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Oronasal fistula repair with Combined Endoscopic & Transoral Approach (3 layer): Case report & Review of Literature

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Abstract

A 24 year old female patient presented with symptoms of nasal regurgitation of liquid feeds lasting since 2 years. On examination patient was found to have oronasal fistula with necrotic exposed maxillary bone (palatal surface). In view of failure of response to conservative management, patient was operated with Combined Transoral- Endoscopic approach (3 layer repair). Patient was under follow up for 1 year and was asymptomatic till last follow up. We shall review the literature of oronasal fistula with respect to etiopathogenesis and management options.

Keywords:

Oronasal fistula, Endoscopy, Mucoperichondrial flap, Greater palatine artery.

Introduction

Oronasal fistula is defined as pathological communication between nasal cavity and oral cavity. The frequent causes of oronasal fistula are congenital defects i.e. cleft palate, trauma, infectious aetiology, neoplastic pathologies, or complication of surgeries of midfacial region, gunshot wounds. Very rarely an acute/chronic/recurrent abscesses of dentoalveolar region of central incisor may tunnel through the maxilla into the floor of the nasal cavity (1). We are reporting a case of oronasal fistula in a 24 year old female which occurred due to infection of maxillary bone (palatal surface) secondary to recurrent tooth root infection (upper incisors). We are discussing technique of 3 layer repair of oronasal fistula by combined transoral and endoscopic approach. The aim of presenting this case was to discuss the various aetiologies, surgical technique and to increase awareness among the general otolaryngology/ dental surgeons.

Case report

24 year old female visited ENT OPD with complaint of intermittent nasal regurgitation of liquids for last 2 years. There were no associated complaints of nasal discharge, nasal obstruction, fever, nasal/ oral bleed. There was past history of episodes of pain in central incisors followed by swelling in palate region. Patient received conservative treatment in form of oral antibiotics and anti-inflammatory agents for recurrent episode of pain from various dental clinics. There was transient relief in acute symptoms but over the time she developed symptoms of nasal regurgitation and non healing palatal ulcer. However, symptoms of pain & swelling subsided thereafter. Patient's speech was not affected. There was no past history of tuberculosis, syphilis, diabetes. On oral examination (figure 1), a mucosal defect of 1 × 1 cm was noted with underlying exposed bone. Bone seen through defect was unhealthy looking & on palpation with probe, was mobile with minimal manipulation. There was no loose tooth / tenderness in any of the tooth. On nasal endoscopy, there was purulent discharge in the floor of nose (figure 2). On cleaning the discharge, there were granulations with slough along the floor of nose. Mild DNS to the left side with small maxillary spur was noted. There were no signs of a submucosal cleft, cleft palate, high arched palate, lip defect. Hematological investigations including ESR were normal. Autoimmune & chronic

granulomatous disorder workup was negative. CECT Paranasal sinus displayed focal bony defect around left side of midline seen showing a piece of bone segment in floor of nasal cavity, reaching anteriorly up to incisors root & not in continuity with rest of maxillary bone (figure 3). Mild spur in left nasal cavity was seen. All of the paranasal sinuses were normal. Differential diagnosis of granulomatous disorder, necrotizing sialometaplasia, vasculitis and osteomyelitis disorder were kept in mind. Endoscopic biopsy of the tissue was taken and sent for histopathological examination. Histopathology was reported as non-specific inflammatory pathology with no evidence of granulomatous/ vasculitic pathology. Patient was given oral ciprofloxacin for 4 weeks to eradicate any bony infection in the surrounding region of defect and then surgery was planned. Patient was explained the nature of disease and with informed written consent, patient was taken up for surgery under general anesthesia. Boyle Davis mouth gag was applied for transoral exposure of palate. The palate was injected with lidocaine with 1:200000 epinephrine in the area of the mucosal incision. Margins of defect were freshened. Modification of Owens type (U-shaped) (figure 4(a) & 4(b)) mucosal incision was made beginning from level of left maxillary tuberosity up to just crossing midline towards right side. Mucosal flap was elevated posteriorly up to hard palate & soft palate junction completely exposing the site of fistula while taking care not to damage the left greater palatine artery (figure 5). Diseased bone fragment was mobilized from palatal defect and removed endoscopically (figure 6). Septal mucoperichondrial flap was raised on left side of septum endoscopically. Part of Septal cartilage was harvested for reconstruction of bone defect while maintaining the Inverted L strut. Wound at site of fistula was thoroughly washed with distilled water to remove any debris. Harvested cartilage was placed over the defect. Fistula was closed transorally with approximation of palatal defect margins with 3-0 vicryl (figure 4(c)). Palatal mucosal defect left after palatal transposition was left to heal by secondary intention. Septal mucoperichondrial flap was placed over defect. Loose anterior nasal pack was kept in left nasal cavity. Nasogastric tube through right side nasal cavity was kept in situ. Postoperative period was uneventful. Pack removal was done on post operative day2. Ryles tube was removed on postoperative day 7 and oral liquid feed was started. By postoperative day 28 palatal defect & raw area healed completely (figure 7) and normal diet was started. Patient was kept under regular follow up for next 1 year. There were no complaints of pain, swelling and recurrent discharge.



