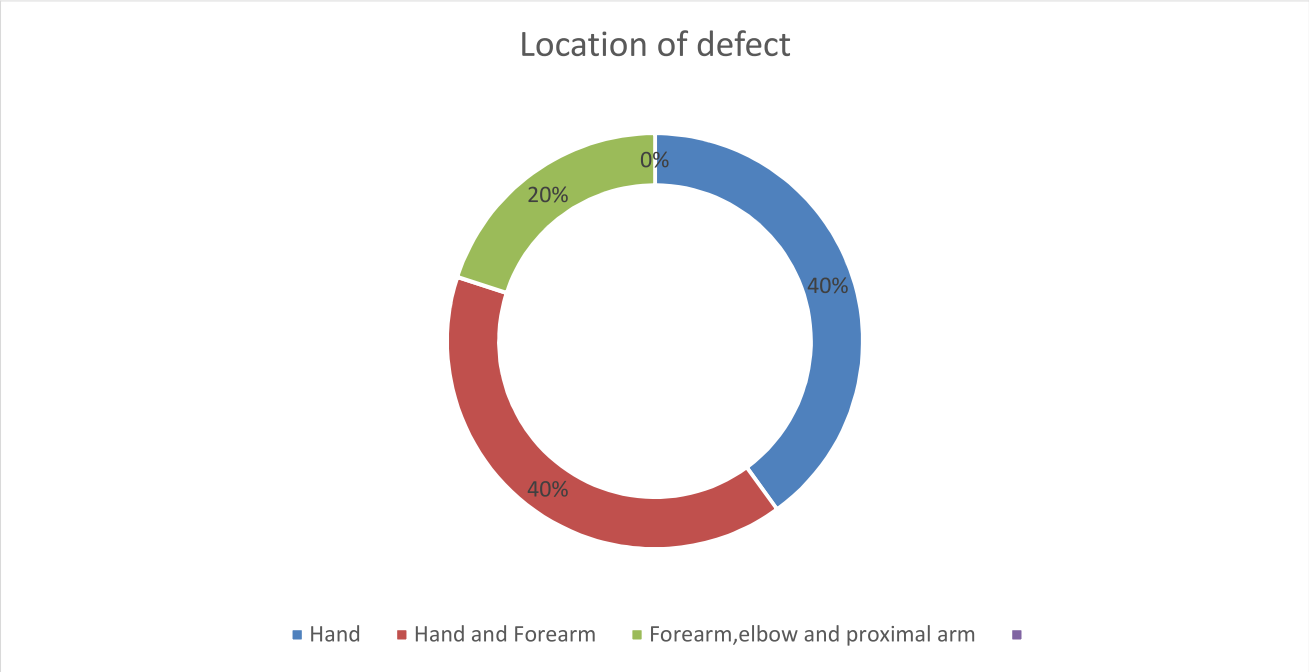
A total number of 30 patients with a variety of upper limb and hand trauma defects were operated and reconstructed with acute free tissue transfer. The mean age was 37 years with an age range between (12 to 65 years)

The male to female ratio was 3:1 with 21 males and 9 females. The most common cause of upper limb and hand soft tissue defects was trauma especially road traffic accidents including crush injuries(16 cases) followed by electric burn(6) , blast injury(5) and fire-cracker injury(3). There were 12(40%) hand and forearm defects, 12(40%) hand defects and 6(20%) defects involving the forearm, elbow and distal arm. The anterolateral thigh free flap was used in 20 patients and the latissimus dorsi flap in 10 patients. The flow through anterolateral thigh flap was used in 10 patients. In 65% of cases defects were covered immediately after debridement. The rest were reconstructed within 5 days. Satisfactory recovery was achieved in all patients. No in-patient mortality was recorded.

Post-operatively 8 patients suffered complications. Two patients had partial skin graft loss at the recipient site. Wound dehiscence was seen at the donor site in two patients and at the recipient site in two patient. Two patients had graft loss at donor area. All managed conservatively with daily dressings. A secondary procedure was required in two patients to manage and close the wound.Patients were discharged on the 5th post- operative day after free flap reconstruction and then asked for 1st follow up after 5 days of the date of discharge.




Etiology
Fire-cracker injury
Blast Injury
Electric burn
Crush Injury
0
2
4
6
8
10
12
14
16
18
Etiology


Location of defect
0%
20%
40%
40%
Hand
Hand and Forearm
Forearm,elbow and proximal arm

Discussion

The advances in microsurgery in the 1970s and 1970 led to the practice of early coverage of these defects.It decreased rates of flap failure, infections and bone healing time as described by Godina in 1986(5).He initially described this in lower limb reconstruction after trauma but later on provided a foundation for free flap reconstruction in the hand and upper limb keeping in mind the functional demands.The first successful free tissue transfer to the upper extremity was reported by Harii in 1974(6).

