PJPS
PAKISTAN JOURNAL OF PLASTIC SURGERY
ISSN #: 2307-213X
Volume 09, Issue 01, March 2021

CONTENTS

Research Article

Outcome of Meek Grafting in Post-Traumatic and Post-Burn Patients

Ali Javed,[1] Nauman Gill[2]

[1-2] *Department of Plastic, Reconstructive Surgery and Burn Unit, Mayo Hospital, KEMU, Lahore*

Abstract

Introduction: The coverage of extensive chronic and post burn wounds is a very common dilemma for the Plastic specialist in the setting of limited donor sites. The Meek technique utilizes widely expanded postage stamp autografts to cover such large areas. This study determined the outcome of micrografting technique in post-traumatic & post burn wounds in terms of percentage of graft take.

Methodology: This descriptive case series was held at Department of Plastic Surgery & Mayo Burn Centre. Non-probability consecutive sampling was employed. The study was carried out between Dec 2019 and June 2020. In patients fulfilling inclusion criteria, Modified Meek grafting was done. Twenty patients with total body surface area >30% were included. The statistics of age, gender, etiology of wound, total area involved and graft take rates were recorded.

Results: The mean age was 28.62 years (range 9 – 60) and the average total body surface area (TBSA) involved of the patients was 37.30% (range 30–60%). The most common mechanism was post-burn, accounting for 82.5%of cases, while post traumatic was the cause in 17.5%.Mean graft take was 86.81% on the 10th post-operative day. Graft take in post-traumatic patients was 91.55% while in post burn patients was 85.81%.

Conclusion: The modified Meek technique can be utilized efficiently for larger areas of wounds where donor sites are minimal. It should be part of reconstructive surgeon's armamentarium of tools in coverage of large wounds.

Received | 07-01-2021: **Accepted** | 05-03-2021

Corresponding Author | Dr. Ali Javed ; **E-mail:** alijaved3693@gmail.com

Keywords | Modified Meek technique, Micrografting, Postage stamp grafting, large wounds

Introduction

Trauma is a top ranking cause of injury and death worldwide. In certain traumatic wounds, degloving injuries occur by the avulsion of skin and soft tissue after high energy shearing forces, leading to development of large wounds. These wounds are initially managed with repeated debridements and dressings. Later they are covered with autograft or flap reconstruction.[1] Burns are another leading cause of injury. In the past, due to a lack of understanding of the systemic effects of burn injury, massive burns had very high early mortality. Fortunately, a better understanding of burn pathology has significantly reduced the early mortality of severely burned patients.[2,3] Also, early wound coverage reduces chances of wound infection, contributing to improved morbidity and mortality.

Complete coverage of extensive wounds imposes a big challenge for the reconstructive surgeon.[4] Although the use of split thickness skin graft(STSG) or full thickness skin graft (FTSG) has provided a practical method to address wound closure, the paucity of donor sites is a problem when encountering large wounds.[5] Therefore it became necessary to explore other methods of wound coverage. There is a diversity of suggested mechanisms in literature to overcome this problem including postage-stamp technique,[6] mesh procedure,[7]

intermingled transplantation,[8,9] micro-dot skin grafting[10] and the Meek technique.[11,12]

Meek technique of micro grafting, first introduced in 1958,[13] involves the expansion of the skin autografts up to nine times. CP Meek achieved wound coverage with the use of autografts meshed with a special Meek-Wall dermatome and placed them on pre-folded gauzes in a uniform distribution. When those gauzes were expanded on the wound the gaps between autografts filled up from their margins to provide wound coverage. However, when mesh skin grafting technique was introduced by Tanner in 1964,[14] the Meek technique was overlooked due to its cumbersome method. Mesh grafting requires about the same amount of donor surface area as the wound, and it may prove difficult to achieve coverage in large wounds.

The original Meek technique was modified in 1993,[15] which was first published by Kreis et al, in which they used a special glue spray to hold the wooden corks and autografts (Figures 1 and 2). The second modification was nylon pleats instead of the parachute silk gauzes used originally by Meek in his experience (figure 3). These two additions simplified the technique, acquiring a response more welcoming than the original procedure. Now the technique is being used in many centers.[16]

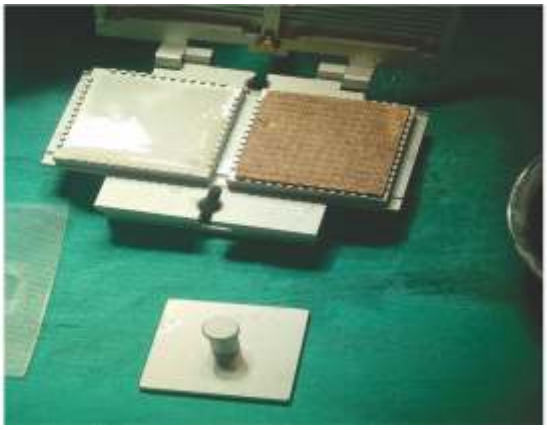


Figure 1: *Carrier Block with Cork Loaded Skin Graft which is Cut in 196 Small Pieces after Passing through the Machine*

The currently available local literature does not provide evidence about the efficacy of graft take with Meek technology. Percentage of graft take varies from 37.5% to 100% with average graft take 74.4% according to a study done by Abelardo Medina et al.[17] Moreover few studies have shown limited data about utility of this technique. Our study will improve the understanding of this technique and add to the body of literature about its use. It will also help the treating surgeon to improve patient outcomes in terms of recovery and lesser morbidity.

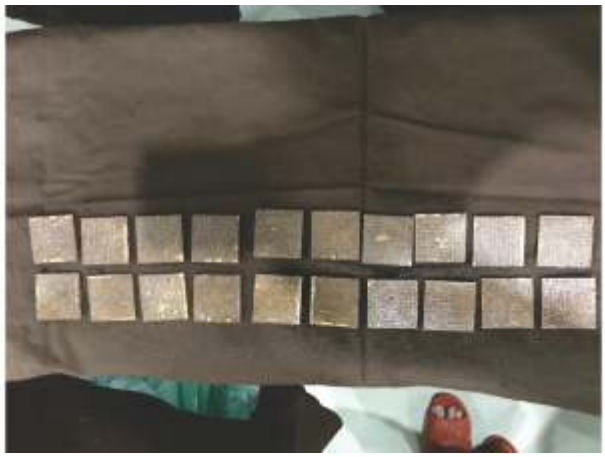


Figure 2: *Corks with Small Autografts after being Sprayed with Glue, Ready to be Transferred Over Prefolded Gauzes*

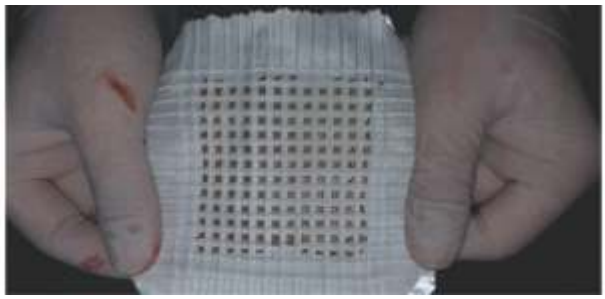


Figure 3: *Gauzes are Expanded and Autografts can be seen Clearly Separated Apart and Ready to Cover the Wound*

Methodology

This descriptive study was held at the Department of Plastic Surgery & Mayo Burn Center from 24-12-2019 to 24 June 2020. A sample size of 20 cases was calculated at 95% confidence level and 12% margin of error considering expected graft take of 37.5% as being successful. Non-probability consecutive sampling was done. Inclusion criteria was patients of either gender, aged between 08-60 years, with post-traumatic and post-burn wounds between 30-50% TBSA. Only wounds that were healthy and granulating were included. Only patients with normal Hemoglobin levels (12-16 gm/dl)& Serum Albumin level (3.5-5.2 gm/dl) were enrolled for the study. Patients who were in Sepsis with WBC value above 15000 and burn patients with inhalational injury were excluded.

All patients underwent standard pre-operative preparation. The procedures were performed under general anesthesia. After performing the graft procedure, the recipient wounds were covered with bactigras dressing, gauze and crepe bandage. First post-operative dressing was changed after 48 hours in the OR, where the outer crepe and gauze were removed and silver sulfadiazene applied over the intact bactigras. Subsequently the dressing was changed after every 48 hours. Skin graft take was assessed on the 10th post-operative day.

Results

In this study there were total 20 cases and the mean age of participants was 28.62 years, with oldest being 60 years and youngest 9 years old. The majority of the patients were male(n=13, 65%), while the remaining 7 (35%) were females.

Post-burn wounds were more common than post traumatic wounds (table 1). The average total body surface area involved was 37.30% and all were deep dermal or full thickness in depth.

Average graft take, observed on day 10, was 86.81%. Commonest reason of graft failure observed was hematoma followed by infection. Graft take percentage in patients with post-traumatic wounds was better (91.55%) than in those with post-burn wounds (85.81%, p value of 0.269). The duration for complete re-epithelialization was approximately 4 to 5 weeks for 1:9 and 3 to 4 weeks for 1:6 expansions.

Figure 4 shows a representative case on 10th post-operative day.

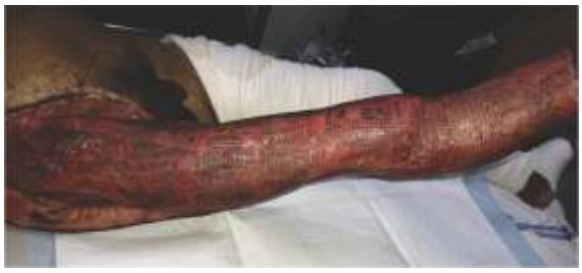


Figure 4: *Post op Day 10,Demonstrating Excellent Graft Take*

Table 1: *Etiology of Wounds*

Cause of wound	Frequency (n)	Percentage (%)
Post-burn	16	80
Post-traumatic	4	20

Discussion

Trauma and burns often result in large wounds requiring coverage, which poses a challenge for the reconstructive surgeons. After initial management as dictated by the cause of injury, these wounds have traditionally been covered by placement of STSG.[18] Traditionally, meshed skin grafting has been the accepted treatment modality to cover these large wounds[(19)] but paucity of donor area is an inhibiting element when harvesting grafts. Micrografting provides an alternative to conventional methods. The studies published before regarding coverage with micrografting techniques were mostly on burn wounds. Coverage of other types of wounds is not much focused in any of previous studies.

Our study analyzed the outcomes of modified Meek technique for coverage of large post-burn and post-traumatic wounds. Our experience suggests that it provides a safe way of achieving wound coverage with expanded autografts in both these types of wounds. It enables a greater expansion ratio as compared to meshed graft[(20)]. The gauzes handle and support the small autografts thoroughly and can be managed more easily than greater expansion ratios (1:6 or 1:9) of mesh skin graft technique.[11]

Kreis et al in 1993 demostrated on 15 patients with post-burn wounds, that modified Meek technique resulted in average graft take rate of 92% at 1 week post-op.[15] Similarly another study done by Lari et al in 2001 included total 7 patients with post-burn wounds. They removed the dressing on third post op day and replaced it with allograft till seventh post-op day in some of their early cases but later they didn't find it necessary to include in their technique as satisfactory results were obtained even without allograft. Their mean graft take was also 90%.[11] The results of both these studies are comparable to our study which showed the average graft take rate of 86.81%.

In another published study by Zermani et al done in 1997, they performed Micrografting technique on five severely burnt patients and found an average graft take rate of about 93% on 6th post-operative day.[21]

A study was done by Hseih et al over a period of 5 years on 37 severely burnt patients involving more than 40% of TBSA. They utilized the Meek technique to cover their wounds and observed a graft take rate of 90-95%. They discussed that complete re-epithelialization was noted in 7– 10 days for

individuals grafted with 1:4 expansions, 2–3 weeks with 1:6 expansions and 1 month with 1:9 expansions.[22] These are also similar to what we observed in our study.

