

Reverse Shoulder Arthroplasty without Reattachment of the Subscapularis Tendon Results in Satisfactory Functional Internal Rotation

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INTRODUCTION: Previous studies comparing the range of motion after reverse shoulder arthroplasty (RSA) with or without subscapularis reattachment report contradicting results, and the role of the subscapularis muscle after reverse shoulder arthroplasty remains unclear. To our knowledge, there are no studies assessing the functional internal rotation after RSA leaving the subscapularis tendon detached. Therefore, this study aims to assess the functional internal rotation using the Activities of Daily Living which require Internal Rotation (ADLIR) questionnaire in patients undergoing RSA without reattachment of the subscapularis tendon with a minimum follow up of 2 years. The secondary aim is to report objective range of motion (ROM), and the rate of postoperative instability.

METHODS: All consecutive primary RSA procedures without reattachment of the subscapularis tendon using one manufacturer's prosthesis between January 2015 and December 2020 were identified to ensure a minimum follow up of 2 years. Patients were contacted and requested to fill in several questionnaires, including the ADLIR and Auto-Constant scores. Radiographs at 6 weeks postoperatively were assessed to measure the lateralization shoulder angle (LSA), distalization shoulder angle (DSA), and the sphere-bone overhang distance (SBOD). Two linear regression models were built to identify explanatory variables (patient characteristics, surgery characteristics, and radiographic measurements) associated with the ADLIR score and ROM in internal rotation.

RESULTS: In total, 210 patients met inclusion criteria, of which 187 were contacted (23 patients were deceased, non-French speaking, or had no contact information), and 151 patients completed questionnaires (response rate: 81%). The median follow up was 4.5 years (range: 2.0-7.6). At final follow up, the mean ADLIR score was 88/100 (Interquartile range (IQR): 81-96). The median level reached in internal rotation was the 3rd lumbar vertebra (IQR: lumbosacral region - 12th thoracic vertebra). One out of 210 eligible patients required a revision for a dislocation. The regression analysis found older age and smoking to be associated with a lower ADLIR score ($\beta=-0.123$, $p=0.0256$ and $\beta=-3.041$, $p=0.0293$, respectively), none of the surgery characteristics or radiographic measurements were significantly associated with the ADLIR score ($p > 0.05$). None of the explanatory variables were associated with ROM in internal rotation ($p > 0.05$).

DISCUSSION AND CONCLUSION: This study demonstrates satisfactory functional and objective internal rotation at mid-term follow up after RSA leaving the subscapularis detached. Leaving the subscapularis detached also did not lead to high instability rates; only one out of 210 prostheses was revised for dislocation.