In trauma cases, road traffic accidents, crush injury and blast injury wounds are often contamination to a great degree. Initial management requires careful debridement, removal of all non-viable tissue and wound irrigation. All dirt, foreign bodies and contaminants are removed(7). This is then followed by stabilization of skeletal framework especially in the hands. Management of wound exudates and infection are important. The application of negative pressure dressings can optimize wound management.(8-10).In high voltage electric burn and severe crush injuries where initial tissue viability is difficult to assess,negative pressure therapy or biological dressings can be employed and a "second look," procedure done 48 hours later to preserve maximum soft tissue.(11).Microsurgical free flaps provide good, reliable coverage and function of post traumatic wounds (12) with the added advantage of enhanced sensibility and mobility.(13).Soft tissue and bone infection rates are less in wounds covered within 5 days as reported by Byrd et al which is comparable to our study in which wound coverage was completed within 5 days(14). Superior results were also seen in high voltage electric burn wounds undergoing radical debridement followed by a second relook and coverage with free tissue transfer within 5 days. Chick et al advised managing burns and grossly contaminated wounds with extensive debridement and immediate coverage of exposed vital structures with free flaps.(15).Early free flap coverage of electric burns is recommended after aggressive debridement.(15).Lister et al (16) have also successfully used immediate or within 24 hour coverage of wounds with free flaps after debridement . Chen et al recommended the use of immediate free flap in cases with exposed major vessel terming it as an absolute indication for coverage with a free flap(17).In our case series we followed the similar criteria for coverage of neurovascular structures in majority of our cases. The anterolateral thigh flap described by Song et al(18)in 1984 is widely used today for reconstruction of soft tissue defects and can be used as a flow through flap with sufficient soft tissue making it a very viable option for upper limb defect reconstruction. There were 10 patients in our study which required reconstruction with an anterolateral flow through flap. Koshima reports using the largest anterolateral thigh flap supplied by a single perforator.(19).A

two team approach is possible and reduces operative time.

The latissimus dorsi flap with the advantages of a considerable amount of hairless skin and soft tissue as well as a long pedicle is also a popular option in upper limb and hand reconstruction. (20). The donor area in majority of cases can be closed primarily. However, it involves changing of position and obviates a two-team approach.

Free flaps are favorable in terms of possessing their own blood supply and customized reconstruction of composite defects. (21).

Conclusion

This study reveals that acute free flaps are safe and provide reliable and immediate coverage restoring optimal hand function. As upper limb trauma usually results in composite, complex defects, reconstruction can be challenging for the surgeon. The employment of more aggressive techniques involving radical debridement. Microsurgical options make coverage of the resulting complex defects possible in the acute setting. Wound coverage either immediately, or following a second look depending upon the condition of the wound are the two pathways in the reconstructive algorithm.

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ORIGINAL ARTICLE

Experience of Using Hypospadias Objective Penile Evaluation (Hope) Scoring System for Evaluating Cosmetic Appearance in Operated Hypospadias Patients

Sama Paras Abbasi, Mahesh Kumar Mugria, Quratulain Soomro

ABSTRACT

Objective: Using the HOPE score to assess the aesthetic appearance after hypospadias surgery.

Methodology: This cross-sectional analysis comprised of a sample of 60 patients aged 1 to 15 years (chosen via non-probability, consecutive sampling) admitted to the Dept. of Plastic & Reconstructive Surgery and scheduled for hypospadias surgery (from January to September 2018) after taking written informed consent from parents/guardians. Information pertaining to basic biodata, aesthetic appearance (gauged by HOPE score) before and after corrective surgery was recorded onto a structured questionnaire. SPSS 21 was used for data analysis.

Results: The mean age of the sample stood at 5 (SD ± 1) years.The commonest types of hypospadias encountered were coronal and sub-coronal accounting for a cumulative 50% of the entire sample. Snodgrass was the most commonly (60%) employed operative procedure. There was a significant improved in the HOPE score following corrective surgery with poor appearance decreasing from 50% to 5% ($p < 0.05$) and excellent appearance increasing from 1.7% to 7.3% ($p < 0.01$). The most appreciable results in terms of aesthetic appearance were yielded by Snodgrass procedure.

Conclusion: This study helped us to assess the outcome of patients with hypospadias surgery in terms of aesthetics, identification of the variables that effect the cosmetic appearance establishing the surgical procedures that yield best aesthetic results according to the type of hypospadias.

Key words: Aesthetic Appearance, Snodgrass Procedure, Coronal Hypospadias, Corrective Hypospadias Surgery

Introduction

Though correctable, hypospadias is the second most common congenital anomaly of the male external genital organs with an incidence of between 1 in 250 to 1 in 300 in alive babies.[1] In the 1970's and the 1980's a boom in the prevalence of hypospadias was recorded in Europe as well as in America where surveillance systems recording a two-fold increase.[2]

No means have evolved yet to prevent this anomaly; consequently, corrective surgeries too have been on the rise and more evidence is needed regarding the aesthetic outcome each offers. Improving outcomes involves patient follow up which can be cumbersome

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regarding time and finance.Consequently, outcomes are based on short-term follow ups including assessment of obvious aesthetics, which after functionality, is the 2nd most important objective.[3]

