Section: Plastic Surgery

Original Research Article

EFFICACY OF DIFFERENT METHODS FOR RECONSTRUCTION OF LIP DEFECTS: AN OBSERVATIONAL STUDY

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ABSTRACT

Background: To evaluate the aesthetic and functional outcomes of various surgical procedure for reconstruction of lip defect. **Materials and Methods:** This Prospective observational study was conducted in Medical College and Hospital, Kolkata over a period of January 2018 to September 2019 with all patients with lip pathology who attended Plastic Surgery OPD at Medical College and Hospital, Kolkata. Based on previous years' records, we recruited 20 patients. **Result:** The aesthetic and functional outcomes of various surgical procedure for reconstruction of lip defect was evaluated and tabulated. **Conclusion:** Primary closure, local and locoregional flaps provide better aesthetic and functional outcomes in comparision to distant flaps.

INTRODUCTION

Lip reconstruction is a particular challenge to the plastic surgeon because the lips are the dynamic center of the lower one-third of the face. They have a very important role in aesthetic balance, facial expression, speech, and deglutination which cannot be replicated by any other tissue substitute. Lip reconstruction must consider both functional and aesthetic outcome and the surgical techniques employed are often overlapping. The aesthetic consideration for lip reconstruction is to provide adequate replacement of external skin with maintenance of the aesthetic balance of the vermiliocutaneous junction and lip aesthetic units. The functional consideration of lip reconstruction is to maintain intraoral mucosal lining and preservation of the surface area of the oral aperture. The competence of the orbicularis muscle sphincter must also be maintained, as this is critical to achieving a functional recovery.[1,2]

Lip cancer and trauma are the two most common causes of lip defects. Other causes include infectious disease, vascular anomalies, cleft lip, vasculitis, and congenital nevi.[3]

When the defect includes more than 1/3 of the lip, primary closure is not possible. Local, regional and distant flaps are used for such cases. Local and regional flaps are the mainstays for the reconstruction of lip defects, although free flaps may also be used for more extensive defects. Reconstruction using local flaps achieves better functional and aesthetic results compared with free flaps.[4] In the present article, we describe several methods of reconstruction of lip defects due to various causes.

MATERIALS AND METHODS

This Prospective observational study was conducted in Medical College and Hospital, Kolkata over a period of January 2018 to September 2019 with all patients with lip pathology who attended Plastic Surgery OPD at Medical College and Hospital, Kolkata. Based on previous years records, we recruited 20 patients.

Inclusion Criteria: All patients with lip pathology who attended plastic surgery OPD at Medical College and Hospital, Kolkata who gave valid consent to be included in the study.

Exclusion Criteria:

- Patients with tumor excision with involvement of margin
- Traumatic lip defects closed primarily
- Having associated disease like

Diabetis mellitus
Chronic renal disease
Peripheral vascular disease

- Those who refused to give consent for the study

Study Technique

- Study population was chosen from all the patients attending plastic surgery out-patient department with the diagnosis of lip pathology requiring soft tissue reconstruction.

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- History taking and clinical examinations was carried out to confirm the diagnosis clinically and to ascertain the applicability of inclusion and exclusion criteria in the patient before allocating the patient in the study population.
- The patients were selected as per inclusion criteria, who required reconstruction of the lip defect following either excision of various lesions of lip like tumour, vascular anamolies etc or having traumatic defects. The option of type of reconstruction was based on extent and location of the defect, age of the patient and local and general condition of the patient. Local and loco regional flaps was the method of choice when the donor area was healthy and well vascularised. The choice of flap was based upon the site&size of the defect, availability and quality of the donor tissue and reach of the flap to cover the defect.
- The free flaps were used in cases where there was no suitable loco regional flap available as in case of mutilating trauma, large defect not manageable with local flaps etc.
- Patients with lip defects following excision of malignant tumors required neck dissection.
- Patients of the study population were investigated optimally and pre anesthetic fitness was judged. Traumatic lip defect cases were evaluated for associated faciomaxillary and other injuries. Oral hygiene was optimized preoperatively.
- Data collection, laboratory investigation, histopathological examination and radiological investigation like CECT, MRI, Colour doppler study were obtained as needed.
- The whole of the surgical procedure was explained to the patients. Informed consent was taken from every patient.
- The choice between delayed and immediate coverage depended on local condition of the wound, exposure of the vital structure and general condition of the patient.
- Patients were operated under general anaesthesia with prophylactic antibiotic cover.
- Type of flap for reconstruction of the lip defect was marked preoperatively or intraoperatively following excision of lesion. Along with these methods skin grafting was required in some cases as an adjunct to cover donor area.

