PAKISTAN JOURNAL OF PLASTIC SURGERY

Official Publication of the Pakistan Association of Plastic Surgeons

Patron
Dr. Saleem Akhtar Malik
Diplomate American Board (Plastic Surgery)

Editorial Board
Chief Editor: Mohammad Mughese Amin
Associate Professor Plastic Surgery
Quaid-e-Azam Medical College Bahawalpur

Editor
Dr. Shahab Ghani

Members
President PAPS:
Dr. Mauzzam Nazeer Tarrar
General Secretary:
Dr. Tahmeed Ullah
Dr. Saeed Ashraf Cheema
Dr. Ehtisham, Dr. Zia-ul-Islam

Peshawar
Dr. Obid Ullah

Karachi
Dr. Tahir Sheikh

Multan
Dr. Naheed Ahmed Chaudrary
CONTENTS

Editorial
Mohammad Mughese Amin
Associate Professor Plastic Surgery
Quaid-e-Azam Medical College Bahawalpur

Total Heel Reconstruction With Sural Fasciomyocutaneous Flap: Indications And Limitations
Nauman A. Gill, M.R.C.S., F.C.P.S.
Abdul Hameed, F.R.C.S, C.R.C.S.
Department of Plastic & Reconstructive Surgery, Shaikh Zayed Hospital, Lahore, Pakistan.
Disclosure: The authors have no financial interests or conflicts of interests in any of the techniques mentioned in this article.

Penile reconstruction in severe penile injury:
Phalloplasty with an island anterolateral thigh flap (ALTF).
Dr. Muhammad Mughese Amin
Dr. Latif Javed
Dr. Muhammad Sajid

Cleft Rhinoplasty: Combining Erich open Rhinoplasty with the Dibbell and Tajima Techniques
Dr. Tahmeedullah, Dr. Shadman, Dr. Tariq Iqbal, Dr. Bilal
Dr. NaseemUlHaq, Dr. Muhammad Tahir
Department P.G.M.I Hayatabad Medical Complex, Peshawar, Pakistan.

Case Report Total ear reconstruction with prefabricated radial forearm flap using salvaged ear cartilage
Saad-Ur-Rehman Sarwar
Mamoon Rashid, Rizwan Aslam, Irfan Ilahi, Ehtesham Ul Haq
Department of Plastic and Reconstructive Surgery, Combined Military Hospital, Rawalpindi

Instruction to Authors
Editorial

Pakistan is long been an area of dynamic development in plastic surgery, adapting to differing cultures, traditions, and medical and surgical philosophies. Recently, these changes have been even more striking and rapid. Microsurgery, tissue expansion, craniofacial surgery, and the spin-offs of these techniques have made permanent changes in trauma, the treatment of malignancy, and aesthetic surgery.

The “Pakistan journal of plastic surgery” creates a focal point for discussion of advances in clinical technique and in research, in Pakistan and worldwide. Topics include plastic and reconstructive surgery, head and neck surgery, aesthetic and craniofacial surgery, microsurgery, trauma, and burn management.

Pakistan journal of plastic surgery provides a forum for original articles advancing the art of plastic surgery. Many describe surgical craftsmanship; others deal with complications in surgical procedures and methods by which to treat or avoid them. Coverage includes "second thoughts" on established techniques, which might be abandoned, modified, or improved. Also included are case histories; improvements in surgical instruments, pharmaceuticals, and operating room equipment; and discussions of problems such as the role of psychosocial factors in the doctor-patient and the patient-public interrelationships.

Perhaps most important is the discussion of the role of reconstructive plastic surgery as the final step in the rehabilitation of patients undergoing long-standing and tedious reconstructive surgery for the repair of congenital, acquired, accidental, and neoplastic defects.

I was given the task to print this journal this year, I have tried to fulfill the responsibility by printing this journal. I will try my level best to continue printing quarterly issues by the help, support and contribution from my colleagues.

Mohammad Mughese Amin
Associate Professor Plastic Surgery
Quaid-e-Azam Medical College Bahawalpur
Total Heel Reconstruction With Sural Fasciomyocutaneous Flap: Indications And Limitations

Department of Plastic & Reconstructive Surgery, Shaikh Zayed Hospital, Lahore, Pakistan.
Disclosure: The authors have no financial interests or conflicts of interests in any of the techniques mentioned in this article.

ABSTRACT
Background: Complete loss of soft tissue of the heel presents great challenge to the reconstructive surgeon because of limited options for reconstruction. Reverse sural flap can be utilized to achieve the goals of heel reconstruction but it is not considered as the first option for coverage of heel defects because it is insensate. Nevertheless, the high sural or fasciomyocutaneous variety of sural flap not only provides coverage to the heel, it can simultaneously cover the Achilles tendon as well.
Methods: Soft tissue defects of heel as a result of different aetiologies were included in the study. Patient demographics, co-morbidities, survival of flaps and complications were noted.
Results: Over a period of seven years (July 2003 to June 2010), heel reconstruction with sural fasciomyocutaneous flap was performed on 46 patients. Their age ranged from 12 to 65 years. Out of 46 flaps, 43 survived completely, 3 flaps had partial necrosis. Long term follow up showed stable wound coverage in majority of the patients.
Conclusion: The sural fasciomyocutaneous flap should be considered as one of the options for heel reconstruction in patients where sensate flaps are not available.

Key Words: Heel reconstruction, sural flap, sural fasciomyocutaneous flap.

INTRODUCTION
The loss of soft tissue at the level of the heel, with the exposure of tendon or bone, represents a challenging reconstructive problem because of the lack of locally available tissue, relatively poor circulation of the skin, and weight-bearing requirement of the region. Therapeutic options include local, regional, and free flaps. A local flap as a surgical solution may not be possible either because of inadequate tissue available to be moved from areas adjacent to the defect or because of limited flap mobilization. Reversed septocutaneous flaps such as the peroneal artery flap, anterior tibial artery flap, and posterior tibial artery flap are other options. When using such flaps, however, a major artery is sacrificed and an already injured lower leg might be jeopardized. Microsurgery can be used to remedy these problems, but such a technique requires a microvascular surgical team and appropriate equipment. The ideal flap for heel reconstruction must be sensate and durable to withstand the stress and trauma that occurs during walking and running. Sensate medial plantar artery flap meets most of the requirements of stable heel reconstruction but its limitations include small size and availability in cases of severely traumatized foot.

Since Masquelet et al. first described the concept of the distally based neurocutaneous island flap supplied by the vascular axis around the sural nerve, similar flaps have been reported subsequently and shown to be appropriate for the reconstruction of medium-to-large defects of the ankle and heel. In most of these reports, attention was focused only on the accompanying arteries of the sural nerve. Reverse sural flap has been established as a workhorse flap for lower leg and foot reconstruction.

LeFourn et al. in 2001 described the technique of including a midline “groove muscle cuff” around the gastrocnemius nerve. This modification allows the elevation of flap from the upper part of the calf increasing the size of flap to cover large defects of the lower limb. The inclusion of perforators from the gastrocnemius muscle improves the reliability of the flap making it one of the most versatile flaps of lower limb. This large sized flap with a portion of gastrocnemius muscle can be used to reconstruct the heel. With some limitations, this flap can not only provide total heel coverage but can
simultaneously cover the Achilles tendon as well.

MATERIALS AND METHODS
This study was carried out at the Department of Plastic & Reconstructive Surgery, Shaikh Zayed Hospital, Lahore. A total of 46 patients with soft tissue loss of heel area were included in the study over a period of 7 years. Patients with trauma to posterior aspect of leg or non-salvageable limbs were excluded from the study. The patients were managed with distally based sural fasciocutaneous flap. In patients with associated co-morbidities like age > 55 years, history of Diabetes Mellitis or venous insufficiency, the flap was delayed for a period of 14 days. After 2 weeks, the flap was transferred to the defect. Post-operatively, patients were instructed to wear special foot ware in order to apply uniform pressure over the heel area. They were also counseled regarding the insensate nature of the flap and its implications to avoid pressure related delayed complications. Patients were followed up at 6 weeks, 3 months, and then yearly for five years and any complications occurring during that period were noted.