Aesthetic and functional requirements translate to a penis, straight on erection possessing a meatus that is vertical and situated at the tip of the glans producing an uninterrupted, single urinary stream. [4]The ideal hypospadias procedure is single-staged while achieving these goals and the role of the fore-skin in contributing to the repair is variable among different communities. [5, 6]

A uniform consensus for evaluating outcomes of the many hypospadias surgery techniques has not evolved yet.[7]It is therefore difficult to compare the results of the different surgical techniques described and only subjective methods are being employed that can be unpredictive and unreliable. A good system of scoring should be reproducible, reliable, easy to interpret and representative of functional and cosmetic outcomes as well as any complications[8, 9]

The aim of such a scoring system would allow an objective comparison of the different repairs and allow innovation to be incorporated where needed.[10]In this research, we present our experience of using Hypospadias Objective Penile Evaluation (HOPE) scoreto evaluate the surgical outcomes of hypospadias in terms of aesthetic appearance.

Methodology

This cross-sectional analysis comprised of a sample of 60 patients aged 1 to 15 years (chosen via non-probability, consecutive sampling) admitted to the Dept. of Plastic & Reconstructive Surgery and scheduled for hypospadias surgery (from January to September 2018) after taking written informed consent from parents/guardians. Information pertaining to basic biodata, aesthetic appearance (gauged by HOPE score) before and after corrective surgery was recorded onto a structured questionnaire. Data was analyzed using SPSS v. 21.0.

Inclusion Criteria: All patients (with willing parents / guardians) aged 1 to 15 years, admitted to the study setting and scheduled for hypospadias repair surgery.

Exclusion Criteria: Patients with Urethral Fistula, Hypospadias with bilateral UDT & ambiguous genitalia, Scrotal Hypospadias and Perineal Hypospadias were excluded from the study. Also, patients who have undergone more than 3 surgeries were excluded from the sample.

The study tool i.e. The HOPE score is as follows graded aesthetic appearance on 5 basic principles, namely: (i)meatus position, (ii) meatus shape, (iii) glans shape, (iv)skin shape, (v) torsion and curvature in penile erection. It awarded from a minimum of 1 to a maximum of 10 points to each principle.

Results

The mean age of the sample stood at 5 (SD ± 1) years with a range from 1 to 15 years. The commonest types of hypospadias encountered were coronal and sub-coronal accounting for a cumulative 50% of the entire sample.

TYPE OF HYPOSPADIAS	FREQUENCY (N)	PERCENTAGE (%)
GLANULAR	*08*	*13.3%*
CORONAL	*15*	*25%*
SUB-CORONAL	*15*	*25%*
DISTAL PENILE	*10*	*16.7%*
MID-PENILE	*07*	*11.7%*
PROXIMAL PENILE	*02*	*03.3%*
PENO-SCROTAL	*03*	*05%*

Table No.1: The frequency (N) and percentage of the types of Hypospadias

Snodgrass was the most commonly (60%) employed operative procedure.

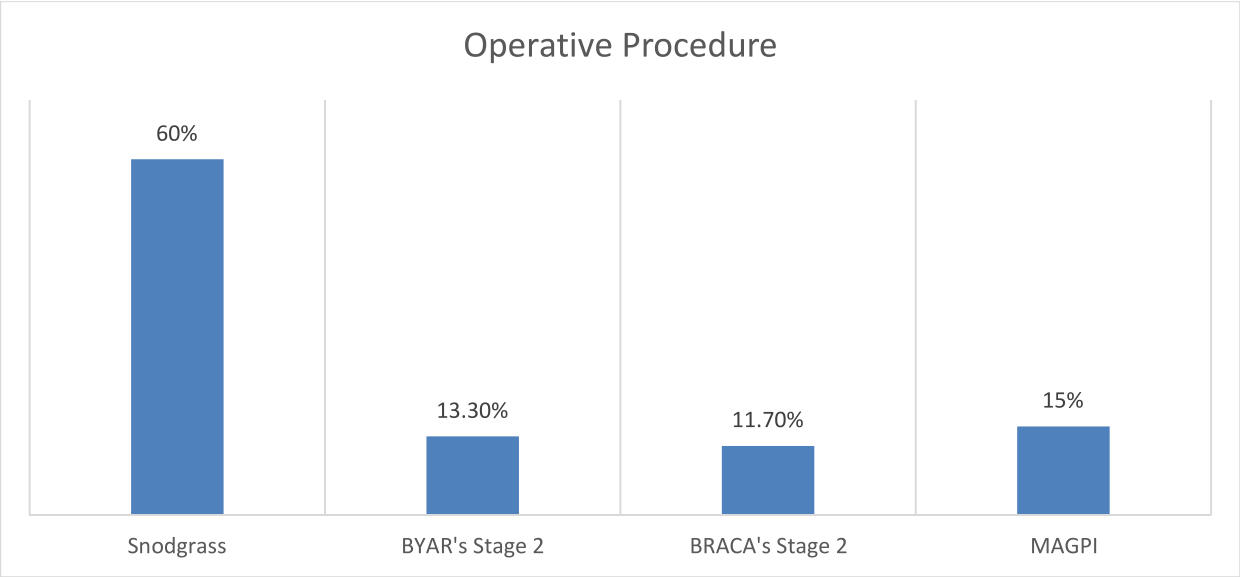

Figure No.1: The percentage wise distribution of the different operative procedures employed, ie, Snodgrass, Byar's stage 2, Braca's stage 2 and MAGPI.