However, Lumenta et al. in 2009 observed only a 70% graft take rate with the Meek grafting method which is less than our results.[12] This difference could be because of the usage of only 1:9 expansion in their patients whereas in our study we utilized a variable ratio depending on the TBSA of patient.

A recent study done in 2016 by Munasinghe et al, conducted Meek Micrografting in eleven patients with post burn wounds and detected 87% graft take. This value is closer to our average graft take rate.[23]

Epithelialization or healing on 10th post op day was a clinical assessment of graft take percentage as done by others.[12,23] We found the graft take percentage was more in trauma patients (91.55%) in comparison with patients who had the etiology of burns (85.81%) which is statistically insignificant. However the number of burn patients were five times more than post traumatic subjects.

In a study by EC Quintero, they stated that patients undergoing Meek technique have less hospital stay than mesh technique. Furthermore the average surgeries per patient are also fewer than the mesh technique.[24]

One reason for relatively rapid epithelialization seen with Meek technique may be that the autografts are distributed in a uniform pattern,[11,20] such that there is a shorter distance between grafts, about 8–9 mm with a maximally expanded 1:9 graft, compared with 11–12 mm in a Tanner meshed graft expanded by 1:6.[22]

While changing the dressing it was sometimes noticed that there was occurrence of infection under the gauze when trying to lift it up. In such circumstances if the gauze could be removed easily we removed it and if it was adherent firmly then we left it there to reduce chances of graft loss with it. While changing the dressing one need to be watchful because there is some possibility of autograft to displace, especially in the first few days. In some data authors have used allografts on 3-6 days of grafting[25] but in our study we didn't use it as Lumenta et al.[11] and Munasinghe et al[23] and found satisfactory results.

There were no statistically significant associations between outcome measures and age. We experienced better graft take of this technique when used on thorax anteriorly and limbs than other parts of the body, similar to what was observed by Alberto Sánchez-García et al.[26]

In our study we observed hematoma and infection were the most common causes of partial graft lost, and similar results were noted by Houschyar et al. and Chua et al.[27,28]

We did not focus on long term results but as previous studies have shown the long term follow up cases we agree that cosmesis is comparable to conventional meshed grafts.[21] The major drawbacks of Meek technique are that it is expensive, needs more staff in operation theatre, and requires increased time as compared to mesh grafting. This has also been demonstrated in previous studies by Almodumeegh et al and Zermani et al.[29,21]

The limitations of this study were that we studied 20 patients over a 6 months period and would recommend larger prospective controlled multicenter trials. Also we did not compare the meek technique with other methods of coverage such as mesh grafting. We also recommend for further research to be aimed at studying long-term results with respect to donor site morbidity and graft aesthetics. Another aspect to study would be the cost-effectiveness of Meek technique as compared to mesh grafting.

Conclusion

The Meek technique efficiently provides coverage to large areas when donor sites are scarce. Although it is labor-extensive, paying attention to the outlined principles allow achieving good results. It should be part of reconstructive surgeon's armamentarium of tools in the coverage of large wounds.

References

1- Graham GP, Helmer SD, Haan JM, Khandelwal A. The use of Integra® dermal regeneration template in the reconstruction of traumatic degloving injuries. Journal of Burn Care & Research. 2013 Mar 1;34(2): 261-6.

2- Bang RL, Gang RK, Sanyal SC, Mokaddas EM, Ebrahim MK. Burn septicaemia an analysis of 79 patients. Burns 1998;24:354–61.

3- Wurtz R, Karajovic M, Dacumos E, Jovanovic B, Hanumadass M. Nosocomial infections in a burn intensive care unit. Burns 1995;21:181–4.

4- Jackson D, Topley E, Carson JS, Lowbury EJ. Primary excision and grafting of large burns. Ann Surg 1960; 152: 167.

5- Biswas A, Bharara M, Hurst C, Armstrong DG, Rilo

H. 2010 Themicrograft concept for wound healing: strategies and applications.

6- Mcheik JN, Barrault C, Levard G, Morel F, Bernard FX, Lecron JC. Epidermal healing in burns: autologous keratinocyte transplantation as a standard procedure: update and perspective. Plastic and Reconstructive Surgery Global Open. 2014 Sep;2(9).

7- Pope ER. Mesh skin grafting. Veterinary Clinics of North America: Small Animal Practice. 1990 Jan 1; 20(1):177-87

8- Gang RK, Hamberg H, Arturson G, Hakelius L. Histological studies of intermingled transplantation of autografts and allografts in rabbits. Burns 1980;8: 80–5

9- Yang CC, Shin TS, Chu TA, Hsu WS, Kuo SY, Kuo SY, Chao YF. The intermingled transplantation of auto and homografts in severe burn. Burns 1980;6:141.

10- Lin SD, Lai CS, Chou CK, Tsai CW, Wu KF, Chang CW. Microskin autografts with pig skin xenograft overlay: a preliminary report of studies on patients. Burns 1992;18:321–5.

11- Lari AR, Gang RK. Expansion technique for skin grafts (Meek technique) in the treatment of severely burned patients.Burns. 2001 Feb 1;27(1):61-6.

12- Lumenta DB, Kamolz LP, Frey M. Adult burn patients with more than 60% TBSA involved–Meek and other techniques to overcome restricted skin harvest availability–the Viennese concept. Journal of burn care & research. 2009 Mar 1;30(2):231-42.

13- Meek CP. Successful microdermagrafting using the Meek-Wall microdermatome. Am J Surg 1958; 6(4): 557 – 558

14- Tanner JC, Vandeput JF, Olley JF. The Mesh skin graft.Plast Reconstruct Surg 1964;34:287–92.

15- Kreis RW, Mackie DP, Hermans RP, Vloemans AR. Expansion techniques for skin grafts: comparison between mesh and Meek island (sandwich-) grafts. Burns. 1994 Jan 1;20:S39-42.

16- Potgieter, D.J., 2016. Experience with the Meekmicrografting technique in major burns (Doctoral dissertation, University of Cape Town).

17- Medina A, Riegel T, Nystad D, Tredget EE. Modified meek micrografting technique for wound coverage in extensive burn injuries.Journal of Burn Care & Research. 2016 Sep 1;37(5):305-13.

18- Wong, Lesley K., et al. "Management of a circumferential lower extremity degloving injury with the use of vacuum-assisted closure." Southern Medical Journal, vol. 99, no. 6, June 2006, p. 628+. Accessed 21 June 2020.

19- Alexander JW, Macmillan BG, Law E, Kittur DS. Treatment of severe burns with widely meshed skin autografts and meshed allograft overlay. J Trauma 1981; 21:433.

20- Raff T, Hartman B, Wagner H, German G. Experience with modified Meek technique. Burns 1996;38(4): 142–6.

21- Zermani RG, Zarabini A, Trivisonno A. Micrografting in the treatment of severely burned patients. Burns. 1997;23(7–8):604–7.

22- Hsieh CS, Schuong JY, Huang WS, Huang TT. Five years' experience of the modified Meek technique in the management of extensive burns. Burns. 2008 May 1;34(3):350-4.

23- Munasinghe N, Wasiak J, Ives A, Cleland H, Lo CH. Retrospective review of a tertiary adult burn centre's experience with modified Meek grafting. Burns & trauma. 2016 Dec 1;4:1-7.

24- Quintero EC, Machado JF, Robles RA. Meek micrografting history, indications, technique, physiology and experience: a review article. Journal of wound care. 2018 Feb 1;27(Sup2):S12-8.

25- Papp A, Härmä M. A collagen based dermal substitute and the modified Meek technique in extensive burns. Report of three cases. Burns. 2003;29(2):167–71

26- Sánchez-García A, Vanaclocha N, García-Vilariño E, Salmerón-González E, Vicente-Pardo A, Pérez-del Caz MD. Use of the Meekmicrografting technique for coverage of extensive burns: A case report. Plastic Surgical Nursing. 2019 Apr 1;39(2):44-7.

27- Houschyar KS, Tapking C, Nietzschmann I, Rein S, Weissenberg K, Chelliah MP, Duscher D, Maan ZN, Philipps HM, Sheckter CC, Reichelt B. Five Years ExperienceWith Meek Grafting in the Management of Extensive Burns in an Adult Burn Center. Plastic Surgery. 2019 Feb;27(1):44-8.

28- Chua AW, Khoo YC, Tan BK, Tan KC, Foo CL, Chong SJ. Skin tissue engineering advances in severe burns: review and therapeutic applications. Burns Trauma. 2016;4:3.

29- Almodumeegh A, Heidekrueger PI, Ninkovic M, Rubenbauer J, Hadjipanayi E, Broer PN. The MEEK technique: 10-year experience at a tertiary burn centre. International wound journal. 2017 Aug;14(4):601-5.

Research Article

Use Of Integra with Split Thickness Skin Graft in Recurrent Post Burn Neck Contracture: Our Experience

Faraz Ahmad Tarar,[1] Farrukh Aslam Khalid,[2] Abdul Malik Mujahid,[3] ZainUlAbidin,[4] Amin Yousaf,[5] Moazzam Nazeer Tarar[6]

[1-6]*Jinnah Burn & Reconstructive Surgery Center, Lahore*

Abstract

Objective: To determine the frequency of successful application of Integra™ and split thickness skin graft in recurrent post-burn neck contracture.

Methodology: After informed consent and approval from the ethical board, this descriptive case series was held at Jinnah burn and reconstructive surgery center, from 1st July 2019 to 31st June 2020. Non-probability consecutive sampling was employed and a sample size of 30 cases was included. After release of contracture and excision of scar tissue, Integra™ was applied topped by a silicone gel sheet. The wound was inspected every 3-5 days. A thin split-thickness skin graft was applied after 3 weeks to replace the silicone gel sheet. Patients were followed up for Integra™ and STSG take. Data was analyzed with SPSS 20. For quantitative variables, means and standard deviations were observed. Frequency& percentages were employed to assess qualitative variables. Chi-square test was used and a P-value of<0.05 was taken as significant.

Results: The mean age of the patients was 34.51 ± 14.19 years (range 11-59). Out of 30 patients there were 13 (43.33%) male and 17 (57.6%) females. The mean duration of contracture among these patients was 595.42 + 177.31 days with the minimum duration being 225 days and the maximum 1003 days. Successful outcome in terms of complete vascularization at 3-weeks was observed in 28 (93.3%) of the cases, whereas unsuccessful outcome was detected in 2 (6.7%) of the patients.

Conclusion: IntegraTM and STSG can be considered as a promising modality in post burn recurrent neck contracture management and reconstructive surgery with the significantly high success rate in terms of complete vascularization and graft take.

Received | 23-01-2020: **Accepted** | 27-12-2020

Corresponding Author | Dr Faraz Ahmed Tarar, Senior Registrar, Jinnah Burn & Reconstructive Surgery Center, Lahore

Email Id : faraztarar86@gmail.com

Keywords | Integra™, split thickness skin graft (STSG), burn, Neck contracture

Introduction

Despite advances in the overall management of burn injuries, severe post-burn contractures continue to form a major chunk of reconstructive surgeries in developing countries[1]. The resultant post-burn contractures are often severe, long standing, and with secondary complications. Management of these problems accounts for up to 50% of a general plastic surgeon's workload.[2] Early excision of a burn wound is now linked to reduced morbidity and mortality in the burn patient.[3] Early and adequate coverage after excision minimizes the vicious metabolic catastrophic cycle consequent to a large uncovered wound and preempts infection.[4]

Artificial skin has been the holy grail for burn surgeon over the past 30 years. A major step in this direction

has been Integra™ which provides the dermal component of skin lost in deeper burns.[5] Integra was devised by Buke and Yannas in 1981 and it comprises 2 layers; an acellular dermal substitute and a silicone sheet that is removed once the dermal layer has integrated into the native tissue[6] (Figure 1). The dermal layer is composed of cross-linked bovine tendon collagen (collagen type I) and shark chondroitin-6-sulfate.[7] In a study by Lohana et al, success of Integra in terms of graft take in post-burn neck contracture was seen in 87% patients.[8]

Figure 1: ***a)*** *Integra Pack and* ***b)*** *Opened Pack Showing Bi-Laminar Layered Integra*

There are no local studies that have assessed the results of use of Integra with split thickness skin graft in recurrent post-burn neck contracture. So, the rationale of our study was to determine the outcome of Integra and split thickness skin graft in recurrent post-burn neck contractures. The result of this study will not only modify the treatment of this problem but also help set baseline data both at national and international level.

