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Case Report

Removal of a Well-Fixed Trabecular Metal Monoblock Tibial Component

Gregg R. Klein, MD, Harlan B. Levine, MD, and Mark A. Hartzband, MD

Abstract: The use of porous tantalum (Trabecular Metal; Zimmer, Inc, Warsaw, Ind) in hip and knee reconstruction has become increasingly popular over the past few years. Widespread clinical use of porous tantalum tibial components for primary total knee arthroplasty has been tempered in part by the perceived difficulty in removing this implant after bone ingrowth has occurred. We present an easy, reproducible, and inexpensive technique for removal of a well-fixed Trabecular Metal Monoblock Tibial Component (Zimmer), which has been used in 4 revision knees. This technique does not require the use of any specialized equipment and results in the production of minimal metallic debris. **Key words:** trabecular metal, tantalum, monoblock knee, explant, knee revision.

The use of porous tantalum (Trabecular Metal; Zimmer, Inc, Warsaw, Ind) in hip and knee reconstruction has become increasingly popular over the past few years. Since 1999, this technology has been applied to primary total knee arthroplasty (TKA) implants. A nonmodular tibial component (Fig. 1) in which the polyethylene articular surface is compression-molded into the porous tantalum baseplate is available. This baseplate has 2 porous tantalum fixation pegs [1]. Theoretically, this component will result in less stress shielding of the proximal tibia due to the lower modulus of elasticity of porous tantalum, as compared with conventional tibial components made of titanium (or cobalt chromium) [2,3].

Widespread clinical use of porous tantalum tibial components for primary TKA has been tempered in part by the perceived difficulty in removing this implant after bone ingrowth has occurred. Since its market introduction in 1999, more than 50 000 have

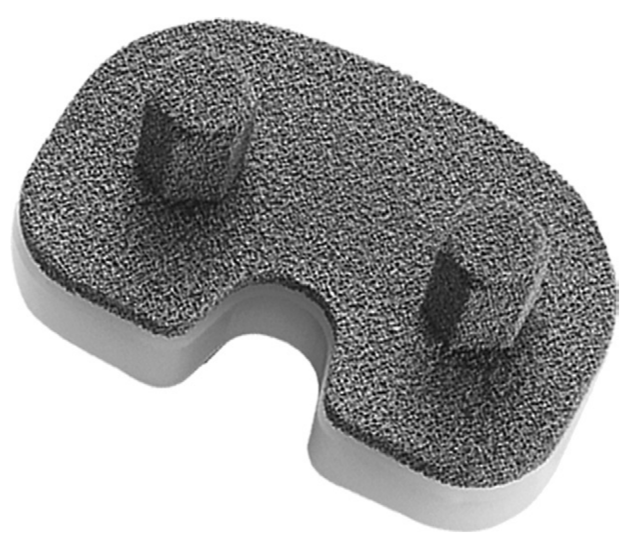

Fig. 1. Trabecular Metal Monoblock Tibia Implant. The pegs are 12.7 mm in diameter (point-to-point across the hexagon); the polyethylene is directly compression-molded into the porous metal base plate.

From the Hackensack University Medical Center, Hackensack, New Jersey; and Hartzband Joint Replacement Institute, Paramus, New Jersey.
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Reprint requests: Gregg R. Klein, MD, Hartzband Joint Replacement Institute, 10 Forest Ave, Paramus, NJ 07652.

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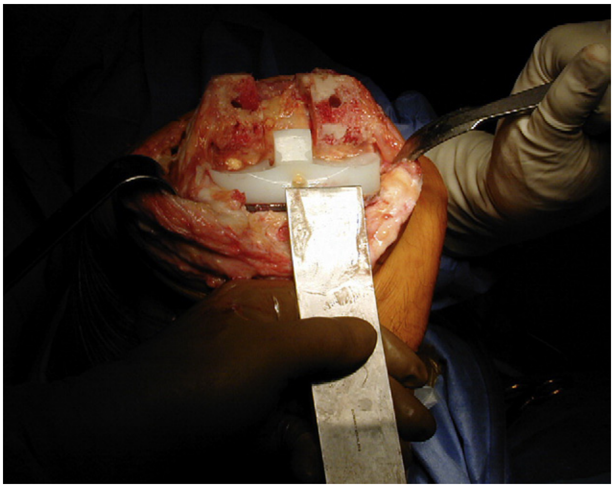

Fig. 2. Intraoperative photo of a 3-cm flat osteotome used to sever the bone-implant interface.

been implanted, and several have invariably been explanted primarily because of infection or instability. The instruments typically used for removal have been an oscillating saw and/or high-speed burr to disrupt the bone-prosthesis interface. The technique uses a saw blade to section the porous tantalum fixation pegs from the body of the tibial baseplate. Although effective and usually performed in 5 to 10 minutes, these powered instruments produce metallic debris that may spread within the joint and in turn lead to third-body wear of the articulating surfaces.