There was a significant improved in the HOPE score following corrective surgery with poor appearance decreasing from 50% to 5% ($p < 0.05$) and excellent appearance increasing from 1.7% to 7.3% ($p < 0.01$).

OUTCOME	PRE-OPERATIVE		POST-OPERATIVE	
	n	*%*	*n*	*%*
EXCELLENT	*01*	*1.7%*	*47*	*78.3%*
GOOD	*03*	*5%*	*6*	*10%*
FAIR	*17*	*28.3%*	*3*	*5%*
POOR	*30*	*50%*	*3*	*5%*
BAD	*09*	*15%*	*1*	*1.7%*

Table No.2: Pre-operative and post-operative aesthetic results of the hypospadias surgery according to the HOPE scoring system assessed and represented in terms of frequency and percentage.

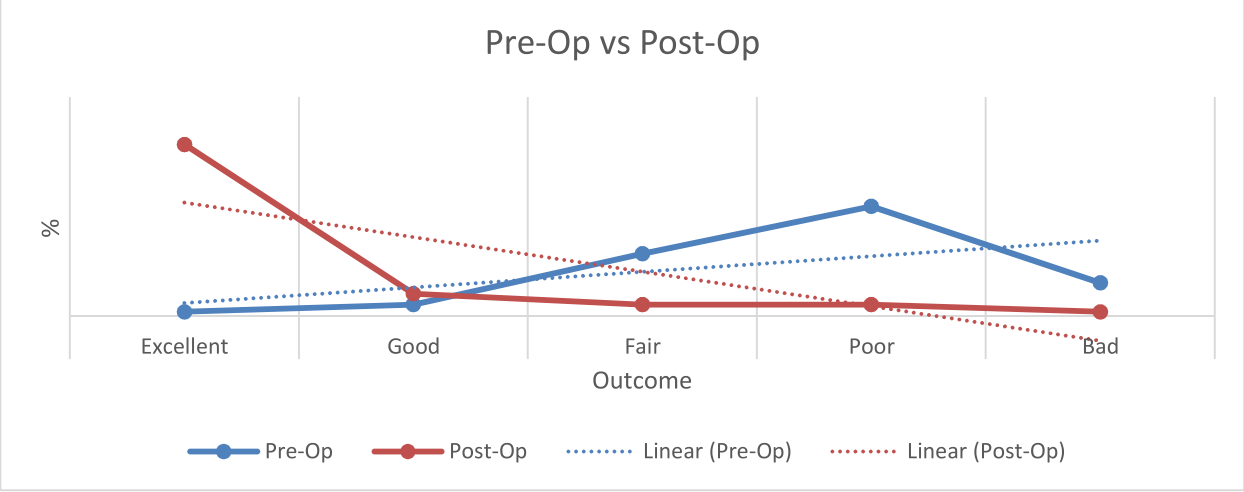

Figure No. 2: Illustration showing the pre-operative and post-operative aesthetic outcome evaluated as "Excellent, good, fair, poor, bad" of the HOPE scoring system.

The most appreciable results in terms of aesthetic appearance were yielded by Snodgrass procedure.

