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Palatal Fistula Secondary to Trauma: Clinical Insights and Management

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A 20-year-old male patient reported to the in-patient Department of Oral and Maxillofacial Surgery with a chief complaint of nasal regurgitation, recurrent nasal and maxillary sinus infections, hypernasal speech, and difficulty in deglutition for approximately one year. The patient had been managing these symptoms conservatively with symptomatic treatment and had not sought definitive care for the underlying condition. Upon evaluation, surgical intervention was advised for the management of the palatonasal fistula.

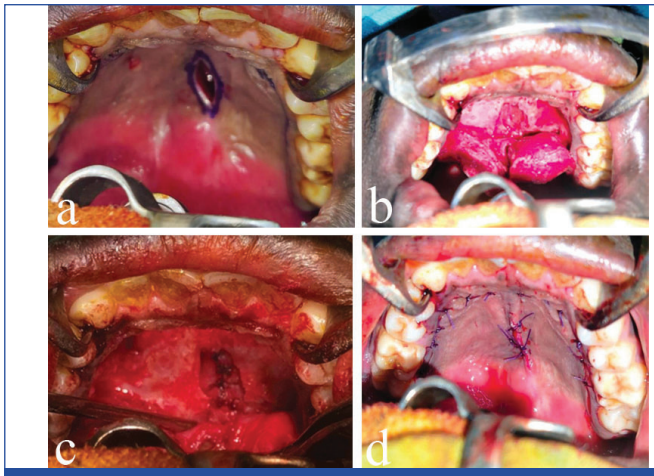
The patient had a history of a Road Traffic Accident (RTA) in which he sustained bilateral Le Fort I fractures and an associated palatal fracture. Initial management was undertaken at a private healthcare facility, where the patient underwent fixation with miniplates for the Le Fort I fractures and K-wire fixation for the palatal fracture. Approximately one month later, the patient developed a fistula on the palate.

On extraoral examination, no gross asymmetry was noted. Intraoral examination revealed a palatonasal fistula measuring approximately 1×0.5 cm near the midline of the hard palate, 2 cm medial to the 24-25 region [Table/Fig-1]. Nasal regurgitation was confirmed by a positive water-holding test. Additional diagnostic tests, including the Valsalva maneuver and mirror fogging test, were also positive, confirming the presence of the palatonasal fistula. Hypernasal speech was evident, further supporting the diagnosis.

[Table/Fig-1]: Preoperative photographs intraoral view.

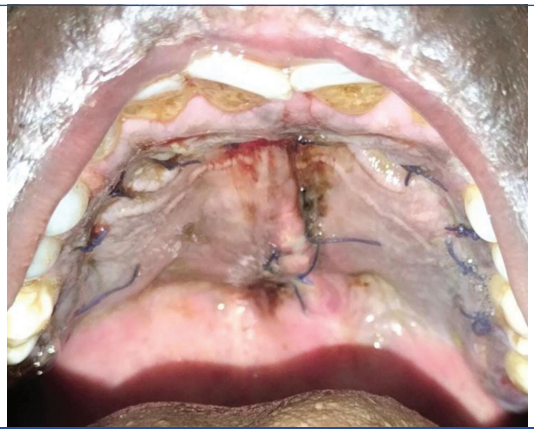
The procedure was performed under general anaesthesia with oroendotracheal intubation, following all aseptic precautions and standard patient protocols [1]. Precise markings were made for the perifistular incision and bilateral lateral releasing incisions on the palate. After infiltration with a solution of saline and adrenaline, incisions were made and deepened through the mucosa, muscle, and periosteum. The lateral incisions were connected anteriorly, and a full-thickness mucoperiosteal flap based on the greater palatine artery was carefully elevated.

The nasopalatal fistula was excised, and the nasal lining was dissected and closed first, followed by closure of the defect and the mucosal layer [Table/Fig-2a-d].