RESULTS

The patients were divided into four groups according to their age and further subdivided into males & females. The total number of patients was 20, among whom 15(75.00%) were male and 5(25.00%) female. It was noted that maximum number of patients were from the age group between 41 to 60 years (65.00%) followed by the 61 to 80 years' group (20.00%). The least number of patients were from the group less than 20 years (5.00%). The mean age was 51.6±14.13 years and the median was 54.5 years.

In our study we have found mainly four etiologies, namely tumour, trauma, vascular anamoly and infection, responsible for the lip defects. Tumour was the most common etiology (80.00%) among them. Most number of patients under this category were male. Patients with T3, T4 and N1 lesions underwent neck dissection along with tumour resection and reconstructive procedure. The other etiology was vascular anamoly, trauma resulting from RTA and infection (Cancrum oris) in one patient.

We have found that most number of cases had defect of the lower lip (10), out of which 8 patients had solely lower lip involvement. This was followed by Upper lip (8), out of which 4 patients had solely upper lip involvement. This was followed by involvement of Commissure (7), out of which 4 patients had solely commissure involvement. 2 patients had involvement of both upper lip and commissure. In 1 patient there was involvement of both Upper and Lower lips. In another 1 patient there was involvement of Upper lip, Commissure and Lower lip.

In our study it was found that maximum number of defects was covered with Inferiorly based nasolabial flap followed by Primary suturing. Many different local and locoregional flaps like Estlander flap, Abbe flap, Cheek Advancement flap, Mucosal advancement flap, karapandzic flap, forehead flap, DP flap and distant free flap like Radial forearm free flap and free chimeric scapular and parascapular flap were used to cover various lip defects in the study though in few numbers.

In this study, other than Primary reconstruction of lip defects, the following surgical procedures were carried out: 16 patients underwent Wide Local Excision of the lip/commissure growth. Neck dissection was carried out in T3, T4 and N1 tumours. 7 patients with T3N0M0 growth underwent Supraomohyoid Neck Dissection (SOND) and 1 patient with T4aN1M0 underwent Modified Radical Neck Dissection (MRND). 2 patient's one each of Trauma and Cancrum Oris underwent debridement before reconstruction. 2 patients with vascular malformation underwent excision followed by coverage. Split Thickness Skin Grafting (STSG) was used to cover donor area in 4 patients. 3 patients who developed microstomia post reconstruction during follow-up underwent commmisuroplasty. 1 patient with large flap in the follow up period underwent flap debulking.

In this study of 20 patients with lip defect, 3 patients who underwent primary closure did not have donor site issue. Whereas in remaining 17 patients, the donor site was either closed primarily (13) or by Split Thickness Skin Grafting (STSG).

In this study the lip defects were divided according to size of the defect as<1/3, 1/3 – 2/3 and>2/3. The maximum number of patients had defect ranging 1/3 – 2/3. There were 7 patients with commissure involvement and commissure defects were measured in cm2.

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Maximum number of<1/3 defect was closed by Primary suturing. Maximum number of 1/3 – 2/3 defect was reconstructed with local and locoregional flaps whereas maximum number of>2/3 defect was reconstructed by distant free flap.

In this study there were 16 patients with tumour growth out of which maximum number of patients were of stage T3N0M0 (8) followed by T2N0M0 (5).

In this study there were 19 patients with lip defects following resection of some pathologic cause. On histopathological examination of the resected specimen, maximum number of patients had Well Diffrentiated Squamous Cell Carcinoma (11) followed by Moderately Differentiated Squamous Cell Carcinoma (2) and Vascular Malformation (2).

We found that the primary suturing took least mean operating time (48.3min), whereas the chimeric scapular and parascapular flap took the longest operating time (360 min). Distant flaps i.e Free flaps took longer operating time compared to local and locoregional flaps. Among the local and locoregional flaps mucosal advancement flap took least operating time (80 min) followed by Abbe flap (100 min).