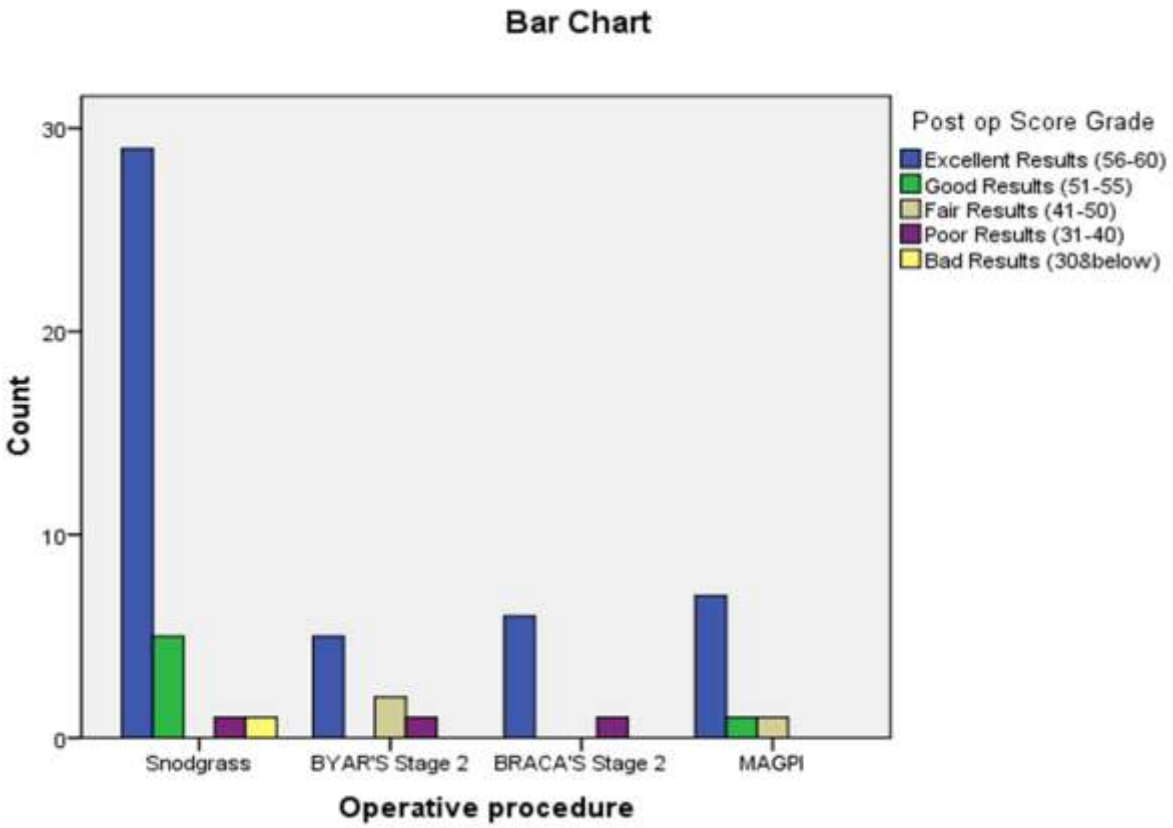

Figure:3: Post-operative scoring grades of HOPE scoring system (Excellent results, good results, fair results ,poor results & bad results) yielded by different operative procedures like Snodgrass , Byar's stage 2,Braca's stage 2&MAGPI.The most appreciable significant results were seen in Snodgrass procedure.

Discussion

Though hypospadias surgery has its roots in the first century, recent advances in hypospadias surgery have refined the functional and aesthetic outomes in the last decade.[11][12]Insights into the embryological origins of hypospadias and corrections methods are in plenty. However, no consensus has been achieved for an objective and reliable comparison of the many techniques. [13, 14]

The HOPE scoring system mainly adopts an objective scoring method. The elements of this scoring system involves photography under standard conditions as well as abnormality assessment using reference pictures, standardization of an acceptable penile appearance and independent panel scoring. It is reproducible and shows good intra and inter observer reliability and shows excellent validity when tested using parametric and nonparametric correlations.[15]

Scoring is possible by simple clinical assessment and observation. Therefore, the scoring system demonstrated good concurrence between parents and medical assessors. This relates to an enhanced understanding and subsequent co-operation between the patients and the surgeon.[16]In this research, the improved results have been objectively measured and others can

experience the same measurement utility if this tool is utilized in common practice.

Conclusion

This study helped us to assess the outcome of patients with hypospadias surgery in terms of aesthetics, identification of the variables that effect the cosmetic appearance establishing the surgical procedures that yield best aesthetic results according to the type of hypospadias.

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ORIGINAL ARTICLE

Treatment of Grade III Gynecomastia with Liposuction and Glandular Excision; Our Experience

Nauman Gill; Ammara Tariq; Shahir Ahmed Mir; Zahrah Gull, Muhammad Daiem*

ABSTRACT

Background: Although gynecomastia treatment has evolved a lot but there are still many limitations to a perfect management plan specially for high grade gynaecomastia. Different methods have been applied to approach excess skin in these patients. All these methods result in visible scars which are cumbersome to patients as well as surgeons treating them. Managing these problems can help patients and surgeons greatly to increase their confidence.

Objective: The authors describe a useful technique of dealing with excess gland and skin in grade III gynecomastia without leaving many unsightly scars.

Methods: The study was performed on gynaecomastia patients. The study was conducted from January 2014 to December 2019 and 45 patients were included who underwent Liposuction and glandular excision followed by compression garments application. Outcome of the patients in terms of complications and aesthetic results was noted. Aesthetic Outcome was measured by the Surgeon ranging from 0 (Poor) to 5 (Excellent). Patient Satisfaction was also graded on a Scale from 0 (Unsatisfied) to 5 (highly satisfied).

Results: All patients were adults, ages 16 to 55. Seroma formation was observed in 15 patients. It was managed with simple aspiration. Six patients complained of Rippling and twelve patients complained of minor skin epidermolysis. Complain of skin or nipple necrosis or saucer deformity was not observed in any patient. Average patient satisfaction score was 4.75 and the surgeon observed score was 4.37.

Conclusion: Gynecomastia Grade III can be effectively treated with liposuction and gland excision preserving the skin in selected patients

Key words: Gynecomastia Grade III,Glandular excision,Liposuction, Treatment of Gynecomastia.

Disclosure: No financial or non-financial disclosure.