Methodology

This study was carried out at the Jinnah Burn & Reconstructive Surgery center, Lahore, over a period of 1 year from 1st July 2019 to 31st June 2020. All patients presenting with post-burn neck contractures were included. Non-probability consecutive sampling was employed until target sample size was achieved. Patients with uncontrolled comorbid conditions such as diabetes, hypertension and ischemic heart disease were excluded.

All patients underwent standard pre-operative preparation, and similar surgical procedures, with release of neck contracture and excision of scar tissue, and application of Integra. The patients were inspected every 3 to 5 days until 3 weeks, at which time, the outer silicon layer was removed and thin split thickness skin graft applied. The skin graft was attached with staples. Sufratulle dressing, absorbent gauze and crepe bandage were used as dressing. All the patients were followed up regularly by the researcher and outcome in terms of graft take was recorded on the 10th post-operative day. Graft take of 80% was labelled as successful.

Data was analyzed by SPSS 20. The means and Standard deviations were recorded for quantitative variables, whereas frequency& percentages were employed for qualitative variables. Chi-square test was used and a P-value <0.05 was considered significant.

Results

A total of 30 patients were included who underwent Integra and split thickness skin graft. The mean age of the patients was 34.51 ± 14.19 years of which the minimum age was 11 year and maximum of 59 years. Of these 30 patients there were 13 (43.33%) male and 17 (57.6%) females.

The mean duration of contracture among these patients was noticed to be 595.42+177.31 days with the minimum duration being 225 days and the maximum 1003 days.

Among these 30 post-burn neck contracture patients successful outcome in terms of complete vascularization after 3-weeks of follow-up was observed in 28 (93.3%) of the cases, whereas unsuccessful outcome was detected in 2 (6.7%) of the patients. Graft take in patients with successful Integra vascularization was 95%. Figure 2 shows the pre-operative, per-operative & post-operative pictures of a representative case.

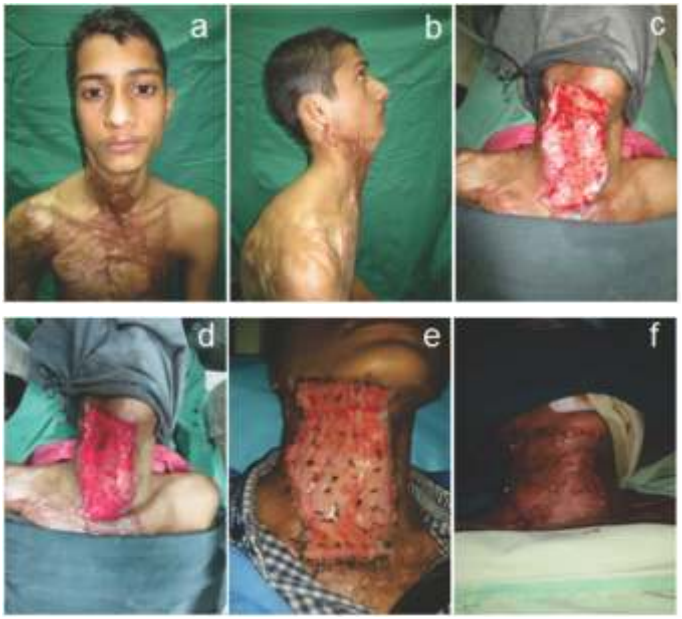
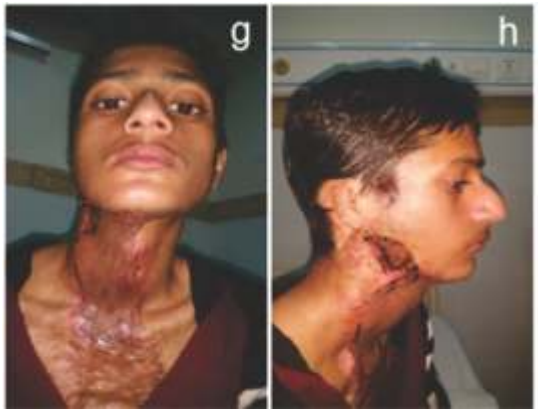


Figure 2: ***(a)*** *Pre-op Front View* ***(b)*** *Pre-op Side view* ***(c)*** *Excision of Scar Contracture* ***(d)*** *Application of Integra* ***(e)*** *3 Weeks Post-op after Removal of Silicone Layer from Integra* ***(f)*** *STSG Application Over Vascularized Integra*



***(g)** 3 Months Post-op front View **(h)** 3 months Post-Op side View*

Discussion

It is not uncommon for hypertrophic scars and contractures to form in deeper burns especially in areas of mobility like the neck and axilla. In developing countries where there is insufficient patient compliance and rehabilitation facilities such morbidities are frequent. In addition, scar morbidity is of higher significance in visible areas where camouflage with clothing is less likely for example the head and the neck.[9]

Progress in surgical and medical care have improved the mortality and outcome of complex burn injuries. A greater acumen and knowledge regarding the pathophysiology following burn injuries is a contributing factor, apart from better and holistic care of the burn patient in the recent years.[6,9] Skin substitutes produced by bioengineering that serve as dermal replacements with temporary epidermal components have revolutionized early burn wound coverage in deeper burns.[10] They have made possible early excision of burn wounds and coverage, preventing most post burn sequelae as coverage of burns exceeding 40% TBSA was earlier impossible due to limitations in the amount of graft that could be harvested. Burke et al reported successful coverage of burn wounds of up to 60% with of Integra™ in 10 patients.[6] Integra is now a well incorporated and effective wound coverage solution both for burns and other open wounds, tumor excision wounds and after contracture release.[11]

Weigert et al. reported the successful use of Integra™ for covering severe hand wounds with acceptable outcomes.[12] Integra™ has also been proven to successfully cover exposed skull after burns and cancer excision. For complex scalp wound defect, Komorowska et al have reported a successful take of graft after Integra application in 6 out of 7 cases.[13] Similarly, Faulhaber et al published the successful use of Integra in 19 patients who presented with post-tumor resection scalp defects[14]. However, multiple small ulcerations with partial necrosis were observed in 1 case with a co-morbidity of renal failure 29 months after the procedure.

We found significantly high percentage of successful outcome of Integra and split thickness skin graft in terms of complete vascularization i.e.93.3% and Integra was unsuccessful in 6.7% of the cases. Lohanan et al also reported the use of Integra in coverage of acute and secondary burn reconstruction.[8] Integra™ was used on 37 anatomical sites. Common sites of application were the upper limb 17 cases (45%), torso 13 (36%), lower limb 6 (16%) and head and neck 1 (3%). Integra was successfully used to cover a total of 64% total body surface area. Twenty three patients underwent second-stage skin grafting. The mean time from Integra to grafting was 23 days (with a range of 7- 55 days) and mean graft take was 87% (with a range of 75-100%).

Likewise Seo et al reported their results on the use of artificial dermis & STSG after excision of burn scars. STSG using artificial dermis was performed 11.6 months after burn injuries on average. The mean take rate was 95.9% (range, 74%-100%) in their study results.[9]

Hunt JA also illustrated better cosmesis after neck contracture release with Integra coverage. The mean take of graft with Integra was 90% (range =70-100%) whereas it was only 85% with an epidermal graft.[15]

Histologically, there is total replacement of the host dermis with Integra. There is remarkable differentiation of the papillary and reticular dermis with Integra that is similar to normal skin. For Integra take and dermal incorporation, the four phases observed are imbibition, fibroblast migration, neovascularization, remodeling, and maturation with the neo-collagen having a similar anatomical disposition to that in normal skin. Full incorporation is observed within a span of 2-4 weeks.

Conclusion

In our study we found that IntegraTM and STSG can be considered as a promising modality in post-burn recurrent neck contracture management and reconstructive surgery with the significantly high success rate in terms of complete vascularization and graft take.

References

1. Saaiq M, Zaib S, Ahmad S. The menace of post-burn contractures: a developing country's perspective. Ann

Burns Fire Disasters. 2012;25(3):152–58.

2. Goel A, Shrivastava P. Post-burn scars and scar contractures. Indian J Plast Surg. 2010; 43:63–71.
3. Makboul M, El-Oteify M. Classification of post-burn contracture neck. Indian J Burns. 2013; 21:50-4.
4. Mathur R, Jain PK, Chakotiya PS, Rathore P. Anaesthetic and airway management of a post-burn contracture neck patient with microstomia and distorted nasal anatomy. Indian J Anaesth. 2014; 58:210-3.
5. Cuadra A, Correa G, Roa R, Pineros JL, Norambuena H, Searle S, et al. Functional results of burned hands treated with Integra(R). J PlastReconstrAesthet Surg. 2012; 65(2):228–34.
6. Burke JF, Yannas IV, Quinby WC, Bondoe CC, Jung WK. Successful use of a physiologically acceptable artificial skin in the treatment of extensive burn injury. Ann Surg 1981; 194: 413–28.
7. VanZuijlen PPM, Gardien KLM, Jaspers MEH, Bos EEJ, Baas DC, van Trier AJM, et al. Tissue engineering in burn scar reconstruction. Burns Trauma. 2015; 3:18.
8. Lohana P, Hassan S, Watson SB. Integra™ in burns reconstruction: our experience and report of an unusual immunological reaction. Ann Burns Fire Disasters. 2014; 27(1):17–21.
9. Seo DK, Kym D, Hur J. Management of neck contractures by single dermal substitutes and skin grafting in extensive burn patients. Ann Surg Treat Res 2014; 87(5): 253-259.
10. Fitton AR, Drew P, Dickson WA. The use of a bilaminate artificial skin substitute (Integra) in acute resurfacing of burns: an early experience. Br J Plast Surg 2001; 54(3):208-12.
11. Chalmers RL, Smock E, Geh JL. Experience of Integra in cancer reconstructive surgery. J Plast Reconstr Aesthet Surg 2010; 63: 2081–90.
12. Weigert R, Choughri H, Casoli V. Management of severe hand wounds with Integra(R) dermal regeneration template. J Hand Surg Eur. 2011;36(3):185–93.
13. Komorowska-Timek E, Gabriel A, Bennet DC, Miles D, Garberoglio C, Cheng C, Gupta S. Artificial dermis as an alternative for coverage of complex scalp defects following excision of malignant tumors. Plast Reconstr Surg 2005 Apr;115(4):1010-7.doi:10.1097/01.prs.0000154210.60284.c6.PMID:
14. Faulhaber J, Felcht M, Teerling G, Klemke CD, Wagner C, Goerdt S, Koenen W. Long-term results after reconstruction of full-thickness scalp defects with a dermal regeneration template. J Eur Acad Dermatol Venereol. 2010 May;24(5):572-7.doi: 10.1111/ j.1468 - 3083.2009.03473.x. Epub 2009 Nov 3.
15. Hunt JA, Moisidis I, Haertsch P. Initial experience of Integra in the treatment of post-burn anterior cervical neck contracture. Br J Plast Surg 2000; 53(Issue 8): 652-685.

