

Flap modalities for reconstruction following excision of vascular malformation on lower lip: a review with a case report



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ABSTRACT

Background: Capillary malformations (CMs) and lymphatic malformations (LMs) are vascular malformations that have the same tendency to cause hard and soft tissue hypertrophy, expressed in three spatial dimensions. Although the middle third of the face is the area most commonly involved, with the dominance of the upper lip, the lower lip sometimes involved in some cases too. Vascular malformations on the lips usually require reconstructive measures with meticulous attention to aesthetic and functional purposes. Reconstruction of the lips, using the rule of thirds shows that lower lip defects involving 1/3-2/3 of the total lip width require closure with a lip switch or local flap advancement techniques (Karapandzic, Abbe, or Estlander).

Case Description: Thirty-six years old woman with bluish tumour lesion on lower lip since childhood, came to our clinic with a history of small lesion enlarging slowly until fulfilling the right edge extended to two-third of the lower lip, bluish in colour, elastic in palpation, and no bruit in auscultation. She felt a little bit itchy, and

a difficulty in eating. She had undergone surgery to reduce the size of lesion twice while childhood and in adult. The surgeon performed a wide excision continued using lip reconstruction Karapandzic flap. The final result of the reconstruction is satisfactory for the patient, and no recurrence nor complication existed.

Discussion: Vascular malformation, which underwent correcting surgery, should consider specific guidelines regarding anatomic consideration and therefore, appropriate reconstruction according to guideline methods, such as Karapandzic. The surgeon chose to use the Karapandzic method in these patients because this technique provides better results in maintaining oral competence. Significant lip defects of more than 50% of the lips can be reconstructed using Karapandzic flap.

Conclusion: Karapandzic flaps are probably proper alternative due to reducing the more substantial lower lip defect (more than two thirds of the lip) which give a satisfying result of this patient.

Keywords: Karapandzic reconstruction, Karapandzic flap, vascular malformations

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BACKGROUND

Vascular Malformation includes Capillary Malformation (CMs), Lymphatic Malformation (LMs), Venous and Arteriovenous Malformation.^{1,2} In more complicated cases, different malformations can grow side by side and are associated with an over-growth spectrum or a syndrome. Microcystic lymphatic malformation (LMs) and Capillary malformation (CMs) are two distinct congenital diseases. Lymphatic malformation arises at birth and caused by lymphatic vessels that dilate with thin walls that produce a bulge in the affected area, while Capillary malformation occurs at birth, also caused by anomalies of the subdermal capillary plexus with enlargement of the postcapillary venule and as usual the clinical feature of "port-wine stain" which follows the distribution of the most common trigeminal branches V1 and V2.¹

There are 2 classifications of lymphatic malformations, namely macrocystic malformations

(>2cm³) and microcystic malformations (<2cm³). Initially can be treated with sclerotherapy, whereas in the future it is very rarely that responds to sclerotherapy, therefore it is necessary to do surgery.¹ Abnormalities on the face not only interfere with one's aesthetic value but also interfere with the function of speech, eating and expression. Therefore reconstruction is carried out on the lip area to normalize the shape, function and anatomical location.³

CASE PRESENTATION

A 36 years old woman come to a plastic surgeon with complaints of a lump in the right corner of the lower lip, this has been felt for approximately one year since the operation 20 years ago with the same case. Initially a small lump then slowly enlarges the lump to the size of a quail egg, bluish-red, mobile, soft palpable, but the patient does not feel complaint of pain and no injuries are found.

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Patients have experienced something like this at least three times. The first is in the age of children and have operated. After a few years of the first surgery, the patient complains of a lump that reappears as a teenager and grows up. The patient recalls the absence of pain in the lump. Then the patient is taken to the surgeon by his parents to remove the lump.

Physical examination at face include eyes, nose and ear are normal limits, but at lower right lip founded a nodule like as large as quail eggs, the appearance of nodule a brownish-red colour, soft nodule, no pain and no bruit. The other physical examinations were in normal limit.

On examination of laboratory blood tests, haemoglobin is 13.9 g/dl, leukocytes 7860 U/L, hematocrit 42%, platelets $4.9 \times 10^6/uL$, eosinophils 1.9, basophils 0.3, lymphocytes 28.9, monocytes 5.5, and HbsAg non-reactive. The result of anatomical pathology examination found vascular malformation.

