Long-Term Functional, Sports- and Work-Related Outcomes After Arthroscopic Capsulolabral Revision Repair for Recurrent Anterior Shoulder Instability: A Minimum 20-Year Follow-Up

Lukas N Muench[1], Isabella Kuhn, Katrin Mitterpleininger, Christoph Bartl[2], Andreas B Imhoff[3], Bastian Scheiderer[4], Sebastian Siebenlist, Marco-Christopher Rupp
[1]Sports Orthopaedics, Technical University of Munich, [2]Munich, [3]Technical University of Munich, Dept of Ortho Surgery, [4]Department of Orthopaedic Sports Medicine, Technic

INTRODUCTION:
Previous reports - predominantly limited to short- to mid-term follow-up - have shown that patients undergoing arthroscopic capsulolabral revision repair for recurrent anterior shoulder instability (ACRR) achieved favorable functional outcomes, however, there remains a concerning rate of recurrent instability of up to 41.5% of cases at a mean follow-up ranging between 1.8 and 5.8 years. While there is evidence at long-term follow-up available for bone block transfers in the management of recurrent instability, evidence pertaining to long-term functional outcomes, sports activity, and work ability of patients undergoing ACRR is scarce – given that earliest attempts to manage recurrent instability following a failed Bankart repair via arthroscopic capsulolabral revision repair date back 25 years. Such evidence on the long-term outcomes following ACRR may inform shoulder surgeons, whether this procedure performed for the right indication may provide durable long-term results.
Thus, the purpose of the present study was to provide comprehensive, prospectively collected long-term clinical outcomes, sports activity, and work ability of patients undergoing ACRR for recurrent anterior shoulder instability at a minimum of 20 years. It was hypothesized that patients undergoing ACRR would maintain significant functional improvement along with a sufficient sports activity and work ability at a minimum follow-up of 20 years.
METHODS: Patients who underwent ACRR for recurrent anterior shoulder instability between 09/1998 to 08/2003 and had a minimum follow-up of 20 years were analyzed. Functional outcome measures included Rowe, Constant-Murley (CM), and age-adjusted CM scores, as well as the visual analogue scale (VAS) for pain, which were collected preoperatively, at short-term follow-up (minimum 2 years) and at a minimum final follow-up of 20 years. The minimal clinically important difference (MCID) and patient acceptable symptom state (PASS) were calculated for the Rowe Score. The Single Assessment Numeric Evaluation (SANE) and Simple Shoulder Test (SST) scores were only collected at final follow-up. Return to sports (RTS) and work (RTW), including sports and work level and discipline, were evaluated using a custom sports and work ability assessment tool.
RESULTS: Twenty-nine patients (mean age at surgery: 28.6 ± 9.8 years) were included in the study, with a mean follow-up of 21.1±1.5 years (range: 20–24 years). The rate of recurrent instability was 27.6% (n=8), while 10.3% (n=3) subsequently underwent revision surgery. Younger age at surgery was significantly associated with failing after revision procedure ($p = 0.042$). The Rowe, CM, and age-adjusted CM score each significantly improved at both the minimum 2-year and minimum 20-year follow-up, when compared to preoperatively ($p < 0.001$, respectively). Neither the CM ($p = 0.055$), nor the age-adjusted CM ($p = 0.110$), nor the Rowe ($p = 0.958$) score differed significantly between the minimum 2-year and 20-year follow-up. For the Rowe score, 79.3% achieved MCID at the minimum 2- and 20-year follow-ups, 51.7% surpassed the PASS at 2 years, and 48.3% did so at 20 years. At the minimum 20-year follow-up, there was no significant difference between the SANE score of the operative compared to the non-operative shoulder ($p = 0.917$). VAS pain at rest was 0.6 ± 1.6, VAS pain during exercise was 1.1 ± 1.4, and SST was 89.3 ± 13.5. The patients' sport-specific capabilities significantly declined at the minimum 2-year and 20-year follow-up compared to pre-injury levels. The amount of activity ($p = 0.022$) and the mobility ($p = 0.021$) significantly declined from the minimum 2-year to the 20-year follow-up. At final follow-up, most patients reported their working ability as "excellent" (71%) and "good" (24%).
DISCUSSION AND CONCLUSION: Patients undergoing ACRR for recurrent anterior shoulder instability maintained significant improvement in functional outcomes at a long-term follow-up of 21.1 ± 1.5 years. In addition, patients achieved a favorable postoperative shoulder sport ability, activity, return to preinjury sports-participation, and work ability. However, a total failure rate of 27.6% of cases was observed, of which 10.3% required revision surgery, along with an attainment rate of the MCID of 79% and PASS of 48%. These minimum 20-year findings that ranging among the first to investigate ACRR at longterm are consistent with previous studies reporting on clinical short- to mid-term outcomes. The present study further provides insights pertaining to remaining postoperative impairments during sports and work participation after ACRR.