## Safety of Accelerated Return to Play Following Open Reduction and Internal Fixation of Adolescent Clavicle Fractures

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INTRODUCTION:
Traditional consensus for return to play (RTP) following open reduction internal fixation (ORIF) of clavicular fractures in adolescent athletes is 10-14 weeks. However, there is a paucity of data on the safety of an accelerated RTP timeline following these procedures, and whether patients may safely RTP before this time point is unclear. The purpose of this study was to assess the safety of an accelerated RTP timeline (<8 weeks) following ORIF of adolescent clavicle fractures.

METHODS:
This was a multi-institution, retrospective cohort study of consecutive adolescent patients (age 10-17 years) undergoing ORIF of a midshaft or distal third clavicle fracture by one of two fellowship-trained pediatric orthopaedic surgeons from 2016 to 2024. Over the course of the study period, the senior surgeons' practices evolved with respect to their standard of care RTP timelines. As a result, two groups of patients were available for comparison: a traditional RTP group (≥8 weeks, typically 9-13 weeks) and an accelerated RTP group (<8 weeks, typically 5-7 weeks). Demographic, injury, and surgical details were collected. The primary outcome was refracture/nonunion at 6 months postoperative. Additional analyzed outcomes included infection and wound complications.

RESULTS:
There were 54 patients, including 27 (50.0%) undergoing an accelerated RTP timeline and 27 (50.0%) undergoing a traditional RTP timeline. There were no differences in any patient, injury, or surgery characteristic between groups, including age (14.4 vs. 14.6 years, p=0.80), sex (74.1% vs. 85.2% male, p=0.31), or proportion planning to return to a contact sport at the time of RTP clearance (80.0% vs. 78.3%, p>0.99), among others. Patients in the accelerated cohort returned to play more quickly than patients in the traditional cohort (mean±SD 6.1±1.1 vs. 11.7±3.0 weeks, p<0.001; accelerated RTP timeline range 3.1-7.7 weeks). Among the 27 patients undergoing the accelerated RTP protocol, 3.7% returned by 3-4 weeks, 18.5% by 4-5 weeks, 40.7% by 5-6 weeks, 81.5% by 6-7 weeks, and 100% by 7-8 weeks. There were no (0%) refractures/nonunions in the accelerated RTP cohort compared to one (3.7%) in the traditional RTP cohort (p>0.99). There were no instances of infection or wound complications in either group.

DISCUSSION AND CONCLUSION: Accelerated RTP following ORIF of adolescent clavicle fractures was not associated with an increased risk of refracture/nonunion or other complications compared to a more traditional RTP timeline. The mean time to RTP in the accelerated RTP group was 6.1 weeks, with patients being cleared to RTP as quickly as 3.1 weeks postoperatively. These data suggest that carefully indicated adolescent patients undergoing anatomic ORIF of clavicle fractures can RTP more quickly than previously thought, with implications for optimizing preoperative decision making and postoperative recovery. Replication of these results in additional cohorts is necessary before accelerated RTP becomes a relative indication for ORIF of clavicle fractures in adolescent patients.