

Number & Title: 10673

Mid-Term Survivorship and Function of Knee Endoprosthetic Replacement for Non-Tumour Indications

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Background:

The burden of complex revision knee arthroplasty is increasing. Endoprosthetic replacement (EPR) is a proven limb salvage option in tumor surgery. It is a possible option for the management of massive bone loss around failed knee implants. However, the outcome of such procedures has received little attention.

Purpose:

The aim of this study was to determine the mid-term survivorship and functional outcome of EPRs performed for non-tumour indications around the knee joint.

Methods:

Since 2007, 85 EPRs were performed for non-tumour indications in a single tertiary centre by six surgeons. The study's mean follow-up was 4 years (range: 1-9). The majority of patients were female (n=52, 61%) and the mean age at surgery was 73.5 years (range: 35-95). Infection was the most common indication (40, 47%), followed by aseptic loosening (16, 19%), peri-prosthetic fracture (16, 19%), primary replacement for complex fracture in osteopenic bone (9, 9%). The mean number of previous arthroplasties was 2 (range: 0 – 9). Implant survival was established, with revision or further surgery with removal of components as end points. Functional outcome was determined using Short Form -12 (SF12) and the Oxford Knee Score (OKS).

Results:

Over the study period, there was a 5-fold increase in the number of non-tumor knee EPRs performed at our institution. At follow-up, 21 (25%) patients were deceased and 2 were lost to follow-up. The overall complication rate was 19%. There were 7 infections, 6 of which were treated with DAIR (debridement, antibiotics, and implant retention) and one who underwent an above knee amputation for osteomyelitis. Four of the patients that underwent DAIR were cleared of infection and 2 are on long term antibiotic treatment. The overall survival at 5-years was 92% (95% CI: 81 – 100%). Accounting for lost to follow-up and those on long term antibiotics as failures the 5-year survival was 89% (95%CI: 78 – 100%). The average OKS was 25 (SD=10). EPR for the treatment of peri-prosthetic infection associated with inferior outcome (OKS: 20 Vs 28; p=0.009). The average number of previous procedures was significantly greater in the infected cohort (p=0.01).

Discussion and Conclusion:

This mid-term study shows that EPR around the knee is a valuable management option with acceptable functional outcome for limb salvage in complex revision cases. These results are comparable to those performed for revision TKRs. However, infection was an independent predictor of inferior functional outcome. This is possibly attributed to the greater number of previous procedures undertaken in this cohort and their poor soft tissue envelope compared to the non-infected cohort. As EPR is the last choice of limb salvage in multiply revised knee arthroplasty, it should form part of the routine armamentarium of the revision knee surgeon.

Summary:

Salvage of failed revision TKRs with Endo-Prosthetic Replacement (EPR) has a 5-year survivorship of 92% and OKS of 25. Distal femur EPR is a valuable option for the increasing burden of complex revision knee surgery.