In this study out of the 5 cases of Inferiorly based Nasolabiall flap, 1 patient had partial flap necrosis (20%) which was managed by debridement followed by re-in setting of the remaining flap under local anaesthesia and did not require a second flap surgery or grafting. There was no flap necrosis noted in other flaps, but the number of cases for these flaps seems to be too less to draw any conclusion.

In this study, during the hospital stay 1 (5%) patient of Inferiorly based Nasolabial flap developed Partial Flap Necrosis, 2 (10%) patients developed Wound Infection and 2 (10%) patients developed Partial Graft Loss at the Donor site.

In this study, during the follow-up period 4 (20%) patients developed Oral Incompetence, 3 (15%) patients developed Microstomia for which they underwent commmisuroplasty and 7 (35%) patients developed distortion of Lip Size and Contour. There were no cases of local recurrence.

It was noted in the study that mean post- operative hospital stay for primary suturing and cheek advancement flap was the lowest (7 days each), followed by Estlanders flap (10.5 days). Maximum hospital stay was seen in case of forehead plus DP flap (30 days). But it is also seen that distant free flaps like RFF (19.5 days) and Chimeric Scapular and parascapular flaps (20 days) had comparatively longer post-operative mean hospital stay compared to local flaps. The longer post-operative mean hospital stays in case of forehead plus DP flap (30 days), forehead flap (25 days) and Abbe flap (19 days) was due to flap delay period of three, three and two weeks respectively.

We found the z value to be 4.4644 and p value to be<.00001. Hence the result is significant at p<.00001.

In this study the Aesthetic outcome have been quantified using Quality of Life Questionnaires. The questionnaire takes into account the impact of surgical procedures on the QOL in relation to surgical resection and reconstruction of lip defects. Four-item scale includes measures of symmetry, vermillion shape, size and contour of the recreated lip and the status of postoperative scars. Each parameter was considered as good (1) or bad (0). Every patient answered once to this questionnaire, i.e.3 months after surgery. It was found while comparing the Aesthetic outcome between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, the prior had better aesthetic outcome (75%) compared to later (41.67%) which was significant (p<.00001).

We found the z value to be 4.3656 and p value to be<.00001. Hence the result is significant at p<.00001.

In this study the Functional outcome have been quantified using Quality of Life Questionnaires. The questionnaire takes into account the impact of surgical procedures on the QOL in relation to surgical resection and reconstruction of lip defects. Four-item scale includes lip mobility, oral competence, articulation and presence of the microstomia. Each parameter was considered as good (1) or bad (0). Every patient answered once to this questionnaire, i.e. 3 months after surgery.

It was found while comparing the functional outcome between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, the prior had better functional outcome (86.76%) compared to later (50%) which was significant (p<.00001).

We found the z value to be 13.1741 and p value to be<. 00001.Hence the result is significant at p<.00001.

In this study it was found on comparison of Mean Operative time between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, the prior had lesser Mean Operative time (113.52 min) compared to later (303.33 min) which was significant (p<.00001).

We found the z value to be 1.5 and p value to be .13362. Hence the result is not significant at p<.13362.

In this study it was found on comparison of Mean Hospital Stay between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, there was no significant difference in Mean Hospital Stay between the two (p<.13362).

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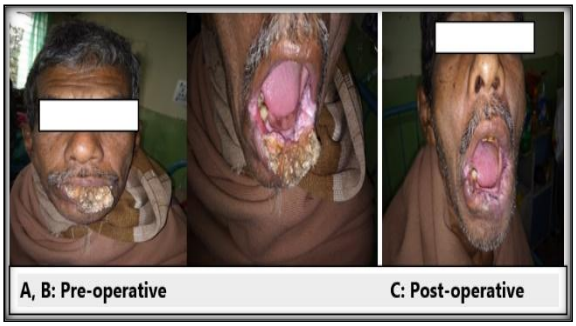
Figure 1: Primary Suturing

