The Journal of Laryngology and Otology
May 1989. Vol. **103.** pp. 471–472

Transplanted ossicles after two decades

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Abstract
The authors now report on the histological appearance of two very long-term ossicles, an autologous incus removed from the middle ear at revision surgery 21 years after repositioning and a homologous incus removed from the middle ear after 20 years. Having been placed in formalin immediately after removal from the ear, both specimens were later decalcified by ethylene diamine tetra-acetic acid, embedded in parrafin wax, serially sectioned and stained with haematoxylin and eosin.

Introduction

Hall and Rytzner (1957) were the first to report ossicular chain reconstruction using autologous ossicular bone. House *et al.* (1966) proposed the use of homologous ossicular material in tympanoplasty. Lang *et al.* (1986) reported on the long-term viability of 23 ossicular implants that had been in the middle ear for a mean duration of 9.6 years; of these, the longest autologous incus had been in the middle ear for a period of 13 years and the longest homologous incus for a period of 14.3 years. The structural integrity of all implants was maintained and there was no evidence of overt osteoclastic bone resorption.

Findings

There was no erosion of either ossicle visible to the

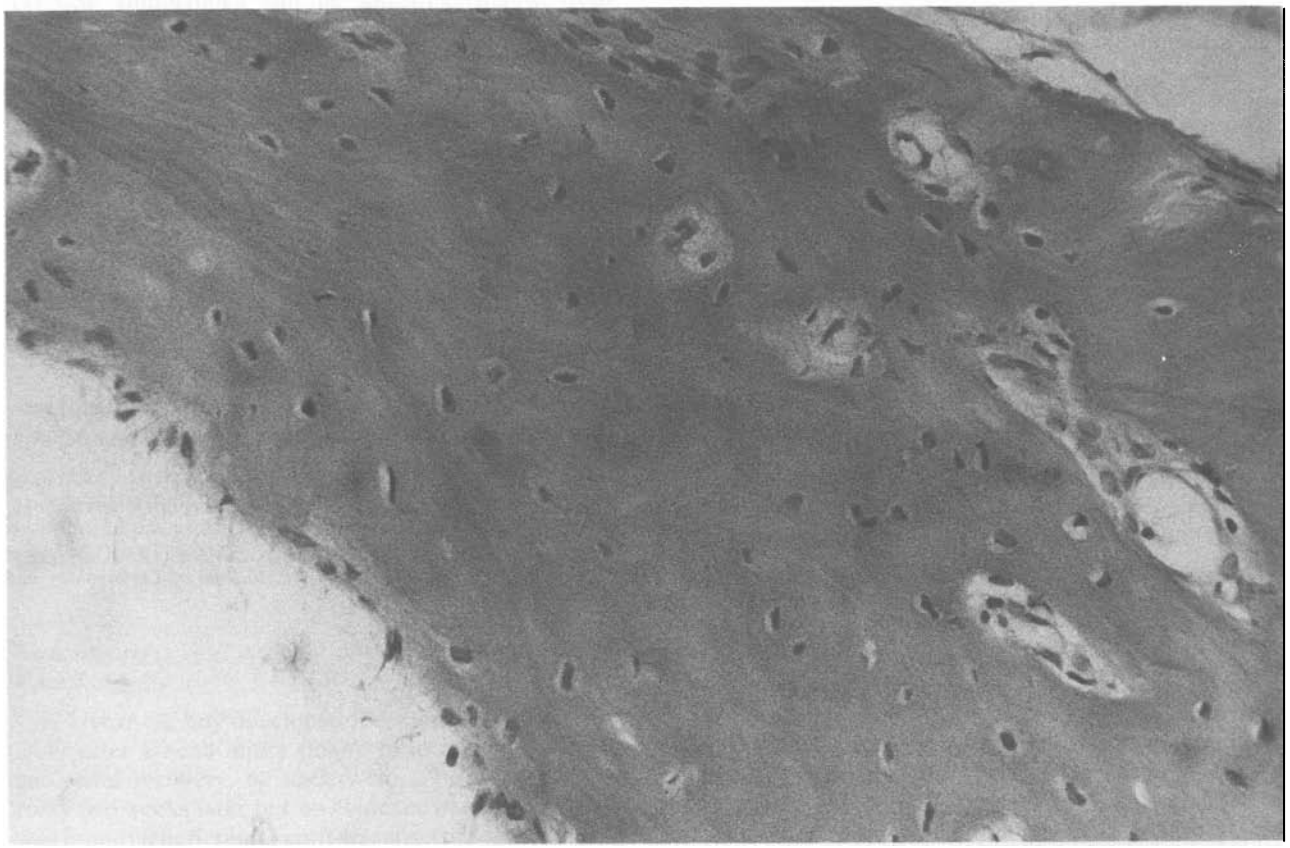


FIG. 1

Widespread new bone deposition with numerous osteocytes in lacunae in relation to the endosteal and periosteal surfaces. (Autologous incus after 21 years in the middle ear) ×250.

