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THE VINTAGE AND VERSATILE:AN ANALYSIS OF 10 YEARS EXPERIENCE WITH THE USE OF FOREHEAD FLAP IN RECONSTRUCTION OF DEFECTS IN HEAD AND NECK REGION POST ONCOLOGIC RESECTIONS

Oncology

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ABSTRACT

OBJECTIVES: To retrospectively analyse the usefulness of forehead flap in the reconstruction of defects following resection in head and neck cancer

METHODOLOGY: Analysis of all patients who had reconstruction using forehead flap in past 10years was made,regarding the area covered,the outcome of flap,donor site morbidity.

RESULTS: The axial pattern fasciocutaneous forehead flap is used in reconstruction of a variety of donor areas in head and neck region,with success rate of 90%.With acceptable donor site morbidity.

CONCLUSION: Forehead flap can be used to cover a variety of oncological defects in facial region and has reliable outcomes.

KEYWORDS

INTRODUCTION:

Reconstruction and rehabilitation is an integral part of surgical oncology.Defects in the facial region after oncologic resections pose great challenge to the surgeon in giving the best possible cosmesis and functional outcome.

There are a wide range of options in the reconstructive ladder from primary closure of the defect to free flapreconstruction.Reconstruction options are based on the location and size of defect,donor tissue quality and reliability,ease of technique and overall morbidity. Regional flaps still predominate in the reconstruction of orofacial defects.Among them forehead flap plays versatile and unique role in the surgeons armamentarium.

The use of forehead flap for nasal reconstructions dates as early as 800BC as recorded in sushrutha veda[1].It is an axial Fasciocutaneous flap based on superficial temporal artery[2].Its local availability,long reach(even upto the contra lateral floor of mouth)and larger area of tissue availability makes it useful for a variety of facial defects like cheek,oral cavity, lower lip,maxillofacial region, and nasal ala .Good vascularity, reliability and easy technique make it ideal for a salvage flap in reresection defects[3].Being less bulky and having colour and texture match with the facial skin it gives good cosmesis. It also has less donor site morbidity.

Nevertheless forehead flaps need to be done as two staged procedures and may delay adjuvant therapy,can cause cosmestic compromise in fore head donor site.

The primary objective of this study is to assess the locations and scenarios in which forehead flaps were commonly used and to document the efficacy ,reliability,and the morbidity associated with forehead flaps.

METHODS:

Inpatient records of 46 patients,over a period of 10 years, across all ages, for whom forehead flap was used to reconstruct defect post oncologic resection were analysed retrospectively to identify the location of coverage,the clinical scenario in which forehead flap was used,the overall flap uptake,the rate of flap necrosis and clinical factors associated with it,the rate of flap complications,and donor site morbidity.

In all these patients written informed consent had been obtained.In patients who had previous neck dissection Doppler usg to locate and check for patency of superficial temporal artery was done.Flap was marked below the anteriorhairline and above eyebrow,flap raised from one end of forehead in subfacial plane over the periosteum upto visualising the contralateral temporalis fascia and proceeded with scissors over the fascia to preserve the nutrient vessels.Flap rotated to avoid acute angulation,and secured to the defect edge.Donor site covered with split skin graft.Flap pedicle tied in 3 weeks,viability of the flap confirmed and then flap revision made.

RESULTS:

The analysis included 46 patients, with 30 males and 16 females. Mean age is 52 for men and 46 for women

DEMOGRAPHIC:

	NO OF PATIENTS	MEAN AGE
MALE	30	52
FEMALE	16	46

Regarding the recipient site,in our series forehead flap was used to cover a variety of locations.Buccal mucosa defects predominated(12 patients).Followed by lower lip reconstructions.In both of these locations close proximity to the commissure is a common indication.Commissural involvement identified in 9 patients,Nasal reconstruction was done in 6 patients.In three patients nasomaxillary defect coverage was done.Two each for upper and lower gingivo buccal sulcus was done. Parotid region and cheek skin reconstruction was also done.Analysis of clinical scenarios revealed that most buccal mucosal defects were post composite resection pmmc failure. (7patients).

