

Penetrating oral foreign body presenting as an aural polyp

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Abstract

A case of a penetrating oral foreign body presenting with an aural polyp is described. The possibility of a penetrating oral injury should be considered whenever a child's fall is unwitnessed, as it is easily overlooked. An underlying foreign body should be considered in cases where an aural polyp fails to respond to standard therapy. MRI may be the best imaging technique to identify plastic foreign material.

Key words: Foreign body; Ear; Mouth

Introduction

Many medical practitioners have at some time been called upon to remove a foreign body from a child's nasal cavity or external auditory meatus (EAM). These foreign bodies occasionally become impacted necessitating general anaesthesia for their extraction. Here we present a unique case of a penetrating foreign body entering via the oral cavity and subsequently presenting to the ENT department with otorrhoea and an aural polyp.

Case report

A 21-month-old boy presented to the local Accident and Emergency department following an unwitnessed fall down stairs. Physical examination was considered to be unremarkable although a laceration was noted in the

buccal mucosa on the left side. Plain X-rays of the skull were requested but not performed as the child would not co-operate, and he was discharged home with appropriate advice given to his parents.

He was brought back to the same department three days later with poor appetite, fever and lethargy associated with a swollen left cheek. In addition to the left facial swelling he was noted to have an erythematous oropharynx and enlarged submental lymph nodes. Plain skull X-rays were now performed and revealed no abnormality. After review by the Maxillo-Facial and Paediatric teams, a diagnosis of viral upper respiratory tract infection was made and he was discharged with oral antibiotics.

One month later he again attended the Accident and Emergency department with a 10-day history of left otalgia

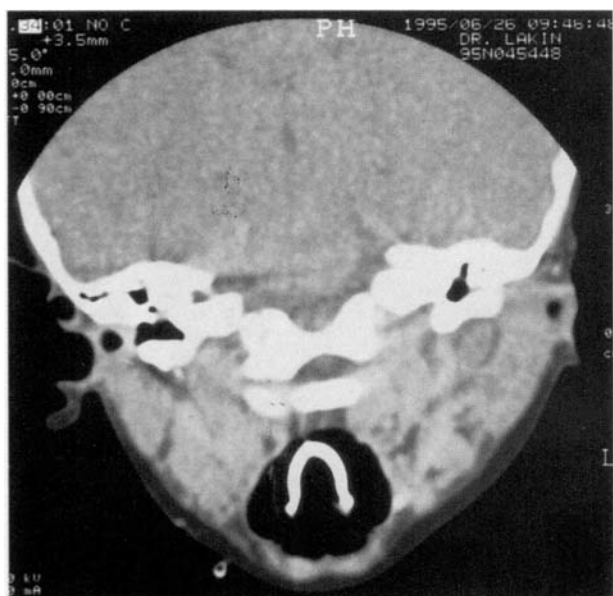


FIG. 1

Coronal CT scan showing an abnormality in the left infratemporal fossa.



FIG. 2

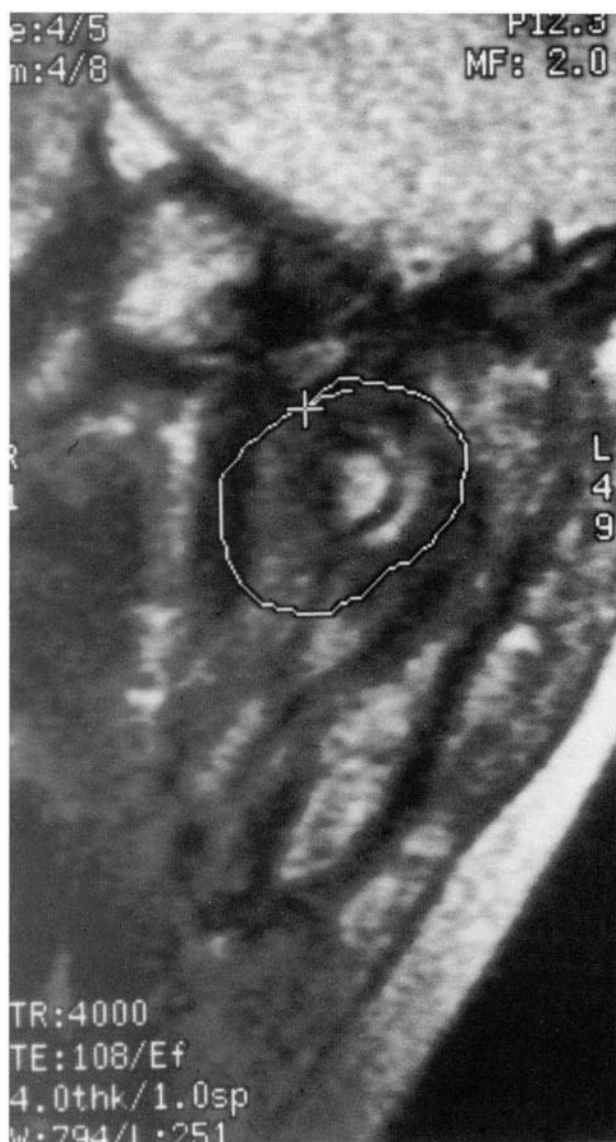
Chewed plastic pen end retrieved from the left EAM.