RESULTS
Out of the total of 46 patients, there were 29 males and 15 females. Their age ranged from 12 to 64 years, while the mean age was 27 years. The average size of the flap was 16x8 cm. The number of flaps performed was 46, out of which 43 survived completely and three flaps suffered partial (marginal) necrosis. The delay principle was applied in 19 patients. The reason for delay was diabetes mellitus in 11 patients, venous insufficiency in three and large size of flap in five patients. There was no complete necrosis. Paresthesia of the lateral border of the foot was reported by 13 patients at 6 months post-operatively, while only 3 patients complained of reduced sensations on the lateral border of the foot one year after the surgery. Follow up ranged from 6 weeks to 5 years. Follow up of three years or more was carried out on 18 patients. Long term complications included ulceration of the flap in 2 patients. These were managed conservatively with local wound care.
Examples of heel reconstruction are shown in

Figures 1 and 2.

DISCUSSION
Defects of the heel have been difficult to cover especially combined injuries involving the weight bearing part of the heel as well as the posterior heel area including the Achilles tendon require a well vascularised reconstruction having a good durability and sensation because of its location and repeated friction by footwear. There are many possible reconstructive options for this region, including skin grafts, local flaps and distant flaps. Lateral calcaneal artery flap

10 originally described by Grabb and Argenta in 1981 is an axial pattern fasciocutaneous flap that is simple, stable and sensate. It is preferred in small sized isolated posterior heel defects with exposed Tendoachilles or Calcaneum and normal skin in flap vicinity. Its main limitation is size of the flap and an unsightly donor site which precludes its usage for large defects of the heel area. Medial plantar flaps are fasciocutaneous flaps from the non-weight-bearing instep area. They can be raised as pedicled flaps, cross-foot flaps, or free flaps, and include the same anatomical features that are unique to the plantar skin, namely a thin layer of subcutaneous fat and dense fibrous septae anchoring the skin to the underlying fascia. Although instep flaps are regarded as the first choice for heel reconstruction, their use is limited by the size of the defect, the severity of prior trauma and peripheral vascular disease. In addition, sensation of the toes may be diminished due to neuropaesthesia. When defects of the plantar foot are larger than 100 cm² in size or are associated with injury and chronic infection of the underlying

14musculoskeletal structures, skin grafted muscle, musculocutaneous flaps and distant skin free flaps can be considered for the reconstruction of the heel. Muscle flaps are favoured for deep irregular defects, especially after bony debridement, because of their ability to fill dead space. They may be superior to fasciocutaneous flaps in the presence of chronic infection and osteomyelitis. Protective sensation is important for flap durability in weight-bearing areas and has been reported repeatedly in muscle flaps.
fasciocutaneous flaps alike. Muscle free flaps, however, are limited by functional impairment. Distant fasciocutaneous flaps may leave unsightly scars or contour deformities. Masquelet et al. are credited to introduce and describe the neurofasciocutaneous flap and its relationship to the sural nerve in the posterior compartment of the leg. Hasegawa et al. in 1994 raised the sural flap based on the lowestmost septocutaneous perforator from the peroneal artery arising from posterolateral septum 5 cm above the tip of lateral malleolus.

In 1996, Rajacic N et al. covered the wounds of lower leg and foot in 21 patients with sural flap and claimed that this flap can reach the dorsum of foot distally and up to the middle third of Tibia proximally. Jeng and Wei in 1997, used variants of distally based sural island flap. They successfully treated 19 patients with fasciocutaneous, adipofascial and flaps based on lateral cutaneous nerve for foot and ankle reconstructions.

Al-Qattan and LeFourn et al. in 2001 described the technique of including a midline “groove muscle cuff” around the intergastrocnemius sural nerve. This “mesentery” can preserve the blood supply continuity from the sural neurovascular axis and the perforators of the gastrocnemius muscle over the calf region. The original goal of this technique was to improve the flap’s arterial supply and venous drainage. As this flap includes high metabolic muscle component, Chen et al. successfully used this fasciomyocutaneous flap to treat chronic calcaneal osteomyelitis in 11 diabetic patients by inserting the muscle component into the bone defect. Ranjendra Prasad et al. in 2002 conducted an anatomic study to delineate the vascular connections of the arteries around the sural nerve. Recently, Chang et al. conducted an anatomic study on the vascular communication between the suprafascial sural neurovascular axis and deep gastrocnemius muscle and concluded that inclusion of muscle cuff improves the flexibility and versatility of the flap.

The present study presents a wide range of age of patients (12 to 65 years). The average age is 27 years, because majority of the patient population comprised of young individuals having wounds as a result of trauma. Mean age in the present study is comparable to Hassanpour and colleagues (25 years), and Akhtar S et al. (31.5 years) as these studies report on similar patient population, while mean age is higher in studies conducted by Chang et al. (45 years) and Rashid M et al. (40 years). Literature shows that increasing age and co-morbidities increase the chances of failure of flap.

The average size of the flap in the present study is 16x8 cm. Although case reports of large sized flaps have been reported by some authors, Larry Hollier et al. reported an average size of 8.3x6 cm while it was 8.7x7 cm in the study conducted by Rashid M et al. and 10x8 cm in the large case series of Akhtar S et al. The largest sural flap (17x16 cm) was raised by Ayyapan and Chadha but this study comprised of 5 patients only and delay principle was applied to all large sized flaps. The safe limits of largest flap are not clearly mentioned in literature simply because of the great variation in the size of the calf of different individuals. We propose that the upper and middle third of the calf can be raised safely on the reverse sural pedicle, but when raising very large size flaps (relative to the size of leg), application of delay principle maximizes the chances of success.

More important than size of the flap is the issue of safe proximal limit of the distally based flap as this is the factor directly affecting the size of flap as well as its arc of rotation. Chen et al. suggested the upper margin of the flap not cross over 6 cm from the popliteal crease as they found necrosis of the distal margin of flap in the more proximally raised flaps. Hassanpour et al. kept the proximal border at 1.5 to 4 cm distal to the popliteal crease. The sural nerve is formed in the middle third of the leg by the union of the median and lateral sural cutaneous nerves, which are branches of tibial and common peroneal nerves, respectively. The origin of median sural cutaneous nerve is quite variable but usually it arises in the middle of the popliteal fossa. Considering the above mentioned anatomic facts, it may be suggested that the proximal border of the flap should be lower than popliteal crease.
This level can also be modified depending upon the size of the leg which is proportional to the height of the patient. We mark 6 cm from the popliteal crease as the upper limit of the flap in adults and 3 cm from the popliteal crease in children and suggest that variations can be made according to the surgeon’s individual experience as well.

Survival of the flap is a major determinant of success of any reconstruction of the lower limb in which flap is used. Regarding the survival of flaps in the present study, 93% flaps survived completely, partial necrosis occurred in 7% patients while there was no complete necrosis. Hassanpour et al.\textsuperscript{24} carried out 28 high sural flaps out of which 27(96%) survived completely, while Fraccalvieri et al.\textsuperscript{29} carried out 33 reverse sural flaps with 94% complete success rate. The reason for high rate of success is that both of these studies comprised of young post traumatic patients who generally don’t develop complications. Case series reporting on old patients or patients with comorbidities like the one conducted by Baumeister et al.\textsuperscript{30} or Parrett et al.\textsuperscript{31} show increased complications rates with low rates of complete survival of reverse sural flaps.

In the past, reverse sural flap has been considered as unreliable in patients with comorbidities. The landmark study conducted by Baumeister et al.\textsuperscript{30} on 70 multimorbid patients showed a 59% complication rate. Similarly, Akhtar and Hameed questioned the reliability of reverse sural flaps in multimorbid patients. Baumeister et al.\textsuperscript{30} called Diabetes Mellitus, arterial insufficiency and venous impairment as ‘Unhappy triad’ and proposed that reverse sural flap should be considered with caution in such patients. Nevertheless, on careful analysis of the results of that study, it becomes evident that they were able to achieve closure in 60 patients and declared the overall success of their study to be 86%. This patient population is vulnerable to complications irrespective of reconstructive procedure attempted. To improve the success rate of sural flap in patients with co-morbidities, various measures have been suggested. We propose that sural flap should always be delayed in patients with age >50 years, history of diabetes mellitus and peripheral vascular disease in order to avoid failure of the flap.

The main criticism of the reverse sural flap for heel reconstruction is its lack of sensation which makes the flap more prone to trauma as result of repeated weight bearing and friction of the footwear. We do not consider the sural flap as the first option for heel reconstruction or this flap being equivalent to other sensate flaps like medial plantar flap, but we propose that this flap should be considered as an option in patients in which Medial Plantar flap is not possible or is inadequate or in centers where microsurgical facilities are not available. In such situations, counseling of the patient regarding avoidance of persistant pressure, use of special footware and proper care of the flap may help the patient to avoid ulceration of the flap. Moreover, the presence of gastrocnemius muscle cuff may increase the durability of the flap and its ability to resist pressure necrosis of the flap in the long term.

