Bilateral Chronic Maxillary Atelectasis with a Unilateral Accessory Ostium

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Background
• Chronic maxillary atelectasis (CMA) is an underdiagnosed condition that can occur bilaterally and may lead to significant complications.
• Its aetiology has not been established.
• Accessory maxillary ostium (AMO) is a defect in the fontanelle and is associated with maxillary sinus pathology.
• It has not been established whether AMO is a congenital or an acquired structure.
• We present a case of bilateral CMA in the presence of a unilateral (left) AMO.

Case Presentation
• 47-year-old male with a long history of nasal obstruction that was worse on the right.
• Associated right-sided malar and periorbital facial pain and frontal headaches.
• Flexible nasendoscopy demonstrated a right anterior septal deviation and marked laterisation of both uncinate processes.
• CT of paranasal sinuses (Figure 1) demonstrated findings consistent with a diagnosis of bilateral stage II CMA. An AMO could also be identified on the left.
• Patient underwent septoplasty, bilateral inferior turbinoplasty, bilateral uncinecomies and maxillary antrostomies.
• Intraoperatively, the left-sided AMO was identified in the posterior fontanelle (Figure 2) and incorporated into the antrostomy.
• At 6 weeks follow-up, there was complete resolution of symptoms.

Discussion
• CMA has traditionally been described as a unilateral condition.
• Multiple reports of bilateral pathology in the literature have challenged this traditional definition.
• Main theory regarding its aetiology:
  • Sustained obstruction at ostiomeatal complex → mucosal resorption of sinus gas → development of negative pressure within maxillary sinuses → triggers process of remodelling and inward bowing of the maxillary sinus walls.
• Study on rabbit models suggests that AMO can be acquired as a result of a pathological situation
• Our patient had bilateral stage II CMA but only had maxillary sinus opacification and symptoms on the right side.
• Presence of a congenital, patent AMO would have likely prevented the initial build-up of negative intra-sinus pressure.
• Therefore, we postulate that the patient initially developed CMA bilaterally from obstruction of the ostiomeatal complex. The patient subsequently developed left AMO, or had a pre-existing obstructed or small AMO that became patent, which then halted the progression of the disease on the left side by equalising the negative pressure differential.
• This supports that idea that some AMO may be acquired anomalies secondary to sinus pathology.

Conclusion
• Chronic maxillary atelectasis can occur bilaterally and cause significant sinonasal symptoms.
• This case suggests that some AMO are acquired defects and supports the notion that CMA is caused by negative intra-sinus pressures.
• Further research is required to establish the precise aetiology of CMA.