



## To sacrifice or replace the posterior cruciate ligament in primary total knee arthroplasty?

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Treatment options for osteoarthritis of the knee joint include high tibial osteotomy, unicompartmental knee arthroplasty, and total knee arthroplasty (TKA).<sup>[1-3]</sup>

Both cruciate-retaining (CR) and posterior-stabilized (PS) implants are commonly used for primary TKA. However, there has been continuing debate about whether to sacrifice or replace the posterior cruciate ligament when performing TKA. The superiority of CR-TKA versus PS-TKA for obtaining knee joint stability with functional improvement is still controversial.

A meta-analysis of eight randomized controlled trials (RCTs) involving 888 patients revealed that CR- and PS-TKA have similar clinical outcomes with regard to knee function, postoperative knee pain and other complications. Implant survivorship for both posterior CR- and PS-TKA is satisfactory, with no differences between them at short- and middle-term follow-up.<sup>[4]</sup>

In another meta-analysis of 36 clinical trials with levels of evidence of I and II, involving 4,052

patients, no differences were reported for two groups regarding anterior knee pain, knee joint instability or revision rate.<sup>[5]</sup>

In a case-control study of 268 patients who underwent CR-TKA versus 211 PS-TKAs, with the same arthroplasty system, and a minimum follow-up of 10 years, the superiority of one design over the other was not found. Both designs can be used expecting long-term successful outcomes and high survival rates.<sup>[6]</sup>

A meta-analysis of 1,114 patients revealed a significant difference in statistical analysis of flexion and range of motion (ROM) in favor of PS knees, while no difference was detected in complication rates. The clinical importance of this finding remains unknown.<sup>[7]</sup>

A total of 42 knees were investigated, with equal representation in the PS- and CR-TKA groups, showing kinematic and functional differences that favored PS-TKA. The results suggest posterior cruciate ligament insufficiency in CR-TKA, indicating that the cam-post systems in PS-TKA may better maintain knee kinematics and function at long term.<sup>[8]</sup>

In a RCT, both PS- and CR-TKA performed well with patients reporting acceptable levels of health-related quality of life in up to 10 years postoperatively. Low levels of revision or reoperation were reported in both groups.<sup>[9]</sup>

A matched paired study comparing in a matched cohort, there were no significant differences in functional score, overall ROM or patient satisfaction between PS- and CR-TKA at 10-year follow-up. However, PS knees had a greater score improvement in ROM compared with CR knees.<sup>[10]</sup>

The influence of posterior tibial slope was investigated in a study. Eight degrees or more posterior tibial slope in CR-TKA using prosthetics designed with

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high geometric conformity to the medial articular surface did not affect the anteroposterior position and external rotation, but increased the postoperative maximum flexion angle and ROM.<sup>[11]</sup>

In conclusion, both prosthetic implants provide a feasible solution to treat osteoarthritis of the knee joint. The PS-TKA reported improvements in the knee ROM. No clinically relevant significant differences concerning the analyzed scores were evidenced. Furthermore, no statistically significant relevant differences in complications were detected. Therefore, strict adherence to surgical indications, the status of the posterior cruciate ligament and understanding the differences in surgical principles may be more important than the selection of a CR or PS prosthesis.<sup>[12]</sup>

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