



Computer-assisted knee arthroplasty versus a conventional jig-based technique. A randomised, prospective trial

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ABSTRACT

We have compared a new technique of computer-assisted knee arthroplasty with the current conventional jig-based technique in 70 patients randomly allocated to receive either of the methods. Post-operative CT was performed according to the Perth CT Knee

Arthroplasty protocol and pre- and post-operative Maquet views of the limb were taken. Intra-operative and peri-operative morbidity data were collected and blood loss measured. Post-operative CT showed a significant improvement in the alignment of the components using computer-assisted surgery in regard to femoral varus/valgus ($p = 0.032$), femoral rotation ($p = 0.001$), tibial varus/valgus ($p = 0.047$) tibial posterior slope ($p = 0.0001$),

tibial rotation ($p = 0.011$) and femorotibial mismatch ($p = 0.037$). Standing alignment was also improved ($p = 0.004$) and blood loss was less ($p = 0.0001$). Computer-assisted surgery took longer with a mean increase of 13 minutes ($p = 0.0001$).

SUMMARY

Randomized Controlled Trial comparing computer-assisted and conventional jig-based TKA on 70 patients. All patients received a post-operative CT to determine alignment values and the blood loss was measured during the first 24 hours after surgery.

CONCLUSION

Significantly less mean blood loss in CAS group (44% reduction)

“[...] the mean blood loss was 252 ml (25 to 620) whereas in the conventional group it was 446 ml (100 to 1100).“

“We observed more loss of blood in the conventional group than in the computer-assisted group. We believe this to be due partly to non-penetration of the femoral medullary canal but also to care in soft-tissue management.”

Significant better alignment of the components with CAS

“Post-operative CT showed a significant improvement in the alignment of the components using computer-assisted surgery in regard to [...] femoral rotation [and] tibial posterior slope.”