Pearls

Pearls: How to Remove a Ceramic Liner From a Well-fixed Acetabular Component

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Although ceramic-on-ceramic bearings enjoy only a small market share of the THAs performed in the United States, they are widely used around the world

[1–6]. While they generally perform well, in some circumstances—particularly in patients presenting with recurrent dislocations—well-fixed modular acetabular components with ceramic liners may require revision.

The dissociation of the ceramic liner from the cup can be difficult, and can result in the unnecessary removal of the cup and liner. To avoid this, the surgeon can perform a simple trick: Using a metallic impactor placed along the external rim of the cup, the surgeon can hit the bearing with a robust hammer blow (Fig. 1). The ceramic liner will dissociate from the internal metal surface. A sharp tool will be necessary to elevate the loosened ceramic liner from the cup margin (Fig. 2).

It should be noted that there are a few modular acetabular components in the marketplace with recessed liner design that may require repeated hammer blows before achieving full dissociation.

When impacting the rim of the metal shell during revision surgery, elastodynamic compressive stress waves are initiated. These compressive stress waves are reflected at physical boundaries (metal and ceramic), transforming into tensile stress waves. When the local tensile dynamic stresses at the interface between the metal and the ceramic exceed the local contact stresses resulting from friction (the taper junction), and adhesion stresses due to contaminations (dried blood,

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Fig. 1 The impactor is positioned orthogonal to the metal rim of the cup (Published with permission from Rocco P. Pitto MD, PhD, FRACS).

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Fig. 2 A small osteotome is used to lift the ceramic liner from the metallic margin of the cup (Published with permission from Rocco P. Pitto MD, PhD, FRACS).

bone fragments), the surgeon will obtain a separation of the interface and loosening of the liner.

If the surgeon replaces the liner, either with ceramic or with polyethylene, double-check that you are using compatible components. The specifications of the taper junction (taper angle, length, surface finish, for example) may differ considerably among manufacturers. The most common taper junction used in THA is the

so-called 12/14 Eurotaper or Standard Taper 12/14, but this is only a size designation, not an indicator of compatibility. Using the wrong liner will result in a disaster. Never mix and match!

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