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Saudi female patient with three accessory maxillary ostia: A case report and review of the literature

Ibrahim Alarifi[1], **Mohammed Alsukayt**[2], **Faisal S Alqusaiyer**[3*], **Ghaida A Al Musma**[3], **Abdullah M Al Meaither**[3]

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Authors' Affiliation:
[1]ENT-Rhinology and Skull Base Consultant, Department of Otolaryngology Head and Neck Surgery, Security Forces Hospital, Riyadh, Saudi Arabia
[2]ENT Registrar, Department of Otolaryngology Head and Neck Surgery, Security Forces Hospital, Riyadh, Saudi Arabia
[3]Medical Intern, College of Medicine, King Saud University, Riyadh, Saudi Arabia

[*]**Corresponding Author**
Medical intern, College of Medicine, King Saud University, Riyadh, Saudi Arabia
Email: FaisalAlqusaiyer@gmail.com

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ABSTRACT

In humans, the prevalence of accessory maxillary ostium (AMO) ranges from 0 to 43%. Several conditions have been associated to the occurrence of an AMO, including recurrent maxillary sinusitis and a maxillary retention cyst, to name a few. This case describes a 22-year-old female with a visit to the Rhinology clinic with three AMOs, two on the right side and one on the left, all of which were located in the posterior nasal fontanelle.

Keywords: Accessory Maxillary Ostium (AMO), Maxillary sinus, Saudi Arabia.

1. INTRODUCTION

Paranasal sinuses are probably the most complicated anatomical structures in the human body. They are located very close to important organs, such as the carotid artery, the optic nerve and skull base. It is necessary to have a good understanding of normal anatomy in order to accurately diagnose sinonasal pathology (Al-Abri et al., 2014). The maxillary sinus was described as a bony cavity that is pyramid-shaped and lined with sinus membrane via the natural ostium in the middle meatus, this membrane connects to the nasal epithelium. The natural ostium is responsible for sinus drainage and ventilation, as well as keeping the maxillary sinus physiologically healthy (Do and Han, 2022). The natural ostium of the maxillary sinus is located on superomedial surface, and its obstruction may factor in the development of maxillary sinus pathologies. AMO is considered one of its structural variants; its opening lies in the lateral nasal wall and is situated 5–10 mm above the inferior concha's attachment. The likelihood of maxillary sinusitis is doubled when there are accessory maxillary ostia (Yenigun et al., 2013). It is unclear if these ostia are congenital or acquired (Genc et al., 2008; Ghosh et al., 2018). A number of factors, including bacterial infection and allergy, assist in the creation of AMO. Notably, various variances in the nose's anatomy might also be a significant element (Ghosh et al., 2018). AMO are typically single, but multiple and

bilateral ostia have been reported (Jog and Mc-Garry, 2003; Prasanna and Mamatha, 2010; Bani-Ata et al., 2020). Research shows that cases of AMO are higher in patients with previous history of maxillary sinus infection or infundibula obstruction (Ali et al., 2017), implying that maxillary sinusitis has a contributive factor in the creation of AMO. 30% of individuals suffering chronically from maxillary sinusitis and 10% to 20% of healthy people have an AMO (Serindere et al., 2022). It is believed that the existence of an AMO disrupts the sinus' physiological functions and contributes to sinus disease. A computed tomography scan offers high level of accuracy and a good quality image to identify significant anatomical abnormalities in paranasal sinuses and should be studied thoroughly prior to any surgical approach (Papadopoulou et al., 2021; Shetty et al., 2021). Many surgical interventions require knowledge of the complex anatomy and normal variations of the sinuses and associated structures by the surgeon to avoid potential complications (El-Anwar et al., 2018; Berjis et al., 2014). Functional endoscopic sinus surgery, which aims to clear any obstruction from the nasal sinuses and return sinus ventilation and mucociliary function to normal, is an illustration of such surgical intervention (Singhal and Singhal, 2014).

2. CASE REPORT

A 22-year-old woman, medically free, presented to the Rhinology hospital with complaints of right-sided nasal obstruction and mouth breathing. Our patient did not complain of nasal discharge, hyposmia or facial pressure and on examination with anterior rhinoscopy, a nasal septum deviating to the right side and hypertrophied right inferior turbinate were appreciated, computed tomography imaging of nasal sinuses was performed, which revealed clear paranasal sinuses on both sides with no cavity obliteration or air fluid level, as well as a small polypoid mucosal thickening related to the right maxillary antrum and ethmoid air cells. Deviated nasal septum to the right side and bilateral concha bullosa, ostomeatal complex bilaterally and mild adenoid hypertrophy was noted. Three accessory maxillary ostium ostia were reported, two to the right side (Figure 1, 2) and one on the left (Figure 3) located in the back of the nasal fontanelle. The patient underwent Septoturbinoplasty with bilateral concha bullosa release. During the operation, all of the reported accessory maxillary ostium was appreciated and the openings were identified. On Post operation follow up visit, silastic sheets were removed and no active complaints were reported.