CONCLUSION

With some limitations, sural fasciomyocutaneous flap can provide durable coverage to the heel and Achilles tendon area and constitutes an important place in the armamentarium of plastic surgeons to deal with foot defects.
References

6. Ali-Qattan MM. A modified technique for harvesting the reverse sural artery flap from the upper part of the leg: inclusion of gastrocnemius muscle cuff around the sural pedicle. Ann Plast Surg 2001;47:269-78.
29. Al-Qattan MM. A modified technique for harvesting the reverse sural artery flap from the upper part of the leg: inclusion of gastrocnemius muscle cuff around the sural pedicle. Ann Plast Surg 2001;47:269-78.
Fig 1.a – A large wound on the right heel as a result of severe trauma to the foot and Tendo Achilles area.

Fig 1.b – Harvesting of a 16x10 cm large sural fasciomyocutaneous flap.

Fig 1.c – Post operative result 3 years after surgery (patient ambulatory).

Fig 2.a – Post traumatic heel pad loss with exposed bone and plantar fascia.

Fig 2.b – Post operative result 2 years after reconstruction.
Penile reconstruction in severe penile injury: Phalloplasty with an island anterolateral thigh flap (ALTF).

Dr. Muhammad Mughese Amin, Dr. Latif Javed, Dr. Muhammad Sajid

ABSTRACT
INTRODUCTION: Penile amputation is common in our society due to trauma by patta injury or electric burn injury. Phallic reconstruction to treat this devastating condition is a major challenge to the reconstructive surgeon. Each surgeon's contribution is an important entry in the menu of surgical alternatives available to the phalloplasty surgeons. We used an island anterolateral thigh flap (ALTF) for phallic reconstruction.

PATIENTS AND METHODS: This study included 12 patients admitted to Plastic & Reconstructive Surgery Unit Bahawal Victoria hospital Bahawalpur from November 2008 to June 2011. Their ages ranged from 16-43 years with mean of 29 years. All the patients were presented by post-traumatic total or subtotal amputation of the penis. All the patients were treated with phallic reconstruction by using island anterolateral thigh flap (ALTF). Aesthetic and functional results were evaluated.

RESULTS: Complete necrosis of the flap was not recorded. Partial necrosis of the distal end of the flap was found in two cases which healed completely with conservative measures. In the remaining cases, the postoperative course was uneventful. The patient's satisfaction with the final result was acceptable in all the cases. Regular sexual activity and performance was good in the patients where bone graft was used & acceptable in other cases.

CONCLUSION: An island anterolateral lateral thigh flap (ALTF) is a very good option for phalloplasty.

Keywords: Penile reconstruction, Alt flap, Single stage reconstruction.

INTRODUCTION

An absent or inadequate penis is a devastating condition with significant psychological and physical impact. Although uncommon, it is a challenging condition to treat. Surgery to find a solution to the problem of "no penis" falls into two broad divisions. Procedures that utilize existing tissue and those that bring in new tissue. Phalloplasty utilizing distant tissue transfer has been accomplished via various techniques. Each surgeon's contribution is an important entry in the "menu" of surgical alternatives available to phalloplasty surgeons [1].

Historically the tube pedicle was used for penile reconstruction [2-5]. Song [6,7] has reported one-stage phalloplasty using low abdominal flaps, scrotal flaps, thigh flaps and costal cartilage. The concept of forming a urethra with less tendency for contraction from split-thickness skin grafts on the deep superficial (Scarpa's) fascia of the groin flap had been contributed [8]. Mukherjee has used a seven-stage procedure utilizing groin and scrotal flaps for reconstructive phalloplasty in male burn victims with a great successful results [9].

One-stage phalloplasty had been reported in female to male transsexuals with a modified Chinese forearm flap, including the cutaneous nerves anastomosed to the genital branches of the ilioinguinal and iliohypogastric nerves and the perineal branches of the pudendal nerve to obtain true genital sensibility[10]. The lateral groin flap in combination with vascularized iliac crest bone graft had been used successfully [11,12]. In their phalloplasty series, phallus had been reconstructed in one-stage using a large radial forearm sensate flap to from the entire penis. They have used a costal cartilage graft as a stiffener [13,14].

The ideal requirements for free flap phalloplasty should include the following: one-stage procedure, creation of a competent neo-urethra to allow for voiding while standing, return of both tactile and erogenous sensibility, enough bulk to tolerate the insertion of a prosthetic stiffener, acceptable aesthetic result to the patient,
minimal scarring or disfigurement with no functional loss in the donor site [15]. Gilbert et al. have used a one-stage phalloplasty utilizing two arterialized flaps. The lateral brachial fasciocutaneous free flap which forms the surface of the penis is based on the radial collateral artery and includes the lateral brachial cutaneous nerves. This method fabricates the urethra from an inferior rectus abdominis musculocutaneous island flap. No skin grafting was required [16,17].

Akoz et al. have used an iliac osteocutaneous flap for phalloplasty and a vascularized bone flap for imitating penile erection. Long-term results are promising in adults [18]. Free radial forearm osteocutaneous flap had been used in twenty two female to male transsexuals patients with promising results [19]. De Fontaine et al. have used free radial forearm flap in cases of micropenis associated with vesical exstrophy for penile reconstruction [20].

The (ALTF) flap had been used over 20 years for reconstruction of various simple and complex soft tissue defects in very difficult anatomic regions. The lateral circumflex femoral system is considered as a super-ideal pedicle for a very versatile (ALTF) flap. Its descending branch represent the vascular pedicle of the ALTF. It gives during its course muscular branches to the surrounding muscles and cutaneous branches to the anterolateral aspect of the thigh. The perforating vessels of this flap took their origin from the main trunk and reach the skin via musculocutaneous route or septocutaneous one [21]. Song et al. had introduced the free anterolateral thigh flap (ALTF) as a new flap concept based on the septocutaneous artery[22].

The different cosmetic and functional requirements for penile reconstruction are well known as follows. (i) The aesthetic appearance of the neophallus must be as normal as possible. (ii) The penile shaft must contain a urethra to allow voiding in a standing position and with a normal stream. (iii) The penile shaft must allow the implantation of a penile stiffener in order to allow intercourse. (iv) Morbidity of the donor area must be minimal with an easily concealed scar. Although phallic reconstruction is a complex surgical procedure, it is nowadays possible to fulfill most of the above-mentioned requirements using the new techniques developed in plastic and reconstructive surgery [23].

The anterolateral thigh flap (ALTF) has been used either as local island or free flap to reconstruct different soft tissue defects in various sites in the body. The elevation and dissection of this flap needs experience and good knowledge of its anatomy. The vast experience of our team in the elevation of this flap encouraged us to use it for phalloplasty.

PATIENTS AND METHODS

This study included 12 patients admitted to Plastic & Reconstructive Surgery Unit Bahawal Victoria hospital Bahawalpur from November 2008 to June 2011. Their ages ranged from 16-43 years with mean of 29 years. All the patients were presented by post-traumatic total or subtotal amputation of the penis (fig-1).

During preoperative explanation of the various options of phalloplasty, we stressed that the mostly used flap in our unit is the radial forearm flap. The patients asked us if it was possible to avoid scars in their forearms. So we proposed the use of anterolateral thigh flap (ALTF) as an island one to construct the phallus and the patients agreed on that proposal All patients were operated under general anaesthesia. The flap size ranged from 10 x 7 cm to 16 x 12 cm. In all the cases neo-urethra formation was done where an island was made on the flap by de-epithelization of strip 1 cm wide.

