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CORR Insights

CORR Insights®: Revision Distal Femoral Arthroplasty With the Compress® Prosthesis Has a Low Rate of Mechanical Failure at 10 Years

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Where Are We Now?

We have made good progress since limb-sparing surgery became a possibility for patients with large skeletal defects about the knee, but that development has plateaued during the last 20 years, in large measure because of limitations associated with continued use of cemented femoral stems in patients who are likely to survive for many years. Because the development of different forms of fixation has been slow, we continue to settle for cemented stems. More patients are surviving their disease, and the number of patients undergoing revision procedures for reconstructive failures continues to grow [2]. Aseptic loosening, infection, and mechanical failure continue to be the major issues our patients face over time, with aseptic loosening being the most common reason for revision [1]. Unlike our hip and knee arthroplasty colleagues, we have been slow to make advances in durable femoral fixation.

Where Do We Need To Go?

The good news is the failure of femoral fixation is being addressed. As more surgeons become aware of the growing problem of revision surgery, attention has been given to the development of cementless options for the distal femur. Our own experience with fully porous coated cylindrical stems did not reflect the excellent results we were seeing in the proximal femur for similar defects fixed with similar stems. Some designs have been more successful than others, but long-term data are not yet available. Failure of ingrowth, stress shielding, difficulty of removal, and the need to encroach more bone for cementless fixation has given rise to the novel and unusual Compress® device (Biomet Inc, Warsaw, IN, USA). This device can theoretically avoid some of the failure modes possible with other cementless (stress shielding, fibrous ingrowth and removal difficulty) designs except for early failure secondary to lack of biologic fixation. When successful, bone

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hypertrophy, not stress shielding, occurs. In the current study, Zimel and colleagues have shown impressive mid- to long-term results for its use in revision surgery when conditions for its use are less than ideal (compromised bone quality and quantity). The device is predicted to provide durable long-term results once biologic fixation occurs. In addition to potentially eliminating aseptic femoral loosening, the device is easy to revise and easy to remove, making it an attractive choice for second-stage revision for infection where an amputation may come into the picture for failure of infection control. Its use with a growing prosthesis potentially fixed the femoral problem with the initial surgery. Femoral stem fixation in the skeletally immature patient is problematic and subsequent conversion to an adult prosthesis can be even more difficult than the initial reconstruction. This is usually due to severe stress shielding.

How Do We Get There?

It is a great disappointment that we as reconstructive/tumor surgeons have not put together a national tumor registry of our patients. We have been slow to make advances in implant modifications, and when we do, we have no idea how well it works. We have limited long-term results of small numbers of patients. In the United States, there are roughly six implant designs, some of which are 30 years old. Implant companies have little ambition to make changes to a device that contributes little to the bottom line. How do we prevent aseptic femoral loosening? In order to answer this question, we need to push for a collaborative multicenter international study. A national registry may have provided the answer. It is up to the members of the Musculoskeletal Tumor Society to develop and implement a tumor registry.

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