

Case Report

Pediatric nasal reconstruction with frontal flap: a case report

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ABSTRACT

Authors presented the case of a 4-year-old male patient who suffered a dog bite on his face with partial amputation of the nasal tip, managed at another institution conservatively, so that one year after the injury he came for the nasal deformity. A frontal flap was performed for reconstruction achieving excellent results, coverage was achieved with similar characteristics of the skin as color and texture. The patient had a follow-up of 5 years with an appropriate course. Authors presented the case due to few reports in the literature of its use in children, where it can be observed that it is an excellent reconstructive tool.

Keywords: Dog bite, Frontal flap, Nasal reconstruction, Pediatric reconstructive surgery

INTRODUCTION

The nose represents a central point in the human face. When a defect in nasal integrity arises, the plastic surgeon usually finds it necessary to use all his or her abilities to achieve an adequate aesthetic and functional reconstruction. It is necessary to use the minimum possible manipulation and, if necessary, to take adjacent tissues for an adequate coverage and aesthetic and functional restitution.¹

Since, ancient times the nose has represented one of the main challenges for the plastic surgeon responsible for preserving body aesthetics, having antecedents as old as the reconstruction made in the year 600 after Christ by Sasrutha Samita where by rotating a local flap of cheek managed to cover nasal defects.²

The General Hospital Dr. Manuel Gea González, Mexico City, Mexico is a tertiary medical center that provides medical care mainly to patients without low-income

insurance in the Mexican Republic, amounting to a target population of 2.5 million people. It is also recognized as a national reference center for plastic surgery, especially in the fields of craniofacial, hand, reconstructive surgery and microsurgery.³

The frontal flap is an excellent tool for the reconstruction of defects in nasal tip, this reconstructive option is very versatile since the skin is similar in texture and color, likewise it presents a good vascular pedicle which comes from the supratrochlear artery. It is not common to use this type of flap in children because of the uncertainty about the growth and adaptation of the same in the underlying tissue, there is little literature on this, so authors consider it relevant to show a case with 5 years of follow-up and adequate results given the complexity of the injury.

CASE REPORT

This was a 3-year-old male patient who was admitted to the general plastic surgery clinic of a referral center in

Mexico City, Mexico after partial amputation of the nasal tip secondary to bite due to canine in 2013. The patient attended the service after one year after presenting the lesion, which included partial amputation of the esthetic sub-units corresponding to tip by 50% and left-wing wall by 40%, with a tissue loss of approximately 1.3 cm in diameter with partial preservation of left alar cartilage (Figure 1).



Figure 1: Patient with partial amputation of nasal tip and left alar one year after canid aggression.

The patient was initially treated conservatively in another institution with antibiotics and cures, attending one year later with the already epithelial lesion area.

The first surgical time consisted in making a left frontal flap taking as a vascular pedicle the left supratrochlear artery identified by portable doppler.

Due to the thin pedicle, it was possible to perform a rotation of the flap without bulging, tension, or vascular compromise verifiable by Doppler screening. The edges of the flap were adapted to the size of the lesion and the defect in the forehead was closed with simple 6-0 nylon stitches.

In a second time 14 days later, the pedicle of the flap was sectioned by cutting the intermediate segment (Figure 2).



Figure 2: Left para median frontal flap.

The patient went to the general plastic surgery clinic 3, 6 and 9 months later, mentioning the absence of complications and aesthetic compliance on the part of the parents and the patient. One year after the revision, it was

decided not to thin the flap due to the good development of the flap.

The patient came at 5 years for revision of the flap referring satisfaction with the results, currently there is adequate ventilatory function and the nasal tip has grown adequately in proportion to the rest of the nose, likewise the characteristics of the skin show a good result as to sensitivity, color and texture. The scar on the forehead shows adequate results without presenting a pathological process (Figure 3).

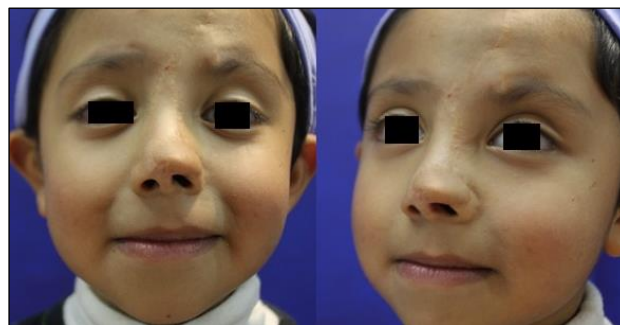


Figure 3: 5-years follow up after frontal flap.

DISCUSSION

The nose represents one of the focal points of the face where attention is focused on human interaction so a defect in that area can have a great impact on the development of the patient, especially if the patient is in the pediatric age, generating a process traumatic.⁴

Rhinoplasty is one of the most complex aesthetic surgeries and likewise nasal reconstruction is one of the most complex reconstructive processes because a minimal intervention can be widely observed and not only the aesthetic factor but also the functional one given that it is a basic structure for the ventilatory and olfactory function.