Research Article

Outcome of Type 4 Saddle Nose Deformity Using Combination of Block and Diced Cartilage

Hannah Khan,[1] Saadia Nosheen Jan[2]

[1-2]*Department of Plastic, Reconstructive Surgery and Burn Unit, Mayo Hospital, KEMU, Lahore,*

Abstract

Introduction: Saddle nose is a commonly encountered nasal deformity which is still challenging to treat. Our aim was to determine the efficacy of type IV saddle nose deformity using combination of block and diced cartilage.

Methodology: This descriptive case series was held at Plastic Surgery Department and burn unit, Mayo Hospital, Lahore from 1st March 2019 to 29th Feb 2020.A total of 60 (16 female, 44 males) patients with type 4 saddle nose admitted from outdoor department were selected for this study. The cases underwent open rhinoplasty and after raising the mucoperichondrial flaps septoplasty was done and dorsal augmentation done by using both the diced and the block cartilage. Results were assessed in the immediate post-operative period and at12 months for recurrence and dorsal deviation. The data were entered and analyzed by using SPSS-23.

Results: Our study showed that use of combination of block and diced cartilage for type 4 saddle nose deformity is efficacious. Out of the 60 patients included in our study, nasal dorsum deviation was seen in only 5 (8.3%) patients, and recurrence of saddle nose was seen in 5 (8.3%) patients

Conclusion: The use of combination of block and diced cartilage for augmentation of type 4 saddle nose is very effective. It provides a unique solution to saddle nose deformity by restoring the structural support and contour with minimal recurrence

Received | 28-01-2021: **Accepted** | 13-03-2021

Corresponding Author | Dr. Hannah Khan; **E-mail:** drhannahkhan@gmail.com

Keywords | Saddle Nose, diced cartilage, graft, augmentation rhinoplasty

Introduction

Beauty consists of due proportion, for the senses delight in well-proportioned things'. Thomas Aquinas (c. 1225 – 74), Summa Theologiae (1265–73). This is all the more important for the nose as it is the most prominent part of face. Saddle nose is a common deformity encountered in plastic surgery, yet it remains one of the most challenging deformities to treat.[1,2] Saddle nose deformity results from disruption of septal support and is characterized by middle vault depression and widening, columellar retrusion, tip over-rotation, deprojection, and nasal shortening. Numerous classification systems describe the manifestations of saddle nose, including those by Vartanian, Tardy et al, and Daniel and Brenner.[1,3,4] Correction of saddle nose deformity requires nasal augmentation.

Different Reconstructive materials available for nasal augmentation are alloplastics, autografts, homo grafts and xenografts. None have been described to be perfect. Biological and alloplastic materials have been in use for reconstruction of saddle nose for the last few decades. Alloplasts were the initial choice as they were readily available and did not have donor site issues. However the trend has shifted towards using biological materials. A systematic review done in 2018 by Liang et al has shown that with the use of autologous costal cartilage the complication rate was 14% as compared to with the use of alloplastics which has complication rate of

8%.[5] However, in another study autologous costal cartilage blocks are deemed superior, especially in Asian noses with thick skin, as they are associated with least complications such as extrusion, and resorption.[6] The main drawback of using costal cartilage block is that it warps in due course of time.[7]

Certain maneuvers have been described to prevent or reduce warping. These include cartilage carving or scoring as described by Nuara et al, who demonstrated good outcomes.[8] Another technique is the use of diced cartilage instead.[9-10] Diced cartilage provides support, without the potential for warping. However in thick Asian skin diced cartilage alone is often insufficient to provide adequate structural support.

This study aimed to evaluate the results of a combination of costal cartilage block and diced cartilage for nasal augmentation in type-4 saddle nose deformity.

Methodology

This study was conducted at Department of Plastic Surgery, Mayo Hospital Lahore from 1st March 2019 to 29th Feb 2020, using a non-probability, consecutive sampling method. All patients presenting in the mayo hospital outpatient department, aged between 20 and 40 years were included irrespective of gender. Patients with type IV saddle nose with no prior corrective treatment were included. Those with a history of radiation therapy in the region were excluded. The sample size was calculated as 60 by keeping the confidence interval equal to 95% with an 8% margin of error. Assessment was done in the immediate post-operative period and at 1 year by a senior plastic surgeon for cartilage warping and recurrence of saddle nose.

In this study, dorsal deviation/warping were defined as the presence or absence of deviated dorsal aesthetic lines. Recurrence of saddling was recorded if the saddle shape reappeared.

After taking informed consent, demographic data (i,e. age and gender) was collected and entered on a predesigned chart. The cases under-went open rhinoplasty. Septoplasty was done and nasal dorsum augmentation done by using both the diced and the block cartilage. These cases were followed up for 12 months for nasal dorsum deviation/warping, and recurrence. All the results were recorded on the patient's chart.

The data was entered and analyzed by using SPSS-23. Quantitative variables were presented as mean ±SD. Qualitative variables were presented as frequencies and percentages. Effect modifiers were controlled through stratification of age and gender. Post stratification chi-square test was applied and p 0.05 was taken as significant.

Results

A total of 60 patients were enrolled. Out of the 60 patients included in our study, 16 (26.7%) were females and 44 (73.3%) were males. Patients between ages 20-30 were 53 (88.3%) and between ages 31-40 were 7 (11.7%), as shown in Table 1.

The cause of saddle nose was post traumatic in 55 (91.66%), post infectious in 2 (3.3%) and iatrogenic in 3 (5.0%) patients (Table 2). No correlation was observed between age, sex or mode of trauma and the degree of warping.

Dorsal deviation/ warping was seen in 5(8.3%) patients and recurrence was seen in 5 (8.3%) patients at 1 year follow-up (Table 3). No correlation was observed between age, sex or mode of trauma and the degree of warping.

Post-operative swelling was seen in 9 (15%) patients and post-operative bruising was seen in 7(11.7%) patients. In all the patients, swelling settled on its own within a month. Bruising settled in two to three weeks. Infection was seen in 2 (3.3%) patients which settled with oral antibiotics at 2 weeks and graft extrusion was seen in 1 (1.7%) patient only in early post-operative period. In addition, contour irregularity was also seen in 2 (3.3%) patients. None of the patients had donor site complications (see Table 4)

Figures 1,2 and 3 show pre-and post-operative pictures of a few representative cases.

Table 1: *Demographic Characteristics of the Patients*

Variable	Frequency	Percentage
Age (in year)		
20-30	53	88.3
31-40	7	11.7
Gender		
Male	44	73.3
Female	16	26.7

Table 2: *Causes of Saddle Nose*

Causes	Frequency	Percentage
Trauma	55	91.66
Infection	2	3.3
Iatrogenic	3	5.0

Table 3: *Outcomes of Our Study*

Variable	Frequency	percentage
Dorsal deviation	5	8.3
Recurrence	5	8.3

Table 4: *Other omplications encountered in the patients*

Complication	Frequency	Percentage
Post-operative swellling	9	15
Post-operative bruising	7	11.7
Infection	2	3.3
Contour irregularities	2	3.3
Graft extrusion	1	1.7

problem of warping with time.

In our study we evaluated the results of nasal dorsal


Figure 1(A): *pre and post-operative Frontal view of Nose.*


Figure 1 (B): *pre and post-operative Lateral Views of nose.*

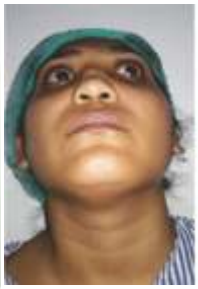



Figure 1(c) : *pre and post-operative basal views of Nose*


Figure 2 (A): *pre and post-operative Frontal views of Nose*


Figure 2 (B): *the pre and post-operative lateral view*


Figure 2 (c) : *pre and post-operative Basal views*


Figure 3 (A): *pre and post-operative Frontal view of nose*

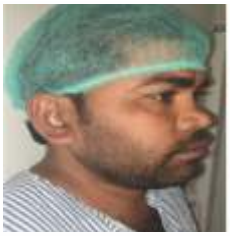



Figure 3 (B): *pre and post-operative lateral views*


Figure 3(c) : *pre and post-operative basal views of nose*

Discussion

Saddle nose is a universally prevailing deformity. The most frequent cause of this disfigurement remains prior trauma to nose, and we found the same in our results. Type 4 saddle nose deformity is especially challenging as it has both functional and aesthetic concerns and requires restoration of anatomical landmarks. Autologous costal cartilage has been used most frequently for correction of saddle nose, but it has the

augmentation using a combination of autologous costal block overlaid with diced cartilage. We found that the combination was effective in nasal dorsum augmentation with decrease in warping. In our study, dorsal deviation/ warping was seen in 5 (8.3%) of the patients, which is lower than documented in literature[7]. Our study showed the recurrence rate 8.3% (5 out of 60 patients) which is comparable to the study by velidedeoglu et al in which the recurrence using block and surgicell-wrapped diced

cartilage was 9.6% (5 out 52 patients).[11] One patient in our study experienced graft extrusion. This patient had very thin and scarred skin.In our study, post-operative swelling was seen in 9(15%) patients and post-operative bruising was seen in 7(11.7%) patients which is comparable to most of the studies.[8-10,12]

Advancing further on the technique of using diced cartilage, many authors have described different ways to use it. Fascia-wrapped diced cartilage was popularized by Daniel and it provided excellent even contour, but it needed additional donor area for harvesting of fascia.[9,10] Cerkes and Basaran proposed the use of diced cartilage wrapped in rectus abdominis fascia in 109 patients.[12] He obtained satisfactory results and fairly acceptable complication and revision rates. Five patients had insufficient augmentation. Using autologous glue comprising of fibrin and PRP, and combining it with diced cartilage was introduced by Bulloks et al. It is costly but has great flexibility as it provides scaffold to diced cartilage[13]. In this prospective study of 68 patients, the dorsal height was maintained and there was no major complication related to diced cartilage.

The use of unwrapped diced cartilage packed in stainless steel syringe has been described by Erol for minor contour irregularities. It can easily be molded with finger manipulation and it can overcome the problem of warping and cartilage graft visibility.[14] In our study, we have used the unwrapped diced cartilage and transferred it into nose with 1cc syringe using a modified suction assisted technique as described by Bashir MM et al[15] in their study. The technique uses an intravenous cannula fitted within the nasogastric tube and connected to a suction machine. It has better ease of filling.

Our study utilized the benefits of both block and diced cartilage. In our experience, favorable results are achieved by combination as the block cartilage provides solid dorsal support and augmentation, whereas the diced cartilage camouflages any subsequent warping, block show and irregularities in carving. The diced cartilage also smoothens out the sharp edges of costal cartilage. As we did not use any wrapping material the added morbidity of infection due to foreign body and unsightly scar/scar alopecia was also removed. Nonetheless, harvesting costal cartilage and its precise carving is cumbersome. Also, dicing the cartilage is a long and tedious process.

The limitations of this study are that it is conducted at a single center. Objective parameters for quantification of warping and augmentation were not employed. The assessment of outcome was done by a single surgeon. Future studies shall be targeted to obviate these limitations.

Conclusion

In conclusion, our technique using combination of block and diced cartilage is efficacious. It was satisfactory both for operating surgeon and the patient. It is safe and easily reproducible. It has satisfactory aesthetic and functional outcomes.

