

# Fading Use of Arthrodesis and Prosthetic Arthroplasty for Basal Joint Arthritis

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## INTRODUCTION:

Thumb carpometacarpal osteoarthritis (CMC OA), also referred to as basal joint arthritis, is a common condition for which various surgical interventions may be considered. These treatment options include: partial/complete trapeziectomy with ligament reconstruction and tendon interposition (LRTI), complete trapeziectomy, thumb CMC joint arthrodesis, and thumb CMC joint prosthetic arthroplasty. The relative use of these surgical options over time and drivers for their use have not been well characterized.

## METHODS:

All adult patients undergoing one of the above-noted procedures were identified from the 2010 to a Q3 of 2021 national, administrative database. Patients diagnosed with infection, trauma, or neoplasm within 90 days prior to their surgery were excluded. Trends for the relative usage of the different procedures were assessed over the years of the study.

Patient characteristics were then abstracted for each surgical group including: age, sex, Elixhauser Comorbidity Index (ECI, a quantitative measure of comorbidity burden), insurance plan type, and US region where surgery was performed. Relative to LRTI, characteristics of the other procedural groups were compared with multivariable logistic regression.

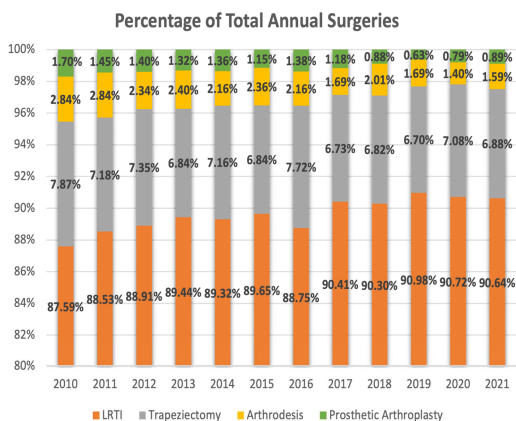
## RESULTS:

A total of 143,243 patients meeting inclusion criteria were identified. Of these, LRTI was performed for 128,429 (89.7%), trapeziectomy for 10,151 (7.1%), arthrodesis for 3,003 (2.1%), and prosthetic arthroplasty for 1,660 (1.2%). Over the years of the study, proportionally fewer cases were addressed with arthrodesis (decreased from 1.70% to 0.89% of overall cases, drop of 47.6%) and prosthetic arthroplasty (decreased from 2.84% to 1.59% of overall cases, drop of 44.0%) (Figure 1).

Patient characteristics of those undergoing trapeziectomy, arthrodesis, and prosthetic arthroplasty were assessed relative to the most performed option (LRTI). By multivariable analysis, age, sex, ECI, and insurance plan were all independently predictive of a patient belonging in some of these groups. However, the most consistently predictive variable across all surgical groups was the geographic region where the procedures were performed.

## DISCUSSION AND CONCLUSION:

Surgical management for the treatment of primary thumb CMC OA is commonly considered, but arthrodesis and prosthetic arthroplasty have represented a decreasing percentage of the options chosen in recent years. While some patient factors were correlated with the choice of one treatment over the others, the most consistently predictive variable was geographic region, suggesting that non-clinical factors are affecting the treatment chosen for this condition. Overall, patient-centered approaches for the management of thumb CMC OA should be prioritized when considering the treatment algorithms.



**Figure 1.** Stacked bar graph displaying percentage of each thumb CMC OA surgery relative to total annual surgeries per year from 2010 to 2021. The year 2021 only includes patient records from January through September.