Based on the results of the examination of the whole patient with complaints of lumps such as quail eggs, mobile, and that is the third recurring complaint at this time, there was no sign of infection found. The patient diagnosed with suspect Vascular

malformation and treatment with Karapandzic methods and perform anatomical pathology checks to confirms the diagnosis (Figure 1).

DISCUSSION

The lips are an important sign of function and aesthetics on the face. Facial deformity can be characterized by vascular birthmarks that damage prominent facial structures.⁴ The International Society for the Study of Vascular Anomalies (ISSVA) is now a widely used system of grouping vascular anomalies into two types: (1) Vasoproliferative or vascular neoplasms such as hemangiomas and (2) Vascular malformations.⁵

Theoretically these lesions are classified as macrocystic (single or multiple cysts $>2 \text{ cm}^3$), microcystic ($< 2\text{cm}^3$), or mixed due to lymphatic malformations.⁶ Clinical findings in patients are nodules seen as significant as quail eggs, swelling, appear bluish-red, mobile, but there is no pain and no bruit, and the other physical examinations within normal limits. So that according to the theory above, the patient's clinical symptoms include macrocystic classification. In other cases painless in the mass has been found on the lymphatic malformation.⁷

Based on the theory listed in the Ritche study, it stated that macrocysts arise with fluid enlargement marks below normal or with slight changes in colour. Intracystic bleeding or a mixture of venous lymphatic malformations cause bluish discoloration of the skin above. That found in patients with complaints of bluish-red lumps.⁸

In the patient, the right lower lip nodule was removed by the Karapandzic method. According to the Khan case report study (2014), Handling off this case use Karapandzic method because in many research literature, this methods has a good appearance and easy to be master (Figure 2).⁶ Karapandzic flap was the method of choice for our case as a treatment to repair of defects from one half to two – thirds of the lower lip, taking advantage of the decreasing perioral elasticity after aging, while the nerves and blood vessels that supply the flap remain largely intact.⁹

Karapandzic

Lips have an important role in the discussion of facial aesthetics, as well as in giving facial expressions, reciting speech, and eating. Lip reconstruction is designed to improve the anatomy of the lip, function and shape as normal conditions. For full-thickness lip defects, the choice of reconstruction option depends on the size of the defect. Defects from one quarter to one third of the upper lip can be closed primarily. Larger defects, which make up one-third to two-thirds of the lower



Figure 1. Patient condition (A) pre-surgery (B) Durante surgery (C) one week after surgery

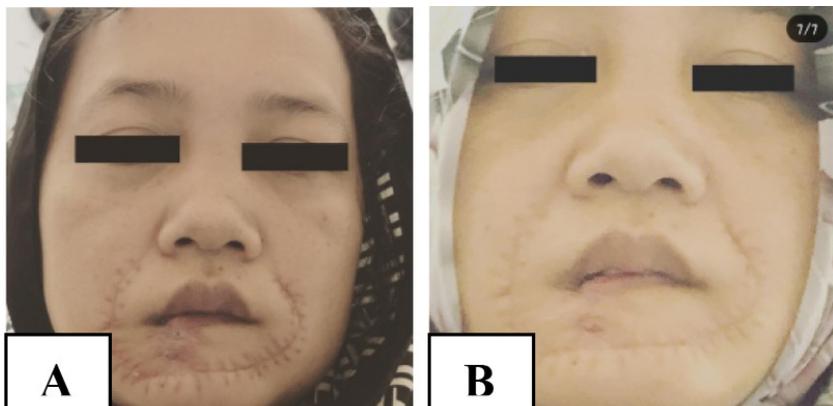


Figure 2. Patient condition (A) one month after surgery (B) three month after surgery

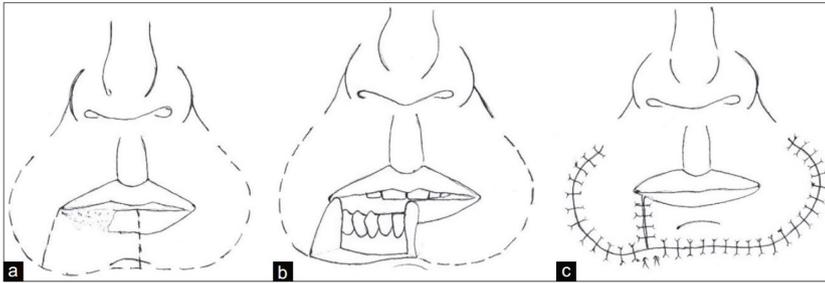


Figure 3. Schematic representation of the Karapandzic flap procedure. (a) Outlining of the surgical defect and the flap. (b) The lesion excised/surgical defect created/recipient site prepared. (c) Bilateral Karapandzic flaps sutured in place.¹⁰

lip width, can be closed with the Karapandzic, Abbe, or Estlander Flaps. If the defect is about the commissure, both of the Karapandzic and Estlander flaps can be used.¹⁰

