Cementless Stems in Patients Aged >60 Years: Justified Use

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Bone ingrowth prostheses were introduced in the United States in the late 1970s and were first used in elderly patients with femoral neck fractures. The idea was that if bone would grow into the implant surface, the bond would be more durable than with cement. Animal studies showed impressive bone ingrowth fixation, as did autopsy retrievals from early patients.

Despite this impressive histology, uncemented total hip replacements (THR) with porous surfaces had some drawbacks in elderly patients. The new uncemented implants were more expensive and the advent of DRG-209 dramatically decreased hospital reimbursements for THR. As a result, in the 1980s, implant-demand matching became popular. Essentially, patients aged >65 years were discriminated against.

In the past 10 years, however, a resurgence of uncemented THR in the Medicare population has occurred based on the following three factors: more published autopsy retrievals showed both ingrowth and ongrowth in the elderly, not just with porocore, but with plasma-sprayed and grit-blasted surfaces; clinical studies, both prospective and retrospective, compared the clinical results of cemented and uncemented procedures; and physicians and hospitals began to request one-cost anatomic medullary locking prosthesis (DePuy, Warsaw, Ind) by embedding and cutting nine autopsy-retrieved femoral specimens from patients aged 70-80 years. On average, 35% of the porous surface stem area had cortical bone ingrowth, which extended into the full depth of the porous surface.

In 1995, Heurn et al\(^1\) compared the cemented and uncemented prostheses of patients who had received one of each through bilateral THR. They found no clinical difference between the cemented stem and the uncemented plasma sprayed taper lock stem. In 1996, Barrack et al\(^4\) reported the cost of implanting a cemented versus a cementless femoral stem and found that although the cementless stem was more expensive, the cemented procedure was more expensive once all cost considerations were taken into account.

In 1998, Lester et al\(^5\) demonstrated that porous coating was not necessary for stable fixation of an uncemented stem. They assessed bone ongrowth onto the press-fit Zweymuller femoral component (Sulzer, Houston, Tex), which has a grit-blasted surface. In 11 cases retrieved at autopsy, bone ongrowth occurred in all cases, and all patients in this study were aged >80 years.

In 1998, McAuley et al\(^6\) reported the results of THR with a porous coated (continued on page 948).
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anatomic medullary locking prosthesis in 212 patients aged ≥65 years. At mean 9-year follow-up, the stem revision rate was 0.5%. In 2001, Keis et al reported primary cementless THR in 223 patients aged >80 years. No femoral revisions were reported in their study group.

Healy, an advocate of implant-demand matching, stressed the importance of one-cost pricing for all implants from the same manufacturer. He reported the Leary clinic results with cemented and uncemented THRs in the elderly, and the femoral revision rate was lower in uncemented cases. He now favors uncemented procedures in the elderly.

According to the literature, for all different types of uncemented stems, survivorship beyond 10 years seems consistent at 95%. However, this is not the case with cemented prostheses. In 2000, Barrack demonstrated that the published results of some modern cemented stems are not as consistent as the results for uncemented stems.

Although surgeon champions and some large centers often report good results, high early failure rates and early femoral lysis are reported by others using the same cemented prosthesis. Why is this? Barrack points out that nuances of modern cement techniques exist and differences of stem design are still not agreed on. Although these factors are understood by the designers, they are often poorly understood by the surgeons. This is the difference between uncemented and cemented stems.

Uncemented stems are simpler and easier for the average surgeon to implant correctly. The average surgeon, performing THR on all age groups, should use the same prosthesis on all cases. Additionally, I suggest an uncemented stem as the results are more predictable than with a cemented stem.

REFERENCES