Figure 1: Oronasal fistula - Underlying necrosed palatine bone can be seen through the defect

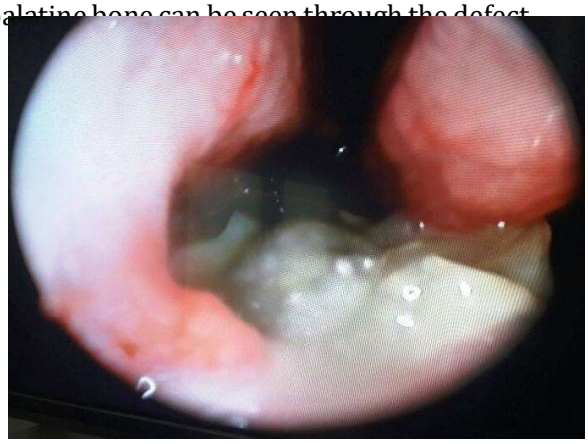


Figure 2: (Endoscopic view) Discharge along the floor of left nasal cavity between nasal septum & left inferior turbinate

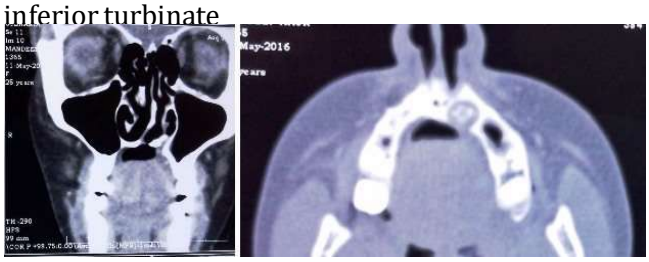


Figure 3: Coronal cut showing piece of loose bone lying in floor of left nasal cavity lying free without any attachment. Axial cut showing the anterior

extent of sequestrum upto root of incisors

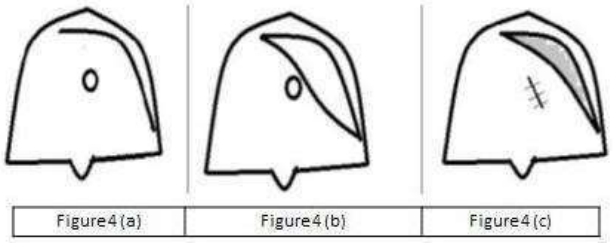


Figure 4: Modification of Owens type (U-shaped) (figure 4(a) & 4(b)) mucosal incision; approximation of palatal defect margins with 3-0 vicryl (figure 4(c))



Figure 5: Oronasal fistula after elevating the palatal flap



Figure 6: Picture of oronasal fistula



Figure 7: Completely healed fistula defect by post-operative day 28

Discussion

Most common cause of oronasal fistula is recalcitrant palatal cleft defect after repair with incidence varying from 20- 40% (2,3). In our case, the pathology is osteomyelitis of palatal bones leading to non-healing of defect & eventually fistula formation. Possible etiology in our patient is due to spread of infection from upper incisors although at presentation there was no pain in tooth/ loosening of any incisors. Other causes of oronasal fistula could be granulomatous disorder (tuberculosis/ leprosy), vasculitis (syphilis/ wegener granulomatosis etc), trauma, complication of palatal surgery. Septoplasty surgery(4) & Cocaine snorting(5) has been reported a cause of oronasal fistula in the literature. It is very important to find out the pathology of oronasal fistula eg. vasculitis / granulomatous disorder. Repairing the fistula without treating the underlying pathology can lead to recurrence of defect. Therefore, tissue biopsy should be routinely done during the initial evaluation of oronasal fistula cases to rule out above mentioned pathologies. Radiological investigation in form of Computerized Tomogram of Palatal region should be done at the time of the initial clinical evaluation to evaluate the extent of underlying bone defect to plan the surgical repair accordingly. Depending on size & location of fistula, symptoms vary from totally asymptomatic to nasal regurgitation of feeds, unclear speech due to increased nasal resonance (rhinolalia aperta). In our patient, only symptom was nasal regurgitation of liquid diet. Murrell GL et al(6) has described oronasal fistula repair with three layers. He repaired nasal mucosa repair with inferior based mucosal flap raised from septum from opposite side of fistula defect. Rest of 2 layers were repaired in a similar way to our method with cartilage and palatal transposition flap. In our case we used mucoperichondrial septal flap from the side of palatal defect. Advantage in our technique is the avoidance of surgery on opposite side of nasal cavity. It avoids unnecessary crusting and decreased morbidity in terms of nasal obstruction and discharge due to crusting on the opposite side of defect. Riyadh A. Alhedaithy et al(4) reported a case of Oronasal fistula post septoplasty. He repaired the defect with multilayers with combined oral and endoscopic approach. Other surgical method of oronasal fistula repair described is inferior turbinate flap based repair, reported by Penna V et al(7) for treatment of oronasal fistula. This flap is useful especially for cleft palate patients for repair of nasal

side of defect. Lee SI(8) reported repair of oronasal fistula with split-skin graft on nasal side and mucosal flap on oral side. 3 layered repair gives more strength to healed wound & carries less risk of recurrence.

Conclusion

Combined transoral & endoscopic 3 layer repair carries less morbidity as compared to other approaches. It is also important to find the underlying pathology before repairing the fistula to decrease the chances of failure.

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