Introduction

Gynecomastia is one of the very common problems presenting to plastic surgeons.[1] Gynecomastia affects 30%-70% of male population with trimodal distribution according to age of patient. [2]It occurs due to imbalance between levels of estradiol and testosterone. There may be abundance of breast tissue or fat or both[3] and the presentation may be as unilateral or bilateral. Grade III Gynecomastia[4] has always been a challenging case for patient as well as plastic surgeons to deal with. Psychosocial embarrassment is the most common cause bringing patient to seek surgical correction.[5.] Various techniques have been devised to manage this problem according to grade and

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severity. Although it is easy to treat Grade I and II with liposuction and residual gland excision, Grade III patients require excision of both glandular tissue and skin simultaneously to get proper shape of the chest. Quite frequently, excision of skin and glandular tissue leads to post operative contour deformity, unsightly scar formation and rarely necrosis of nipple areolar complex.[6] Scar related complications like keloid formation and hypertrophic scars are very common in Fitz Patrick type 3 skin and above.[9] These scars are unsightly and uncomfortable for patients and may further reduce patient's confidence. The senior author has treated quite a few patients with liposuction and excision of glandular tissue through a semicircular circumareolar incision without excision of skin. We believe that preserving skin and reducing the scars help as the skin gets retracted to a great extent within 4 to 6 months after surgery. In the present study we intend to share our experience of treating Grade III gynecomastia with preservation of skin and reducing the scars to increase patient's confidence, satisfaction and reduce post-operative complications.

Materials and Methods

This is a descriptive case series which was carried out at King Edward Medical University and Laser Praxis Clinic over the time period of January 2014 to December 2019. A non-probability purposive sampling technique was used. All cases of gynecomastia grade III were included in study. Patients with Diabetes Mellitus, Ischemic Heart Disease, and endocrine disorders and with previous surgical history for gynecomastia were excluded. A comprehensive history and examination were performed in all patients. The secondary causes of gynecomastia were ruled out. Pre-operative pictures of the patient in standard views were taken and marking of the areas to be treated was done in standing position.

All procedures were done under general anesthesia. The breast tissue was infiltrated, via a single stab incision in the inframammary fold, with a solution of normal saline, lignocaine (0.5%) and adrenaline (1:500,000). All patients received one dose of intra-operative intravenous antibiotics as prophylaxis for infection. After thorough liposuction, glandular excision was carried out through a semicircular circumareolar incision. After securing hemostasis, subcuticular sutures were applied to close circumareolar incision. No drains were placed. Compression garments was applied post operatively. Patients were followed up over 6 months post operatively. They were instructed about post-operative compression garments and massage therapy.

Demographic variables like age were noted. The aesthetic outcome was measured in two ways. The treating surgeon graded the aesthetic outcome on Surgeon Observed scale ranging from 0 (Poor) to 5 (Excellent). The patient satisfaction was also graded on a Scale from 0 (Unsatisfied) to 5 (highly satisfied). Average and means were calculated for demographic variables like age. Complications like pain, Hematoma, seroma, epidermolysis were observed. As this was a descriptive case series so no test of significance was applied.

Results

A total of 45 patients were included in study, operated over a period of 6 years (2014 to 2019). Their age ranged from 16 years to 55 years. Out of these, 3 cases were unilateral and 42 were bilateral grade III gynecomastia (Fig.1-4).Average patient satisfaction score

was 4.75. Average surgeon observed score was 4.37. Regarding the complications, 15 patients complained of post-op seroma formation which was managed by simple aspiration and compression dressing. Twelve patients complained of skin epidermolysis which was managed with dressings. No patient complained of skin or nipple necrosis. Rippling (fold formation) was noted in 6 patients but none of the patients requested for correction of skin contour. No patient came with complaint of post-operative hypertrophic scar.

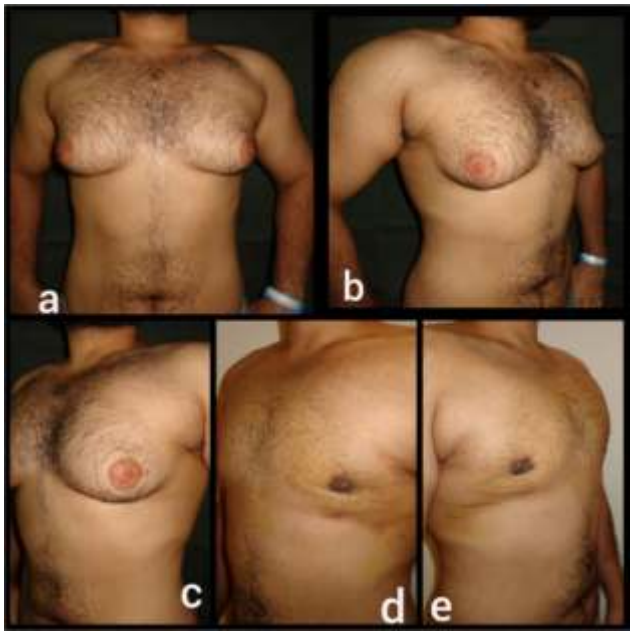

Fig 1. a),b),c) Pre op Pictures of a male with Simon's Grade III Gynaecomastia. d), e) Post op results after Liposuction and Glandular excision.