[Table/Fig-2a-d]: Intraoperative photographs: a) Incision marking; b) Nasal layer dissected; c) Closure of nasal layer; d) Closure of oral layer of palate.

Postoperative assessment of the defect correction was conducted meticulously to evaluate the success of the surgical intervention. Clinical examination revealed no signs of nasal regurgitation. The integrity of the repair was further confirmed postoperatively using techniques such as the water-holding test and the Valsalva manoeuvre, which demonstrated intact palatal closure without any leakage, ensuring functional restoration of the palate [Table/Fig-3].



[Table/Fig-3]: Postoperative photograph depicting closed fistula and Intraoral sutures.

On subsequent follow-up visits, the patient reported no persistent complaints. There was no evidence of nasal regurgitation, and a noticeable improvement in speech quality was observed. Intraoral suture removal was performed during the second postoperative week. Follow-up photographs at the fifth-month postoperatively showed complete absence of the palatonasal fistula [Table/Fig-4].

[Table/Fig-4]: Follow-up photograph at fifth-month postoperatively.

Trauma-induced palatonasal fistulas are an exceptionally rare clinical entity, with very few cases documented in the literature. While palatal fistulas are more commonly encountered as postoperative complications following cleft palate repairs, their development secondary to midface trauma is seldom reported. The scarcity of such cases makes present report particularly significant, as it provides valuable clinical insights in an area with limited evidence.

Majid OW reported high fistula rates following maxillofacial trauma. The persistence of oronasal fistulas in five of nine patients with palatal injuries, despite attempts at primary repair, highlights the importance of early, tension-free, two-layered closure to manage tissue loss and prevent recurrence [2].

In present case, the hard palate fistula was repaired in two layers: the nasal layer was closed first, followed by closure of the fistula using a mucoperiosteal palatal flap. As suggested by Fayyaz GQ et al., fistulas located in the midline of the hard palate should be repaired with a mucoperiosteal flap, particularly after closure of the nasal layer [3].

The use of a mucoperiosteal flap based on the greater palatine artery ensured a well-vascularised and tension-free repair. Closing the nasal lining first provided a scaffold and effectively separated the nasal cavity from the oral environment. Subsequent closure of the oral mucosa restored both the structural and functional integrity of the palate. This two-layered method not only reinforces the repair but also distributes tension evenly across the surgical site, reducing the likelihood of recurrence.

The nasal microbiota, which comprises a diverse collection of microorganisms including *Actinobacteria, Bacteroidetes, Firmicutes*, and *Proteobacteria*, differs from the oral microbiome [4]. Given this variation and the potential for cross-contamination, addressing both the nasal and oral sides of the defect is essential to restore the barrier between these regions. This approach reduces the risk of infection, promotes proper healing, and prevents complications.

Fistula closure techniques are classified into four main groups: mucoperiosteal flaps, such as rotational and hinge flaps; pedicled flaps using tissues from other intraoral sites, including the tongue or buccal mucosa [5]; free tissue transfer, including free radial forearm or scapular flaps for large defects lacking local tissue; and the use of bone or cartilage grafts, or acellular dermal matrix in combination with other flaps to ensure effective closure [6].

Fistula formation can result from extensive dissection of the maxillary crest and nasal floor. Additionally, untreated or inadequately managed palatal trauma may contribute to its development [7]. The technique employed in present case for closing a palatonasal fistula offers several advantages: it is a straightforward, single-stage procedure requiring only one incision in the oral cavity, in contrast to methods that involve using a tongue or buccal flap.

When treating palatal fistulas in the context of complex maxillofacial injuries, a customised strategy that combines precise surgical skill with conscientious postoperative care is required. To achieve optimal outcomes, the present case emphasises the importance of early intervention, patient cooperation, and the application of reconstructive procedures. Standardised protocols for the prevention and management of such complications and defects are needed. The present report highlights the clear need for further research on the incidence, pathophysiology, and management of palatal fistulas secondary to trauma.

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