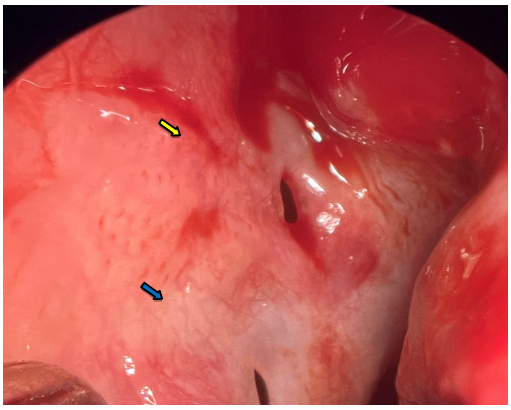

Figure 1 Intraoperative endoscopic picture of the first (yellow arrow) and second (blue arrow) right side accessory maxillary ostia in the posterior nasal fontanelle

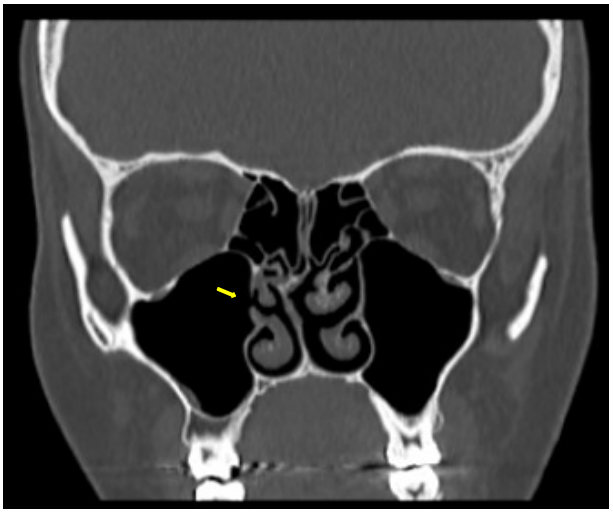

Figure 2 Preoperative sagittal view computed tomography image of nasal sinuses, yellow arrow pointing towards the first right sided Accessory maxillary ostia in the right posterior nasal fontanelle

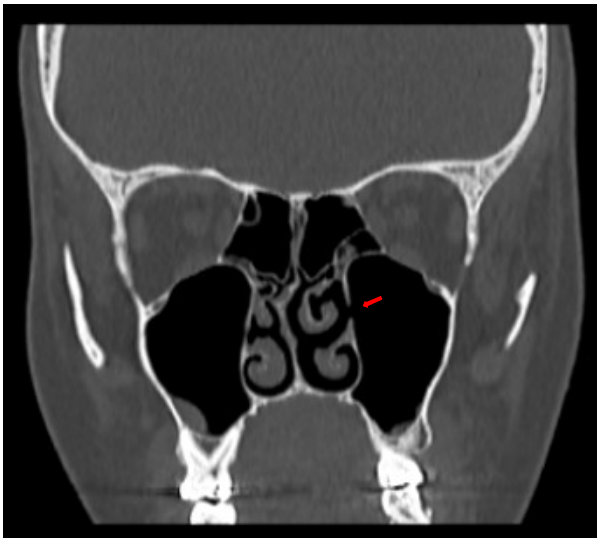

Figure 3 Preoperative sagittal view computed tomography image of nasal sinuses, red arrow pointing towards the left sided accessory maxillary ostia in the left posterior nasal fontanelle

4. DISCUSSION

The mechanism of accessory ostium formation could be due to maxillary sinusitis obstructing the main ostium or due to pathologic and anatomic factors presenting in the middle meatus cause the fontanelles to rupture, which is thought to be more common in the posterior fontanelle (Ghosh et al., 2018; Jog and Mc-Garry, 2003). According to one study, having an additional maxillary ostium tripled the likelihood of encountering a mucus retention cyst and doubled the likelihood of encountering maxillary sinusitis and mucosal thickening (Yenigun et al., 2013). A mucosal thickening associated with the right maxillary antrum and ethmoid air cells was discovered in our case report. In 2020, a study conducted with cone beam computed tomography on 160 individuals, discovered that AMOs were affected by maxillary sinus pathologies, which was shown by morphological changes to the sinus mucosa being associated with increase in both area and length of AMOs (Hung et al., 2020).

5. CONCLUSION

Detection of accessory maxillary Ostia prior to and during surgery has shown to reduce postoperative surgical complications. In our case, no postoperative complications were discovered or reported by the patient during subsequent visits. We believe our case is the first reported case of three accessory maxillary Ostia in the region. Similar to other studies evaluating and examining the

effects of AMO around the world, further studies are warranted to evaluate the incidence rate of AMO in the region and any correlation with postoperative complications.

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Author's contributions

All authors contributed in the writing of this study, from case discussion to manuscript writing.

Informed consent

Inform consent was obtained from the patient for publication of this report and accompanying images.

Ethical Approval

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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