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Robotic vs Navigational vs Conventional Primary Total Knee Arthroplasty. Clinical and Radiological Long-Term Results with a Minimum Follow-up of 10 years -Survivalship Analysis-

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Robotic vs Navigational vs Conventional Primary Total Knee Arthroplasty. Clinical and Radiological Long-Term Results with a Minimum Follow-up of 10 years -Survivalship Analysis-

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Jong-Keun Seon and Eun-Kyoo Song

Center for Joint Disease, Chonnam National University Hwasun Hospital

Introduction: The aim of this study was (1) to compare the clinical and radiological outcomes of robotic, navigational and conventional total knee arthroplasty(TKA) with a minimum follow-up of 10 years, (2) to evaluate the survival rate, (3) and to estimate the accuracy of the three techniques.

Methods: We evaluated 515 knees who underwent robotic, navigational or conventional TKA with minimum follow-up of 10 years. Finally, this study including 92 patients (103 knees) who underwent robotic TKA using ROBODOC® , 197 patients (225 knees) who underwent navigational TKA using Orthopilot, and 175 patients (187 knees) who underwent conventional TKA. Hospital for special surgery(HSS) score, Knee Society Score(KSS), Western Ontario and McMaster Universities (WOMAC), and Range of Motion(ROM) were used for clinical evaluation. Mechanical alignment, implant

radiological measurements and outliers were analyzed for radiological results. Complication related with surgery was also evaluated.

Results: All clinical assessments including HSS, KSS, WOMAC, and ROM at final follow-up showed improvements in three groups (all, $p<0.05$), without any significant difference between the groups ($p>0.05$). In radiologic data, sagittal inclination of femoral implant in robotic group showed better result than another groups ($p<0.05$). The cumulative survival rate was 94.8% in the robotic group, 96.2% in the navigation group, and 92.4% in the conventional group with excellent survival ($p=0.563$). Complication rate was 5.2 % in the robotic group, 5.3% in the navigation group, and 8% in the conventional group

Conclusion: Our study showed excellent survival with robotic, navigation and conventional TKA and similar clinical outcomes at long-term follow up. However, in terms of radiological outcome robotic TKA showed accurate position of femoral component. With longer follow-up and larger cohort, the accuracy and effectiveness of robotic TKA can be elucidated in the future.

Key words: Conventional TKA, Long term survival ship, Navigational TKA, Robotic TKA

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