Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/19869
DOI URL: http://dx.doi.org/10.21474/IJAR01/19869

RESEARCH ARTICLE

USE OF ESTLANDER FLAP IN SMALL TO LARGE LIP AND COMMISSURE DEFECTS - A CASE SERIES

Dr. K. Vignesh[1], Prof. Dr. S. Sivakumar[2], Dr. M. Thenmozhi[3] and Dr. S. Mahesh Kumar[4]

1. Final Year Post Graduate, Department of Plastic and Reconstructive Surgery, Government Mohan Kumaramangalam Medical College, Salem. Tamilnadu, India- 636001.
2. MS,Mch., Head of the Department, Department of Plastic and Reconstructive Surgery, Government Mohan Kumaramangalam Medical College, Salem. Tamilnadu, India- 636001.
3. D.A, MS, Mch (Plastic), Assistant Professor, Department of Plastic and Reconstructive Surgery, Government Mohan Kumaramangalam Medical College, Salem. Tamilnadu, India- 636001.
4. MS, MCh (Plastic), Assistant Professor, Department of Plastic and Reconstructive Surgery, Government Mohan Kumaramangalam Medical College, Salem. Tamilnadu, India- 636001.

Manuscript Info

Manuscript History
Received: 08 September 2024
Final Accepted: 17 October 2024
Published: November 2024

Key words:-
Estlander Flap, Lip Reconstruction, Small to Moderate Defect

Abstract

Background: The Estlander flap is an axial-pattern, lip-switch technique used to reconstruct lip defects that include the oral commissure. The Estlander flap is a hardy local flap which can be used to reconstruct defects of small to large defects of both the upper and lower lip. The lips are the principal aesthetic and functional unit of the lower 1/3rd of the face. Alterations to normal lip appearance and motion can have a profound impact on patient's daily activities and psychosocial wellbeing. Aim of this case series is to evaluate the versatility of Estlander flap in lip reconstruction with regard to function and aesthetic outcome

Material and Methods: From May 2022 to May 2024, single centric case series study was done in a tertiary care center in Southern India. This case series comprised of 6 cases of small to moderate defects of the lip and commissure in our institution.

Prospective case series from May 2022 – May 2024.The cases were post traumatic, including RTA, dog and human bite and also included post tumor excision

Results: This case series had a 100% flap success and all 6 patients were satisfied with the functional and aesthetic outcome of the surgery. One patient underwent commisuroplasty.

Conclusions: By the use of this case series, we can conclude that the Estlander flap is a reliable flap for the reconstruction of small to large sized lip and commissure defects

Conflict of interest: None.

Introduction:-

Lips are the principal aesthetic and functional unit of the lower 1/3rd of the face. Lip reconstruction following trauma or post oncologic excision remains a significant challenge to the facial plastic surgeon.

Corresponding Author:-Dr. K. Vignesh
Address**:-**Final Year Post Graduate, Department of Plastic and Reconstructive Surgery, Government Mohan Kumaramangalam Medical College, Salem. Tamilnadu, India- 636001.

Alterations to normal lip appearance and motion can have a profound impact on patient's daily activities and psychosocial wellbeing. The reconstructive surgery must balance the aesthetic outcome with maintenance of function.

That said, function is even more important, **especially articulation, oral competence and an adequate aperture**. Therefore, reconstruction of the lip is a significant challenge when trying to restore any defect with cosmetically similar, functional and sensate tissue.

The functional goals of lip reconstruction include
1. Maintenance of oral competence
2. Sufficient oral access
3. Preservation of lip sensation

The**Estlander flap** was first described in 1872. This flap is an axial-pattern, lip-switch technique supplied by either the inferior or superior labial artery which can be used to reconstruct defects of the upper lip or lower lip, depending upon the respective vascular anatomy.

It can be used to reconstruct defects involving one to two thirds of the length of the lip, especially those involving the oral commissure. The technique is cosmetically and functionally successful, resulting in good symmetry of the oral commissure

Surgical Anatomy
The lip is supplied by the superior and inferior labial artery, branches of the facial artery. Lies between the orbicularis oris and mucosa at the level of vermillion. This flap is supplied by the contralateral superior or inferior labial artery, depending on whether the flap is superiorly or inferiorly-based.

