

Unexplained Pain Following Total Knee Arthroplasty is Rotational Malalignment the Problem?

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Summary:

In this, the largest study yet reported on component rotation in TKA, we found no difference in the incidence of tibial or femoral component malrotation in painful versus well functioning TKAs. Tibial component IR in particular appears to be a common finding, and its significance when evaluating the painful TKA should be interpreted with caution.

Abstract:

Introduction & aims

Malrotation of tibial or femoral components has been implicated as a potential source of pain following total knee arthroplasty (TKA). The presence of malrotation has been suggested as an indication for revision surgery in patients with painful TKA.

However previous studies have been small, with variable control groups. The aim of this study was to compare rotational alignment in TKA patients with unexplained pain to a control group with well functioning TKAs.

Methods

Seventy-one patients with unexplained pain following primary TKA were included in this retrospective, comparative study. Diagnostic work-up included clinical exam, blood tests, x-rays, long-leg films, and CT scan. Patients with an identifiable diagnosis or with initially well-functioning TKAs were excluded.

A control group of 41 patients with well-functioning TKAs (WOMAC Score >70; scale 0-100 worst to best) also underwent CT scans. Femoral component rotation was measured relative to the surgical epicondylar axis. Tibial component rotation was measured relative to the medial third of the tibial tubercle, using a previously validated method involving 3D-image reconstruction (Figure 1). All measurements were performed twice by two independent observers and the results averaged. Alignment findings were compared between painful and control TKA groups.

Results

We found no difference in femoral component rotation between the painful and control groups (mean 0.6° vs 1.0° external rotation (ER), $p=0.4$), and no difference in tibial component rotation (mean 11.2° vs 9.5° internal rotation (IR), $p=0.3$). Fifty-nine percent of patients in the painful group had tibial component rotation >9° IR versus 49% in the control group. 6% of patients in the painful group and 2% in the control group had femoral component rotation >3° IR. When measuring combined rotation (tibial plus femoral), 36% of the painful group and 29% of the control group had combined rotation >11° IR ($p=0.6$). There was no difference in overall coronal alignment between groups (mean 1.3° varus vs 0.5° varus, $p=0.23$).

Conclusions

In this, the largest study yet reported on component rotation in TKA, we found no difference in the incidence of tibial

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