Flap design:

The site of the cutaneous perforator of the descending branch of the lateral circumflex femoral artery was marked 2 cm above the middle of a line joining the anterior superior iliac spine and the lateral aspect of the patella by using handheld Doppler. The flap was designed around this point and its size ranged between 10x7 cm to 16x12 cm on the anterolateral aspect of the thigh. Preoperative photography documented the preoperative status and design of the flap (Fig. 3).
Operative technique:
Under general anaesthesia in twelve patients the preparation and draping was done. The medial margin of the flap was incised first. The incision was made down through the deep fascia and also includes the epimysium of the rectus femoris muscle. The edges of the deep fascia and epimysium were secured to the subdermal tissue between the deep fascia and subcutaneous fat. The flap was then undermined and raised laterally with sharp dissection towards the intermuscular septum between the rectus femoris and vastus lateralis muscles. Two musculocutaneous perforating vessels were found at the site that was marked preoperatively in eight cases. Dissection of them was done carefully and both musculocutaneous perforators were skeletonized without taking muscle cuff around them. In the other four cases single septocutaneous perforating vessel was found in the septum between vastus lateralis and rectus femoris muscles. Dissection was then continued upward following the descending branch of the lateral circumflex femoral vessels till its origin from the profunda femoris vessels. Harvesting the lateral cutaneous nerve of the thigh was done for its microneuro anastomosis with the dorsal cutaneous nerve of the penis.
Fashioning of the new phallus, formation of new urethra, anastomosis of neo-urethra to the urethral stump & fixation of the neo-phallicis with penile stump was done in single stage in all the cases. Closure of the donor site was done with split thickness skin graft. Postoperative treatment included antibiotics, analgesics and vitamins.

RESULTS
This study was carried out on twelve patients in the period between November 2008 and June 2011 with a follow-up period that ranged from 4 months to 24 months. All the patients were of post-traumatic amputation of the penis. Their ages ranged between 16-43 years with a mean of 29 years. All patients were operated on under general anaesthesia. The flap size ranged between 10 x 7 to 16 x 12 cm. The pedicle length was 11-15 cm with a mean of 13.4 cm. The operative time was 3-4 hours with a mean of 3.15 hours. In all the cases the distal end of the flap was fixed to the penile stump. The pedicle was severed two weeks later. In this series, insertion of bone graft as stiffener was done in eight cases 6 months after complete healing. Five of them were already married. Six months after insertion of the bone graft as stiffener, they have enough rigidity for practicing normal sexual activity with good performance.
Complete necrosis of the flap was not recorded. Partial necrosis of the distal end of the flap was found in two cases which healed completely with conservative measures. In the remaining cases the post operative course was uneventful. In the post-traumatic cases impaired sensation of the reconstructed phallus was persistent for 9 months and gradually regained with medical treatment one year postoperatively. The patient's satisfaction with the final result was acceptable in all the cases (Figs. 5, 7). Regular sexual activity and performance was very good in the patients where bone graft was used. It is not yet evaluated in the other cases. In the post-traumatic partial loss of the penis regular sexual activity was delayed up to 12 months postoperatively as a result of decreased skin sensation of the reconstructed phallus and psychological upset of the previous trauma.
Fig 1: Photograph showing traumatic penile amputation.

Fig 2: After healing of stump.

Fig 3: Photograph showing flap design.

Fig 4: Early postoperative results with grafted donor area.

Fig 5: Late postoperative photograph showing.

Fig 6: Reconstructed phallus during voiding reconstructed phallus with good results.

Fig 7: Reconstruction of phallus after subtotal traumatic penile amputation with very good results.
DISCUSSION

There is no doubt that the radial forearm flap is considered the standard flap for phalloplasty all over the world. It gives long, sensate phallus with average size and shape with very low failure rate. We have used it in more than 07 cases of phalloplasty in patients at different age groups. Although we were faced with the most famous drawbacks of this flap as donor site unacceptable scar, tendon exposure and urethral problems, the final results were acceptable to a great extent. Free radial forearm flap provides a promising choice for phalloplasty with an excellent result. It considered by many surgeons as a gold standard for penile reconstruction [19,20,24,25].

Urethral complications represent the most frequent complication in free radial forearm flap. In our unit urethrocutaneous fistula was recorded in 54% of cases. In Fang et al. [26] phalloplasty series (56 cases), the urethrocutaneous fistula rate was 38/56 (67.8%). Fang et al. [19] reported 40.9% urethrocutaneous fistula in their transsexuals series. However, Perovic recorded the best result of this complication 2/24 (8.3%) in his series of phalloplasty in children and adolescent with extended pedicle island flap[27].

Five major disadvantages of the radial forearm flap were recorded [28]. They include tightness of the forearm skin graft, potential loss of the wrist extension, loss of tactile forearm skin and loss of radial artery coupled with the significant aesthetic disadvantages of the grafted donor site. Weinzung and Daves[29] summarized these disadvantages in unsightly donor site scar especially in young female and skin graft breakdown with tendon exposure. Fang et al. [19] added radius bone fracture as one of the disadvantages of the radial forearm osteocutaneous flap for phalloplasty for female to male transsexuals.

The disadvantages of the donor site of the forearm flap has led to the search for other donor sites. The vast experience of our team in the elevation and dissection of the ALTF encouraged us to use it as an alternative to radial forearm flap for phalloplasty. In our series the age group ranged between 16-43 years with a mean of 18.2 years. Gilbert et al. [30] have done their series (11 patients) of phallic construction in prepubertal and adolescent boys. The age ranged between 12-18 years in Perovic Series [27]. However, in traumatic series (7 children) of ochoa [31] the age group ranged between 4 months to 8 years and 5 patients were younger than one year.

In our study the indication for phalloplasty was post traumatic subtotal or total amputation of the penis. Traumatic amputation whether subtotal or total was the main indication [30-33].

In our study, the flap size ranged between 10x7 cm to 16x12 cm and it proportionate to the patient body built and age. In the study by Zayed E. et al.[1], the flap size ranged between 12x8 cm to 18x13 cm. Sun and Huang [17] reported one stage reconstruction of the penis with composite iliac crest and lateral groin skin flap. The flap size was 11 cm long and 10 cm wide. The flap size depends on the patient built as reported in Perovic series [27].

In our cases, total loss of the island ALTF was not reported as a result of using an island flap with its wide safety profile, absence of the risks of micro-anastomosis and thrombus formation. However, partial loss of the distal end of two flaps was recorded and healed completely conservatively. Single case of total loss out of 56 cases of the free radial forearm flap had been recorded [26]. However, partial flap necrosis were reported in two cases [27] and in one case [1,19].

In our study, insertion of bone graft as stiffener was done in eight cases. It was sufficient for obtaining rigidity in the reconstructed phallus. After insertion of the bone graft as stiffener they have enough rigidity for practicing normal sexual activity with good performance. Zayed E et al. used silicon implant as penile stiffener[1]. Composite iliac crest to provide rigid support with lateral groin skin flap have been used [11]. The osteocutaneous skin flap have been used sexual penetration have been also used [24]. Vascularized iliac bone had been used with good result for sufficient rigidity for a neophallus [18].

In the post-traumatic partial loss of the penis regular sexual activity was delayed up to 12 months postoperatively as a result of decrease skin sensation of the reconstructed phallus and
bad memory of the previous trauma. No penile fracture had been recorded in the eight cases that have regular sexual activities [19]. The sexual performance on regular basis was rated as highly satisfactory [19,20]

The island anterolateral thigh flap "ALTF" is an option for phalloplasty[1]. It has the following advantages. Flap elevation is both easy and safe, the vascular pedicle is long enough to facilitate its transport to the proper site, the operative time is not long as free flap and with a mean 3.15 hour this series. The flap is potentially sensate one which is an imporant feature in phalloplasty. There possible side effects and the postoperative course is uneventful in most cases. The skin territory of this flap is very wide and a large phallus can be constructed from the anterolateral aspect of the thigh. Finally the donor site is completely concealed and has a lower rate of complications. The disadvantages of this flap are: the constructed phallus is thick and it was difficult to construct the urethra by folding of this flap. The thickness and difficulty increase in obese patients. A trial of thinning of this flap is going on cautiously.

Conclusion:
The island anterolateral thigh flap(ALTF) is very a good option for phallus reconstruction especially when the radial forearm flap is not available or not accepted by the patient.

