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Medial Pivot Total Knee Arthroplasty Shows Faster Recovery Than Posterior Stabilized Design, But Achieves The Same Outcomes In Midterm: A Trible-Blinded Randomized Clinical Trial

Orthopaedics / Knee & Lower Leg / Joint Replacement - Primary

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Keywords: Medial Congruent, Kinematic, Biomechanic, Gait, Forgotten Joint, Flexion, KOOS

Background
While medially congruent (MC) total knee arthroplasty (TKA) systems have been biomechanically designed to replicate natural knee kinematics, evidence on their clinical superiority over posterior-stabilized (PS) designs remains inconclusive. Previous studies have yielded conflicting results, with some reporting improved kinematics and joint awareness with MC designs, while others found no significant functional differences. However, most have failed to assess short-term recovery trajectories that could influence enhanced recovery after surgery (ERAS) protocols.

Objectives
This study aimed to compare clinical and patient-reported outcomes between a MC and a PS knee design.

Study Design & Methods
In this triple-blinded randomized controlled trial, 82 patients undergoing primary TKA for knee osteoarthritis were randomized to receive either the Persona® MC or PS system. Clinical and patient-reported outcomes—including range of motion (ROM), Visual Analogue Scale (VAS), Knee Injury and Osteoarthritis Outcome Score (KOOS), and Forgotten Joint Score (FJS)—were evaluated at multiple postoperative intervals up to two years.

Results
Both groups demonstrated significant postoperative improvements. However, the main finding of this study is that MC-TKA failed to show any long-term improvements in either knee ROM or patient satisfaction compared to PS-TKA. In contrast, MC-TKA patients exhibited significantly faster early recovery, achieving superior knee flexion and reduced flexion contracture at 2 weeks, as well as higher KOOS and FJS-12 scores at 1 year. These early advantages diminished by midterm follow-up, where functional outcomes and satisfaction were comparable between groups

Conclusions
Despite similar long-term outcomes, the accelerated early recovery observed with MC-TKA suggests a potentially valuable role in fast-track arthroplasty programs and ERAS pathways. These findings highlight the importance of temporal outcome assessment and suggest that implant design may influence not only ultimate function but also the pace of postoperative rehabilitation.

Created on 07.11.2025 14:16:00