Accepted for publication: 6 October 1988.

https://doi.org/10.1017/S0022215100156658 Published online by Cambridge University Press

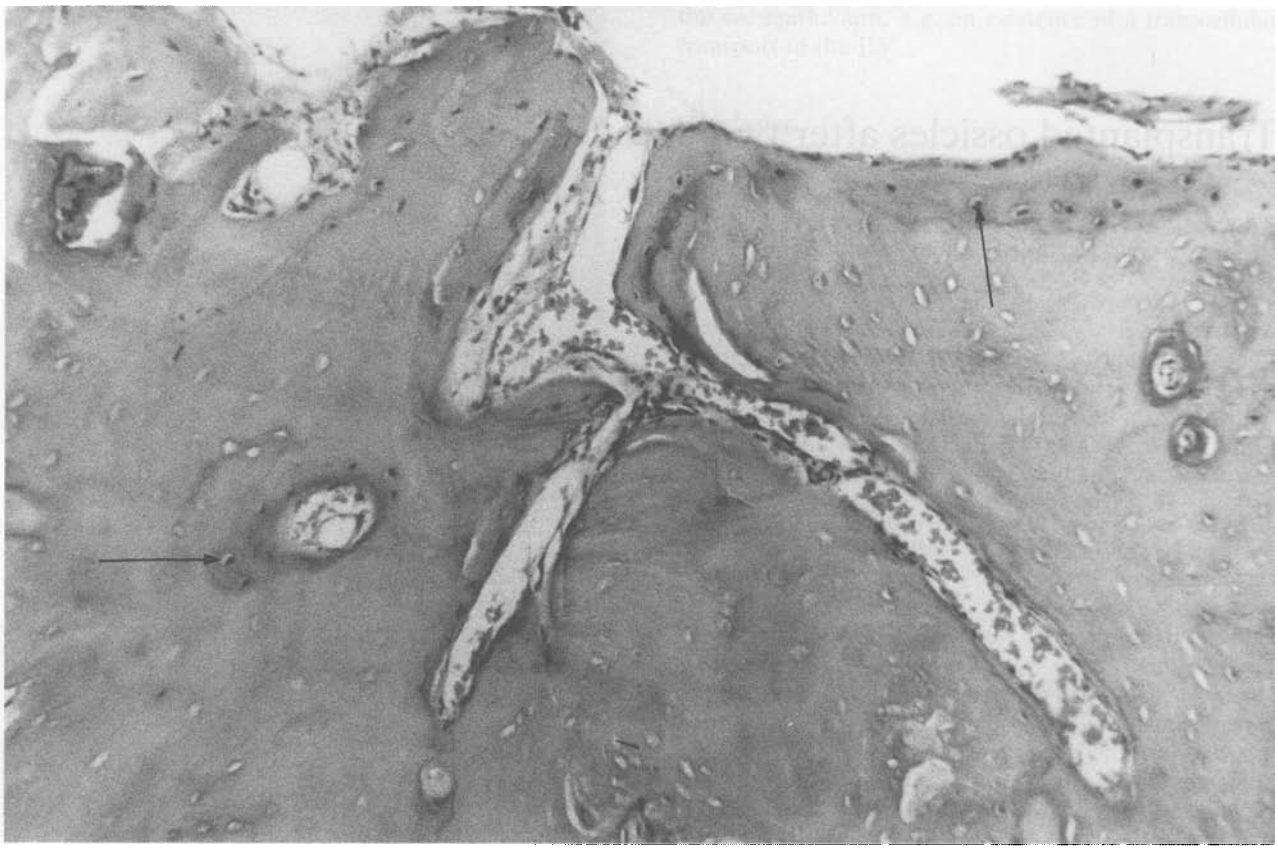


FIG. 2

Minimal new bone deposition, indicated by the arrows. The specimen consisted largely of dead bone with empty lacunae. (Homologous incus after 20 years in the middle ear) ×160.

naked eye. Histologically there was living fibrous tissue in the Haversion canals. A perivascular infiltrate of mononuclear inflammatory cells was present in a number of the Haversian canals in the autologous incus. A residual cholesteatoma was found unexpectedly in this patient at the time of revision surgery. There was no evidence of active osteoclastic bone resorption in either specimen.

The autologous incus showed 50–75 per cent replacement of the ossicle with new bone formation in relation to both the endosteal and periosteal surfaces (Fig. 1). The homologous incus showed only minimal new bone deposition (Fig. 2) and consisted largely of dead bone with empty lacunae. Under polarized light, however, the collagenous matrix was seen to maintain its normal lamellar arrangement.

Discussion

This report of the histological findings of an autologous incus repositioned 21 years earlier, and of a homologous incus removed from the middle ear after 20 years further supports the concept of prolonged survival of ossicular implants in the middle ear. However, despite the long duration complete replacement of the grafts with new bone formation had not occurred. Although there was only minimal new bone deposition in the homologous incus the structural integrity was maintained and therefore there should be no concern as to the long-term survival in the middle ear.

References

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https://doi.org/10.1017/S0022215100156658 Published online by Cambridge University Press