

Publication

Total knee arthroplasty: posterior tibial slope influences the size but not the rotational alignment of the tibial component

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4598220

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Year 2020

Title Total knee arthroplasty: posterior tibial slope influences the size but not the rotational alignment of the tibial component

Journal Knee Surgery, Sports Traumatology, Arthroscopy

Volume 28

Number 12

Pages / Article-Number 3899-3905

Keywords Anatomical tibial axis; Tibial component alignment; Tibial component malrotation; Total knee arthroplasty; Total knee replacement

The reasons leading to rotational tibial malalignment in total knee arthroplasties (TKAs) remain unclear. A previous cadaver study has shown an increase in internal rotation of the anatomical tibial axis (ATA) after the tibial cut. This study investigates the influence of tibial slope on the ATA and the size of the resected tibial surface.; CT scans of 20 cadaver knees were orientated in a standardized coordinate system and used to determine the position of the centres of rotation of the medial and lateral tibial articular surfaces and, hence, of the ATA, after a virtual resection of 6 mm with 0°, 3.5°, 7° and 10° slope, respectively. Furthermore, at each slope, the radii of the medial and lateral tibial articular surfaces after resection were calculated.; Compared to resection of 6 mm with 0° slope, a slope of 3.5° resulted in a mean external rotation of the ATA of 0.9° (SD, 1.5°; P = 0.025). A slope of 7° resulted in a mean external rotation of the ATA of 1.0° (SD 2.0°; P = 0.030) and a slope of 10° had no influence on the rotation of the ATA. The radii of the medial and lateral articular surfaces of the cut tibiae were larger than those of the uncut tibia (P < 0.001).; Differences in the posterior tibial slope should not contribute to a rotational malalignment when using the ATA to align the prosthetic tibial plateau. Although statistically significant, the change in ATA with increasing slope was negligible.

Publisher Springer

ISSN/ISBN 0942-2056 ; 1433-7347

edoc-URL <https://edoc.unibas.ch/76990/>

Full Text on edoc Available;

Digital Object Identifier DOI 10.1007/s00167-020-05875-z

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/32030500>

Document type (ISI) Journal Article