

Paper #159

Navigation Improves the Ten to Fifteen Year Survival Rate after Mobile Bearing Total Knee Arthroplasty: A French Multicentric Nationwide Study

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Summary:

Navigated TKAs experienced a small but significant better long term survival after 10 years in comparison to conventional TKAs.

Abstract:

Introduction

Computer assistance has been suggested to improve the accuracy of implantation of a TKA. However, few long term results have been documented. The present study was designed to evaluate the long-term (more than 10 years) results of mobile bearings TKAs on a national scale. The secondary goal was to assess the influence of navigation assistance on the survival rate.

Methods

All patients operated on between 2001 and 2004 in all participating centers for implantation of a mobile bearing TKA (whatever design used) were eligible for this study. Usual demographic and peri-operative items have been recorded. All patients were contacted after the 10 year follow-up for repeat clinical and radiological examination (KSS, Oxford knee questionnaire and knee plain X-rays). Patients who did not return were interviewed by phone call. For patients lost of follow-up, family or general practitioner was contacted to obtain relevant information about prosthesis survival. Survival curve was plotted according to the actuarial technique. The influence of the implantation technique was assessed with a logrank test at a 0.05 level of significance.

Results

1,604 TKAs were implanted during the study time-frame. There was no difference in any baseline criteria between conventional (968 cases) and navigated (636 cases) TKAs. 289 patients deceased before the 10 year follow up (18%). Final follow-up was obtained for 926 cases (58%). 26 prosthetic revisions were performed for mechanical reasons during the follow-up time (2%). The global 10 year survival rate was 93.9%. The 10 year survival rate for mechanical revision was 98.6%. The 15 year survival rate for mechanical revision was 96.0% (figure 1). No component was considered loose at the final radiographic evaluation. No polyethylene wear was detected at the final radiographic evaluation.

Considering mechanical revision only, the 10 year survival rate of conventional TKAs was 98.6% vs 98.7% for navigated TKAs (NS). However, the 13 year survival rate were 97.2% and 98.3% respectively ($p < 0.05$). The survival curves could not be plotted to 15 year follow-up because of low number of remaining cases.

Discussion

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This study confirms quite satisfactory results of mobile bearing TKAs after more than 10 years. Longer term follow-up may be required, but more than 15 year survival might be higher than after conventional TKA. Navigated TKAs experienced a small but significant better long term survival after 10 years in comparison to conventional TKAs. This difference might be related to polyethylene wear, although no macroscopically evident wear was observed. A more consistent anatomical reconstruction and ligamentous balance of the knee may lead to more consistent survival of the TKA by decreasing microscopic polyethylene wear, this decreasing third body wear and synovitis. Other authors did observe similar results. However, superiority of navigated TKA in comparison to conventional implanted TKA is difficult to prove because of the subtle differences expected in mostly underpowered studies. Longer term follow-up may be required.