

## **Clinical Evaluation of Reverse Total Shoulder Arthroplasty: Telerehabilitation during Sars-Cov-2 Pandemic**

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### **INTRODUCTION:**

Reverse total shoulder arthroplasty (RTSA) is an effective surgical procedure widely used for rotator cuff arthropathy, revision shoulder arthroplasty, and comminuted proximal humerus fractures. The use of RTSA has progressively increased, given the good clinical outcomes and few complications rate. Two main humeral prosthetic designs have been described: Inlay and Onlay. The former was the classic Grammont design, medializing the center of rotation. The Onlay design was developed to lateralize the center of rotation, increase the deltoid wrapping effect, and reduce the scapular notching. Postoperative rehabilitation is believed to be crucial in optimizing clinical function after RTSA. Sars-Cov-2 pandemic limited postoperative rehabilitation protocol.

The purpose of this study was to determine the clinical advantage of telerehabilitation in patients treated with RTSA during Sars-Cov-2 pandemic; the second aim was to detect clinical differences in patients treated with Inlay versus Onlay prosthetic designs.

**METHODS:** Twenty-six consecutive patients have been prospectively enrolled in this study between March 2020 and December 2020, they performed either an Inlay or Onlay prosthesis. Telerehabilitation session once a week, in addition to physiotherapy sessions twice a week, starting 4 weeks after the surgery and continued for four months. Outcomes evaluated included: Range of Motion (ROM) (forward flexion, abduction, external rotation, and internal rotation), complications, and patient-reported outcomes at different follow up (Visual Analog Scale [VAS], Disabilities of the Arm, Shoulder, and Hand score [DASH], Simple Shoulder Test [SST], Constant Score [CS], and American Shoulder and Elbow Surgeons score [ASES]). Chi square test or Fisher's exact test were used for qualitative variables, the Wilcoxon-Mann-Whitney test was used to compare the quantitative variables between two analysis groups and the Wilcoxon signed rank sum test for comparison between two consecutive measurements in the same group.

**RESULTS:** Fourteen patients were treated with Inlay and twelve with Onlay design. ROM reported at final follow up: Forward flexion of 150°-Inlay and 160°-Onlay ( $p = 0.60$ ), Abduction 120°-Inlay and 140°-Onlay ( $p = 0.19$ ), External Rotation 40°-Inlay and 45°-Onlay ( $p = 0.66$ ), Internal Rotation superior in the Onlay ( $p = 0.10$ ). Patient-reported outcomes detected good and similar results between the two groups for VAS ( $p = 0.32$ ), DASH ( $p = 0.56$ ), SST ( $p = 0.73$ ), CS ( $p = 0.40$ ), ASES ( $p = 0.37$ ). No complications have been reported.

**DISCUSSION AND CONCLUSION:** Telerehabilitation represents a good alternative and a valid support to the traditional physiotherapy. Sars-Cov-2 pandemic emphasized the importance of medical technology development to assist and improve health communication. Although with no statistical significance, Onlay design achieved more satisfactory results and with less time compared to the Inlay prosthesis.