REFERENCES

Abstract:
Objectives: To determine the post-operative results in terms of patients' and surgeon's satisfaction of the combined Erich open rhinoplasty with the Dibbell and Tajima techniques.
Place and duration of the study: This study was performed in the department of Plastic & Reconstructive Surgery, PGMI Hayatabad Medical Complex, Peshawar, Pakistan and Al-Shifa Healthcare Centre Peshawar, Pakistan.
Study design: Descriptive cross-sectional study.
Material & Methods: All the patients presenting for the secondary cleft rhinoplasty irrespective of their gender with the age above 12 years were included in the study. Those patients who had a nasal correction at the time of lip repair were excluded from the study. After informed consent, Erich open rhinoplasty combined with Dibbell and Tajima techniques was performed in all the patients. All the data were recorded in a proforma constructed with the help of a statistician. The data was analysed with help of a Statistical Package for Social Sciences version 17 (SPSS 17). The post-operative outcome was divided into good, average and poor on the basis of patients' and surgeon's satisfaction. The results were expressed in the form of tables and figures.
Results: A total of 21 patients including 15 (71.42%) male patients and 6 (28.57%) female patients were included in the study. As a whole the frequency of good post-operative result was observed in 66.6% (n=14). The individual good post-operative results in male and female patients were 60% (n=10) and 66% (n=04) respectively.
Conclusion: Being a complex anomaly, cleft lip nasal deformity correction requires a considerable surgical experience. The combination of open rhinoplasty with Tajima and Dibbell techniques is a safe and reliable method of correction of secondary cleft nasal deformities with low revision rates.

Key words: Cleft lip nasal deformity, cleft lip, rhinoplasty.
is further refined and modified by Liou EJ. NamIn this series we included only those patients helps in approximating the alveolar cleft and the who underwent an Erich open rhinoplasty with alar cartilage and increase the length of the Dibbell and Tajima techniques. A total of 21 columella on the cleft side. Inspite of all these patients were included in the study according to efforts there is still residual nasal deformity in the selection criteria. Among them 6 patients were patients with cleft lip which needs secondary females and 15 were males. Four patients were surgery to further modify the aesthetic excluded from the study because they had a appearance of the nose. Few years later after the history of primary nasal correction at the time of primary cleft lip nasal correction, there are alip surgery. number of factors which play an important role to We performed Erich open rhinoplasty exhibit the nasal deformity e.g. scar formation, technique combined with Dibbell and Tajima growth in the facial skeletal and soft tissue techniques. An inverted U shaped incision over structures. The natural anatomical development the columnella was used. A Tajima inverted U incision was made on the cleft side over the secondary rhinoplasty. Some of these change the dorsum of the nostril and inside the ala and the include: inverted U incision was designed similar to the 1. Shortened columellar nostril shape on the non-cleft side. The nose was 2. Retro displacement of the dome on the cleft opened after subcutaneous undermining between side skin and cartilage. Once the domes were fully 3. Loss of tip definition exposed, the Dibbell incision was made across the 4. Alar collapse on the cleft side nasofloor. The medial crus of the lower lateral 5. Alar notching on the cleft side cartilage was cut at the lower end and the lower 6. Buckling of the lower lateral cartilage on alar cartilage was fully mobilized on the cleft the cleft side. The domes were approximated by putting A limited rhinoplasty is now regularly performed by most of the plastic surgeons at the The medial crura of both the lower lateral time of primary lip repair and it involves only cartilage were stitched together with 5/0 dissection and medical mobilization of the cleft polypropylene suture. The alar base was then lower lateral cartilage. There are data dissected from the underlying bone and the alar demonstrating that the nasal growth is complete base was placed into normal position by putting a at the age of 13 years in girls and 14 years of age in the peristium of the anterior nasal spine. boys. Surgical correction of secondary cleft lip After tip correction the rhinoplasty incision was nasal deformities is mandatory after completion closed. The inferior skin flap of the Tajima of nasal growth and it should be according to the incision was then marked, trimmed and closed. severity of these deformities. This created the soft triangle. All the patients had pre-operative and post-operative photographs (Frontal and worms eye view) taken. The post-operative results were classified into three groups as good, average and poor as described in table I.

Material and methods:
This study was conducted in the department of Plastic and Reconstructive Surgery, Hayatabad Medical Complex Peshawar and Al-Shifa Healthcare Centre Peshawar, Pakistan. A single surgeon performed secondary cleft rhinoplasty in 25 patients. Patients eligible for inclusion in the study were 21 and among them 15 were males and 6 were female. In male we achieved good results in 60% of patients and in female we achieved good results in 66% patients. Poor results observed in 13% male patients only.
Discussion:

Secondary nasal deformity associated with cleft lip is a difficult surgical task. Since time immemorial numerous surgical methods have been created to address the structural changes that occur over time following primary surgery. Because the presenting patients with cleft lip nasal deformity are young, the surgical plan must account for patient growth and surgical scarring. The challenges posed by secondary unilateral cleft lip nasal defects have spurred the recent advent of various surgical techniques and the use of autogenous and alloplastic material to correct the structural and supportive deficiencies. Although a wide variety of alloplastic materials have been used historically and they still have a place in nasal surgery the ideal implant has strict requirements concerning biocompatibility, plasticity, stability of form, resistance to infection and removability. The most commonly used alloplastic materials used are silicone, expanded polytetrafluoroethylene (Gore-Tex) and porous high density polyethylene (Medpore) with intent to circumvent the short-comings of autogenous tissue materials. Silicone implants although relatively inert do not become integrated into recipient tissues making them prone to extrusion. There are frequent reports of rejection, infection and bone resorption. Polyamide undergoes severe hydrolytic degradation of bulk and has been associated with severe inflammatory reaction. Limited use of Gore-Tex is attributed to its inability to maintain an exact shape or provide...
support. Medpore may offer many advantages in terms of host tissue tolerance, easy manipulability and demonstration of host tissue ingrowth but still carry a removal rate of 3.1% as compared to silicone which has significantly higher of 6.5%. Proplast is often used in its place. All these great variety of alloplastic materials are available but there high cost, poor tissue tolerance and infection limits there use. Moreover, many patients are not suitable for or do not agree to the use of alloplastic materials. The combination of Erich open rhinoplasty with Dibbell and Tajima techniques will correct most of the secondary cleft nasal deformities. Some of the plastic surgeons use autogenous cartilage grafts or alloplastic material in the form of columella struts or for tip augmentation. In our series the pre-operative and post-operative photographs were assessed which showed good aesthetic improvements in 60% of the male patients and 66% in the female patients. Poor results observed in 13% male patients only. We believe that the achievement of good aesthetic results in secondary cleft rhinoplasty depends upon a number of factors as below:

1. Selection of the patients: It is very important to perform the secondary cleft rhinoplasty when the nasal growth is complete at the age of 11-12 years in females and 13-14 years in male patients. Pre-operative assessment of deformity: It is important to assess the external and internal nasal structures. Pre-operative assessment of any functional problem is also mandatory and will need correction at the time of secondary cleft rhinoplasty.

One of the cleft nasal deformities is the descent of the lower lateral cartilage on the cleft side. This deformity will lead to obliteration of the soft triangle and causing a nostril apex overhang. The inverted U Tajima incision will create a soft triangle so a combination of open rhinoplasty with the Tajima and Dibbell technique will address all the visible deformities of the cleft nose.

With open rhinoplasty approach we have a good exposure of the domes. So accurate reconstruction and precise placement of sutures in the domes and correction of the nasal tip disparities in cleft nose is possible with the technique. Several authors reported the use of autogenous cartilage grafts.

In secondary cleft rhinoplasty, because the lower lateral cartilage in the cleft patients tends to be floppy, we did not use any cartilage grafts in our series. We observed that the lower lateral cartilage in our population are thick and needs only repositioning in the majority of cases so we prefer to use the suture technique which provides adequate support to maintain the cartilage in correct and desired anatomical position.

Conclusion:
Cleft lip nasal deformity is a complex anomaly and its correction requires a considerable surgical experience. Thorough understanding of the magnitude of the deformity and various techniques of its repair allows a successful correction. The combination of open rhinoplasty with Tajima and Dibbell techniques is a safe and reliable method of correction of secondary cleft nasal deformities with low revision rates.

References:
5. McComb HK, Coghlan BA. Primary repair of the unilateral cleft lip nose: completion of a longitudinal
Case Report

Total ear reconstruction with prefabricated radial forearm flap using salvaged ear cartilage

Saad-Ur-Rehman Sarwar, Mamoon Rashid, Rizwan Aslam, Irfan Ilahi, Ehtesham Ul Haq
Department of Plastic and Reconstructive Surgery, Combined Military Hospital, Rawalpindi

SUMMARY. There are numerous techniques for total ear reconstruction, either for microtia or for post-traumatic complete amputation, are well described in the literature. Best results although are achieved with successful replantation of the whole amputated ear but the results with classical two stage total ear reconstruction are usually also more than just a mere satisfaction. We report a case of a seven year old boy with an AV malformation of Right ear needing surgical intervention. To ensure the complete removal of the tumor an elective total amputation of the ear was done. The native cartilage skeleton was salvaged and was banked subcutaneously in the left forearm to prefabricate a composite radial forearm free flap for the later on total ear reconstruction. Six months later, after confirming the successful ablation of the tumor, total ear reconstruction was performed with transfer of prefabricated composite radial forearm free flap. Postoperative flap edema took three months to subside revealing an improved contour definition of the embedded cartilage skeleton. The final result was satisfactory for the patient and his parents.