References

1. Durbec M, Disant F. Saddle nose: classification and therapeutic management. Eur Ann Otolaryngol Head Neck Dis. 2014;131(2):99-106
2. Rabie AN, Gamal A. Saddle nose deformity: pathological grading and anatomical reconstruction. Egypt J Otolayngol. 2017:33:31-36
3. Cakmak O, Emre IE, Ozkurt FE. Identifying septal support reconstructions for saddle nose deformity: the Cakmak algorithm. J Am Med Assoc Facial Plast-Surg 2015;17:433–9.
4. Celik M, Haliloğlu T, Bayçin N. Bone chips and diced cartilage: an anatomically adopted graft for the nasal dorsum. Aesthetic PlastSurg 2004;28:8–12.
5. Liang X, Wang K, Malay S, et al. A systemic review and meta-analysis of comparison between autologous costal cartilage and alloplastic materials in rhinoplasty. J PlastReconstrAesthetSurg 2018; 71:1164–1173
6. Shin Hyuk. Yoo; Yong Ju. Jang Rib cartilage in Asian rhinoplasty: new trends, Current Opinion in Otolaryngology & Head and Neck Surgery. 2019 ; 27(4) : 261-266
7. Ozturan O, Aksoy F, Veyseller B, Apuhan T, Yıldırım YS. Severe saddle nose: choices for augmentation and application of accordion technique against warping. Aesthetic Plast Surg. 2013 Feb;37(1):106-16. doi: 10. 1007/ s00266-012-0038-4. Epub 2013 Jan 9. PMID: 23299636.
8. Nuara MJ, Loch RB, Saxon SA. Reconstructive rhinoplasty using multiplanar carved costal cartilage. JAMA Facial PlastSurg 2016; 18:207–211.
9. Daniel RK. Aesthetic Plastic Surgery: Rhinoplasty. Boston, MA: Little Brown; 1993
10. Daniel RK, Calverts JW. Diced cartilage grafts in rhinoplasty surgery. PlastReconstr Surg2004; 113:2156–21
11. VelidedeoğluH,DemirZ,SahinU,KurtayA,Erol OO. Block and surgicel-wrapped diced solvent-preserved

costal cartilage homograft application for nasal augmentation.PlastReconstr Surg.2005;115(7):2081-93

12. Cerkes¸ N, Basaran K. Diced cartilage grafts wrapped in rectus abdominis fascia for nasal dorsum augmentation. PlastReconstrSurg2016;137:43–51
13. Bullocks JM, Echo A, Guerra G, et al. A novel autologous scaffold for dicedcartilage grafts in dorsal augmentation rhinoplasty. Aesthetic PlastSurg 2011; 35: 569–579
14. Erol OO. Injection of compressed diced cartilage in the correction of secondary and primary rhinoplasty: a new technique with 12 years' experience. Plast ReconstrSurg
15. Bashir MM, Sohail M, Khan FA, et al. A Modified Suction-Assisted Technique of Transfer of Diced Cartilage Graft to Carrier Material and Outcome of Direct Injection of Unwrapped Diced Cartilage in Rhinoplasty. J Craniofac Surg. 2017;28(4):924-927.

Research Article

Outcome Of Autologous Fat Grafting In Facial Contour Deformities with Tumescent Solution On Recipient Site

Javeria Khan,[1] Muhammad Sohail[2]

[1-2]*Department of Plastic Surgery, Mayo Hospital, Lahore*

Abstract

Objective: The study aimed to find the percentage reduction of fat graft in autologous fat grafting for facial contour deformities with tumescent solution infiltration at recipient site.

Methodology: This descriptive case series was held at Plastic Surgery Department from September 1st 2019 to March 1st 2020. Patients with contour deformities requiring fat grafting were included in the study. Amount of fat grafted was measured with ultrasonography on 3rd post-op day, then again at 3 months, to calculate percentage reduction of fat graft and grouped into two categories for the purpose of this study: <30% reduction, and >30% reduction.

Results: A total of 121 patients were included in this study. 57.02% (n=69) had <30% reduction in fat whereas 42.98%(n=52) had >30% reduction.

Conclusion: We concluded that a significant percentage of reduction of fat graft was recorded in autologous fat grafting for facial contour deformities with tumescent solution infiltration at recipient site

Received | 09-02-2021: **Accepted** | 26-03-2021

Corresponding Author | Dr. Javeria Khan; **E-mail:** jkchaudry@hotmail.com

Keywords | Facial contour deformities, autologous fat grafting, percentage reduction of fat graft

Introduction

Contour deformities of the face that require augmentation often result from a variety of congenital, developmental or acquired (trauma, infections, etc.) disorders. Over time fat grafting has gained immense popularity as an efficient technique to re-contour the face for these deformities. A number of important advantages are attributed to autologous fat: it is biocompatible, inexpensive, and easily obtainable in large amounts, with minimal morbidity. Furthermore, the vast majority of patients are satisfied with the short as well as long-term results.[1] Pioneered by Coleman et al, this technique and its indications are continually expanding.[2] It has thus become one of the most commonly performed procedures by plastic surgeons for facial re-contouring. However, there is lack of reliability and consistency of clinical results, which often creates the need for multiple fat grafting procedures.[3-5] The survival of adipose tissue is dependent on multiple factors in the micro environment of the area grafted.[6-7] These include variations in donor sites, fat harvesting and injection techniques. Many studies have been undertaken to find the standard fat grafting and processing techniques since the survival rate of grafted fat has been reported to be variable, ranging from 40 to 80 percent. The reasons for this variation in fat survival are however, still unpredictable.[8-12] To date, there is no published consensus on the optimal technique for fat grafting or graft retention longevity data which makes further research in this particular field evermore necessary.[13]

There is a lack of data evaluating effects of tumescent solution on fat graft viability after infiltration at recipient site. It is thought that infiltrating tumescent solution over the recipient site produces vasoconstriction which

decreases vascular permeability and fluid extravasation thus decreasing intra-operative bleeding, collection and hematoma formation. This not only helps to reduce bruising but also decreases chances of accidental intravascular embolization of fat.[14] It also results in lesser activation of cytokines and pro-inflammatory mediators, reducing chances of infection. All these factors may improve fat cell viability in areas infiltrated with tumescent solution and give better clinical results. The rationale of this study is to evaluate the clinical outcome of fat graft with tumescent infiltration at the recipient site in terms of fat graft retention.

Methodology

This was a descriptive case series held at the Plastic Surgery Department from September 1st 2019 to March 1st 2020, after approval by the hospital's ethics committee and taking informed consent from participants. Non probability, consecutive sampling was used. A sample size of 121 was calculated at 95% confidence level and 6% margin of error and taking expected frequency of reduction as 13%.[14] Patients having facial contour deformities, aged 5-70 years of both genders were included. Patients with contour deformities where previously graft was applied or with skin adherent to underlying bone were excluded. Patients with bleeding abnormalities, uncontrolled diabetes and hypertension, and connective tissue disorders were also excluded from the study.

Demographic, clinical (site and etiology of the deformity) and laboratory data of patients were collected. Pre-operative photographs were taken under standard lighting, distance, views and camera make and settings. All procedures were carried out under GA. After standard preparation and draping, areas requiring fat grafting were marked with a permament marker (as depicted in Figure 1). An appropriate quantity of tumescent solution was infiltrated at recipient site. Fat was harvested from abdomen or lateral side of thigh using 3mm two-hole blunt cannulas with 10ml syringe after infiltrating tumescent solution. Tumescent solution was a mixture of lignocaine and epinephrine in normal saline prepared as 0.4% lignocaine and 1:1,000,000 epinephrine

Fat was processed by sedimentation and filtration. It was then injected 30 minutes after tumescent infiltration with 1.5mm blunt-tip cannula. Fat was placed in different planes from deep to superficial layers in small volume till clinical symmetry was achieved with opposite normal side. Quantity of fat injected was noted in millimeters.

Figure 1: *Pre-Operative Mapping of Areas to be Injected with Fat*

Ultrasound was done at 72 hours to measure the total soft tissue thickness. Repeat ultrasound was done at 3 months follow-up. The percentage reduction of fat graft was calculated from these two values, as follows:

$$\text{Percentage reduction} = \frac{\text{Fat thickness at 72 hours} - \text{at 3 months} \times 100}{\text{Fat thickness at 72 hours}}$$

To ensure accuracy in measurement areas were marked with reference to anatomic landmarks using a permanent marker, pictures were taken and the same areas were examined in the follow-up visits. The same sonographer performed both follow-up ultrasounds measuring soft tissue thickness in millimeters.

The data was analyzed using SPSS version 26. Qualitative variables like gender and etiology were expressed as frequencies and percentages. Quantitative variables like age, patient and physician assessment scores, total volume of fat injected in one procedure and percentage reduction in fat graft volume were expressed as mean (SD). Chi square test was used. A p-value of <0.05 was considered significant. The data was stratified for age, gender, site of harvest and volume of fat transferred.

Results

A total of 121 cases fulfilling the selection criteria were enrolled. Age distribution in the study is shown in Table 1 and gender distribution in Table 2. The mean volume of fat transferred was recorded as 112.89 ± 86.99. Fat harvest sites is shown in Table 3 and showed that the abdomen was the most frequent site of harvest.

Regarding percentage reduction in fat content, 57.02% (n=69) had <30% reduction whereas 42.98%(n=52) had >30% reduction. (Table No. 4). The data was stratified for age, gender, site of harvest and volume of fat transferred. (Table No. 5-7). Figures 2 and 3 depict representative cases.

Table 1: *Age Distribution*

Age(in years)	No. of patients	%
5-20	29	23.97
21-70	92	76.03
Total	**121**	**100**
Mean±SD	**23.24±4.14**	

Table 2: *Gender Distribution*

Gender	No. of patients	%
Male	18	14.88
Female	103	85.12
Total	**121**	**100**

Table 3: *Site of Fat Harvest*

Site of fat harvest	No. of patients	%
Abdomen	69	57.02
Buttock	25	20.66
Right thigh	27	22.32
Total	**121**	**100**

Table 4: *Percentage Reduction in Fat Graft Volume*

Percentage reduction in fat graft	No. of patients	%
<30%	69	57.02
>30%	52	42.98
Total	**121**	**100**

Table 5: *Percentage reduction in fat with regards to age and gender*

Variable	Percentage reduction in fat		P value
	<30%	>30%	
Age group (years)			0.000
5-20	19	10	
>21	10	82	
Gender			
males	9	9	
females	63	43	0.51

Table 6: *Stratification of Percentage Reduction of Fat with Regards to Site of Harvest*

Site of harvest	Percentage reduction in fat		P value
	<30%	>30%	
Abdomen	43	26	0.17
Buttock	11	14	0.14
Right thigh	15	12	0.86

Table 7: *Stratification for Frequency of Percentage Reduction inFat with Regards to Fat Injected*

Fat injected	Percentage reduction in fat		P value
	<30%	>30%	
Upto 100 ml	36	40	0.005
>100ml	33	12	

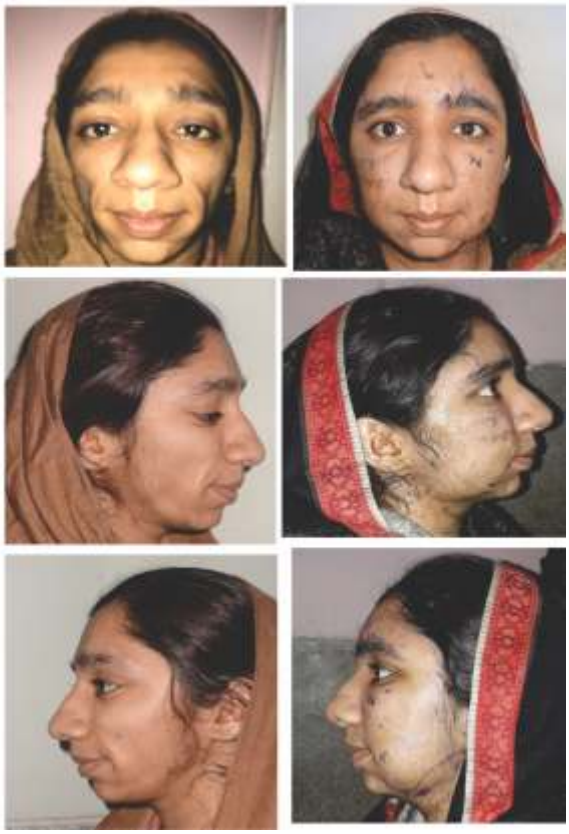


Figure 2: *Pre-op and 3 Months Post-op Pictures of a Patient who Underwent fat Grafting of Bilateral Cheeks*

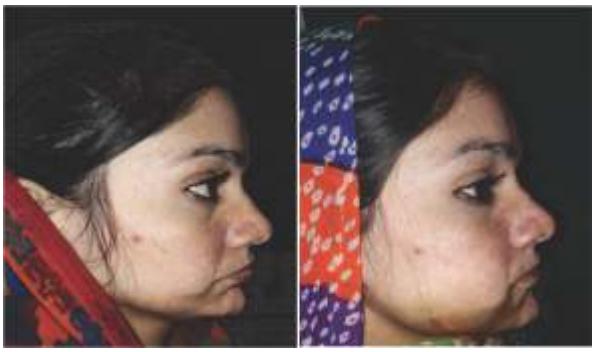


Figure 3: *A Young Woman with Contour Deformity of Lower Face Underwent Fat Grafting and was Satisfied with Resultant Chin Projection and Contour of Angle of The Mandible at 3 Months*

Discussion

Autologous fat grafting has many beneficial qualities that make it advantageous for correcting contour deformities or augmenting soft-tissue for reconstructive or cosmetic indications. The tumescent technique helps to reduce postoperative bruising, swelling and pain at the donor site. Because blood loss is minimized during tumescent liposuction, use of the technique reduces the chance that a blood transfusion will be needed. The expanded fat compartments allow the cannula to travel smoothly beneath the skin as the fat is removed.

