

ABSTRACT

TITLE OF THE DISSERTATION

Comparative analysis of surgical treatment of advanced degenerative changes in the carpometacarpal joint of the thumb using the RegJoint implant and the CMC1 Touch cementless bimobile prosthesis.

INTRODUCTION

Osteoarthritis of the thumb carpometacarpal joint (CMC1) is a common cause of pain and impaired hand function, particularly in middle-aged and elderly individuals. In advanced stages, conservative treatment often proves insufficient, necessitating surgical intervention. Despite the growing popularity of biodegradable interpositional implants (e.g. RegJoint™) and cementless dual mobility prostheses (e.g. CMC1 Touch®), no direct comparative studies of these two techniques have been conducted to date.

AIM OF THE STUDY

The aim of this study was to compare the effectiveness of two modern surgical techniques for treating advanced CMC1 osteoarthritis: implantation of the biodegradable interpositional RegJoint™ implant and the cementless dual mobility prosthesis CMC1 Touch®. This work addresses an existing gap in the literature by providing the first direct comparative analysis of these methods. The evaluation focused on recovery dynamics, pain reduction, improvement in hand function, and the rate of achieving the minimal clinically important difference (MCID).

MATERIALS AND METHODS

A prospective study was conducted between 2023 and 2025, enrolling 95 patients with advanced CMC1 osteoarthritis (Eaton-Glickel stage III or IV). Patients were randomized into two operative groups. Clinical and functional outcomes were assessed at four time points (preoperatively, and at 4 weeks, 8 weeks, and 6 months postoperatively) using the NRS for pain, range of motion measurements, grip strength, and the QuickDASH questionnaire. To increase group comparability and minimize confounding factors, propensity score matching was applied. Final analyses included data from 26 patients in the CMC1 Touch® group and

26 in the RegJoint™ group. Absolute values were compared, MCID achievement rates were assessed, and correlations between selected clinical and functional parameters were analyzed.

RESULTS

Both groups showed statistically significant improvement in all evaluated parameters. However, treatment with the CMC1 Touch® prosthesis resulted in faster and more pronounced improvement, particularly in pain reduction, range of motion, and hand function. The proportion of patients achieving MCID was significantly higher in the CMC1 Touch® group, especially at 8 weeks and 6 months postoperatively. These findings were confirmed by both univariate and multivariate analyses.

CONCLUSIONS

Cementless dual mobility prosthesis (CMC1 Touch®) proved to be a more effective surgical treatment for advanced thumb CMC1 osteoarthritis than interpositional arthroplasty using the RegJoint™ implant. Its use enabled faster and more noticeable functional improvement and a higher proportion of patients reaching clinically meaningful outcomes. Further studies are needed to evaluate long-term outcomes, radiological findings, complication rates, and patient satisfaction.