Fig 2. a), b), c) Pre op Pictures of 23years old male patient with Simon's Grade III Gynaecomastia. Excess skin and glandular tissue visible in all views. d), e) Post op results after Liposuction and glandular excision.

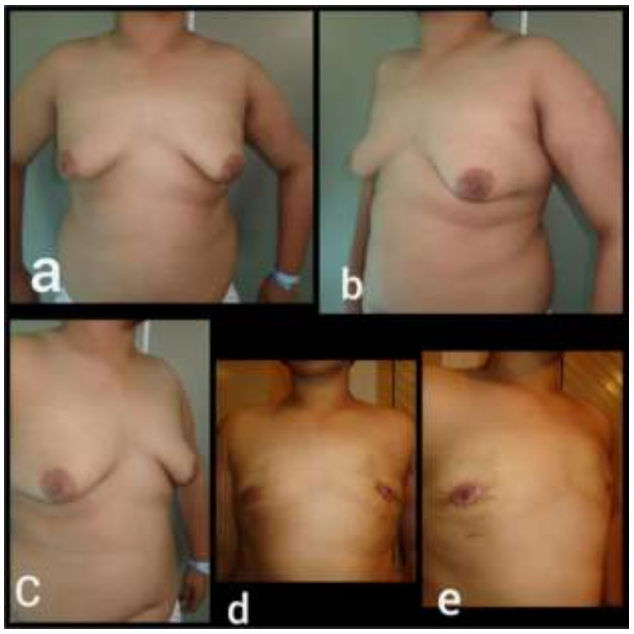

Fig 3. a), b), c) Pre op views of young male patient with Simon's grade III gynaecomastia. d), e) Post op results after 3 months with minimal scars. Epidermolysis is

visible in NAC which was managed conservatively.

Fig 4.a) Frontal view of patient with Simon's grade III Gynaecomastia. b), c) Lateral pre op views d), e) Post op views showing visible reduction in breast size on both views with minimal scarring.

Discussion

Gynecomastia is a very common problem for male population especially in adult age group. In patients with lower grades of disease surgical management is relatively easy. In grade III gynecomastia, patient's skin excess is also a problem along with glandular and fibrous hyperplasia which needs special assessment and management. In past most of the patients with grade III have been approached for gland as well as skin excess through different techniques. These techniques lead to formation of unsightly scars, visible incision marks and long painful surgeries.[8]Not much data is available to describe management of grade III gynecomastia only by addressing gland excess and letting the skin modify and settle down post operatively without having to give extra incisions.

For management of excess glandular component we used both liposuction and glandular excision. In our study, we approached excess glandular tissue first with liposuction and then with glandular excision through circumareolar incision. Combined with liposuction for excess of gland tissue, excision of glandular tissue was first described by Teimourian[8] and now is a commonly used method. Sarkar A. et al.[9]used circumareolar skin excision along with liposuction and found that there was puckering of skin along the incision line due to purse-string effect of subdermal suture. Different techniques were used in past for skin reduction and preservation of nipple-areolar complex (NAC). NAC preservation on a de-epithelised flap, inferior pedicle reduction technique, horizontal ellipse with superior pedicel flap, bipedicle flap etc., were described to keep the neurovascular supply of the NAC intact, but these surgical techniques usually produce scars over male chest, which is aesthetically unappealing.[8]
In our case series, this technique was able to address both glandular as well as skin excess with strict post operative compression therapy. We observed that managing Grade III gynecomastia without skin incision can still lead to optimal outcome by reducing unnecessary scars, as post operatively the skin gets contracted during healing phase. There was minimal post-operative pain. Seroma formation was most common complication which was managed with simple aspiration. No patient needed revision surgery and surgical scar was not noticeable. Both surgeon and patients were satisfied with post operative results in terms of correction of pre operative problem as well as post

operative appearance of scars. However, our study was limited in a way that it was a small case series, all patients were operated by single surgeon and post op surgeon observed scale was also assessed by primary surgeon. Despite these limitations the study gives a future direction to further search for ways to less invasive and more productive management plan of grade III gynecomastia and incite questions towards finding solutions for all complications associated with conventional methods.

Conclusion

Grade III gynecomastia can be effectively treated with liposuction and gland excision preserving the skin in selected patients.

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COVID-19 PANDEMIC

Mustehsan Bashir

The Covid 19 pandemic continues to wreak havoc as the world scrambles to find the yet elusive cure. With millions of infected cases and mortalities worldwide, it is mainly a droplet infection though other modalities have been documented. Concurrent to this pandemic infection, other diseases continue unabated and must be managed alongside the menace of COVID 19 infection. Surgical practices need to adapt to cater for the threat of infection during human interactions in the community, during stay in the hospital and between the surgeon and his patients.

In the wake of the highly contagious epidemic, surgical patients should be triaged according to evidence-based guidelines. Patients need to be carefully selected for admission and screened for COVID19 and operating room protocols upgraded. Demographics, history and screening of the patient are mandatory before admission. Inpatient quarantine and curtailing hospital traffic are part of COVID infection control. Special operating room preparation, organization of teams and transport planning are essential in patients requiring operations. Tele-medicine is emerging as an effective modality in patient management and infection control. The current situation could be a testing ground of its feasibility as a reliable practice for the future as well. It is hoped that positive changes in infection control improvised to curtail COVID19 spread would become habitual so as to convert a parasitic relationship into a symbiotic one.

