

Failure Analysis of Retrieved Cemented Total Knee Prostheses

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ABSTRACT

Surface wear of articular polyethylene in knee arthroplasty may contribute to failure. A total of 83 retrieved cemented knee prostheses of total condylar, unicondylar and constrained designs with implantation times ranging from 4 to 160 months were available for evaluation. Increasing time in situ correlated with increasing wear score for tibial components but not for femoral components. Polymethylmethacrylate particles were embedded in the articular surface in 43% of all tibial components. Increasing patient weight correlated with decreasing implant survival.

INTRODUCTION

Failure in total knee arthroplasty has been studied extensively.¹⁻¹¹ Aseptic loosening of the tibial component has been the most common cause of failure. Progressive component loosening may lead to malalignment, instability and pain. Loss of normal prosthetic alignment results in component overload with subsequent deformation of bone or of the component itself. It has been suggested that deformation of polyethylene articular surfaces may contribute to failure and the need for surgical revision.¹²⁻¹⁴ Hood *et al.*⁵ studied articular surface wear patterns in 48 total knee arthroplasties and found significantly greater

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