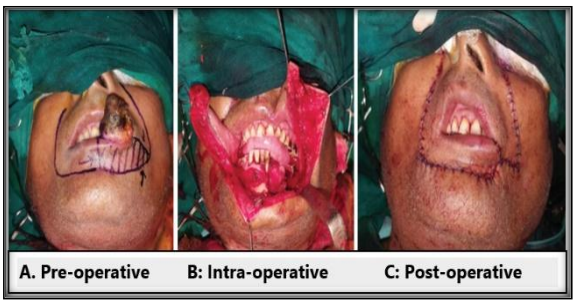
Picture 2: Nasolabial flap

Picture 3: Estlanders flap

Picture 4: Local Advancement flap



Picture 5: Mucosal advancement flap



Picture 6: Karapandzic flap

Picture 7: Estlanders plus Nasolabial flap

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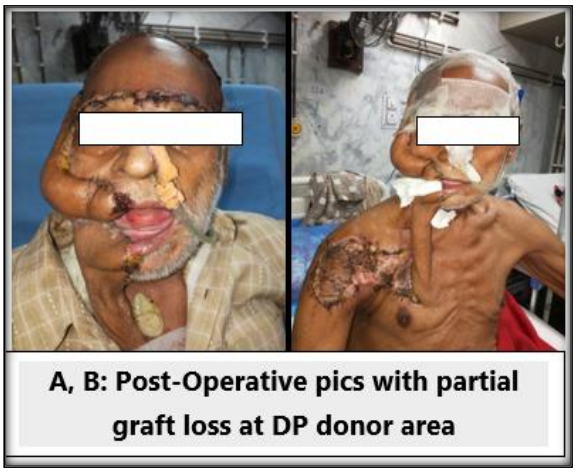
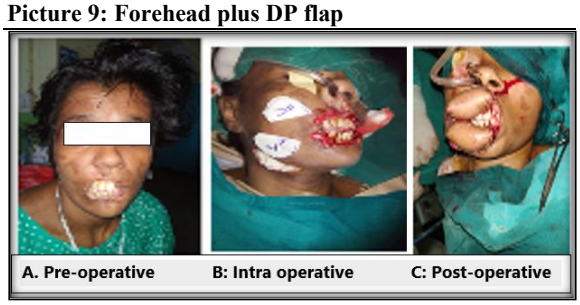
Picture 8: Forehead flap



Picture 9: Forehead plus DP flap



Picture 10: Chimeric scapular and parascapular free flap

Picture 11: Radial forearm free flap

Table 1: Overview of age & sex distribution among study population

Age	Male	Female	Total in group	Percentage
<20 years	0	1	1	05.00%
21- 40 years	1	1	2	10.00%
41-60 years	12	1	13	65.00%
61-80 years	2	2	4	20.00%
Total	15 (75.00%)	5 (25.00%)	20	100%

Table 2: Distribution of patients according to Etiology.

Etiology	Male	Female	Total	%
Tumour/Growth	14	2	16	80.00
Trauma	0	1	1	05.00
Vascular anamoly	1	1	2	10.00
lnfection	0	1	1	05.00
Total	15	5	20	100

Table 3: Distribution of patients according to location of defects.

Location	Number of cases

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Upper lip	8
Lower lip	10
Commissure	7
Upper lip and commissure	2
Upper lip and Lower lip	1
Upper lip,Commissure and Lower lip	1

Table 4: Distribution of patients according to flap/surgery used for coverage.

Name	Number	Percentage (%)
Primary suturing	03	15
Nasolabial flap	05	25
Estlanders flap	02	10
Abbe flap	01	05
Cheek Advancement flap	01	05
Mucosal advancement flap	01	05
Karapandzic flap	01	05
Estlanders plus Nasolabial flap	01	05
Forehead flap	01	05
Forehead plus DP flap	01	05
Chimeric Scapular and Parascapular free flap	01	05
RFF	02	10
Total	20	100

Table 5: Distribution of Surgical Procedures other than Primary Reconstruction.

Surgical Procedure	No.
Wide Local Excision (WLE)	16
Supraomohyoid Neck Dissection (SOND)	7
Modified Radical Neck Dissection (MRND)	1
Debridement	2
Excision	2
Split Thickness Skin Grafting (STSG)	4
Commisuroplasty	3
Flap Debulking	1

Table 6: Distribution of Modes of Donor Site Coverage.