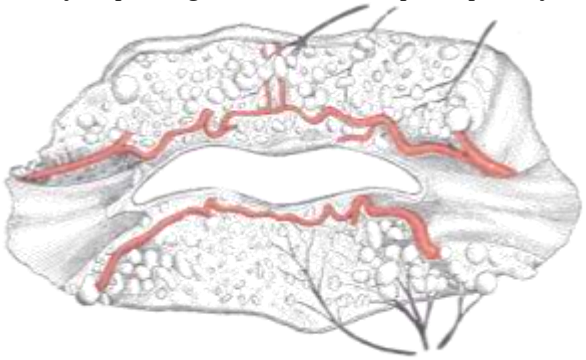

Figure 1: - The figure illustrates the cross-section image of the lip, where the artery is seen between the orbicularis muscle and the mucosa.

Material and Methods: -

This case series is a prospective study undertaken in a tertiary care centre in southern India from May 2022 – May 2024.

All patients reported with traumatic lip injuries or oncological lip defects having small to large lip defects of the lip requiring reconstruction were included in study.

This case series consists of 6 cases of which 3 were post traumatic, one was post tumour excision, one was dog bite defect and another one was post human bite defect. Patients having lip defects less than 1/3rdof the lip, and could have been managed by primary closure were excluded from the study.

Surgical Technique
- The patient is placed in the supine position, Contralateral nasal intubation is the preferred method of airway control.
- Tumescent Infiltration is given along the edges of the wound.

- The edges are freshened and the defect is measured in the medial-lateral direction along the vermillion.
- An ipsilateral flap from the lip opposite to the defect is planned such that its width is one-half the width of the defect and height is the same as of the defect.
- This is to achieve symmetrical lip tissue in both lips, thereby sharing the lip loss equally between the upper and lower lips and also for proper flap rotation. But this could not always be applicable for larger defects.
- A full thickness incision is made at the lateral limb of the donor triangle, and dissect to identify the ipsilateral labial artery location within the plane of dissection and cauterise it.
- The medial limb is also a through-and-through incision, but spares the oral margin of the red lip, thereby preserving the labial artery on a thin pedicle.
- This thin pedicle helps to restore the shape of the neo commissure.
- The flap is then rotated 180^{o} onto the defect and it is closed in 3-layer technique

Figure 2: - The figure illustrates a moderate sized upper lip and commissure defect with the estlander flap marking from the lower lip.

Post Operative Care

Oral feeds are started after 6 hours after the surgery, it is started from clear liquids to soft solid diet

Topical antibiotic ointment is applied for 3 or 4 days. After 5 days alternate suture removal is done for the non-absorbable sutures and 2 days later rest of the sutures are removed

Once the wound is completely healed the patient is advised scar massage and mouth opening exercises to help the scar become supple and soft

Regular follow up is done at 7 days, 1 month, 6 month and 1 year duration

Advantages And Disadvantages of Estlander Flap

Advantages

- Safe and a reliable flap with an excellent blood supply that affords versatility in flap design

- Simple to perform, and provides functionally and aesthetically pleasing results for 1/3rd to 2/3rd sized lip and commissure defects.
- Change of appearance is very minimal and very acceptable for the patients.
- Improves functional results in terms of speech and symmetrical lip movements and oral competence

Disadvantages
- Blunting of the oral commissure
- Microstomia
- Vermillion notching if there is imprecise or inappropriate approximation of the vermillion

Results: -

We had operated on 6 cases of small to moderate sized upper and lower lip defects

These defects were following post trauma, post animal bite (dog), post human bite, and post tumour excision

All 6 patients had excellent results both functionally and aesthetically

One had undergone commisuroplasty for microsomia, which is an expected complication of this flap

Master chart containing all the details of the 6 cases that are included in this case series

Case.No	DIAGNOSIS	INTER - PUPILLARY DISTANCE	COMMISSURE DISTANCE – mouth open	COMMISSURE DISTANCE – Mouth closed	UPPER LIP – LOWER LIP DISTANCE
1	BCC -Right lower lip and commissure	6.5 cms	4 cms	3.6 cms	3.5 cms
2	Human bite - Full thickness 1/3rd defect of the left upper lip and commissure	7.5 cms	6 cms	6 cms	4 cms
3	Dog bite Full thickness defect -left upper lip –extending over to the left cheek	5.5 cms	4 cms	3.5 cms	3 cms
4	RTA Full thickness defect of the left upper lip and cheek involving the commissure	7 cms	4.2cms	4cms	3.5 cms
5	RTA – Full thickness defect of the right lower lip	7 cms	6 cms	6 cms	4 cms
6	RTA – Full thickness defect of the left upper lip and commissure	6.5 cms	5.5 cms	5 cms	4.2 cms

