

Experience with Deltopectoral Flap

S A CHEEMA

Department of Oral and Maxillofacial Surgery, Mayo Hospital Lahore.

Correspondence To Dr. Saeed Ashraf Cheema, Email: sacheema2002@yahoo.com

Deltopectoral flap was utilized in a total of eight cases of soft tissue defects in head and neck region. It included one female and seven male patients. Defects were post ablative, posttraumatic and congenital in nature. Flap did excellent in all cases. The only complication that we came across was extrusion of the underlying mandibular reconstruction plate in two of the cases. Although a staged procedure, in selected cases, this flap may be a good option bringing soft pliable skin to the area with minimum donor site morbidity. Speed, versatility, reliability, convenience and low incidence of complications are the main advantages with this option¹ present our experience regarding use of this flap in various situations.

Key words: Reconstruction, Head and neck reconstruction, Deltopectoral flap

Deltopectoral flap is a useful option for soft tissue reconstruction of head and neck area providing skin cover, lining of the oral cavity, pharyngeal wall, or it can be tubed for esophageal reconstruction². This flap has also been used for microvascular transplantation³. Various modifications including a vertical split, a tangential split, and deepithelialization of portions of flap for tunneling have been described⁴. Role of this flap in reconstruction of the soft tissue defects of the head and neck area is evident from its extended arc of rotation which includes posterior triangular mastoid, ear, parotid, cheek, angle of mouth, and chin⁵. The only disadvantage with this flap is that the procedure is a staged one and may further require delaying of the flap⁶.

Experience with deltopectoral flap along with review of literature is being presented.

Material and methods

This study was carried out at The Department of Oral and Maxillofacial Surgery, Mayo Hospital Lahore, from January 2000 to December 2002. This was a retrospective study. Cases with soft tissue defects of head and neck area reconstructed with deltopectoral flap were included in the study. These included post traumatic, postexcisional and congenital defects in the area. Contraindications for utilization of this flap included any previous surgery in the donor area, which might have jeopardized the dominant pedicle. Reconstruction aimed at providing bulk, skin cover and or inner lining depending on the soft tissue defect. In majority of the post ablative cases reconstruction was done at the time of extirpation.

In post traumatic wounds reconstruction was delayed to get a stable, healthy granulating wound. Delaying of flap was done in cases where the required length of the flap approached mid lateral line at shoulder. Before delaying, defect was measured, mapped out and flap planned and marked after standard planning in reverse. Delay was then done for a period of two weeks and during this procedure flap was raised off from its underlying muscle through two parallel lines at the planned upper and lower borders of the future flap while leaving the distal

border intact. This flap was then sutured back to donor site for two weeks. After two weeks time the flap was raised through the previous incision lines and planes. The flap was sutured to the defect site and left there for another period of three weeks at the end of which flap was divided and inseting was done.

After raising the flap donor site was covered with split thickness skin graft from thigh with tie over dressing. Flap was not tubed in any of the cases. In one of the cases where extensive reconstruction of the area including floor of mouth, lip, and chin was done inseting was postponed for another week after division of the flap.

Results

This was a retrospective study for three years period. It included 8 cases, 7 males and 1 female. Age ranged from 18- 60 years. Five of the cases had postablative defects, three being cases of squamous cell carcinoma of cheek, two cases of basal cell carcinoma of the cheek area. Other three cases included one case of roadside accident, firearm injury and Romberg syndrome each.

Table 1

Pt. No.	Age/ Sex	Diagnosis	Reconstruction
1	53/M	Bcc-lt lower Lip	Lip & chin
2	50/M	Sec-lt cheek	Cheek prefabricated
3	40/M	Sec-Rt cheek	Cheek -lining& cover
4	60/M	Sec-floor of mouth	Floor of mouth
5	58/M	Bcc-Rt cheek	Cheek -cover
6	34/M	Roadside accident	Floor of mouth , lip,
7	18/F	Romberg Syndrome	Cheek -bulk
8	19/M	Fire arm injury	Both malar regions

Defects included cheek area in three cases. There was one case of Romberg syndrome with soft tissue deficiency at cheek area. Rest of the four cases had different soft tissue defects which included: defect at floor of the oral cavity, lower lip and adjacent chin area, floor of oral cavity plus lip and adjacent chin, both malar regions in one case each. Table 1.

Flap was delayed in four cases while in other four cases delay was not considered necessary.

Flap provided both the cover and lining of the oral cavity in three cases. In two cases it was used to line the cavity and in other two cases it provided the cover. In one case it was used to provide soft tissue bulk in the area. Flap was prefabricated in one case where skin graft was given at the under surface of the flap to line the oral cavity. In one of the cases skin cover was provided at malar area bilaterally by deepithelializing the midline portion and passing it beneath the bridge of the nose.