The purpose of this article is to describe our technique for removal of a well-fixed porous tantalum tibial component that is safe, quick, easy, inexpensive, conserves bone, and results in minimal metallic debris.

Technique

An adequate exposure is always necessary for tibial component removal. Standard exposures may be used, however, if exposure is inadequate, more

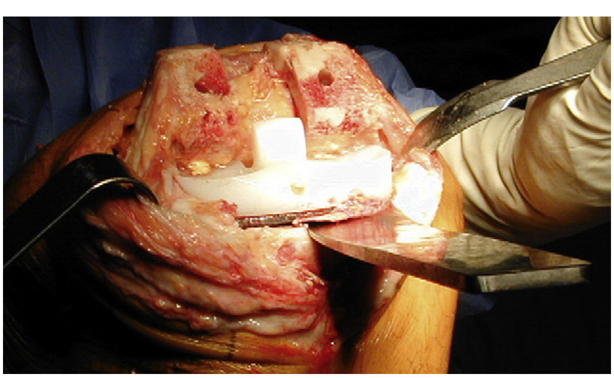

Fig. 3. The large, broad osteotome has been impacted through the tibial fixation pegs.

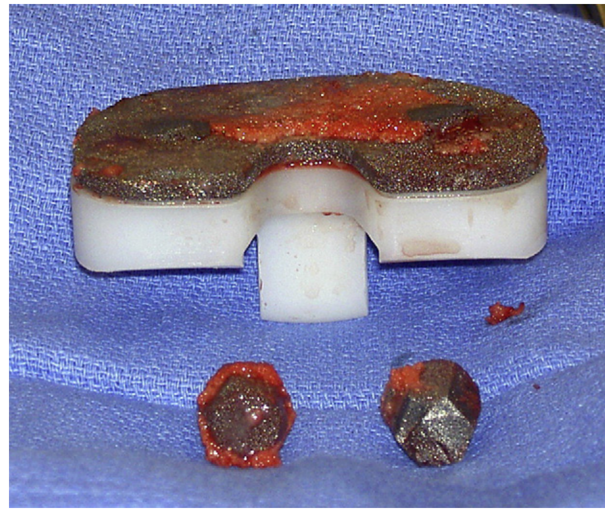

Fig. 4. Intraoperative photograph after removal of the well-fixed tibial component with the fixation pegs still in place. Note the minimal bone loss. A quarter-inch osteotome is impacted around the 6 edges of the tibial fixation peg.

extensile approaches such as the quadriceps snip, V-Y quadricepsplasty, or tibial tubercle osteotomy may be necessary. The bone-prosthesis interface is identified with adequate soft tissue removal. A Hohman-type retractor may be placed posterior to the tibia for soft tissue protection. A sharp, broad, 3-cm osteotome is used to disrupt the bone-prosthesis interface anterior to the tibial pegs (Fig. 2). Once the tibial pegs are encountered, firm impaction of the osteotome will sever the tibial pegs from the prosthesis at the level of the undersurface of the tibial tray (Fig. 3). The posterior bone-prosthesis interface is then disrupted by continued careful osteotome impaction. The tibial

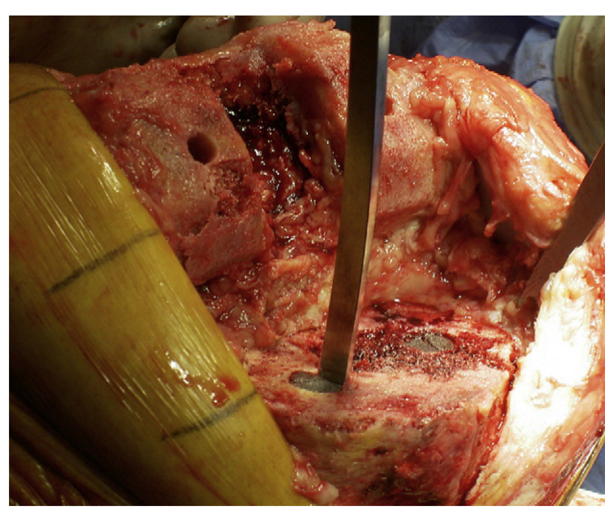

Fig. 5. The tibia has been successfully removed with minimal bone loss. The remaining bone stock can successfully accept a primary tibial component.