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Accepted for publication: 16 June 1997.

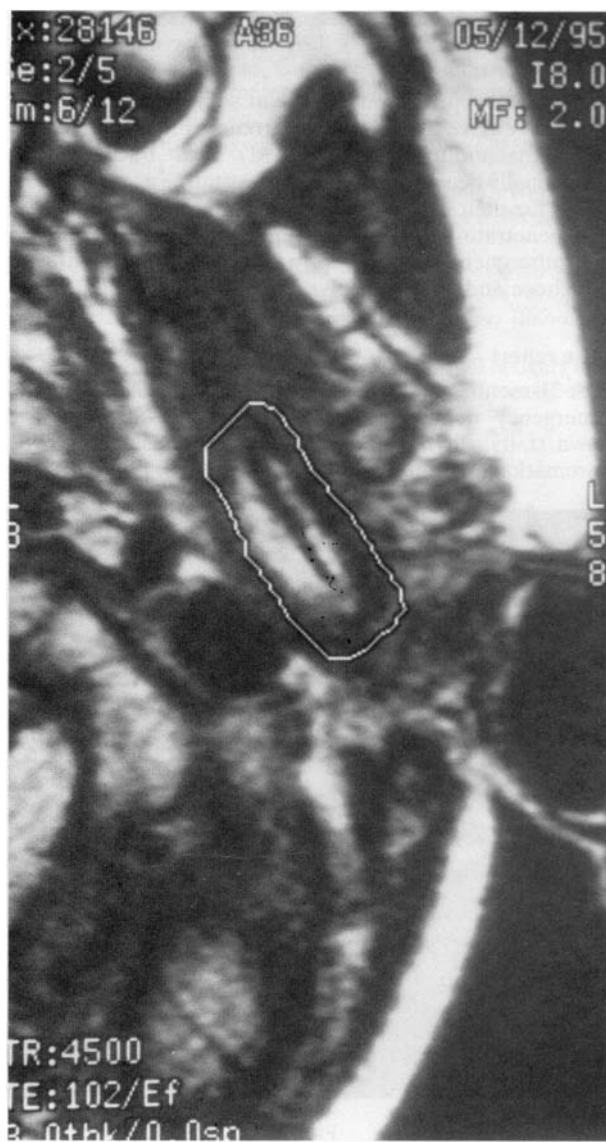
and otorrhoea. Otoscopy revealed a large, fleshy polyp almost completely filling the EAM. He was referred to the ENT department and an aural polypectomy was performed under general anaesthesia. Histological examination confirmed granulation tissue consistent with an inflammatory aural polyp. Despite ongoing treatment with oral antibiotics, aural dressings and antibiotic ear drops the polyp recurred, requiring two further polypectomies at which it was noted that the polyp was highly vascular and arose from the inferior aspect of the external acoustic meatus at the junction of the bony and cartilaginous portions. Fasting blood glucose and serum immunoglobulin levels were normal, as was a pure tone audiogram. A third polypectomy was followed by intra-venous antibiotics and daily aural toilet but regrowth of the polyp occurred, raising the question of an underlying neoplasm or foreign body. Computed tomography (CT) scan revealed a large lucent area in the infratemporal fossa, anterior to the bony EAM, consistent with an abscess cavity (Figure 1). Examination of the ear under general anaesthesia at the time of the scan showed

recurrent granulation tissue which was curetted exposing the tip of a blue plastic foreign body beneath. This was, with some difficulty, finally delivered through the EAM, leaving a 2 × 1 cm cavity which was packed with antibiotic-soaked ribbon gauze. The size of the foreign body (Figure 2) and its position antero-inferior to the EAM suggested that it had penetrated the oral cavity or pharyngeal wall and subsequently migrated to this final position. When presented with the pen end his parents remembered that he had been chewing a plastic pen shortly before he fell.

