INPLASY PROTOCOL

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Conflicts of interest:
The authors declare that they have no competing interests.

Comparison of computer navigated and conventional total Knee Arthroplasty for the Treatment of Knee Osteoarthritis: a meta-analysis

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ABSTRACT

Review Question: Whether the navigation system could show more benefits in clinical outcomes and radiological positioning precision of the prosthesis.

Condition being studied: Osteoarthritis (OA) is a major cause of disability in the elderly across the world, it affects around 18% of women and 10% of men over the age of 60. Total knee arthroplasty (TKA) and Unicompartmental knee arthroplasty (UKA) are common surgical intervention which can be conducted in patients with end-stage knee OA. Besides, UKA is regarded as a reliable surgical treatment for patients with isolated osteoarthritis and osteonecrosis.

INTRODUCTION

Objectives / Review question: Whether the navigation system could show more benefits in clinical outcomes and radiological positioning precision of the prosthesis.

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METHODS

Participant or population: Patients have undergone computer navigated or conventional Unicompartmental Knee Arthroplasty.

Intervention: Patients have undergone computer navigatedUnicompartmental Knee Arthroplasty.

Comparator: TPatients have undergone conventional Unicompartmental Knee Arthroplasty.

Study designs to be included: Randomized Controlled Trials.

Eligibility criteria: (1) Studies compared the clinical or radiographic outcomes in patients who underwent navigated UKA and conventional UKA ;(2) Clinical or radiographic outcomes were not limited to pool; (3) Published studies in Engllish were eligible.

Information sources: Embase, Medline, Web of Science, Cochrane databases were searched to retrieve related studies updated on October 2019.

Main outcome(s): inliers of the mechanical axis, Kennedy's central zone, coronal femoral prosthesis, sagittal femoral prosthesis, coronal tibial prosthesis and sagittal tibial prosthesis..

Additional outcome(s): Hospital for special surgery knee score (HSS score); Oxford Knee Score(OKS score); American knee society knee score (KSS score); the Western Ontario and McMaster universities osteoarthritis index(WOMAC score); Range Of Motion (ROM) ; complications, Surgical Time (minutes); Pain scale (Visual Analogue Scale/Score, VAS).

Quality assessment / Risk of bias analysis: The quality of the 13 non-RCTs studies was assessed according to the Downs and Black and the Newcastle-Ottawa Scale (NOS) quality assessment method. A total NOS score was 9* and if the NOS score was over 6*, it would be considered as higher quality research. A higher score was recognized as better quality research. The 12-item scale was used to assess the quality of the RCTs . Each item was scored "Yes", "Unclear", or "No". If a trial with a score of more than 7 "Yes" was considered high quality, more than 4 but no more than 7 was considered moderate quality, and no more than 4 was considered low quality. Any different opinions were resolved by a third reviewer (WJ).

Strategy of data synthesis: Statistical heterogeneity of data was evaluated by using Cochran's Q statistic. If statistical Q statistic ($P < 0.10$) was considered to be significant heterogeneous among studies, a random-effects model was performed, if not, a fixed-effects model was used. If the heterogeneity of a parameter was over 85%, the meta-analysis was not performed. The results of continuous data were applied to the mean difference with 95% confidence interval (CI). For dichotomous data, the Odd ratio (OR) was calculated using the Mantel-Haenszal method, mean difference and standardized mean difference were considered statistically significant at the $P<0.05$ level. Data analysis was carried out by using Review Manager 5.3. Sensitivity analysis was performed to assess the results through the exclusion of eligible studies once time.

Subgroup analysis: None.

Sensibility analysis: An individual study was deleted each time to investigate its influence on the pooled results.

Coutries involved: Korea, China, Italy, USA, Austria, Australia, Korea, France.

Keywords: Navigation; Knee Osteoarthritis; Unicompartmental arthroplasty; Meta-analysis.