Keywords: forearm replantation, revascularisation, limb reconstruction

Gillies first described total ear reconstruction in 1920, with a carved costal cartilage placed under the scalp skin. Tanzer modified the procedure into stages. Brent further improved the techniques into the state of the art procedure. Ear can be reconstructed with other methods but results are usually below satisfaction. In cases of traumatic loss of ear the results are more frequently successful on both extremes of the injury i.e. small size amputated fragments have more chances of being salvaged by simple reattachment as a composite graft. Similarly large amputated segments or total ear amputates, with suitable vasculature, have equally better chances of successful microvascular replantation. Numerous procedures are described in literature to improve the chances of successful outcome. Some authors propose use of the retroauricular tissue pocket principle others prefer the use of either a pedicled or a microvascular free flap, first as an embedding site and then as a carrier latter on; and others suggest a standardization of procedure.

We are reporting the case of total ear reconstruction. The ear was excised electively as a therapeutic procedure and the cartilage skeleton was embedded in the forearm to prefabricate a composite radial forearm microvascular free flap. It was subsequently transferred to its original site in order to reconstruct the ear.

Case Report

A seven year old boy was referred to our department for the management of a large A-V malformation of Right ear. Clinically and on investigations the tumour was involving entire external ear (Fig.1A).

Indications for intervention were recurrent ulceration leading to episodes of profuse bleeding, increasing size and the eroding nature of the tumour that was progressively deforming the auricular cartilage skeleton. It was planned to amputate the external ear in-Toto, so as to ensure the complete removal of the tumour, and then to bank the cartilage skeleton for delayed total ear reconstruction, Figure.1B. The tumour was resected en-block, the cartilage skeleton was denuded and reduced in size to approximate the normal ear. It was then banked subcutaneously, between fascia and skin, in the distal half of the left forearm, Figure.1C. The defect at operation site was closed primarily with local scalp advancement flap.
Six months later, after confirming the complete removal of tumour, it was decided to proceed for the second stage ear reconstruction. A prefabricated radial forearm free flap, including the embedded salvaged auricular cartilage skeleton, was raised and transferred to the Right auricular area. Microvascular anastomoses were done in the neck, end to side between the radial artery and the external carotid artery and end to side between the cephalic vein the external jugular vein, Figure.1D.

The patient remained in the hospital for one week postoperatively with an uneventful stay. Due to the flap oedema the details of the cartilage skeleton remained obscured for a month or so which improved subsequently with the passage of time, Figure.1E. Secondary surgery was not performed on wish of the patient and his parents, as they are satisfied with the result.
Discussion

The concept of transient embedding of amputations involving the upper limb are amputated but otherwise undamaged body frequently seen in the hospitals of this country. fragments for later on transfer to the original site. However, in the majority of the cases either the patient reaches very late or the amputated part has been appropriately preserved and transported. been proposed in literature to use a prefabricated in addition many hospitals may not have a plastic composite free flap, including the embedded surgeon trained in microsurgery. There is, auricular cartilage, for ear reconstruction therefore, a pressing need of a program of increased awareness regarding the preservation of case of trauma.

In this era the most commonly done and transport of amputated part, directed towards procedure for ear reconstruction involves the use not only the lay community but medical of autologous costal cartilage being carved as professionals as well. With several plastic surgery auricular framework. In our case we took the training programs active at this time it can be opportunity to utilize the native cartilage hoped that in the future more hospitals will be framework, of excised ear for reconstruction. Unequipped with plastic surgeons being trained to this way we managed to conserve a normal body handle these crippling injuries. The decision to segment that would have been otherwise replant, or otherwise, requires expertise and discarded. critical judgement. It is a labour-intensive

We used the radial forearm free flap that procedure, but if performed in the appropriate has some advantages beside its role as carrier and cases, can produce dramatic restoration of limb skin cover. This flap has thin pliable skin with functions. good color and texture match for the ear. It has a pedicle with large diameter and it can be raised with adequately long pedicle.

References

We had the option of using autologous costal cartilage but that would have amounted to


more donor site morbidity. Most importantly that procedure requires healthy and normal skin in the


3. Tanzer, R. C., Total reconstruction of the auricle. The temporoauricular area for cartilagenous skeleton


5. Brent, B., The correction of microtia with autogenous expander, bolus suturing of cartilage with cartilage graft: II. Atypical and complex deformities.

overlying skin upon insertion or utilization of forearm fascia alone. Contralateral. Brent, B., A personal approach to total auricular


this kind of total ear reconstruction.

Utilisation du lambeau de fascia superficial


Silicon frameworks have been the most commonly used implants but with a high incidences of infection and implant exposure. A new framework, Medpore surgical. Isshiki, N. Technique of total ear reconstruction with open framework, composite pseudomeatus graft and implant is a porous polyethylene material that postauricular transposition flap. Clin. Plast. Surg. 17: has some advantages over silicon framework of surrounding tissue into the implant.

Authors
Saad-Ur-Rehman Sarwar
Resident

Mamoon Rashid
MB,BS, FCPS(Pak), FRCS(Eng) Consultant Plastic Surgeon and Head of Department

RizwanAslam
FCPS(Pak) Senior Resident

Irfan Ilahi
FCPS(Pak) Resident

Ehtesham Ul Haq
Resident
Department of Plastic Surgery, Combined Military Hospital, Rawalpindi

Correspondence to Dr. Mamoon Rashid
Paper received 20 March 2003.
Accepted 21 March 2003.
Vacuum Assisted Closure (VAC) in Children

Dr. Muhammad Ahmad
Plastic, Reconstructive, Hand & Hair Restorative Surgeon
Islamabad Cosmetic Surgery Centre, Islamabad, Pakistan

Dr. Muhammad Homayun Mohmand
Plastic, Reconstructive, Hand & Hair Restorative Surgeon
Islamabad Cosmetic Surgery Centre, Islamabad, Pakistan

Introduction: VAC, initially described by Argenta in 1997, has been reported in the adult literature as a novel method of accelerating wound healing. However, a few reports exist about the use of VAC therapy in children. The VAC therapy consists of the use of an open-cell foam, sealing with an adhesive drape, and sub-atmospheric pressure, usually at 125 mmHg. VAC promotes wound healing by removing localized oedema, reducing bacterial density, promoting angiogenesis, and the formation of granulation tissue.

Vacuum Assisted Closure (VAC) therapy was applied in paediatric patients in a variety of wounds arising from congenital defects, plastic, reconstructive, hand and hair restorative surgery. VAC therapy is now an accepted treatment modality for acute and chronic wounds in adults. VAC therapy should not be applied over necrotic tissue, malignant tissue, untreated osteomyelitis, or direct over vital structures such as tendons, ligaments, nerves, and large blood vessels.

Keywords: Vacuum Assisted Closure, Wound, Lower limb tendons, ligaments, nerves, and large blood vessels.

Materials and Methods: of VAC therapy were collected using a pre-designed surgery setup. Demographic information collected includes age, sex and co-morbid condition. Information noted setup from 2006 to 2010. All the patients of age for wound includes size before and after less than 12 years of either sex were included. A VAC dressing was changed. The wound was washed thoroughly with normal saline and VAC was reapplied in most cases at bedside. The wound was re-applied at bedside. The wound was re-applied in most cases at bedside.

Results:

Application of VAC: A total of 32 patients were included in the study. Majority of the patients (53.1%) were males with a female to male ration of 1:1.3. The mean age of male patients was 9.4 years (range, 5–12 years) as compared to 9.6 years (range, 7–12 years) in female patients. Most of the patients had the wounds due to road traffic accident. Burns constituted about 37% (Table 1).

Foot was the most frequently affected area. Pre-op direct contact with the base of the wound. Pre-op (40.6%) followed by hands (Table 2). The average size of the wounds was 17.93 cm². The average number of VACs was 4.4 in male patients and 4.8 in female patients. The mean size of the wounds at the end of the therapy was 7.67 cm².

