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Surya Rao Rao Venkata Mahipathy
Professor & Head, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Alagar Raja Durairaj
Professor, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Narayanamurthy Sundaramurthy
Associate Professor, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Anand Prasath Jayachandiran
Assistant Professor, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Praveen Ganesh Natarajan
Assistant Professor & Craniofacial Surgeon, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

James Solomon Jesudasan
Assistant Professor & Maxillofacial Surgeon, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Centina Rose John
Fellow, Craniomaxillofacial Trauma, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Corresponding Author:
Surya Rao Rao Venkata Mahipathy
Professor & Head, Dept. of Plastic & Reconstructive Surgery, Saveetha Medical College & Hospital, Thandalam, Kanchipuram Dist., Tamil Nadu, India

Paramedian forehead flap for reconstruction of the nasal tip – A case report

Surya Rao Rao Venkata Mahipathy, Alagar Raja Durairaj, Narayanamurthy Sundaramurthy, Anand Prasath Jayachandiran, Praveen Ganesh Natarajan, James Solomon Jesudasan and Centina Rose John

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Abstract
The paramedian forehead flap is a good option for reconstruction of large and complex nasal defects. For full-thickness defects, it may be used alone or in combination with other methods. It can be easily performed under local or general anesthesia, providing a very good color and texture matching to the nasal skin. The only disadvantage is that it is a two-stage procedure that requires flap division and inset after 3 weeks. Here, we present a case of post-traumatic loss of the nasal tip reconstructed with a paramedian forehead flap.

Keywords: Forehead flap, nasal tip defect, reconstruction

Introduction
The paramedian forehead flap is a simple and versatile flap for nasal reconstruction. It is the mainstay for reconstruction of large and complex wounds of the distal nose, especially of the tip and ala, including full-thickness defects [1, 2]. The paramedian forehead flap is used as an interpolation flap to restore projection of the nasal tip and convexity of the ala, having a broad pedicle and a robust vascular supply [3-7] The flap is basically a paramedian forehead flap and utilizes single supratrochlear or supraorbital vessel. It provides good color matching at the host site, hair-free pedicle, and matching tissue texture. For full-thickness defects, paramedian forehead flaps may be used alone or in combination with other methods to restore nasal lining [8]

Case Report
A 34-year-old male presented to us with a history of fall from a bicycle sustaining injury to nose. He was treated outside by suturing and later after one week came to us with blackish discolouration of the nasal tip and part of right ala with sutures still present. There was no history of any co-morbid illnesses. CT scan of the facial bones should no fractures. On examination, there was a sutured wound of the nasal tip with necrosis of the avulsed segment. (Fig. 1)

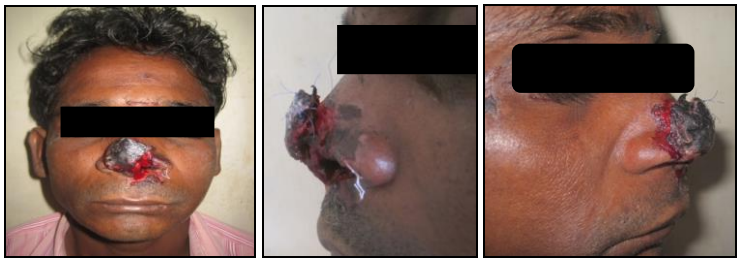

Fig 1: Clinical photograph showing the necrosed nasal tip

We proceeded with debridement under general anaesthesia. Following debridement, there was a total loss of the nasal tip, loss of skin & soft tissue of the columella, left ala, and part of right ala, with the cartilage framework intact. The total defect size was 3 x 3cm. There was a 0.5cm dee

laceration of the nasal sill which was sutured and a 0.5 x 0.5cm raw area on the upper lip. (Fig. 2)

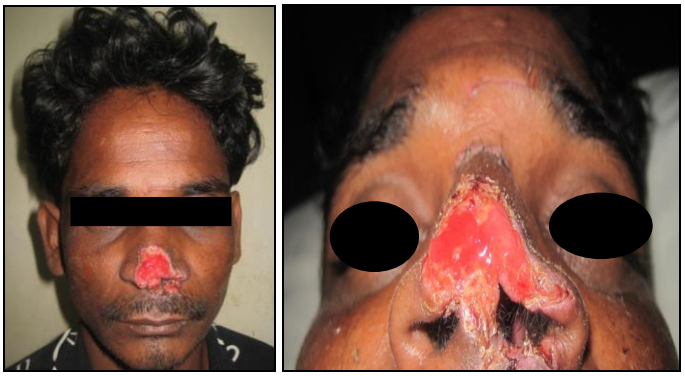

Fig 2: Photograph after debridement

We proceeded to do a left paramedian forehead flap. We traced the supratochlear artery wuth a hand held Doppler and marked the flap by planning in reverse with a lint pattern. (Fig. 3, 4, 5)