Donor Site Coverage	Number
Primary Closure (PC)	13
Split Thickness Skin Grafting (STSG)	4
Total	17

Table 7: Distribution according to size of the defect.

Size	Upper Lip	Lower Lip
<1/3	0	2
1/3 – 2/3	6	5
>2/3	0	3

Table 8: Distribution of patients according to stage of the tumour.

Stage of the tumour	Number
T1N0M0	2
T2N0M0	5
T3N0M0	8
T4aN1M0	1
Total	16

Table 9: Distribution of patients according to Histology of the Tumour/Pathology.

Histology of the tumour	Number
Well differentiated Squamous Cell Carcinoma (WDSCC)	11
Moderately differentiated Squamous Cell Carcinoma(MDSCC)	2
Poorly differentiated Squamous Cell Carcinoma(PDSCC)	1
Veruccous Carcinoma (VC)	1
Actinic Keratosis(AK)	1
Vascular Malformation (VM)	2
Cancrum Oris(CO)	1
Total	16

Table 10: Distribution of flaps according to mean operative time.

Name	Mean Operative time(min)
Primary suturing	48.3
Nasolabial flap	110

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Estlanders flap	107.5
Abbe flap	100
Cheek Advancement flap	115
Mucosal advancement flap	80
Karapandzic flap	160
Estlanders plus Nasolabial flap	200
Forehead flap	120
Forehead plus DP flap	245
Chimeric Scapular and Parascapular free flap	360
RFF	275

Table 11A: Distribution of flaps according to complication (Flap necrosis).

Name	Total	Flap necrosis	Percentage (%)
Primary suturing	NA	NA	NA
Nasolabial flap	5	1(partial)	20
Estlanders flap	2	0	0
Abbe flap	1	0	0
Cheek Advancement flap	1	0	0
Mucosal advancement flap	1	0	0
Karapandzic flap	1	0	0
Estlanders plus Nasolabial flap	1	0	0
Forehead flap	1	0	0
Forehead plus DP flap	1	0	0
Chimeric Scapular and Parascapular free flap	1	0	0
RFF	2	0	0

Table 11B: Challenges of peer assessment on student perception survey.

Complication	Number
Partial Flap Necrosis	1(5%)
Wound Infection	2(10%)
Donor Site Morbidity (Partial graft loss)	2(10%)

Table 11C: Distribution of complication (During Follow up Period).

Complication	Number
Oral Incompetence	4(20%)
Microstomia	3(15%)
Local Recurrence	0
Distortion of Lip Size and Contour	7(35%)

Table 12: Mean hospital stay of the flaps.

Name	Mean hospital stay (days)
Primary suturing	7
Nasolabial flap	11
Estlanders flap	10.5
Abbe flap	19
Cheek Advancement flap	7
Mucosal advancement flap	10
Karapandzic flap	19
Estlanders plus Nasolabial flap	17
Forehead flap	25
Forehead plus DP flap	30
Chimeric Scapular and Parascapular free flap	20
RFF	19.5

Table 13: Comparison of Aesthetic outcomes between the flaps.

Flap	Aesthetic outcome(Mean score)
Primary suturing, Local and Locoregional flaps	75%
Distant Free Flaps	41.67%

Table 14: Comparison of Functional outcomes between the flaps.

Flap	Functional outcome (Mean score)
Primary suturing,Local and Locoregional flaps	86.76%
Distant Free Flaps	50%

Table 15: Comparison of Mean operative time between the flaps.

Flap	Primary suturing ,Local and Locoregional flaps	Distant Free Flaps
Mean Operative time (min)	113.52	303.33

Table 16: Comparison of Mean Hospital Stay between the flaps.

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Flap	Primary suturing ,Local and Locoregional flaps	Distant Free Flaps
Mean hospital stay (days)	13.18	19.67

DISCUSSION

Lip reconstruction may be required after trauma or surgical excision due to several causes. Principles of reconstruction include preserving sensation of the lips and maintaining oral competence, continuity of vermilion border, sufficient oral access and adequate lip appearance. The aesthetic and functional outcome was quantified using Quality of Life Questionnaires.[5] The questionnaire took into account the impact of surgical procedures on the QOL in relation to surgical resection and reconstruction of lip defects. Four-item scale for each of aesthetic and functional outcome was included. Aesthetic outcome included measures of symmetry, vermillion shape, size and contour of the recreated lip and the status of postoperative scars whereas functional outcome included lip mobility, oral competence, articulation and presence of the microstomia. Each parameter was either considered as good (1) or bad (0). Every patient answered once to this questionnaire, i.e. 3 months after surgery.