Donor site was covered with split thickness skin graft in all cases and part of this was excised at division and inseting of the flap and covered with proximal part of the flap not utilized in the reconstruction.

All of our cases did excellent except in two cases where they partially covered the mandibular reconstruction plate. In these two cases, plate extruded and timely intervention saved rest of the flap. Plate was removed and rest of the course was uneventful.

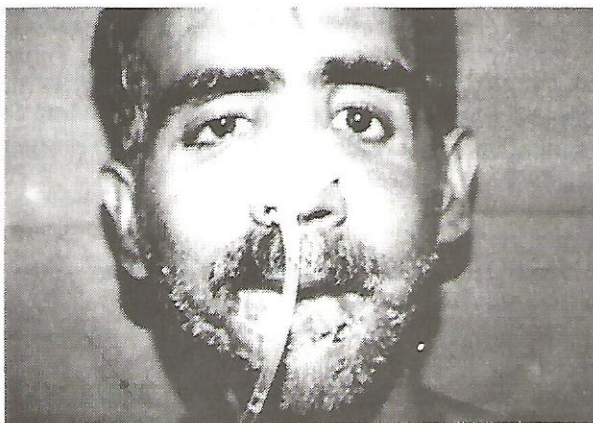


Fig. 1. patient with post traumatic defect . part of floor of mouth , along with full lower bucal sulcus. lower lip and chin is missing.



Fig. 2. Deltopectoral flap has been raised to reconstruct the defect in the same patient

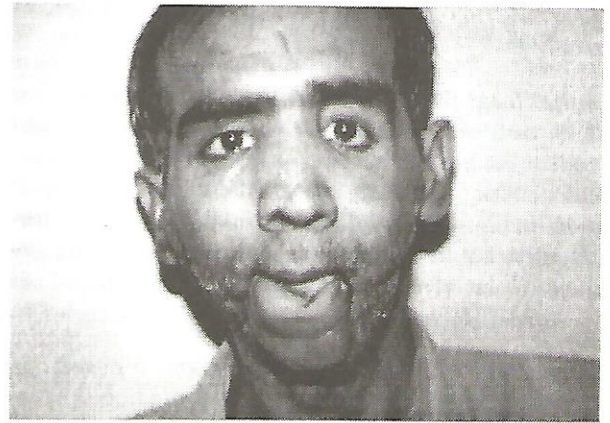


Fig. 3. Same patient after division and inseting of the flap.

Discussion

Deltopectoral flap is a fasciocutaneous flap described by Bakamjian in 1965⁷, which provides reliable, well matched cover from the shoulder and upper arm area⁸ Flap runs horizontally across the anterior chest wall with its upper border at and parallel to the clavicle line while lower border is at the anterior axillary fold. It is based on first three perforating branches of the internal mammary vessels. It has advantage of speed, versatility, reliability, convenience and low incidence of complications¹. Working end of the flap may be widened and lengthened considerably, with prior expansion allowing primary donor site closure. The flap may be delayed by elevation of its distal perimeter or ligation of the thoracoacromial vessels⁸.

Present series confirms these previous reports as a variety of defects were reconstructed with this option. (Table 1). The highest most limit, that was reached in this series, was a defect that had its upper limit at the infra orbital margin. In another case, post firearm injury, defect was lying horizontally, starting from one malar area passing under the bridge of the nose and involving the opposite malar area as well. Both the defect sites were covered with this flap while deepithelialized central portion of the flap was tunneled beneath the bridge of the nose.

We also agree that delaying the flap may increase the working length of the flap. ⁸ In one of the cases defect started from the floor of the oral cavity with missing bucal sulcus. lower lip and also whole of the chin. Delayed deltopectoral flap in this case provided an excellent solution for all these missing structures. Fig. 1,2 & 3.

Full thickness defects of cheeks present the challenging problem of reconstructing a two sided surface⁸. In this series cheek reconstruction was carried out in four of the cases. In one case defect was full thickness and flap was folded on itself to reconstruct the defect. In

another case flap was prefabricated with skin graft on the its under surface to line the oral cavity. Third case needed skin cover only while in fourth case flap was deepithelialized and was used to provide bulk in the area.

Various complications have been described in literature which include necrosis, partial flap loss, infection and separation^{2,9,10}. Present series differs markedly from these reports as none of these complications was noticed in the study. Series enjoyed very good results, as flaps remained healthy with out any loss. Infection, separation, fistula formation or any of the mentioned complications was not noticed in all cases. But series did experience another complications which is frequently noticed after the use of mandibular reconstruction plates¹¹.

In two of our cases mandibular reconstruction plate got extruded partially and intervention was necessary. We removed plates in both of these cases and rest of the course in the treatment was uneventful.

Conclusion

Though reconstruction with deltopectoral flap is a staged procedure and occasionally delaying of the flap may also be required, it remains an excellent reconstructive tool with reliability, versatility and minimum complications.

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