INTRODUTION

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The use of alumina ceramics in total hip arthroplasty has dated back over 30 years ago in Europe. Boutin implanted the first ceramic-on-ceramic cemented hip replacement in France in 1970. [1]

During the next few years, early experience with ceramic couplings began to emerge from Germany. Biomechanical and biocompatibility testing confirmed alumina as being a safe wear and corrosion resistant material with a low coefficient of friction. [2] Griss [3] and Mittelmeier [4] began implanting both cementless and cemented versions of the alumina device with reasonable short-term outcomes.

Despite improvements in taper technology, surface polishing, and ceramic grade, the earlier failures eroded confidence in these devices especially in light of Charnley's early successes with the standard metal-on-polyethylene prostheses. Later failures of the ceramic articulations were the result of loosening and not ceramic fractures. Most notable is the experience with the Autophor (Smith & Nephew Richards, Memphis, TN), which was the only ceramic-ceramic prosthesis marketed in the United States at the time. This implant had multiple design flaws not involving the ceramic bearings. These included a monoblock screw-in acetabular component without surface coating, a large skirt causing impingement, and a cementless femoral stem designed for macro-interlocking without any biological coating. Hence, the results were less than satisfactory. [5]

Yoon et al, also reported their experience with this ceramic-on-ceramic total hip system. They found the prosthesis to have a high rate of loosening

after 5 years from implantation. Failure was largely from the fixation of the acetabular component and the resulting osteolysis was documented. [6]

Almost two decades ensued before the next generation of ceramic devices was reintroduced to the United States. Evidence began to implicate polyethylene as the cause of aseptic loosening of total hip replacements subsequently limiting their survival despite advancements in fixation, metallurgy and technique.[7] Polyethylene was also determined to be highly vulnerable to third body wear resulting in rapid accumulation of polyethylene debris and subsequent aseptic loosening. While the susceptibilities of polyethylene were being uncovered, advancements in both the fixation of implants and other bearing surface materials were being made. Efforts to identify alternate bearing materials intensified and the redesigned and upgraded ceramic-on-ceramic coupling emerged as a potential solution. [7]

AIM OF THE STUDY

Assessment of the advantages and the disadvantages of ceramic on ceramic total hip arthroplasty.

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