In our study it was found that maximum number of defects was covered with Inferiorly based nasolabial flap followed by Primary suturing. Many different local and locoregional flaps like Estlander flap, Abbe flap, Cheek Advancement flap, Mucosal advancement flap, karapandzic flap, forehead flap, DP flap and distant free flap like Radial forearm free flap and free chimeric scapular and parascapular flap were used to cover various lip defects in the study though in few numbers. The Free Flaps were used for reconstruction along with Palmaris longus tendon graft to provide a better oral competence. In a study by Sivamuthu, et al,[6] out of 21 patients, 4 patients underwent lip switch/Estlander flap, 2 patients underwent Fujimori gate flaps and one each patient underwent bilateral Inferiorly based Nasolabial flap, Converse over and out flap, Folded forehead flap, Cervical skin advancement flap, Cheek advancement flap, Schuchardts principle flap and Central Abbe flap. In another study by Faveret P.[3] out of 50 patients for lip reconstruction, 23 patients underwent simple suturing, 10 underwent Gilles flap, 6 Nasolabial, 3 Karapandzic, 3 Oral mucosa flap, 3 Advancement flap and 2 Abbe flap. In another study by Sasidaran, et al,[7] on three patients with lip defects, all were reconstructed by Radial forearm free flap.

In this study the lip defects were divided according to size of the defect as<1/3,1/3 – 2/3 and>2/3. The maximum number of patients had defect ranging 1/3 – 2/3. There were 7 patients with commissure involvement and commissure defects were measured in cm2. Maximum number of<1/3 defect was closed by Primary suturing. Maximum number of 1/3 – 2/3 defect was reconstructed with local and locoregional flaps whereas maximum number of>2/3 defect was reconstructed by distant free flap. In a study by Siqueira EJ et al,[8] 6 (20%) patients presented lesions of up to 30% of the total lip surface that required primary closure. Eighteen (60%) patients had lesions of 30-80% of the total area of the lower lip that were repaired using a myomucosal flap. In 14 of these patients, bilateral skin flaps were also used due to cutaneous involvement associated with the resection. Faveret P,[3] in his study concluded that for repair of defects affecting up to 1/3 of the lower lip, the direct suture is the best esthetic option, as long as the excision in V, if required, can be modified into a W excision to adjust the resection borders. For the reconstruction of defects affecting more than 1/3 of the lower lip, the Gillies and Karapandzic flaps should be the first choice. For defects affecting more than 50% of the lip, Gillies and Karapandzic technical approaches should be chosen to avoid microstomia.

We found that the primary suturing took least mean operating time (48.3min), whereas the chimeric scapular and parascapular flap took the longest operating time (360 min). Distant flaps i.e Free flaps took longer operating time compared to local and locoregional flaps. Among the local and locoregional flaps mucosal advancement flap took least operating time (80 min) followed by Abbe flap (100 min).

In this study out of the 5 cases of Inferiorly based Nasolabial flap, 1 patient had partial flap necrosis (20%) which was managed by debridement followed by re-in setting of the remaining flap under local anaesthesia and did not require a second flap surgery or grafting. There was no flap necrosis noted in other flaps, but the number of cases for these flaps seems to be too less to draw any conclusion.

In this study, during the hospital stay 1(5%) patient of Inferiorly based Nasolabial flap developed Partial Flap Necrosis, 2 (10%) patients developed Wound Infection which was managed by antibiotics and 2 (10%) patients developed Partial Graft Loss at the Donor site which healedin due course of time with regular dressing.

In this study, during the follow-up period 4 (20%) patients developed Oral Incompetence, 3 (15%) patients developed Microstomia for which they underwent commmisuroplasty and 7 (35%) patients developed distortion of Lip Size and Contour. There were no cases of local recurrence.

