A case report of an intra-oral exophytic growth in reaction to Gore-Tex expanded PTFE membrane left in situ for eighteen years

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Abstract

This case report explores the challenging multidisciplinary management of a gentleman over the course of 28 years. It begins with resection of a maxillary ameloblastoma, describes an 18-year period of elusive discomfort, culminating in an exophytic lesion associated with a retained Gore-Tex membrane. Retained foreign bodies can cause a multitude of complications including chronic infection, discomfort and reactive tissue growth. Imaging for foreign bodies may have a low diagnostic yield and surgical exploration should be considered when conventional methods fail to provide a diagnosis. The case concludes with successful prosthodontic rehabilitation, lessons with barrier membranes and foreign body management.

Keywords: Foreign body; Gore-Tex; Maxilla; Dental Implant; Oral; Exophytic; ePFTE.
eloblastoma recurrence although benign inflammatory changes were noted in the region.

In 2013 the now 63-year-old gentleman was referred from Oral and Maxillofacial Surgery to Restorative Dentistry for prosthodontic management and review of the region of discomfort. The patient reported numerous complications since the resection of the ameloblastoma in 1991. His primary complaint was ongoing low-grade discomfort from his right maxillary incisor region, present for many years, but previous investigations and reviews simply indicated inflammation. Medical history included Parkinson’s, asthma and pernicious anaemia. His current implant retained removable partial obturator was functional, but retention relied primarily on one implant. The UR4 implant was diagnosed with peri-implant mucositis and managed with non-surgical periodontal treatment.

In 2017 the patient attended for review and continued to experience discomfort in the right anterior maxilla. Treatment planning began for a new removable prosthesis. It was discussed the buried implant in the UR2 region could be uncovered and utilised to improve prosthodontic function. A second stage surgery was undertaken under local anaesthetic and a healing cap was placed on the UR2 implant. However, as treatment progressed a concerning exophytic lesion developed buccal to the UR2 site. An urgent referral was made to the Oral Surgery department. Intraoral radiography failed to reveal any foreign bodies (Figure 1). Exploration of the site unveiled the corner of a flat, whitish, fabric-like material (Figure 2). This was removed and sent for analysis by histopathology.

Histological examination revealed a 14 X 9 mm laminated acellular membrane overrun by bacterial colonies. The features were that of a foreign body resembling Gore-Tex membrane. This section of Gore-Tex membrane for guided bone regeneration had been in-situ adjacent to the UR2 implant for eighteen years. This created a nidus for chronic infection. Following removal of this foreign body the chronic symptoms of discomfort finally resolved. The UR2 implant was then utilised for a bar retained prosthesis offering improved retention, stability and quality of life for the patient (Figure 3).

Figure 1: Intraoral image of the UR2 and UR4 Branemark implants taken at the time of the exophytic growth, eighteen years after grafting and placement. The radiolucent Gore-Tex membrane was still in situ, but is not radiographically apparent.

Discussion

Foreign bodies in the mouth may present as acute, recurrent or chronic infection, inflammation, purulent discharge, osteomyelitis, reactive soft tissue growth or non-descript pain [1]. Clinical presentation may mimic other more common conditions. Use of a surgical sieve expands our differential diagnoses and can prevent delayed definitive diagnosis with appropriate management.

An investigative history to understand the timeline of events can help identify a potential foreign body. This can be obfuscated by the transient nature of human memory and recall. Retrospective investigation of clinical notes can clarify the timeline, however multi-centre management of patients can make
assimilation of information difficult.

Imaging is recommended for foreign body identification however remains vulnerable to false negatives. Radiographic imaging can have limited diagnostic yield; particularly when an object, such as ePTFE, is radiolucent. Plain film radiographs will not typically reveal ePTFE membranes. The differences in density between ePTFE and the rest of the body mean that high resolution CT and MRI imaging could reveal membranes [2]. In practice this may be difficult to discern, particularly with small scale oral applications of membrane and when scans are taken at standard resolution.

Ultrasound waves pass through established ePTFE but will initially be impeded in the immediate post-operative period, until the membrane is filled by cells and fluid [2].

With hindsight the retained Gore-Tex would have been removed within an appropriate timeframe. There are now evidence-based protocols for membrane use in guided bone regeneration, twenty years ago these were less established. Gore-Tex continues to be used and left permanently in-situ for procedures such as hernia repair. Gore-Tex is biocompatible and when covered should remain inert when strict aseptic protocol is followed.

When non-resorbable membranes are placed for guided bone regeneration, the second surgical intervention for removal of the membrane should be scheduled, typically 3-9 months post-augmentation [3]. ePTFE membrane exposure is a recognised complication that permits a communication of bacteria into the surgical site, risking infection and bone loss [3]. Infection should be treated aggressively as unresolved infection will require premature removal of the membrane.

Expanded PTFE membranes, such as Gore-Tex, are porous in nature, therefore at an increased risk of infection in comparison to dense PTFE [4]. Resorbable collagen membranes are increasingly used, offering progressively comparable outcomes to non-resorbable membranes [5,6]. They have numerous advantages including no barrier removal procedure required with subsequent reduced risk of tissue damage and morbidity [3]. Disadvantages include unpredictable rates of resorption and comparatively inferior mechanical properties which can lead to collapse [3].

Decision to commence surgical exploration should be made on a case-by-case basis. Advantages and disadvantages of exploration should be evaluated when history, examination and imaging have failed to adequately diagnose symptoms associated with a previous surgical site. This foreign body eventually presented as an exophytic lesion, otherwise it may have remained undetected.

This case demonstrates the long pathway a patient with a successfully resected benign tumour can endure. The ameloblastoma was successfully resected, however the defect took multiple surgeries over years to stabilise. The rehabilitation phase with dental implants should improve quality of life, but in this case an undiagnosed foreign body contributed to discomfort for eighteen years.

**Conclusion**

Retained foreign bodies can cause a multitude of complications including chronic infection and discomfort. The radiolucent nature of PTFE contributed to a protracted period featuring waves of low-grade discomfort and infection with an unknown cause. This case highlights the difficulties in diagnosing a foreign body, the potential limitations of imaging and the importance of considering surgical exploration. Exploration should be considered when clinical history, examination and imaging fail to provide a diagnosis. Surgical exploration comes with its own risks, which must be discussed with the patient as part of the consent process.

**References**

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