The average hospital stay was 19.4 days in male patients as compared to 15.3 days in female patients. Split-thickness skin grafting was done in the majority of the cases (Table 3). A very few partial loss of skin graft in one case and complete loss of skin graft in one case only.
Case 1:
A nine years old child had a foot injury due to entrapment in the motorcycle wheel. He had a large wound on right foot (Fig. 2A). The wound was debrided and VAC was applied (Fig 2B & C). Later skin grafting was performed (Fig 2D).

Discussion:
There have been few reports about the use of VAC in children. The mean age in the present study was 9.4 years and 9.6 years in male and female patients respectively which is almost similar as noted in other studies. We included the patients having wide range of cases; however, we did not encounter any case of fistula, pilonidal sinus, sternal wound as noted in other studies. We strictly changed the dressings after 48 hours. The average number of VAC was 4.4 and 4.8 in male and female patients respectively. Whereas the mean hospital stay was 17.5 days which is similar to the observation noted in other studies. The average size of wound was 17.93 cm at the start of the therapy which decreased to 7.67 cm at the end of the therapy, thereby decreasing more than half of the original size.

Unlike Caniano et al., we did not apply VAC intraoperatively rather on the 2nd or 3rd day after the initial wound debridement. Another different point in the present study from all others is the use of vacuum machine. We used the locally available vacuum machines, not the branded ones. This helped in reducing the cost of the treatment, thus lessening the financial burden on the parents/guardians.

VAC has also been described for closure of dehisced wounds, in sternum, abdomen, extremities and back. VAC is more cost-effective than daily dressings. In the study carried out in Canada, the cost of VAC was found to be almost 50% less than the traditional therapy for wound management.

Conclusion:
VAC offers many advantages in children. Fewer dressing changes result in increased inpatients comfort and rapid recovery enables children to rapidly return to their daily activities.

We advocate more use of VAC in children.

References:


Table 1: Aetiology

<table>
<thead>
<tr>
<th>Cause</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road traffic accidents</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Burns</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Home accidents</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chronic wounds/Fistula</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2: Areas involved

<table>
<thead>
<tr>
<th>Area</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Leg</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Arm</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Hand</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Back</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Head</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Abdomen/Chest</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Operative Modalities

<table>
<thead>
<tr>
<th>Operative modality undertaken</th>
<th>Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split-thickness skin grafting</td>
<td>21</td>
<td>65.6</td>
</tr>
<tr>
<td>Full thickness skin grafting</td>
<td>3</td>
<td>9.4</td>
</tr>
<tr>
<td>Local flaps</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>Distant flaps</td>
<td>4</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Fig. 1: Application of VAC

Fig. 3: Pre-operative and post-operative photographs of a child having foot injury
Instruction to Authors

All material submitted for publication should be sent exclusively to the Journal of the College of Physicians and Surgeons, Pakistan. Work that has already been reported in a published paper or is described in a paper sent or accepted elsewhere for publication should not be submitted. Multiple or duplicate submission of the same work to other journal should be avoided as this fall into the category of publication fraud and are liable for disciplinary consequences, including reporting to Pakistan Medical & Dental Council and Higher Education Commission. A complete report following publication of a preliminary report, usually in the form of an abstract, or a paper that has been presented at a scientific meeting, if not published in full in a proceedings or similar publication, may be submitted. Press reports of meetings will not be considered as breach of this rule, but additional data or copies of tables and illustrations should not amplify such reports. In case of doubt, a copy of the published material should be included with a manuscript to help the editors decide, how to deal with the matter.

Authors can submit their articles by post or by E-mail: publications@cpsp.edu.pk to the Managing Editor, Journal of the College of Physicians and Surgeons Pakistan. Article can also be submitted by post or by hand on a Compact Disc (CD) with three hard copies (laser copies or inkjet, photocopies are not accepted). Articles submitted by E-mail do not require any hard copy or CD.

Material for Publication.

The material submitted for publication may be in the form of an Original research (Randomized controlled trial - RCT, Metaanalysis of RCT, Quasi experimental study, Case Control study, Cohort study, Observational Study with statistical support etc), a Review Article, Commentary, a Case Report, Recent Advances, New techniques, Debates, Adverse Drug Reports, Current Practices, Clinical Practice Article, Short Article, KAP (Knowledge, Attitudes, Practices) study, An Audit Report, Evidence Based Report, Short Communication or a Letter to the Editor. Ideas and Innovations can be reported as changes made by the authors to an existing technique or development of a new technique or instrument. A mere description of a technique without any practical experience or innovation will be considered as an update and not an original article. Any study ending four years prior to date of submission is judged by Editorial Board for its suitability as many changes take place over the period of time, subject to area of the study. Studies more than four years old are not entertained. JCPCP also does not accept multiple studies/multiple end publications gathered/derived from a single research project or data (wholly or in part) known as 'salami slices'.

Original articles should normally report original research of relevance to clinical medicine. The original paper should be of about 2000-2500 words excluding abstract and references. It should contain a structured abstract of about 250 words. Three to 10 keywords should be given for an original article as per MeSH (Medical Subject Headings). There should be no
more than three tables or illustrations. The data should be supported with 20 to 25 references, which should include local as well as international references. Most of the references should be from last five years from the date of submission.

Clinical Practice Article is a category under which all simple observational case series are entertained. The length of such article should be around 1500 - 1600 words with 15 - 20 references. The rest of the format should be that of an original article. KAP studies, Audit reports, Current Practices, Survey reports and Short Articles are also written on the format of Clinical Practice Article. Evidence based reports must have at least 10 cases and word count of 1000-1200 words with 10 - 12 references and not more than 2 tables or illustrations. It should contain a non-structured abstract of about 150 words. Short communications should be of about 1000 words, having a non-structured abstract of about 150 words with one table or illustration and not more than five references. Clinical case reports must be of academic and educational value and provide relevance of the disease being reported as unusual. Brief or negative research findings may appear in this section. The word count of case report should be 1200-1500 words with a minimum of 3 key words. It should have a non-structured abstract of about 100-150 words (case specific) with maximum of 10 references.

Review article should consist of critical overview/analysis of some relatively narrow topic providing background and the recent development with the reference of original literature. It should incorporate author’s original work on the same subject. The length of the review article should be of 2500 to 3000 words with minimum of 40 and maximum of 60 references. It should have non-structured abstract of 150 words with minimum 3 key words. An author can write a review article only if he/she has written a minimum of three original research articles and some case reports on the same topic.

Letters should normally not exceed 400 words, with not more than 5 references and be signed by all the authors-maximum 3 are allowed. Preference is given to those that take up points made in contributions published recently in the journal. Letters may be published with a response from the author of the article being discussed. Discussions beyond the initial letter and response will not be entertained for publication. Letters to the editor may be sent for peer review if they report a scientific data. Editorials are written by invitation. Between 3 to 10 key words should be given for all the category of manuscripts under the abstracts as per mesh [medical subject heading].

Dissertation / Thesis Based Article.

An article, based on dissertation, approved by REU, submitted as part of the requirement for a Fellowship examination of the CPSP, can be sent for publication provided the data is not more than four years old. Approval of REU is not required for an article submitted for second fellowship examination in lieu of dissertation. The main difference between an article and a dissertation is the length of the manuscript, word count, illustrations and reference numbers. Dissertation based article should be re-written in accordance with the journal's instructions to the author guidelines. Such articles, if approved, will be published under the category of Dissertation based article.

Ethical Considerations.

If tables, illustrations or photographs, which have already been published, are included, a letter of permission for re-publication should be obtained from author(s) as well as the editor of the journal where it was previously published. Written permission to reproduce photographs of patients, whose identity is not disguised, should be sent with the manuscript; otherwise the eyes will be blackened out. If a medicine is used, generic name should be used. The commercial name may, however, be mentioned only within brackets, only if necessary. In case of medicine or device or any material indicated in text, a declaration by author/s should be submitted that no monetary benefit has been taken from manufacturer/importer of that product by any author. In case of experimental interventions, permission from ethical committee of the hospital
should be taken beforehand. Any other conflict of interest must be disclosed. All interventional studies submitted for publication should carry Institutional Ethical & Research Committee approval letter.

Ethical consideration regarding the intervention, added cost of test, and particularly the management of control in casecontrol comparisons of trials should be addressed: multicentric authors’ affiliation may be asked to be authenticated by provision of permission letters from ethical boards or the heads of involved institutes.