The physiological effect of lignocaine and adrenaline on fat cell viability is not established. The few studies that have discussed the effect of tumescent solution on donor site,[16-17] state that the effect of epinephrine on fat cell viability is unclear[18-19] or negligible. However, epinephrine can be used as a hemostatic and to prolong the effect of lignocaine.[20]

Lignocaine in some studies has been shown to inhibit the growth of adipocytes in culture, and to slow down glucose transport, but the effect is transient[16], whereas in other studies there was no difference on fat cell morphology and viability with infiltration anesthetic.[17,21]

Wen H and others[14] investigated the application of facial liposuction and fat grafting in the remodeling of facial contour. In their trial, subcutaneous facial liposuction with tumescent technique and chin fat grafting were performed in all the cases, and it was revealed that marked improvement was achieved in all the patients with stable results. However, complications, such as asymmetry, unsmooth appearance and sagging were retreated with acceptable results.

A recent study by Bashir et al[15] measured fat retention in terms of thickness which was found to have a mean of 18.62+7.2mm and 12.88+6.21mm at 72 hours and 6 months respectively. These figures correspond to a reduction of transplanted fat by 30.77(13%). The findings of our study are similar to this trial.

Based on the results of this study, we did not find any improvement in fat retention with using tumescent infiltration on recipient site, rather it resulted in significant resorption of fat.

The hypothesis that "infiltrating tumescent solution over the recipient site produces vasoconstriction, decreases vascular permeability and fluid extravasation thus decreasing intra operative bleeding, collection and hematoma formation" may be further evaluated in local multicenter trials so that guidelines may be established while dealing with facial contour deformities.

Conclusion

We concluded that a significant percentage of reduction of fat graft was recorded in autologous fat grafting for facial contour deformities with tumescent solution infiltration at recipient site.

References

1. SR C. Structural fat grafts: The ideal filler? Clin PlastSurg 2001;28:111-9.
2. WP CR. Autologous fat transplantation. PlastReconstr Surg 1991;88:736.
3. Illouz YG SA. Autologous fat transplantation to the breast: a personal technique with 25 years of experience. Aesthetic PlastSurg 2009;33:706-15
4. Sterodimas A dFJ, Nicaretta B, Boriani F. Autologous fat transplantation versus adipose-derived stem cell-enriched lipografts: a study. AesthetSurg J 2011;31: 682-93.
5. Xie YZD, Li QF, et al. J PlastReconstrAesthet Surg. An integrated fat grafting technique for cosmetic facial contouring 2010;63:270-6.
6. Eto H1KH, Suga H, Aoi N, Doi K, Kuno S, Yoshimura K. The fate of adipocytes after nonvascularized Fat Grafting: Evidence Of Early Death And Replacement of Adipocytes. PRS 2010: 1081-92
7. JP1H. Tumescent and syringe liposculpture: a logical partnership. Aesthetics PlastSurg 1995(Jul-Aug;19 (4)321-33.
8. Zocchi ML ZF, Surg. AP. Biocompartmental breast lipostructuring. 2008;31:313-28.
9. Wolf GA GS, Patro N AS et al. Magnetic resonance imaging assessment of gluetal fat grafts. Aesthetic PlastSurg 2006;30:460-8.
10. Niechajev I, SuOPS. Long term results of fat transplantation: Clinical and histologic studies 1994;94:496-506.
11. Delay E GS, Tusson G, Sinna R. Fat injection to the breast AesthetSurg J 2009;29:360-76.
12. Park SKB, Shin Y. Aesthetic Plast Surg. Correction of superior sulcus deformity with orbital fat anatomic repositioning and fat graft applied to retro-orbicularis oculi fat for Asian eyelids. 2011;35:162-70.
13. Rubin A HS. Fat purification: survival of the fittest. PRS 2002:1463-4.
14. Wen H, Ma L, Sui Y, Jian X.The application of facial liposuction and fat grafting in the remodeling of facial contour.Zhonghua Zheng Xing Wai KeZaZhi 2015; 31(2):89-92.

15. Muhammad Mustehsan Bashir. Outcome of Conventional Adipose Tissue Grafting for Contour Deformities of face and role of Ex Vivo Expanded adipose tissue-derived stem cells in treatment of such deformities. J CraniofacSurg 2018;00.
16. Moore JH Jr KJ, Morales LM, et al. viability of fat obtained by syringe suction lipectomy: effects of local anesthesia with lidocaine. Aesthetic PlastSurg 1995; 19:335-9.
17. Kim IH, YJ, Lee DG, Chung HY, Cho BC. Evaluation of centrifugation technique and effect of epinephrine on fat cell viability in autologous fat injection. Aesthet Surg J 2009;29:35-9.
18. Keck M JJ, Ueberreiter K. Viability of preadipocytes in vitro: the influence of local anesthetics and pH Dermatologic Surgery June 2009;8:1251-7.
19. Sobjflrysak. The effect of lidocaine and adrenaline on the viability of injected adipose tissue—an experimental study in nude mice. J Drugs Dermatol 2005;4:311-6.
20. SBSG. Current concept of fat graft survival: Histology of aspirated adipose tissue and review of the literature. DermatolSurg 2006;26:1159-66.
21. PhanetteGirMDea. Fat grafting: evidence-based review on autologous fat harvesting, processing reinjection, and storage. Plastic and Reconstructive Surgery July 2012
22. Avendaño-Valenzuela G, Guerrerosantos J. Contouring the Gluteal Region With Tumescent Liposculpture. Aesthetic Surgery Journal2011;31:200–13

Research Article

The Speech Score: A New Concept in the Evaluation of the Functional Result in the Cleft Patient; A Multicentric Study.

[1]Edwar Alvarez MD, [2] David Alvarez MD, [3]Andrea Iñiguez MD, [4]Cleidys Pereira Sp. T.

[1-3]Reconstructive and Aesthetic Plastic Surgery Service. Continental Basic Hospital. Latacunga-Ecuador
[4]Phonoaudiology Service of the Operation Smile Ecuador Foundation

Abstract

Objective: Normal speech is an important parameter in an optimal palate repair. The Alvarez Speech Score was developed to evaluate post-repair and post-speech therapy phonation quality.

Methodology: Patients older than four years who came for consultation, regardless of their underlying pathology, severity of palatal malformation, sex, and previous surgical repair techniques were included in the study. Speech was assessed in the immediate pre-operative period and then one month postoperatively. The Score was used in 3 countries, by twenty-seven specialists who were trained in the score application. Audio recordings of the corresponding words in each level of Speech articulation were submitted for analysis. Speech was measured at the nasolabial, dental-palatine and velopharyngeal level.5 tests were applied, with a score of 1 - 3 allotted to each test, giving a maximum total of 15. At the end of the practice the results that each specialist obtained were compared in a collective way.

Results: 27 patients were included in the study. Comparable and satisfactory scores were obtained between the specialists who scored the speech samples. Table 1, 2,3 and 4 depict the breakup of the results obtained.

Conclusion: The Alvarez Score proved to be an easy and reproducible application instrument. It provides a useful measure of parameters for the evaluation of surgical results, and gauges the competency level and technical skills of the Cleft Surgeons. It can also serve as a quality control tool.

Received | 22-05-2021: **Accepted** | 05-06-2021

Corresponding Author | Edwar Alvarez MD **E-mail:** edwaralvarezc@hotmail.com

Keywords | Naso labial Insufficiency (NLI) Naso Labial Incompetence (NLIC) Dental Palatine Insufficiency (DPI) Dental Palatine Incompetence (DPIC) Velo Pharyngeal Insufficiency (VPI) Velo Pharyngeal Incompetence (VPIC) Effort Test (ET)

Introduction

During the last 50 years the interest in search of new and innovative reconstructive techniques for Lip and/or Palate surgery has motivated the Cleft Surgeons to look for the "ideal surgery" that allows to obtain the closest result to normal in the visual aspect of both the lip and the palate. Techniques for lip repair evolved from Le Mesurier, Tenison-Randall, Millard and lately the Fisher technique which has excellent results, but requires a long learning curve.[1-4] In the same way palate repair has evolved with wide dissection techniques, such as Veau-Wardill, Bardach, Von Lagenbeck and Furlow's. Currently more conservative techniques with minimal incisions are also in use. They have a long learning curve, but with encouraging results. Mixed techniques have taught us to temper surgical procedures by dissecting what is strictly necessary to achieve repair of the defect with minimal scars, we have described these as the Surgical Philosophy of the Palate, or cut as you go.[5-7]

Despite the efforts that allowed us to repair the congenital defect, we were "disappointed" when the patient did not speak well or had difficulty articulating some

words. Unfortunately their diagnosis, preoperative evaluation and postoperative improvement became elements of subjective analysis, because we did not have adequate methods to measure the quality of speech.

Without doubt diagnostic resources such as Fibronaso-endoscopy, Pressure-flow Nasometry, voice onset time (VOT), and Nuclear Magnetic Resonance allow us to have an approximate idea of the residual defect that can lead to a speech quality problem, but many of these "residual defects" can be compensated with an adequate speech therapy established at an early age.[8] Therefore, it becomes difficult to measure the effectiveness of the surgery, and to determine when the phonemic compensation began.

It is important to mention the "Pittsburg Scale" as an interesting instrument to measure the quality of pre and post operative speech in relation to Velopharyngeal insufficiency and Incompetence correction and repair, but this scale is incomplete.[9]

Therefore, we provide a new method to measure the known speech problems and new disorders that we are describing, that could be detected at several levels of speech articulation, among them the 1st Level or NASOLABIAL, the 2nd Level or DENTAL PALATINE and the 3rd Level or VELOPHARYNGEAL.

Methodology

With the respective knowledge and approval of the medical directors, the "Speech Score" was routinely applied in all cleft patients older than four years who came for consultation, regardless of their underlying pathology, severity of palatal malformation, sex, and previous surgical repair techniques. 27 cleft surgeons in 4 countries were invited one by one to listen to the same recording, and were asked to grade their results in the form. At the end of the exercise, the results were compared with the rest of their colleagues. 5 variables of speech were assessed on a scale of 1-3 each, to give a maximum allotted score of 15.

Surgeons in charge of the evaluation were trained individually and collectively prior to the score application. Sentences were designed to expose all sound varieties at the nasolabial, provoked nasolabial, dental palatine, velopharyngeal levels and effort test.

