A Unique Alternative in Reconstruction of Nasal Cavity Defects

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ABSTRACT

OBJECTIVE:
There is a paucity of literature reporting nasal reconstruction after exenteration of nasal cavity/paranasal sinus malignancies. Here we describe a novel method for reconstruction of a unique nasal cavity defect with a variation of the commonly used paramedian forehead flap in conjunction with a cantilevered bone graft.

METHODS:
One patient underwent open surgical excision of a stage IV squamous cell carcinoma of the nasal cavity/paranasal sinuses via lateral rhinotomy. The resultant defect required reconstruction of the upper two-thirds of the nasal framework, the entire nasal lining, yet none of the external skin. Near total septectomy and turbinectomy limited possible donor sites. The defect was reconstructed with a paramedian forehead flap to line the nasal cavity and provide coverage for a cantilevered calvarial bone graft.

RESULTS:
The described technique resulted in an excellent functional and aesthetic nasal reconstruction. The patient has been very pleased with his postoperative appearance and reports excellent nasal airflow.

CONCLUSIONS:
Here we describe a novel method for reconstruction of a unique nasal cavity defect with a variation of the commonly used paramedian forehead flap in conjunction with a cantilevered bone graft. Lack of reconstruction certainly would have resulted in significant contraction with an obvious and extreme cosmetic saddle nose deformity, likely nasal airway obstruction, and the potential for frontal sinus mucocele formation.

The nasal lining defect could have been addressed differently with a faciocutaneous free flap (i.e., radial forearm), or a pericranial flap. We felt like we could spare the patient the morbidity of a free flap and still provide a robust enough coverage to avoid extrusion of the nasal framework, the paramedian forehead flap was the best option. The need for postoperative radiation therapy was a significant factor in our decision, and we felt inferior turbinate grafts would not provide adequate lining. As there is a significant recurrence rate with this type malignancy, we also kept in mind the need for potential donor sites in the future should the patient’s cancer recur. An osteocutaneous radial forearm free flap was one additional option for reconstruction considered that would have fulfilled both the nasal lining and framework requirements. The other options we considered for nasal framework were a costal cartilage or bone graft, homologous graft, or an alloplast.

Utilizing this type flap and graft for nasal reconstruction is not novel. However, to our knowledge, reconstruction of this type defect has not previously been described. By reporting this case we hope to add to the indications for the use of these workhorse techniques, and strengthen the armamentarium of the facial plastic and reconstructive surgeon.

REFERENCES


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To Daniel R. Englert for his expertise in medical illustration. All drawings are his original work.

To this particularly grateful patient for his consent to allow us to display his photos and artist’s depiction of nasal reconstruction. (A/D) The lateral rhinotomy was reopened revealing the defect. (B/E) Paramedian forehead flap is raised and shown how it will be used as the nasal lining after the framework is reconstructed. (C/F) The nasal skin is still held open revealing the calvarial bone graft secured and forehead flap flipped down to provide nasal lining.