Instructions to the Authors and Reviewers of the Manuscripts

(Base upon Minimum Requirements for Writing and Editing of Manuscripts)

INTRODUCTION

The new Editorial Board of Pakistan Journal of Plastic Surgery during its meeting held on January, 2019 decided to follow the "Uniform requirements for manuscripts submitted to Biomedical Journals: writing & Editing for Biomedical Publications by International Committee of Medical Journal Editors. A brief account of minimum requirements is given below for assisting the authors, reviewers and editors, the full text can be read, (www.icmje.org). Moreover plagiarism policy of ICMJE, Higher Education Commission and PMDC will be observed. It is authors' responsibility to apprise them of plagiarism in any form including paraphrasing and self plagiarism. The Plagiarism Standing Committee of Pakistan Journal of Plastic surgery would deal with cases of plagiarism and comprise of staff members, and editors. Those claiming intellectual/ idea or data theft of an article must provide documentary proof in their claim otherwise their case will be sent for disciplinary action.

GENERAL PRINCIPLES

1. Title Page

The title page should carry the following information:

i. The title of the article. Concise titles are easier to read than long, convoluted ones. Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
ii. Authors' names and Title of the Program. The names and other relevant information should be on title page only to ensure blind peer review of research article.
iii. The name of the department(s) and institution(s) to which the work should be attributed.
iv. Disclaimers, if any.
v. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript.
vi. Source(s) of support in the form of grants, equipment, drugs, or all of these.
vii. Word counts. A word count for the text only (excluding abstract, acknowledgments, figure legends, and references). A separate word count for the Abstract is also useful for the same reason.
viii. The number of figures and tables.
ix. Conflict of Interest Notification Page

2. Conflict of Interest Notification Page

To prevent the information on potential conflict of interest for authors from being overlooked or misplaced, it is necessary for that information to be part of the manuscript. It should therefore also be included on a separate page or pages immediately following the title page.

3. Abstract and Key Words

An abstract (requirements for length and structured format vary by journal) should follow the title page. The abstract should provide the context or background for the study and should state the study's purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Authors are requested to provide, and identify as such, 3 to 10 key words or short phrases that capture the main topics of the article. These will assist indexers in cross-indexing the article and may be published with the abstract. Terms from the Medical Subject Headings (MeSH) list of Index Medicus should be used.

4. Introduction

Provide a context or background for the study (i.e., the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be made clear, and any pre-specified subgroup analyses should be described. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

5. Material and Methods

The Methods section should include only information that was available at the time the plan or protocol for the study was written; all information obtained during the conduct of the study belongs in the Results section.

(a) Selection and Description of Participants

Describe your selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use variables such as race or ethnicity, they should define how they measured the variables and justify their relevance.

(b) Technical information

Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods, give reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, includ-ing generic name(s), dose(s), and route(s) of administration. Also describe diagnostic or therapeutic procedures if part of the study design.

(c) Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Define statistical terms, abbreviations, and most symbols. Specify the computer soft-ware used.

6. Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations.

When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

7. Discussion

Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these find-ings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted.

8. References

(a) General Considerations Related to References

Although references to review articles can be an efficient way of guiding readers to a body of literature, review articles do not always reflect original work accurately. Small numbers of references to key original papers will often serve.

Avoid using abstracts as references. References to papers accepted but not yet published should be designated as "in press" authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. Informa-tion from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

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The Uniform Requirements style is based largely on an ANSI standard style adapted by the National Library of Medicine (NLM) for its databases. For samples of reference citation formats, authors should consult National Library of Medicine web site.

References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. The titles of journals should be abbreviated according to the style used in Index Medicus. Consult the list of Journals Indexed for MEDLINE, published annually as a separate publication by the National Library of Medicine.

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Tables capture information concisely, and display it efficiently; they also provide information at any desired level of detail and precision. Including data in tables rather than text frequently makes it possible to reduce the length of the text.

Type or print each table with double spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each. Do not use internal horizontal or vertical lines. Give each column a short or abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Be sure that each table is cited in the text.

10. Illustrations (Figures)

Figures should be either professionally drawn and photo-graphed, or submitted as photographic quality digital prints. In addition to requiring a version of the figures suitable for printing, Pakistan Journal of Plastic Surgery ask authors for electronic files of figures in a format (e.g., JPEG or GIF) that will produce high quality images in the web version of the journal; authors should review the images.

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Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals cor-responding to the illustrations. When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend.

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Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

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Use only standard abbreviations; the use of non-standard abbreviations can be extremely confusing to readers. Avoid abbreviations in the title. The full term for which

14. Drug Name

Generic names should be used. When proprietary brands are used in research, include the brand name and the name of the manufacturer in parentheses after first mentioning of the generic name in the Methods section.

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