For nasolabial sufficiency or speech testing, the phonation of phonemes as "pa-pa" was graded 1 or mild for total escape of air with illegibility of the word, 2 or moderate when there was hyper-nasal speech with a whistle deformity contributing to the labial leakage, and 3 if there was optimal emission of the word.

Provoked nasolabial phonation assessment is similar to the nasolabial but focuses more on the pressure build up and release of the consonant "p" and was assessed using the same scheme.

In dental palatine speech evaluation, phonemes as "sa-se-si-so-su", were graded with 1 or severe for total escape of air with illegibility of the word, 2 or moderate when hyper-nasal speech existed or air escaped through the mouth, 3 for optimal emission of the word.

For velopharyngeal speech grading, phonemes as "ca-co-cu" were graded with 1 or severe for total escape of air with illegibility of the word, 2 or moderate when hyper-nasal speech existed and finally the optimal emission of the word was graded three.

The effort test consists of inflating a balloon to check for velopharyngeal seal competency. A grade of 1 or severe for the absolute inability to inflate the balloon, a grade of 2 or moderate when there was a partial ability to inflate the balloon, finally the optimal insufflation of the balloon was graded 3.

With previous consent of the children's parents an audio and video of all the patients was taken. After that, all the surgeons evaluated the same patient's speech recording, and their final score was compared.

In this way, the above mentioned "speech score" was applied once in immediate pre-operative period and again a month after the procedure. Both results were added to the patient's records

Results

Comparable results were achieved by the specialists for all speech parameters both pre-operatively and post operatively.

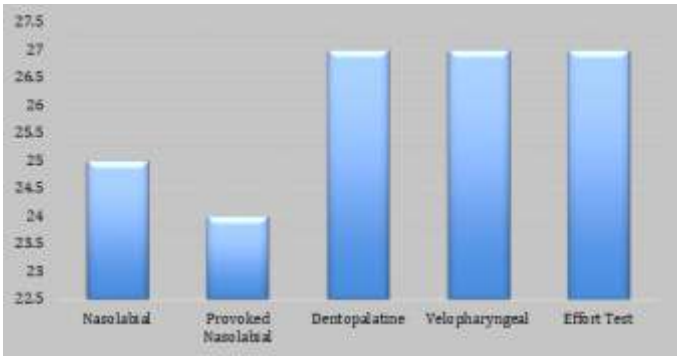


Figure 1: Pre-operative statistical analysis. Professional constant results

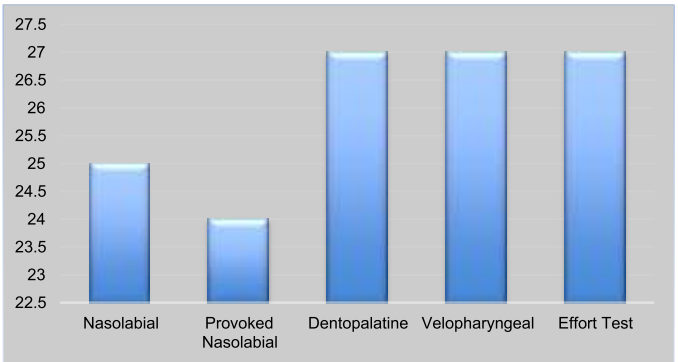


Figure 2: Postoperative statistical analysis. Professional Constant results

Discussion

Normal speech is one of the key aims in a cleft palate repair. This study held across 4 countries found consistently good results of repair at various levels. It can be inferred therefore that cleft palate repair has positive results on speech.

Normal speech is produced by an interplay of structures at various levels. At the nasolabial level, between the vestibular floor and the lips, the sounds that are modulated are the vowels a, e, i, o, u, and the consonants b, f, m, and v. With the intention to evaluate the clarity of the sounds at this level, we ask the patient to say words like "ma-ma".For the emission of this phoneme, we only need a modulation of the air flow in its path by an anatomic structure that could be contractile or not. Provoked nasolabial speech testing relies on the same level of articulation as the nasolabial, but it integrates the "p" consonant which needs different characteristics to the aforementioned. This "p" explosive sound needs an increase of intra-oral air pressure, the orbicularis oris sphincter has to be able to contain the air while the pressure inside the mouth is ascending. Hence the need for a good lip muscle capacity becomes evident, as this phoneme evaluates the “Naso Labial Competence”. As we will see further on, it also evaluates the palatal integrity and the velopharyngeal sufficiency, when the soft palate ascends while intra-oral air pressure raises.

For the dento-palatine level of speech articulation, the dental integrity as well as the hard palate play an important role. The partial or total lack of them will generate abnormal sounds, in the same way a hard palate fistula will make the air escape into the nose generating hypernasal speech due to "Dental Palatine Incompetence". The Maxillo- mandibular discrepancy secondary to maxillary growth disorders known as class three dento-facial anomaly or pseudoprognathism, prevents adequate dental or palatal sounds modulation secondary to "Dentopalatine insufficiency”. This is by far the most frequent speech disorder encountered, and it is illustr-ated by the negative effect on maxillary development caused by the aggressive and widely dissected scarring of Cheiloplasty and Palatoplasty, in a much more notice-able way when Maxillary orthopedy was absent. The modulated sounds are the letters: c, d, h, l, n, r, s, t, z.

At the velopharyngeal level, sound modulation has likely been the most widely studied and evaluated, since most surgical efforts and postoperative diagnostic evaluation such as Naso-endoscopy, Pittsburg Scale, etc., have been focused on it. It is the one that strictly evaluates the soft palate’s adequate length and the muscular competence of soft palate tensor, Palate Elevator and Uranus-estafilino muscles, as demonstrated in the third generation Veloplasty technique.[10] The sounds modulated here, such as the letters g, j, k, q, w, x, y, have been the most important sounds for the Cleft Surgeons because they indicate the effectiveness of the repair of the soft palate muscle tissue.

The effort test is a simple test that consists of inflating a balloon. It tests the integrity of all levels so far described working on all of them in full coordination, so we will need; an adequate labial length; a competent orbicularis oris muscle to grasp the balloon between the lips; an adequate palatal integrity to contain air while increasing intra-oral pressure; and an adequate palatal length to completely occlude the oral cavity roof and finally get the balloon inflated. It is logical to assume that a very short or insufficient palate will not occlude the roof of the mouth and therefore will not achieve the objective of inflating the balloon making evident the diagnosis of velopharyngeal Insufficiency. On the other hand, Velo-pharyngeal Incompetence has enough veil length that allows the possibility of inflating the balloon.

With this score we finally have an integral assessment instrument of speech at different modulation levels, which has important value in pre-operative diagnosis of the cleft patient, and we also have a useful scale of measurement for postoperative improvement and language therapy evaluation applied to every patient. With this simple quick method, we can put a quantitative numerical score to something that was always qualitative, and had a very subjective appreciation.

The highest optimal value in this system is graded as 15/15 and the minimum possible score is 5/15. The minimum acceptable value that a patient should ideally reach is 13/15 considering the scarring process due to multiple surgeries to which the patient has been exposed.

Conclusions

"The Alvarez Speech Score" allows us to measure the speech quality of a cleft patient, and at the same time provides us with information about the effectiveness of surgery and speech therapy.

This tool would also allow us to evaluate the technical quality of a surgeon, and a service in general. With this evaluation we would talk about the academic preparation that makes up a Plastic Surgery Service and most importantly seek to reinforce this knowledge for the patient benefit.

This score can be easily reproduced at all levels without the application of complex technologies.

Once the score is tested by others, it could be an instrument that allows measuring and comparing the effectiveness of one technique with another.

Acknowledgments

Dr. J. Núñez, Operation Smile Peru

Dr. M Fariña, Operation Smile Paraguay

Dr. R. Cabrera, Operation Smile Nicaragua

Dr. F. Córdova, Operation Smile Ecuador

Dr. Ghulam Qadir Fayyaz-Pakistan

References

1. Reddy GS, Webb RM, Reddy RR, Reddy LV, Thomas P, Markus AF. Choice of incision for primary repair of unilateral complete cleft lip: a comparative study of outcomes in 796 patients. Plast Reconstr Surg 2008;121(3):932-40
2. Rose W. Harelip and cleft palate. London: HK Lewis, 1891. CID:629CD4B6-71AB-49B4-9E99-8106BAE63DC0
3. Millard DR. Refinements in rotation advancement cleft lip technique. Plast Reconstr Surg 1964;33: 26 38.
4. Nordoff MS. Reconstruction of vermillion in unilateral and bilateral cleft lips. Plast Reconstr Surg 1984;73(1):52-61.
5. Perko M. The history of treatment of cleftlip and palate. In Historical Aspects of Pediatric Surgery 1986 (pp. 238-251). Springer, Berlin, Heidelberg.
6. Larossa D. The state of the art in cleft palate surgery. The Cleft palate-craniofacial journal. 2000 May;37(3):225-8.
7. Strong EB, Buckmiller LM. Management of the cleft palate. Facial plastic surgery clinics of North America. 2001 Feb 1;9(1):15-25.
8. Pamplona M, Ysunza A, Patiño C. Speech summer camp for treating articulation disorders in cleft palate patients. Int J Pediatr Otorhinolaryngol 2005; 69: 351-359.
9. Kuehn DP, Moller KT. Speech and language issues in the cleft palate population: the state of the art. Cleft Pal Craniofac J 2000; 37: 348-1-348-35
10. Edwar Alvarez, Romaisa Shamim Khan, David Alvarez MD, Andrea Iñiguez: Third generation veloplasty: elongation of the soft palate, a new concept and technique; Pak J of plastic surgery

Research Article

Delayed Stitch Sinus Development Post Face and Open Neck Lift

Yangmyung Ma,[1] Shafiq Rahman,[2] Muhammad Riaz[3]

Abstract

Face and neck lift is a common aesthetic surgery procedure where deep non-absorbable sutures can be used. Amongst the complications, delayed presentations of infections are scarcely reported. The authors report a case of a 65-year-old lady who presented with a 6-week history of swelling on both sides of the post-auricular region. This patient had received a minimal access cranial suspension face lift with open neck lift 10 years ago using two 2/0 Ethibond sutures for both lifts. There was no history of previous complications of the surgery. On examination, a stitch was visible on the right post-auricular area, which was removed. The left post-auricular area developed discharge a couple of days later and was managed similarly. Both areas healed within a few days. Our report identifies the risk of delayed development of stitch sinus and the role of appropriate surgical management, should signs of infections occur.

Received | 07-06-2021: **Accepted** | 15-06-2021

Corresponding Author | Dr Muhammad Riaz, Consultant Plastic Surgeon, Hull & East Yorkshire Hospitals NHS Trust Castle Hill Hospital, Cottingham, East Yorkshire HU16 5JQ; **Email**: mmriaz@hotmail.com

Keywords | minimal access cranial suspension face lift, open neck lift, stitch sinus.

Introduction

Face and neck lift surgery is a common aesthetic procedure where deep non-absorbable sutures are often used. Amongst the complications of face and neck lift surgery, infections leading to stitch sinuses are not generally known to occur. Although rare, stitch sinuses can cause a significant level of discomfort and morbidity to patients. We report a rare, delayed presentation of stitch sinuses 10 years after surgery and discuss its management.

Case Report

A 65-year-old lady presented with a 6-week history of bilateral symmetrical swelling of her post-auricular area. There was no history of previous complications. This patient had received a minimal access cranial suspension (MACS) face lift with open neck lift 10 years ago using 2/0 Ethibond sutures. The swelling eventually burst open with discharge. On examination, there was a visible stitch on the right post-auricular area, which was removed, and the area healed within a few days (Figure 1). A couple of days later, the patient presented at the clinic again with a history of similar discharge on the left post-auricular area with a visible stitch which was subse-quently removed (Figure 2). This side also healed within a few days. The patient remained asymptomatic and there has not been any swelling since.

