

## Surgical bone wax causing epistaxis

H. L. TAY, F.R.C.S., L.K.S. TAN, F.R.C.S.

### Abstract

A case of recurrent epistaxis caused by bone wax in the nasal cavity is reported. This is the first reported case of a nasal complication due to surgical bone wax.

**Key words:** Epistaxis; Waxes

### Introduction

For over 100 years, bone wax has been used to control bleeding from bone by physically plugging the osseous canals which contain the bleeding capillaries. The original recipe was first described by Horsley in 1892 and quickly found its use in surgery (Parker, 1892). The bone wax used today consists of refined white beeswax (75 per cent w/w), paraffin wax (15 per cent w/w) and isopropyl palmitate (10 per cent w/w). This material is not resorbed and has been reported to induce inflammatory reactions in tissue at the site of implantation.

We report a case of bone wax in the nasal cavity presenting with recurrent epistaxis.



FIG. 1

Coronal CT scan showing opacity in the left middle meatus.

### Case report

A 75-year-old woman had a left dacryocystorhinostomy for left-sided epiphora following dacryocystitis. The procedure was uneventful except for bleeding from the ethmoid bone during the operation. The bleeding was controlled with the use of bone wax.

Her operation cured the watering left eye. However, since surgery the patient complained of some discomfort around the left side of her nose and recurrent daily left-sided epistaxis. She had prolonged courses of antibiotics which failed to improve her symptoms and was therefore referred to the Otolaryngology Department.

On examination, the external incision wound had healed. Endoscopic intranasal examination revealed polypoidal granulation tissue in the left middle meatus. A CT scan of the nasal cavities and paranasal sinuses showed a soft tissue opacity in the left middle meatus (Figure 1). Endoscopic examination under general anaesthesia revealed bone wax deep in the left middle meatus which was removed endoscopically. The adjacent oedematous mucosa was biopsied and was reported to show acute on chronic inflammatory changes. She has been followed-up in the clinic and has not complained of further epistaxis. Endoscopic examination showed a normal left middle meatus.

### Discussion

There is no other haemostatic bone sealant as widely used in clinical practice as bone wax. It is not resorbed in the tissue and has been known to cause marked foreign body reaction (Aurelio *et al.*, 1984). In addition, beeswax may lower the bacterial clearance in cancellous bone and form a mechanical barrier to bone regeneration (Friedenberg and Brashear, 1956; Rockwood *et al.*, 1968; Sorrenti *et al.*, 1984). Embolization of bone wax has also been described (Robicsek, *et al.* 1981).

This is the first reported case of nasal mucosal reaction to bone wax. The chronic inflammatory response produced gave rise to mucosal bleeding and hence recurrent epistaxis. It is thus important to follow the manufacturer's advice that the wax be used sparingly and any excess removed from the operative site.

Recently, a novel wax-like biodegradable material has

From the Department of Otolaryngology, Ninewells Hospital and Medical School, Dundee, UK.  
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been developed. Polyorthoester has the bone haemostatic properties of beeswax but does not inhibit bone healing (Sudmann *et al.*, 1993). However, it too provokes foreign body reaction in the first few weeks after implantation. Unlike beeswax, polyorthoester appears to be absorbed by the tissue after a year.

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Address for correspondence:

Mr H. L. Tay,  
Department of Otolaryngology,  
Ninewells Hospital and Medical School,  
Dundee DD1 9SY.

Fax: 01382-632816