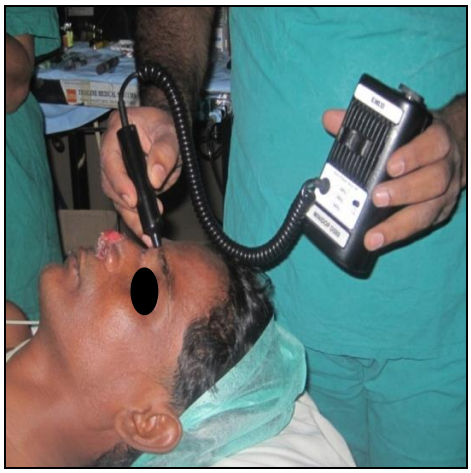

Fig 3: Pre-operative Doppler marking

Fig 4: Flap marking done

Incision was made and deepened in layers. Flap was elevated and inset given with 4-0 ethilon. The secondary defect was closed primarily. (Fig. 5, 6, 7, 8). The flap was divided after 3 weeks with good cometic result with no nasal obstruction. (Fig. 9)

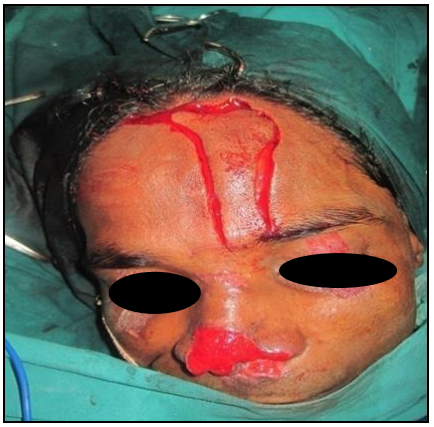

Fig 5: Photograph showing the incision

Fig 6: Picture showing flap elevation

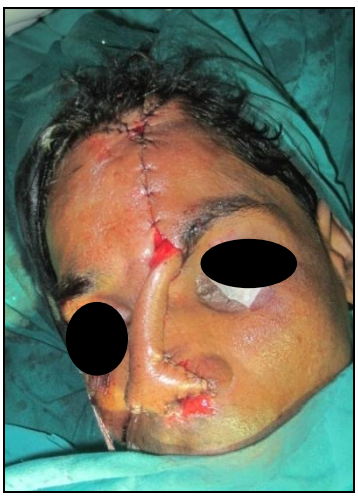

Fig 7: Immediate post-operative picture

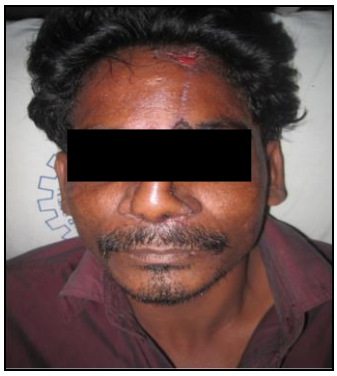

Fig 8: Status forehead flap before flap division

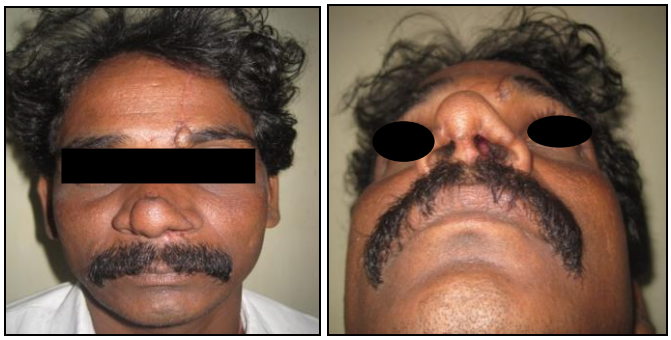

Fig 9: Picture after flap division (frontal and worms eye view)

Discussion

The forehead flap was initially used by Sushruta in 600 BC for nasal reconstruction. This flap provides similar color, texture, and structure of the nasal skin. The robust blood supply from the feeder vessels, supratrochlear or supraorbital arteries makes this a reliable flap [9] The flap is also perfused randomly from the adjacent skin, through the frontalis muscle, and axially through its vertical muscles. The primary blood supply is through supratrochlear vessels with multiple anastomoses to the dorsal, and supraorbital and angular arteries. Usually the forehead flaps are about 5 cm in height from the eyebrow to the hairline; this measurement may be useful in estimating the tissue availability for reconstruction. It is used for reconstruction of defects which are more than 2 cm in diameter [10] The flap is basically a two-stage procedure, with the first stage involving designing of flap, elevation, and insertion. The second stage involves the division of pedicle and reshaping of the tissues to achieve the normal anatomy of the area. There are three main disadvantages, the arc of rotation my compromise the blood supply of the flap, the unsightly vertical scar on the forehead and at times the unwanted hairs makes the area unappealing, but can be managed by laser hair removal, electrolysis, application of depilatory creams, or cauterizing each hair follicle at the time of pedicle transfer or division [11] While raising a forehead flap, possible distortion of hairline, eyebrow, eyelid, and canthi should be addressed. The low pivot point of a paramedian flap provides easy tissue movement toward the defect, leaving hairy scalp. It is also necessary that designing of flap should ensure that the scars rest within the relaxed skin tension lines and close parallel to the lines of maximal extensibility [12] The donor site can be closed primarily, skin grafted or left to heal by secondary intention [13]

Conclusion

The paramedian forehead flap is a versatile and convenient flap for nasal tip reconstruction. There is excellent colour and texture match and it is cosmetically acceptable. Patient selection, surgical planning and preplanning, and meticulous technique are all necessary to minimize potential complications.

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