Discussion

Face and neck lift is one of the common aesthetic procedures in the UK with 2134 recorded surgeries performed in 2019, a 7% increase from 2018.[1] Face and neck lifts have also consistently remained a popular surgical procedure for the last 10 years. Despite its popularity and widespread public acceptance, complications related to face and neck lift surgery continue to persist. These complications can be minimised by optimising the approach across three main areas: preoperative assessment and surgical planning, intraoperative surgical manoeuvres, and postoperative care[2]. Stitch sinuses can often present with erythema and tenderness to the auricular cartilage which may cause

significant discomfort and morbidity to patients. It is recommended that the offending suture(s) are removed and local wound care with an antimicrobial ointment applied[2]. Significant erythema and tenderness may require oral antibiotics to cover Staphylococcus, Streptococcus and Pseudomonas to prevent permanent damage to the cartilage[2]. This case reports a delayed presentation of stitch sinus after 10 years but with no symptoms of infection previously. The same sutures were used for the MACS face lift and neck lift, but the sinuses only developed in relation to the neck scars within the post auricular regions. The reason for these unusual presentations is difficult to explain but surgical removal resolved the problem and the patient remained asymptomatic.

Lee et al also reported a similar case of a patient with symptomatic unilateral periauricular sinus after undergoing a midface facelift two years prior[3]. The cause of the presentation was due to a preauricular sinus, which is a rare benign congenital malformation of the preauricular soft tissues[4]. Preauricular sinuses are mainly asymptomatic, but are inherited as incomplete dominant traits with various symptoms, have a male to female sex ratio of 2:35, and 50% of incidences are bilateral[6]. The possibility of congenital lesions must always be considered and surgeons should carefully assess the preauricular area before undergoing facelift surgery.

The authors advocate for more similar cases to be reported within the literature in order to optimise approaches to management in addition to increasing the evidence base when considering choice of deep sutures between absorbable versus non-absorbable. Plastic surgeons should therefore be aware of the risk of delayed stitch sinus development in face and neck lift surgery and aim to inform patients of this potential complication many years after the procedure.

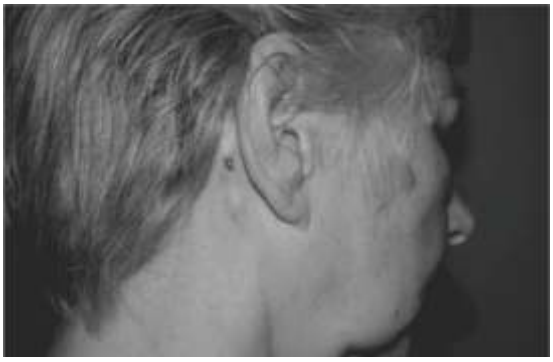


Figure 1 *Stitch Sinus with Visible Stitch on the Right Post-Auricular Area*

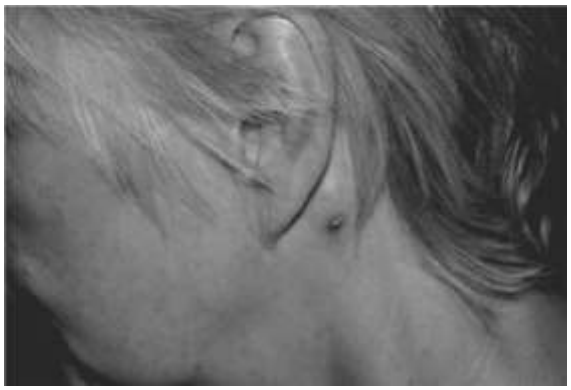


Figure 2 *Stitch Sinus with Visible Stitch on the Left Post-Auricular Area*

References

1. BAAPS. Cosmetic surgery stats: number of surgeries remains stable amid calls for greater regulation of quick fix solutions. May 20, 2019. Available at: https://baaps.org.uk/about/news/1708/cosmetic_surgery_stats_number_of_surgeries_remainsstable_amid_calls_for_greater_regulation_of_quick_fix_solutions#:~:text=According%20to%20the%20new%20figures,and%20blepharoplasty%20(eyelid%20surgery). [Accessed 2020 Oct 9].
2. Chaffoo RAK. Complications in Facelift Surgery: Avoidance and Management. Facial PlastSurgClin North Am. 2013;21(4):551-558.
3. Lee DW, Choi HJ, Kim JH, Oh MH. Hidden Preauricular Sinus as a Cause of Persistent Infection After Facelift. J Craniofac Surg. 2020;31(1):269-270.
4. Rachel D, Edward B, Larson B. Incidence of complications and early recurrence in 29 patients after facial rejuvenation with barbed suture lifting. Dermatol Surg.2010;36:348–354.
5. Chami R, Apesos J. Treatment of asymptomatic preauricular sinuses: challenging conventional wisdom. Ann Plast Surg.1989;23:406–411.
6. Minkowits S, Minkowitz F. Congenital aural sinuses. SurgGynecolObstet.1964;118:801–806.

Editorial

Role of Social Media in Promoting Aesthetic Surgery

Physical appearance is an important aspect of personal identity. The tripartite model[1] states that beauty ideals are reinforced by three primary sociocultural influences: peers, parents and media. These influences are in turn mediated by 'internalization' and 'comparison'. Internalization is when a person accepts society's beauty ideals and works to achieve them. Comparison relates to people evaluating and comparing themselves to others based on looks.

The beginning of the 21st century has seen a rapid rise in the use of social media platforms. This surge plays a dual role in popularizing aesthetic surgery. On one hand it is an influencer in establishing beauty standards. Many of these applications provide users with various filters to achieve the ideal image. According to a survey by the American Academy of facial plastic and reconstructive surgery (AAFPRS), in 2017, 55 per cent of facial plastic surgeons consulted patients that wanted to look better in selfies[2]. On the other hand, social media platforms are frequently used to promote aesthetic procedures by physicians working in this field. A study showed that 88% of plastic surgeons advertised (but the form of marketing varied), and 28.2% used social media platforms to do so[3].

Widespread social media use has its pros and cons in general. As long as the ethical dilemmas attached to such practices are kept in check[4], aesthetic surgery will continue to prosper under the socially influenced world as it is in current times.

References

1. Thompson JK, Heinberg LJ, Altabe M, Tantleff-Dunn S. Exacting beauty: Theory, assessment, and treatment of body image disturbance. American Psychological Association; 1999.
2. AAFPRS Annual Survey Reveals Trends in Facial Plastic Surgery - Plastic Surgery Practice
3. Chad K. Wheeler, MD, Hakim Said, MD, Roni Prucz, MD, Rod J. Rodrich, MD, David W. Mathes, MD, Social Media in Plastic Surgery Practices: Emerging Trends in North America, *Aesthetic Surgery Journal*, Volume 31, Issue 4, May 2011, Pages 435–441, https://doi.org/10.1177/1090820X11407483
4. Ethical marketing and social media for aesthetic practitioners (hamiltonfraser.co.uk)

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:

1. 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.
2. 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.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript.
6. Source(s) of support in the form of grants, equipment, drugs, or all of these.
7. 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.
8. The number of figures and tables.
9. 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.

Avoid citing a “personal communication” unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, authors should obtain written permission and confirmation of accuracy from the source of a personal communication.

For articles published in journals indexed in MEDLINE, the Pakistan Journal of Plastic Surgery considers PubMed (http://www.pubmed.gov) the authoritative source for information about retractions.

(b) Reference Style and Format

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.

9. Tables

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.

For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photo-graphic prints, usually 127 x 173 mm (5 x 7 inches). Letters, numbers, and symbols on Figures should therefore be clear and even throughout, and of sufficient size that when reduced for publication each item will still be legible. Figures should be made as self-explanatory as possible, since many will be used directly in slide presentations. Titles and de-tailed explanations belong in the legends, however, not on the illustrations themselves.

Photomicrographs should have internal scale markers. Symbols, arrows, or letters used in photomicrographs should contrast with the background.

If photographs of people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. When-ever possible permission for publication should be obtained.

Figures should be numbered consecutively according to the order in which they have been first cited in the text.

11. Legends for Illustrations (Figures)

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.

12. Units of Measurement

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

Temperatures should be in degrees Celsius. Blood pressures should be in millimeters of mercury, unless other units are specifically required.

13. Abbreviations and Symbols

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.

15. Guidelines for Authors and Reviewers

All material submitted for publication should be sent exclusively to the Pakistan Journal of Plastic Surgery. 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 for editors' consideration.

Authors can submit their articles by post or by E-mail: pjpspakistan@gmail.com to the Editor, Pakistan Journal of Plastic Surgery. Article can also be submitted by post or by hand on a Compact Disc (CD) with three hard copies. Articles submitted by E-mail are preferred mode of submission and do not require any hard copy.

All authors and co-authors must provide their contact telephone/cell numbers and E-mail addresses only on the title page of manuscript.

A duly filled-in author's certification proforma is mandatory for publication. The duly signed ACP must be returned to the Pakistan Journal of Plastic Surgery office as soon as possible. The sequence / order of the authors on ACP once submitted shall not be changed at any stage.

It is mandatory to provide the institutional ethical review board / committee approval for all research articles, at the time of submission of article.

The editors reserve the right to edit the accepted article to conform to the house-style of the Journal.

16. General archival and linguistic instructions

Authors should submit the manuscript typed in MS Word. Manuscripts should be written in English in British or American style/format (same style should be followed throughout the whole text), in past tense and third person form of address. Sentences should not start with a number or figure. Any illustrations or photographs should also be sent in duplicate. Components of manuscript should be in the following sequence: a title page (containing names of authors, their postal and Email addresses, fax and phone numbers, including mobile phone number of the corresponding author), abstract, key words, text, references, tables (each table, complete with title and footnotes) and legends for llustrations and photographs. Each component should begin on a new page. The manuscript should be typed in double spacing as a single column on A4 (8-1/2" x 11" or 21.5 cm x 28.0 cm), white bond paper with one inch (2.5 cm) margin on one side.

Sub-headings should not be used in any section of the script except in the abstract. In survey and other studies, comments in verbatim should not be stated from a participating group. Acknowledgements are only printed for financing of a study or for acknowledging a previous linked work.

From January 2016, all randomized trials should also provide a proof of being registered at the **International RCT Registry.**

17. Material for Publication

The material submitted for publication may be in the form of an Original research (Randomized controlled trial - RCT, Meta-analysis 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 three 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 three years old are not entertained. In exceptional cases, if Editorial Board is of the view that data is important, an extension of one year may be granted. Pakistan Journal of Plastic Surgery 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 - 1200 words, having a non-structured abstract of about 150 words with two tables or illustrations and not more than 10 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 800 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 5 - 6 references. Not more than 2 figures shall be accepted.

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 upon 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].

18. Thesis Based Article

Thesis based article should be re-written in accordance with the journal's instructions to the author guidelines.

Article shall undergo routine editorial processing including external review based upon which final decision shall be made for publication. Such articles, if approved, shall be published under the disclosure by author that 'it is a Thesis based article'.

19. 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 case-control comparisons of trials should be addressed: multi-centric authors' affiliation may be asked to be authenticated by provision of permission letters from ethical boards or the heads of involved institutes.

20. 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, (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.

The Journal discourages submission of more than one article dealing with related aspects of the same study. The journal also discourages the submission of case reports unless unreported from Pakistan. Unusual but already reported cases should, therefore, be submitted as letters to the editor.

21. Copyright

The Pakistan Journal of Plastic Surgery 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.

 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 PAKISTAN JOURNAL OF PLASTIC SURGERY 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 of PJPS. Publishing of advertising material does not imply an endorsement by the PJPS.

22. Proofs

Page proofs will be emailed, without the original manuscript, to the corresponding author for proof correction and should be returned to the editor within three days. Major alterations from the text cannot be accepted. Any alterations should be marked, preferable in red.