In a study by Sivamuthu, et al,[6] the following complications were noted: Oral incompetence - 2 cases, Hypoesthesia with mild drooling - 4 cases, Microstomia -1case, Local recurrence - 1case, Partial wound dehiscence - 1case and Distortion of features - 1case. In our study one patient each of Estlanders flap, Karapandzic flap and cheek advancement flap planned to undergo commisuroplaty as a secondary procedure in view of microstomia in the follow up period. According to study by Ashish Kumar et al.[9]

In our study 2 patients underwent Radial forearm free flap with Palmaris longus sling to attain good oral competence. 1 patient had partial graft loss at donor

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site which healed by itself on continued dressing. In one patient oral incompetence was a major problem. In a study by Sasidaran, et al,[7] it was concluded, although the free radial forearm flap is widely applied flap for lip reconstruction, it is not without its inherent defects.

In our study, there were 1 each patient who underwent Abbe flap, Lateral based forehead flap and Forehead plus Deltopectoral flap. All these patients had two stage procedure, the second stage being flap detatchment with reinset. The two stages were carried out in same hospital stay which explains relatively longer hospital stay in these local and locoregional flaps. In Abbe flap, the flap was detatched after a delay of 2 weeks. In rest of the flaps the delay was 3 weeks. All these patients had satisfactory aesthetic and functional outcome. In a study by Agbara R et al.[10] it was concluded that the forehead flap remains a reliable option in orofacial soft tissue defect reconstruction which provides good textural, thickness and colour match in comparision with the recipient site tissues

In this study the Aesthetic outcome have been quantified using Quality of Life Questionnaires.[5] The questionnaire takes into account the impact of surgical procedures on the QOL in relation to surgical resection and reconstruction of lip defects. Four-item scale includes measures of symmetry, vermillion shape, size and contour of the recreated lip and the status of postoperative scars. Each parameter was either considered as good (1) or bad (0). Every patient answered once to this questionnaire, i.e. 3 months after surgery. It was found while comparing the Aesthetic outcome between the Primary suturing, Local and Loco regional flaps combined to that of Distant Free Flaps, the prior had better aesthetic outcome (75%) compared to later (41.67%) which was significant (p<.00001).

In this study the Functional outcome have been quantified using Quality of Life Questionnaires.[5] The questionnaire takes into account the impact of surgical procedures on the QOL in relation to surgical resection and reconstruction of lip defects. Four-item scale include lip mobility, oral competence, articulation and presence of the microstomia. Each parameter was considered as good (1) or bad (0). Every patient answered once to this questionnaire, i.e. 3 months after surgery. It was found while comparing the functional outcome between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, the prior had better functional outcome (86.76%) compared to later (50%) which was significant (p<.00001).

According to Szymczyk C et al,[5] their experience with free radial forearm free flap for total lip reconstruction suggests that the careful and detailed planning of the size, shape and type of lip suspension influence both functional and aesthetic results. Static lip suspension for defects limited to lower lip only is comparable to dynamic suspension in cases where the defect is complex and extended. Results of quality of life analysis may be a predictive factor influencing the choice of individual flap modification including the type of lip suspension.

In a study by Sasidaran, et al,[7] it was concluded, although the free radial forearm flap is widely applied flap for lip reconstruction, it is not without its inherent defects requiring secondary revision surgeries to improve both the esthetic and the functional defects.

In this study it was found on comparison of Mean Operative time between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, the prior had lesser Mean Operative time (113.52 min) compared to later (303.33 min) which was significant (p<.00001).

In this study it was found on comparison of Mean Hospital Stay between the Primary suturing, Local and Locoregional flaps combined to that of Distant Free Flaps, there was no significant difference in Mean Hospital Stay between the two (p<.13362).

CONCLUSION

Lip defects can result due to various causes like following excision of tumour, trauma, infection etc. Flap coverage is usually required for larger defects involving more than one third defects. Choice of flap depends on size and location of the defect, availability and quality of the donor area, reach of the flap to cover the defect and age and general condition of the patient.

In our study, we compared reconstruction of the lip defects by primary suturing, local and locoregional flaps to that by distant free flaps and found that the prior has better aesthetic and functional outcome and shorter operating time compared to later which was significant. There was no significant difference in mean hospital stay between the two.

In conclusion, Primary closure, local and locoregional flaps provide better aesthetic and functional outcomes in comparision to distant flaps.

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