Case Series

Fig 3(a) Fig 3(b)

Fig 3(c)

Figure 3:- 3(a) Illustrates a case of 64 yr old lady, a case of bcc right lower lip and commissure, for which wide local excision and estlander flap cover was done. 3(b) 2 yr follow up with good acceptable aesthetic and functional outcome. 3(c) 2 yr follow up with mouth opening

Fig 4(a) :- **Fig 4(b):-**

Figure 4:- 4(a) a 25-yr old male a case of post human bite – defect involving the left upper lip and commissure. The defect was reconstructed with Estlander flap. 4(b) 3 months follow up.

Fig 5(a) :- **Fig 5(b):-**

Fig5(c):-

Figure 5:- 5(a) A 6 yr old female child, a case of post dog bite full thickness defect of left upper lip and commissure, reconstructed with estlander flap. 5(b) Immediate post op image. 5(c) 6 month follow up.

Fig 6(a):- **Fig 6(b):-**

Fig 6(c):-

Figure 6:- 6(a). A 35 yr old male patient, a case of RTA with full thickness defect of the left upper lip and commissure, reconstructed with the estlander flap. 6(b) immediate post op photo. 6(c) 6 month follow up.

Fig 7(a):- **Fig(b):-**

Figure 7:- 7(a)This patient developed microstomia which is an expected complication of this procedure and hence commisuroplasty 7(b) was done by mucosal advancement technique.

Conclusion:-

The Estlander lip-switch procedure is a valuable tool in the arsenal of the reconstructive surgeon. It has remained the mainstay of surgical closure of defects involving the Lip and oral commissure.

Proper surgical planning allows for acceptable aesthetic and functional outcomes after commisuroplasty

Despite being a more than 150 years old technique the Estlander flap still is a reliable method of lip reconstruction

Our experience with 6 patients with Estlander flap reconstruction has been encouraging and the result obtained was extremely satisfactory.

Acknowledgements:-

Entire Department of Plastic and reconstructive surgery ward staffs, hospital management and patients involved in my study.

Declarations
Funding: nil
Conflict of interest: nil
Ethical approval**: yes**

References:-

1. EstlanderJA : Eine Methode aus der einen Lippe Substanzverluste der anderenzuersetzen. Arch Klin Chir 14:622, 1872 .
2. Baker SR , Krause CJ . Cancer of the lip. Cancer of the Head and Neck. Suen JY, Myers EN, editors. New York: Churchill Livingstone, 1981 .
3.This article incorporates text in the public domain from page 555 of the 20th edition of Gray's Anatomy (1918)
4. Genc S , Ugur SS , Arslan IB , et al : Lower lip reconstruction with Abbe–Estlander flap modification: Preserving the same side vascular pedicle. Eur Arch Oto-Rhino-Laryngol 269:2593–2594, 2012 .
5.Wilson JS, Walker EP. Reconstruction of the lower lip. Head Neck Surg. 1981;4(1):29-44.
6.Flanagin WS. Free composite grafts from lower to upper lip. Plast Reconstr Surg. (1946). 1956;17(5):376-80.
7.Zhai QK, Tan XX, Jin ZL et al. Reconstruction for defects of the lower lip after tumor ablation. J Craniofac Surg. 2012;23(2):552-55.
8.Rea JL, Davis WE, Rittenhouse LK. Reinnervation of an Abbe-Estlander and a Gillies fan flap of the lower lip: electromyographic comparison. Arch Otolaryngol. 1978;104(5):294-95.
9.Roldán JC, Teschke M, Fritzer E et al. Reconstruction of the lower lip: rationale to preserve the aesthetic units of the face. PlastReconstr Surg. 2007;120(5):1231 39.
10.Krunic AL, Weitzul S, Taylor RS. Advanced reconstructive techniques for the lip and perioral area. DermatolClin. 2005;23(1):43-53.