Summary of research proposal LROI

Title:
The influence of previous prior shoulder surgery on the outcomes of shoulder arthroplasty: a retrospective cohort study using Dutch Arthroplasty Register (LROI) data from 2014-2021

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Abstract:
Shoulder arthroplasty is a successful treatment option for a variety of degenerative and traumatic pathologies of the shoulder. Despite the success rate of shoulder arthroplasty, a specific subpopulation is at risk of unsatisfactory outcomes, including postoperative complications, reduced range of motion, and persistent pain.

Previously to arthroplasty, 12 to 16% underwent non-arthroplasty shoulder in 2020 the Netherlands. The potential influence of prior non-arthroplasty surgery on the outcomes of shoulder arthroplasty remains largely unknown. A better understanding of the impact of prior surgery on shoulder arthroplasty outcomes may inform preoperative decision making, planning, implant selection, ultimately leading to better outcomes. Therefore, the purpose of this study is to determine if a history of prior non-arthroplasty shoulder surgery is associated with worse outcomes after primary shoulder arthroplasty.

The primary outcome of the study is defined as the revision rate of patients undergoing shoulder arthroplasty. Secondary outcomes are: shoulder pain (measured using the NRS) at three months and one year postoperatively and shoulder function (measured using the OSS) at three months and one year postoperatively.

All adult patients who underwent primary total anatomical, reversed or hemi shoulder arthroplasty between 2014 and 2021 with or without prior shoulder surgery will be included in this study.

A multivariable Cox proportional hazard analysis will be performed to examine the revision rate adjusted for prior shoulder surgery and described confounding factors. The association between change scores from baseline to 3 month and 12 month postoperative pain and shoulder function and previous shoulder surgery will be analyzed using a multivariable mixed model analysis. Adjustments will be made for potential confounding factors.

This study will help identify if prior non-arthroplasty surgery before shoulder arthroplasty is associated with worse revision rate, shoulder pain and shoulder function. Moreover, through subgroup analysis we will provide insight in the relevance of prior non-arthroplasty shoulder surgery between different groups of patients undergoing shoulder arthroplasty, such as reverse shoulder arthroplasty.

Implications for clinical practice will be an important deliverable of this project, as it will provide orthopedic surgeons with information on how to improve patient selection for shoulder arthroplasty and potentially reduce postoperative complication rates. This will be achieved through the dissemination of the study findings and recommendations to relevant medical research societies by the study team.

Ultimately, the results of this study can inform patients on what to expect after shoulder arthroplasty, which can lead to more realistic expectations, better patient outcomes, and more efficient use of healthcare resources.

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