For the reconstruction, the surgeon has several tools, included in something commonly called the reconstructive ladder, an apology that refers to a protocol that should be continued by the simplest procedures such as closure by first or second intention, until reaching the microsurgical flaps.⁵

Local flaps are used in nasal reconstruction because they have similar appearance and dermal characteristics and are superior to skin grafts because of better integration given their vascular preservation.⁶

For the reconstructive decision of the patient several factors were taken into account, mainly the affectation of several aesthetic units, the age of the patient, the presence of internal coverage and the integrity of the cartilaginous structure, as well as the unknown previous treatment, so opted for a frontonasal flap for its safe blood supply and

similar skin characteristics. For an adequate technique, minimal manipulation of the tissue was performed with an adequate dissection and an identification of the pedicle, by means of the portable Doppler, authors could identify the supra trochlear artery in a simple way with the possibility of having a thin pedicle, promoting an adequate rotation and avoiding tissue swelling around the glabella allowing a primary closure of the most aesthetic donor site. Many studies have analyzed in depth the irrigation of the frontal flap, where the supratrochlear artery has a fairly constant discharge from the orbit of 1.7 to 2.2 cm from the midline to irrigate the region for median forehead, so authors opted for its identification by portable Doppler versus a more invasive study.⁷ In addition, in the surgical technique authors recommend the dissection of the flap in a subperiosteal plane 2 centimeters above the orbit, to ensure the incorporation of the artery to the pedicle.

During the first 5 years of life the nose reaches 50% of its total size, so many surgeons decide to wait until 6 years to start its reconstruction, this has led to the front flaps are not the first option for patients pediatric due to the concern of its development throughout the rest of the time.⁸

To date there are few studies in this regard, Giugliano C et al, reported 6 cases of nasal reconstruction with frontal flap in children aged between 2 and 5 years, where there are few complications with the exception of moderate nostril stenosis in two patients, their aesthetic and functional results were considered good by the surgeon and the patients, demonstrating that the flap has a joint growth with the patient.⁹⁻¹¹

The patient had an adequate growth, this attributable to adequate vascular supply. The most feared long-term complication was a contracture of the flap with an inadequate growth in relation to the rest of the nose, however, that development was satisfactory. In the same way, the patient did not presented complications in the airway or olfactory.

Until now, the use of frontal flap represents the ideal option of reconstruction in many patients with facial injuries since it can be used safely and reliably, and its use should not be limited in pediatric patients.

CONCLUSION

Due to its composition and location, nasal amputation injuries are one of the greatest challenges for the plastic surgeon, so they must make use of all their tools.

The frontal flap is an excellent option for nasal pediatric reconstruction due to its versatility and the possibility of providing coverage of similar conditions to the original skin, likewise it was seen that the flap had an adequate development throughout the patient's growth.

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REFERENCES

1. Menick FJ. Triple-flap technique for reconstruction of large nasal defects. *Arch Facial Plastic Surg.* 2001;3(1):22-3.
2. Samhita S. English translation by Kaviraj Kunja Lal Bhishagratna. 1907;16:152-4.
3. Telich-Tarriba JE, Velazquez E, Theurel-Cuevas A, Shinji-Perez K, Anaya-Ayala JE, Jimenez-Murat Y, et al. Upper extremity patterns of injury and management at a plastic and reconstructive surgery referral center in Mexico City. *Ann Plastic Surg.* 2018;80(1):23-6.
4. Masnari O, Landolt MA, Roessler J, Weingaertner SK, Neuhaus K, Meuli M, et al. Self-and parent-perceived stigmatisation in children and adolescents with congenital or acquired facial differences. *J Plastic Reconstructive Aesth Surg.* 2012;65(12):1664-70.
5. Riefkohl R, Pollack S, Georgiade GS. A rationale for the treatment of difficult basal cell and squamous cell carcinomas of the skin. *Ann Plastic Surg.* 1985;15(2):99-104.
6. Park SW, Heo EP, Choi JH, Cho HC, Kim SH, Xu L, et al. Reconstruction of defects after excision of facial skin cancer using a venous free flap. *Ann Plastic Surg.* 2011;67(6):608-11.
7. Shumrick KA, Smith TL. The anatomic basis for the design of forehead flaps in nasal reconstruction. *Arch Otolaryngol-Head Neck Surg.* 1992;118(4):373-9.
8. Rusch MD, Grunert BK, Sanger JR, Dzwierzynski WW, Matloub HS. Psychological adjustment in children after traumatic disfiguring injuries: a 12-month follow-up. *Plastic Reconstructive Surg.* 2000;106(7):1451-8.
9. Ueda K, Nuri T, Okada M, Maeda S. 28 year's follow-up of bitten-off nose replantation performed in a 9-year-old girl. *Plastic Reconstructive Surg.* 2014;133(6):904e-5e.
10. Duteille F, Perrot P, Pannier M. Suitable age for nasal reconstruction after subtotal amputation in a child, with respect to a case involving purpura fulminans. *J Pediatric Surg.* 2006;41(9):1616-9.
11. Giugliano C, Andrades PR, Benitez S. Nasal reconstruction with a forehead flap in children younger than 10 years of age. *Plastic Reconstructive Surg.* 2004;114(2):316-25.

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