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Custom fitted articulating cement spacers for use in two-stage revision knee replacement

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BACKGROUND

In two-stage revision knee replacement, insertion of a temporary cement spacer is followed by implantation of the definitive prosthesis 6–12 weeks later. Static spacers restrict knee movement, leading to soft tissue contracture and bone loss.¹ Articulating spacers maintain range of movement and elute more antibiotics than metal equivalents.² Commercially available products have their limitations. We therefore describe a novel technique for creating custom fitting articulating spacers, which can include any heat stable antibiotic.

TECHNIQUE

Tibial and femoral spacers are made independently with two separate double mixes of antibiotic loaded cement. A trial tibial insert is sized on the proximal tibia, usually one size greater than the implant removed. Cement is moulded in the hollow insert to a thickness that matches the extension gap less 10mm; a tibial stem is created (Figs 1 and 2). A femoral spacer is made using a femoral trial, usually one size less than the one removed. Cement is moulded to the contours of the trial adding a femoral shaft stem. The distal cement should be

Figure 2 The tibial spacer is removed as the cement becomes firm.

Figure 3 A femoral spacer is created laying a sheet of cement over the femoral trial/impactor.

Figure 1 Cement is inserted into a hollow tibial trial and a stem created.

Figure 4 Both spacers are inserted after the cement has hardened.

Figure 5 Radiography confirms placement of the spacers.

10mm thick. A 'cobra hood' extension covering the anterior femur prevents suprapatella pouch scarring (Fig 3). The cement is removed from each mould as it becomes firm. After final moulding and confirmation of fit in situ, they are removed and allowed to harden. They are then reinserted and checked for stability (Figs 4 and 5).

DISCUSSION

In two-stage revision knee replacement, our technique permits easy creation of inexpensive custom fit spacers.

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An innovative way of stabilising a titanium total ossicular replacement prosthesis

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BACKGROUND

In order to reconstruct the transformer mechanism of the middle ear, we need an intact tympanic membrane, conduction of sound to the stapes footplate and a ventilated middle ear cleft. Reconstruction of the conduction mechanism using a titanium total ossicular replacement prosthesis (TORP) has been reported with good audiological results.¹

TECHNIQUE

The senior author uses a Kurz® (Dusslingen, Germany) titanium TORP. Following mastoidectomy, a cartilage 'horseshoe' is formulated from conchal cartilage. A 0.2mm thin piece of cartilage is prepared in the shape of a horseshoe. The TORP is stabilised on the footplate, and good contact is confirmed between the neotympanic membrane

Figure 1 Diagrammatic representation of middle ear assembly of cartilage 'horseshoe' and total ossicular replacement prosthesis (TORP)

and footplate. The horseshoe is slid in from below and the assembly confirmed (Fig 1). We have observed good audiological outcomes at follow-up visits.

DISCUSSION

The major challenge in columella type tympanoplasty is stabilisation of the prosthesis on to the stapes footplate. Beutner *et al* described using a punch hole in cartilage laid over the stapes footplate.² This, however, occludes the view of the footplate. Babighian *et al* stabilised TORPs against the fallopian canal using cartilage.³ Both techniques have limitations: the former occludes the footplate view and the latter could be difficult to use against a dehiscence facial canal. Our technique stabilises the TORP on the footplate and then supports it with the horseshoe once TORP–footplate contact has been confirmed. The method described here is safe in cases with a dehiscence fallopian canal, and can be used in canal wall up and canal wall down procedures. Our technique is easier to learn and stabilisation of TORP can be confirmed before closure.

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