



A longitudinal study of angular artery island flap, used for reconstruction of facial defects

KEYWORDS: mid and upper facial defect, angular artery island flap, ipsilateral or contralateral, local flap, donor area

Introduction

Considering cosmetic and functional outcome, reconstruction of moderate to large mid & upper facial soft-tissue defects due to trauma, neoplasm, or infection remains a challenge. We used either ipsilateral or contralateral angular artery island flap in patients with full-thickness soft-tissue defects in those areas.

We present our experience in 30 patients (17 females & 13 males) with mean age of 65, with complex soft-tissue defects in mid & upper face reconstructed with angular artery island flaps.

Defect sizes changed from 1 × 2 cm to 3.5 × 5 cm.

Flap size varied from a length of 2.2 to 6 cm average (average 4 cm) and width of 2.7 to 6.5 cm (average 5 cm). All donor sites were closed primarily. Twenty seven flaps (90%) healed without any necrosis and completely survived.

Ipsilateral or contralateral angular artery island flap is a very convenient, safe and reliable flap for reconstruction of moderate to large mid and upper facial defects. Good aesthetic outcome for variety of facial defects could be obtained with this flap. Donor site morbidity also less.

Table 1. Age distribution.

Age range (years)	Number
31-40	1
41-50	2
51-60	6
61-70	9
71-80	9
>80	3

Table 2. Sex distribution

Sex	Number
Male	13
Female	17

Table 3. Diabetes.

Diabetes	Number
Yes	9
No	21

Table 4. Nature of lesion.

Lesion	Number
BCC	18
SCC	12

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Table 5. Site of lesions.

Site	Number
Paranasal	1
Infra orbital	6
Medial canthus	8
Malar region	6
Nasal dorsum	4
Nasal tip	2
Glabella	1
Nasal ala	2

Table 6. Size of lesions.

Length (cm)		Breadth (cm)	
Minimum	Maximum	Minimum	Maximum
1	4.5	1.5	5

Table 7. Size of defects.

Length (cm)		Breadth (cm)	
Minimum	Maximum	Minimum	Maximum
2	5.5	2	6

Table 8. Size of flaps.

Length (cm)		Breadth (cm)	
Minimum	Maximum	Minimum	Maximum
2.2	6	2.7	6.5

Table 9. Operative time-time required to create defect, raise flap & inset of flap.

Maximum (mins)	Minimum (mins)	Mean
120	70	89.17

Table 10. Post-operative hospital stay.

Maximum (days)	Minimum (days)	Mean
27	6	12.50

Table 11. Complication.

Complication	Number
No complication	23
Partial necrosis	3
Bulky	2
Haematoma	1
Ectropion	1

Table12. Relation between flap survival and smoking.

Smoking	Complication	No complication	p value
Yes	3	8	0.698
No	4	15	

Table13. Relation between flap survival and Diabetes.

Diabetes	Complication	No complication	p value
Yes	3	6	0.397
No	4	17	

Table 15. Facial aesthetics.

Best outcome	Worst outcome	Mean outcome
6	14	8.6

Table 15. Relation between flap dimension and complication

Null Hypothesis	Test	Sig.	Decision
The distribution of Flap_L is the same across categories of Complication_New.	Independent-Samples Mann-Whitney U Test	0.054 ¹	Retain the null hypothesis.
The distribution of Flap_B is the same across categories of Complication_New.	Independent-Samples Mann-Whitney U Test	0.027 ¹	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is 0.05.
¹Exact significance is displayed for this test.



Figure 1: BCC Left medial canthus.



Figure 3: Marking of flap.



Figure 2: Defect following resection of the lesion.



Figure 4: Identification of angular artery red arrow shows angular artery.



Figure 5: Delay of flap.



Figure 9: 2 weeks follow up.



Figure 6: Insetting of flap.



Figure 10: 3 months follow up.



Figure 7: Congestion of the flap.



Figure 11: 6 months follow up.



Figure 8: 1 week follow up.



Figure 12: 6 months follow up.



Figure 13: BCC of Left medial canthus & upper eyelid.



Figure 17: Follow up 2 week.



Figure 14: Defect after excision with flap marking arrow showing exposed bone.



Figure 18: 4 weeks follow up.



Figure 15: Flap elevation.



Figure 19: 3 months follow up.



Figure 16: Flap inset.



Figure 20: 6 months follow up.



Figure 21: BBCC near Right medial canthus.



Figure 25: Follow up of 2 weeks.



Figure 22: Excision of the lesion.



Figure 26: 4 Weeks follow up.



Figure 23: Elevation of flap.



Figure 27: 3 months follow up.



Figure 24: Insetting of flap.



Figure 28: 6 months follow up.



Figure 29: SCC Right medial canthus & adjacent lateral nasal wall.



Figure 33: BCC Left infraorbital region.



Figure 30: Excision of lesion with nasal bone removal arrow shows removed bone.



Figure 34: Defect after excision.



Figure 31: 4 weeks follow up.



Figure 35: Shows reach of flap over forehead.



Figure 32: 6 months follow up.



Figure 36: Shows reach of flap over forehead.



Figure 37: Reach go upto ipsilateral lateral canthus.



Figure 40: Insetting of flap.



Figure 38: Shows reach of flap to nasal tip.



Figure 41: After maxillectomy defect covered with angular artery island flap.



Figure 39: Reach of angular island flap contralateral upper eyelid.



Figure 42: After maxillectomy defect covered with angular artery island flap.