Despite the removal of this foreign body, the ear continued to discharge and further granulation tissue was removed three weeks later along with a small fragment of clear plastic thought to be from the pen shaft. This still failed to produce a dry ear and so magnetic resonance imaging (MRI) was performed (Figures 3a and 3b). This showed a further large fragment of plastic in the infratemporal fossa, just medial to the head of the mandible, lateral to the internal jugular vein and internal carotid artery and anterior to the stylomastoid foramen, lying in a



(a)



(b)

FIG. 3

Coronal (a) and axial (b) T2-weighted MRI of the left infratemporal fossa showing a foreign body and surrounding soft tissue reaction (circled).

plane parallel to the Eustachian tube. This fragment is clearly seen in Figure 3a as a hexagonal cross-section of the clear plastic pen shaft. A smaller piece of plastic was removed via a superior approach to the infratemporal fossa, with the temporalis muscle separated from its origin on the skull and reflected inferiorly. In view of the close proximity of the foreign body to major vessels at the skull base these same vessels were exposed in the neck at the beginning of the procedure so that they could be controlled easily if necessary. The EAM and the cavity in the infratemporal fossa were packed with BIPP which was removed after three weeks. The ear remained dry for six months but then began to discharge again and a further exploration of the EAM was performed. At this operation the larger plastic fragment was recovered and the subsequent cavity and the EAM were again packed with BIPP. Six months following this final operation the ear is dry with no sign of recurrent granulation, the tympanic membrane is intact and pure tone audiometry is normal.

Discussion

Young children often chew the ends of pens and similar objects and if they fall whilst doing so are likely to sustain intra-oral trauma which may appear trivial. However, the possibility of a penetrating injury, perhaps with implantation of the foreign material, should always be considered (Radkowski *et al.*, 1993; Law *et al.*, 1997). In this case such a possibility was suggested at a relatively early stage by the presence of cheek swelling and signs of chronic infection. The failure of an aural polyp to respond to polypectomy and treatment with antibiotic ear drops should also suggest an underlying foreign body, particularly in children of this age or where the history of otorrhoea is short. Under these circumstances an aural polyp is less likely to be secondary to chronic middle ear disease or cholesteatoma.

Usually foreign material producing an aural polyp enters via the EAM; this case is unusual because the foreign body entered through the oral cavity, penetrated the buccal mucosa and lodged in the infratemporal fossa. From this position the pen end was pushed by the action of the pterygoid muscles up towards the EAM where it emerged at the point of least resistance, namely the junction of the bony and cartilaginous portions of the canal. Despite examination by paediatricians, maxillo-facial and ENT surgeons no sign of penetrating oral/pharyngeal injury was noted, possibly because none was expected. It is important that children who have unwitnessed falls are thoroughly examined for any evidence of hidden trauma, in particular

intra-oral injury, otherwise the possibility of a penetrating foreign body will be overlooked leading to considerable delay in diagnosis.

This case also demonstrates the difficulty in imaging plastic material inside the body, either foreign bodies or prostheses. Plain radiographs are unhelpful and CT scanning may not distinguish plastic material from soft tissues, depending on their relative densities, although it may show signs of infection or other chronic tissue reaction. MRI is probably the best imaging technique with which to locate plastic foreign bodies embedded in soft tissues.

The position of the final remaining fragment of plastic presented a surgical challenge. In an adult an easier approach would have been to displace the ramus of the mandible laterally, either with a mandibular osteotomy or by dislocating the mandibular condyle. In children this is not possible as the growth centre would be disrupted, producing a hypoplastic hemimandible. An antero-lateral approach would endanger the facial nerve and for this reason a superior approach to the infratemporal fossa was used without any early complications, although in the long term there is a risk of temporalis muscle wasting leading to a hollow in the scalp. This often results when the temporalis muscle is released from its origin even though every effort is made to repair it to its previous tension and length.

Acknowledgements

We wish to thank Mr R. Pyke and Mr C. Milford for their permission to report this case and also Dr C. Woodham and Dr P. Anslow for their advice concerning CT and MR imaging techniques.

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