Tables and Illustrations.
Legends to illustrations should be typed on the same sheet. Tables should be simple, and should supplement rather than duplicate information in the text; tables repeating information will be omitted. Each table should have a title and be typed in double space without horizontal and vertical lines on an 8-1/2" x 11" (21.5 x 28.0 centimeters) paper. Tables should be numbered consecutively with Roman numerals in the order they are mentioned in the text. Page number should be in the upper right corner. If abbreviations are used, they should be explained in footnotes. When Graphs, scatter grams, or histograms are submitted, the numerical data on which they are based should be supplied. All graphs should be made with MS Excel and other Windows/Macintosh compatible software such as SAS and be sent as a separate Excel file, even if merged in the manuscript.

S.I. Units.
System International (S.I) Unit measurement should be used. Imperial measurement units like inches, feet etc are not acceptable.

Figures and Photographs.
Photographs, X-rays, CT scans, MRI and photomicro-graphs should be sent in digital format with a minimum resolution of 3.2 mega pixels in JPEG compression. Photographs must be sharply focused. Most photographs taken with a mobile phone camera do not fulfill the necessary requirements and, therefore, not acceptable for printing. The background of photographs must be neutral and preferably white. The photographs submitted must be those originally taken as such by a camera without manipulating them digitally. The hard copy of the photographs if sent, must be unmounted, glossy prints, 5" x 7" (12.7 x 17.3 centimeters) in size. They may be in black and white or in color. Negatives, transparencies, and X-ray films should not be submitted. Numerical number of the figure and the name of the article should be written on the back of each figure/photograph. Scanned photographs must have 300 or more dpi resolution. The author must identify the top of the figure. These figures and photographs must be cited in the text in consecutive order. Legends for photomicrographs should indicate the magnification, internal scale and the method of staining. Photographs of published articles will not be returned. If photographs of patients are used, either they should not be identifiable or the photographs should be accompanied by written permission to use them.

References:
References should be numbered in the order in which they are cited in the text. At the end of the article, the full list of references should give the names and initials of all authors (if there are more than six, only the first six should be given followed by et al). The authors’ names are followed by the title of the article; title of the journal, abbreviated according to the style of the Index Medicus (see "List of Journals Indexed," printed yearly in the January issue of Index Medicus); year, volume and page number; e.g.: Hall RR. The healing of tissues by C02 laser. Br J Surg 1971; 58:222-225 (Vancouver style). Reference to books should give the names of editors, place of publication, publisher, year and page numbers. The author must verify the references against the original documents before submitting the article. The Editorial Board may ask authors to submit either soft or hard copy (full length) of all the articles cited in the reference part of the manuscript.
Abstract

Abstract of an original article should be in structured format with the following subheadings:

i. Objective.
ii. Design.
iii. Place & duration of study.
iv. Patients & Methods.
v. Results.
vi. Conclusion.

Four elements should be addressed: why was the study started, what was done, what was found, and what did it mean? Why was the study started is the objective. What was done constitutes the methodology and should include patients or other participants, interventions, and outcome measures. What was found is the results, and what did it mean constitutes the conclusion. Label each section clearly with the appropriate subheadings. Background is not needed in an abstract. The total word count of abstract should be about 250 words. A minimum of 3 Key words as per MeSH (Medical Subject Headings) should be written at the end of abstract. A non structured abstract should be written as case specific statement for case reports with a minimum of three key words.

Introduction.

This section should include the purpose of the article after giving brief literature review strictly related to objective of the study. The rationale for the study or observation should be summarized. Only strictly pertinent references should be cited and the subject should not be extensively reviewed. It is preferable not to cite more than 10 references in this segment. Pertinent use of reference to augment support from literature is warranted which means, not more than 2 to 3 references be used for an observation. Data, methodology or conclusion from the work being reported should not be presented in this section. It should end with a statement of the study objective.

Methods.

Study design and sampling methods should be mentioned. Obsolete terms such as retrospective studies should not be used. The selection of the observational or experimental subjects (patients or experimental animals, including controls) should be described clearly. The methods and the apparatus used should be identified (with the manufacturer's name and address in parentheses), and procedures be described in sufficient detail to allow other workers to reproduce the results. References to established methods should be given, including statistical methods. References and brief descriptions for methods that have been published but are not well-known should be provided; only new or substantially modified methods should be described in detail, giving reasons for using them, and evaluating their limitations. All drugs and chemicals used should be identified precisely, including generic name(s), dose(s), and route(s) of administration. For statistical analysis, the specific test used should be named, preferably with reference for an uncommon test. Exact p-values and 95% confidence interval (CI) limits must be mentioned instead of only stating greater or less than level of significance. All percentages must be accompanied with actual numbers. SPSS output sheet must be attached with manuscript to clarify results (p-values).

Results.

These should be presented in a logical sequence in the text, tables, and illustrations. All the data in the tables or illustrations should not be repeated in the text; only important observations should be emphasized or summarized with due statement of demographic details. No opinion should be given in this part of the text.

Discussion.

This section should include author's comment on the results, supported with contemporary references, including arguments and analysis of identical work done by other workers. Study limitations should also be mentioned. A summary is not required. JCPSP does not publish any
acknowledgement to the work done. Any conflict of interest, however, must be mentioned at the end of discussion in a separate heading.

Conclusion.

Conclusion should be provided under separate heading and highlight new aspects arising from the study. It should be in accordance with the objectives. No recommendations are needed under this heading.

Peer Review

Every paper will be read by at least two staff editors of the Editorial Board. The papers selected will then be sent to two external reviewers. If statistical analysis is included, further examination by a staff statistician will be carried out. The staff Bibliographer also examines and authenticates the references.

Assurances.

Authors should provide the following information in appropriate places in the manuscript:

- A statement that the research protocol was approved by the relevant institutional review boards or ethics committees and that all the participants gave written informed consent, if applicable,

- The identity of those who analyzed the data.

Authors of original research articles are not required to submit a formal Financial Disclosure Form at the time of submission. The journal's editor shall request it later, if necessary. However, authors should notify major conflicts of interest or the source of funding in their covering letter.

Conflict of Interest.

Authors of research articles should disclose at the time of revision any financial arrangement they may have with a company whose product is pertinent to the submitted manuscript or with a company making a competing product. Such information will be held in confidence while the paper is under review and will not influence the editorial decision, but if the article is accepted for publication, a disclosure statement will appear with the article. Because the essence of reviews and editorials is selection and interpretation of the literature, the Journal expects that authors of such articles will not have any significant financial interest in a company (or its competitor) that makes a product discussed in the article.

Abbreviations.

Except for units of measurement, the first time an abbreviation appears, it should be preceded by the words for which it stands.

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

Authorship Criteria.

As stated in the Uniform Requirements, credit for authorship requires substantial contributions to (a) the conception and design or analysis and interpretation of the data, (b) the drafting of the article or critical revision for important intellectual content, critical appraisal of findings with literature search and actual write up of manuscript, and c) final approval of the version to be published. Each author must sign a statement attesting that he or she fulfills the authorship criteria of the Uniform Requirements.

JCPSP strongly discourages gift authorship. Mere supervision, collection of data, statistical analysis and language correction do not grant authorship rights. Ideally all authors should belong to same department of an institute, except for multi-centre and multi-specialty studies. The Journal discourages submission of more than one article dealing with related aspects of the same study.

Reprints.

Three copies of the journal will be sent to the corresponding author.
Copyright.
The Journal of College of Physicians and Surgeons Pakistan is the owner of all copyright to any work published by the journal. Authors agree to execute copyright transfer of their Forms–ACP (Authors Certification Proforma) as requested with respect to their contributions accepted by the journal.
Material printed in this journal being the copyright of the JCPSP, may not be reproduced without the permission of the editors or publisher. Instructions to authors appear on the last page of each issue. Prospective authors should consult these before submitting their articles and other material for publication. The JCPSP accepts only original material for publication with the understanding that except for abstracts, no part of the data has been published or will be submitted for publication elsewhere before appearing in this journal. The Editorial Board makes every effort to ensure the accuracy and authenticity of material printed in the journal. However, conclusions and statements expressed are views of the authors and do not necessarily reflect the opinions of the Editorial Board or the CPSP. Publishing of advertising material does not imply an endorsement by the CPSP.
Bosch Pharmaceuticals (Pvt) Ltd.

Head Office: 4, Modern Society, Tipu Sultan Road, Karachi-75350 Pakistan.
Phone: 3211, Bosch House, Baloch Rd, Korangi Industrial Area, Karachi (Pakistan)
Website: www.bosch-pharma.com, e-mail: marketing@bosch-pharma.com

ISO 9001:2008 Certified Company