Olecranon Stress Fracture Treated with Headless Compression Screws and Bone Marrow Aspirate Concentrate Augmentation: A Case Report and Systematic Review of the Literature

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Introduction. An olecranon stress fracture (OSF) is an uncommon phenomenon in the context of sports injuries, with a prevalence of 5.4% among baseball-related elbow disorders. A variety of surgical techniques have been described to treat OSFs, most commonly involving the use of cannulated screws placed perpendicular to the fracture line. However, hardware removal due to mechanical failure, infection, and pain is commonplace. We present a novel surgical approach using ORIF with two headless compression screws and augmented with bone marrow aspirate concentrate treated cancellous allograft bone to avoid complications associated with prominent compression screws.

Methods. A literature search was performed following the PRISMA guidelines utilizing six separate online databases using search terms "Screw" AND "Olecranon stress fracture". The databases were searched from inception to the original search date February 22, 2024 for text on olecranon stress fracture management.

Results. At final follow up, the patient had radiographic and clinical evidence of fracture union, full range of motion, and was able to resume full baseball activities. In the systematic review, across the three included studies, 12 throwing athletes were treated for olecranon stress fractures with headless compression screws either after unsuccessful conservative treatment or due to a desire for expedited return to high-level play. All athletes returned to their throwing sport between four to six months post-surgery.

Conclusions. This is a novel surgical approach to treating olecranon stress fractures resistant to conservative management and may assist in minimizing known complications associated with prominent olecranon hardware.