SITE COVERED:

SITE COVERED	NUMBER
BUCCAL MUCOSA	12
LIP	10
COMMISURAL INVOLVEMENT	9
NASAL ALA	6
NASOMAXILLARY	3
UPPER ALVEOLUS	2
LOWER GB SULCUS	2
PAROTID	1
SKIN MALIGNANCY OVER CHEEK	1

Analysis of efficiency of flap revealed that more in than 90 percent cases flap healed without any compromise in viability.3 patients had marginal necrosis,out of whom revision surgery was done for one.7 patients developed suture dehiscence,observed commonly in post radiotherapy patients(4) and nasal reconstructions(3).Two patients had flap necrosis as a result of infection warranting flap revision in

1.Orocutaneous fistula occurred in one patient following flap dehiscence.Donor site partial ssg uptake seen in 11 patients.was managed conservatively,or regrafting ,drilling was done in few patients.

	Viability	Infection	Dehiscence	Graft loss
	3	2	7	11
Normal	46	46	46	46
Percentage	6.5	4.3	15.5	23.9

DISCUSSION:

The objective of the study is to evaluate the efficacy and efficiency of the foreheadflap in reconstruction of facial defects.

The efficacy of the flap is well documented in literature, were forehead flaps is used to reconstruct a variety of defects.Since ancient times it has been the predominant flap of choice in nasal reconstructions.It has also been used in orbitomaxillary[4],intraoral,cheek reconstructions[5].In our study commissural involvement of both buccal mucosal and lower lip defects predominated followed by nasomaxillary region.It reflected the incidence of cancer in our region.The non bulky ,pliable nature of the flap made it ideal for commissure reconstructions with good salivary competence.The colour match ,regional availability,and low morbidity made it a good choice for naso maxillary reconstructions.It has also been used in reconstruction of intraoral defects including floor of mouth and cheek skin defects,reflecting the versatility of the flap.

Booth PW et al[6] described it as a lifeboat flap in view of its reliability and usefulness when other local flaps failed or cannot be used.In our series seven of the buccal mucosal defects which were covered were post composite resection, pectoralis major myocutaneous flap failures.

The success rate with regard to the viability of flap is 94%.In 3 persons marginal necrosis was found.No case of total flap loss occurred .This is matching with the published standards like Yan Z et al[7] who described partial necrosis in 2 out of 14 patients in whom forehead flap was used in nasi facial and basicranial defects.McGregorl et al [8]used forehead flap for reconstruction of intraoral defects and reported 100% success rate.

Infection of forehead flap occurred in 2 patients within the intraoral portion of the flap,resulting in sloughing and suture dehiscence ,one patient required flap revision.Mohammed Ilyas shaik et al[9] in their study reported 10% incidence of infection in forehead flap reconstructions.

Suture line dehiscence occurred in 7 patients.4 in post composite salvage scenario and 3 in nasal reconstruction site.In post composite scenario suture dehiscence is attributed to marginal necrosis,effect of radiotherapy and infection.In nasal reconstructions low vascularity of the alar region skin may have contributed to dehiscence.In comparison to existing data where upto 20% of suture line dehiscence is reported,13% reported in our series is acceptable .

In 11 patients there were partial graft failure which were managed by regrafting,drilling and regrafting and in very small losses conservatively. Periosteal breach during flap raising is a factor for graft loss along with infection.

In this era of free flap reconstruction,affordability, availability and technical ease with acceptable function and cosmesis makes forehead flap an excellent choice in reconstruction of head and neck defects post oncological resections.

SAMPLE CASES:

POST COMPOSITE ORAL CAVITY DEFECT

PRIMARY CHEEK DEFECT

NASOMAXILLARY DEFECT

CONCLUSION:

Forehead flap can be used to cover wide range of recipient regions. Nasal ala,commissure involvement in buccal and lip defects predominating.Its a salvage flap for post pmmc failure in buccal mucosa.It has high reliability in viability and reach.Donor site morbidity is acceptable with some cosmetic compromise.There is no long term functional morbidity regarding mouth opening and oral intake.

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