The surgical step using the Karapandzic method is a semicircular incision of sufficient length to close the defect in the direction of the commissures (Figure 3). The incision is made using a scalpel and followed by using electrocautery to mobilize subcutaneous tissue. Separate the orbicularis oris muscles vertically or lengthwise on the incision that has been made. This is done very carefully so that nerves and blood vessels remain safe. The skin is only incised laterally at the level of the commissures down to the subcutaneous tissue. Requires caution when identifying and maintaining labial arteries and buccal nerve branches. The flaps are turned medially to close the defect and after meticulously reapproaching the vermilion edges, a standing seam is applied. The defect is closed in three layers, which approach the muscle and skin.^{3,10}

Side effect from the use of this techniques are the formation of scar tissue and microstomia. The second repair of commissure is often used to prevent oral paralysis during feeding, maintain oral hygiene and the placement of dentures. The incision in this procedure will be seen because it is located in the fold of the skin.¹⁰

However, the Karapandzic could be a better choice as it maintains the oral ability better.¹⁰ Major lip defects where more than 50% of lip can be restored with a Karapandzic flap that preserves sensory and motor functions. The incisions are designed to follow the curvatures of the nasolabial fold and can be designed with asymmetrical lengths for defects that are not central. The skin and intraoral mucosa are incised while the intact central muscle layer remains to allow dynamic oral closure.¹¹

CONCLUSION

Karapandzic flap reconstruction method is the main choice in reconstructing the lips to be normal when there is sufficient cheek tissue for mobilization and does not require new additional tissue. Another advantage of this method is that it is able to reach out to the lips and are mastered. Karapandzic has a better ability to deal with disabilities ranging from a quarter to two-thirds the width of the lower lip. However, side effects that need to be considered are microstomia and decreased aesthetic value due to the incision in the skin folds.

REFERENCES

1. Dessy M, Colletti G, Dionisio A, Liberale C, Biglioli F. Surgical Correction Of Hypertrophic upper lip in vascular malformations. *J Craniomaxillofac Surg.* 2018 Oct;46(10):p1790-1792.
2. Wetzel-Strong SE, Detter MR, Marchuk DA. The Pathobiology of Vascular Malformations: Insights From Human and Model Organism Genetics. *J Pathol.* 2017 Jan;241(2):p281-293.
3. Case Report : Karapandzic Flap. Khan, Abdul Ahad Gaffar. 2, India : *Indian Journal of Dentistry*, 2019, Vol. 5.
4. Abdul AGK, Jyoti VK. Case Report : Karapandzic Flap. *Indian Journal of Dentistry.* 2014; 5(2):p107-109.
5. Brian J-F W, Michelle GA, Jacob OB, et al. *Facial Plastic and Reconstructive Surgery : A Comprehensive Study Guide.* Springer International Publishing. 2016. 978-3-319-18035-9.
6. Ramashankar, Chandan P, Nishit KS, Girish G. Lymphatic malformations: A dilemma in diagnosis and management. *Contemp Clin Dent.* 2014 Jan-Mar; 5(1): p119-122.
7. Li WY, Chaudhry O, Reinisch JF. Guide to Early Surgical Management of Lip Hemangiomas Based on Our Experience of 214 Cases. *Plast Reconstr Surg.* 2011 Nov;128(5):p1117-24.
8. Joshua AC, Erica B, Edward IL. Vascular Malformations: A Review. *Seminars in Plastic Surgery.* 2014;28(2); p1535-2188.
9. Sun Y, Jingzhen S, Jianchao H, Jing A, Haojun Y, Shujing Q. Modified extended Karapandzic flap for large lower lip reconstruction. *Biomedical Research.* 2017 September;28(19); p8372-8375.
10. Anuj SD, Seemit S, Harish S, Parul T, Vinayak M. Karapandzic Flap for Esthetic and Functional Reconstruction of Large Defect of Lower Lip. *Ann Maxillofac Surg.* 2017 Jul-Dec; 7(2): p300-303.
11. Gresham TR, Adva BF. Review Article : Hemangiomas And Vascular Malformations: Current Theory and Management. *International Journal of Pediatrics.* 2012; p1-10.



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