

# Wooden Spatula Sinusitis following Maxillary Expansion Surgery

## INTRODUCTION

Sinusitis is a recognised rare complication of palatine expansion procedures and is due to the presence of an oroantral fistula. We report the first case of unilateral sinusitis as a result of a retained foreign body (wooden spatula) following a surgical assisted rapid palatine expansion (SARME) procedure.

## CASE REPORT

### Presentation

A 28-year-old gentleman had a SARME performed in America by an oral surgeon and orthodontist. The SARME was checked post-operatively with a routine scan. He had continued to recover well until he had a tooth extraction done approximately a month post-SARME in the USA. He had been initially thought to have an upper respiratory tract infection which was managed accordingly. His symptoms progressed into post-nasal drip, nasal congestion, cacosmia and dysgeusia which were managed with antibiotics, nasal decongestant and fluticasone nasal spray. As his symptoms did not resolve, he was reviewed by his oral maxillofacial surgeon who repeated his CT scan, which showed a polyp arising from the medial wall of the right maxillary sinus. Consequently, he was treated with fluticasone nasal spray and prescribed further oral antibiotics which did not lessen his symptoms.

On returning to the UK three months after his initial SARME, he was reviewed by his GP who advised him to continue his Fluticasone nasal spray with oral Clarithromycin for one additional month. He was then referred to our rhinology clinic four months post his initial SARME with cacosmia, right-sided nasal blockage, perceived dysgeusia, posterior nasal drip and right-sided facial pressure. On the initial assessment, a nasal endoscopic examination revealed a deviated nasal septum (left sided spur) and right-sided middle meatal oedema with mucopus. His SNOT-22 score was 33/110. A diagnosis of chronic right maxillary sinusitis was made.

### Investigation

A CT Scan of the paranasal sinuses showed a polypoidal right maxillary medial wall, a fluid level in the left maxillary sinus and confirmed the deviated nasal septum to the left. His CT Lund-Mackay score was 3/24. The mucopus from the right middle meatus was sent for microbiological analysis which yielded no microbial growth.

### Management

After the initial maximum medical management with nasal douching, Fluticasone furoate nasal spray and oral Clarithromycin, he remained symptomatic with a SNOT-22 score of 59/110 and a reduced peak nasal inspiratory flow rate at 30L/min on the right compared to 90L/min on the left. Subsequently, he had limited endoscopic sinus surgery including bilateral uncinectomies, maxillary antrostomies, reduction of the septal spur (for access) and a left frontal balloon sinuplasty. There was purulent and polypoid contents in his right maxillary sinus. The left maxillary sinus had an accessory ostium which was connected to the natural ostium.

## **Outcomes and Follow-up**

On post-operative follow-up, he remained symptomatic with cacosmia, apparent dysgeusia and posterior nasal discharge. The initial endoscopic examination showed clear maxillary sinuses with no significant oedema or discharge and his SNOT-22 score was 44. Consequently, he was reassured and continued with Mometasone nasal spray and nasal douching. He continued to complain of unresolved symptoms at his review visit months later. The second post-operative endoscopic examination revealed a right-sided polypoid maxillary sinus with purulent discharge while the left was normal. He was started on oral Doxycycline and topical manuka honey.

However, he continued to be symptomatic and it was at this juncture that a further nasoendoscopy revealed a wooden spatula embedded in his right nasal floor which was removed (Figure 1). A retrospective review of his CT scans showed the wooden spatula to have been evident in the floor of the nasal cavity with the anterior end of the spatula positioned next to a defect in the inferior maxillary sinus wall (Figure 2). His symptoms have improved since this intervention.

### **Text for Figure 1**

Photograph showing the wooden spatula removed from the patient's nasal cavity

### **Text for Figure 2**

CT scan showing the spatula in the floor of the nasal cavity

## **Discussion**

### **Unilateral sinusitis:**

It is expected that foreign bodies should be excluded as a cause of unilateral sinusitis[1]. Maxillary implants have been known to cause chronic maxillary sinusitis, mainly as a sequelae of oroantral fistula. However, the majority of cases of chronic unilateral rhinosinusitis are said to be odontogenic[6, 7, 8]. Evidence of dental implant associated maxillary sinusitis is emerging; these are recognised foreign bodies which can cause sinusitis. There are potential rhinogenic causes of unilateral sinusitis such as septal deviation, nasal polyps and rarely malignancy. Adult foreign bodies include iatrogenic sources such as migration of orbital/oral implants, or following traumatic implantation. Incidental finding of a foreign body as a cause of chronic rhinosinusitis in adults is rare but it is prudent to rule out such a cause.

### **Maxillary Expansion Procedures:**

Maxillary or palatal expansion treatment has been used to correct transverse maxillary hypoplasia in the treatment of cross-bite, teeth crowding and malocclusion since the eighteenth century [2]. It works by increasing the maxillary transverse dimension. Various methods are used including rapid maxillary expansion (RME) which achieves 0.5mm to 1mm expansion per day usually inserted by orthodontists; slow maxillary expanders achieve 1mm expansion per week; implant supported expanders involve implants inserted in the palatal vault region to anchor an RME device[3]. Surgically assisted rapid maxillary expansion (SARME) is the main technique which involves a combination of procedures including distraction of the mid-palatal suture, paramedian palatal osteotomies, corticotomy through the zygomatic buttress from the piriform rim to the maxillopterygoid junction and osteotomy through the pterygoid plates[4]. Following surgery, patients will typically wear rapid maxillary expanders for between 2 -12 months. SARME is a safe procedure with low morbidity. Complications include alar base flaring, sinus infection (as a result of oroantral communication), injury to the maxillary nerve, gingival recession and root resorption [5].

Chronic unilateral sinusitis can be challenging to manage in cases where the immediate aetiology is not apparent. History, endoscopic examinations and radiological investigations play a key role in determining the underlying aetiology and management. We believe the foreign body was left in his nasal floor accidentally during the SARME procedure. This case highlights the importance of excluding a foreign body as a cause of unilateral sinusitis. Actively looking for this on radiological and endoscopic examination may lead early diagnosis and decrease the morbidity associated with this condition.

## Conflicts of interest statement

The authors have no conflicts of interest to declare

## Funding

None

## Acknowledgements

There are no other contributors to this article whether in the form of writing, technical help or otherwise

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