***CORR* Insights®: Long-term Outcome of Displaced, Transverse, Noncomminuted Olecranon Fractures**

Boris A. Zelle MD

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Abstract This *CORR* Insights® is a commentary on the article “Long-term Outcome of Displaced, Transverse, Noncomminuted Olecranon Fractures” by Flinterman and colleagues available at DOI [10.1007/s11999-014-3481-5](https://doi.org/10.1007/s11999-014-3481-5).

Where Are We Now?

Olecranon fractures represent a common injury with an estimated annual incidence of approximately 12 per 100,000 population [7]. This injury is treated by a wide assortment of orthopaedic specialists, including traumatologists, upper extremity surgeons, and general orthopaedic surgeons. Tension band wire fixation reliably and inexpensively results in union and restoration of elbow function [7–9], although alternative techniques, such as plate fixation, intramedullary screw fixation, and locked intramedullary nailing are in use [1, 3, 5, 6]. In particular,

more comminuted and unstable olecranon fractures seem to benefit from plate fixation constructs [3, 5]. Despite the availability of well-established surgical techniques, there remain several issues associated with the treatment of these injuries. Therefore, painful hardware, surgical site infections, ulnar neuritis, and decreased elbow ROM, and posttraumatic arthritis remain commonly reported problems following surgical fixation of olecranon fractures [3, 5, 7–9]. Recent reports have also emphasized that many orthopaedic surgeons tend to perceive the treatment of olecranon fractures as uncomplicated, and they underestimate the frequency with which complications and poor clinical results occur [4]. Although open reduction and internal fixation of the olecranon is performed frequently, little is known about the results of this treatment at long-term followup.

Where Do We Need To Go?

A critical assessment of the effectiveness of an open reduction and internal fixation procedure requires a thorough documentation of the clinical outcomes. This should not only include a physical examination, but also the use of a validated site-specific scoring system. In order to minimize the risk of bias from missing data, investigators should attempt to minimize the number of patients who are lost to followup. Moreover, well-designed outcome studies should have an appropriate length of followup in order to record all relevant clinical issues and limitations that are associated with the surgical procedure. In this study published by Flinterman et al., the authors provide insightful data on the long-term functional results following tension band wire fixation. The authors use validated outcome measures that allow for appropriate comparisons with other

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B. A. Zelle (✉)

Department of Orthopaedic Surgery, UT Health Science Center
at San Antonio, 7703 Floyd Curl Dr, MC-7774, San Antonio,
TX 78229, USA
e-mail: zelle@uthscsa.edu

patient populations. I would also like to commend the authors for collecting clinical outcome data with an impressive average followup of approximately 20 years. In addition, the authors were able to track down a reasonable number of patients for their followup examinations (68% of the available subjects). The results recorded in this study strongly support the use of tension band wire fixation in patients with noncomminuted, transverse olecranon fractures. All patients returned to work and approximately 87% of patients were found to have excellent clinical results. These results seem to contradict recent biomechanical reports that have questioned the biomechanical properties of tension band wire fixation constructs [2, 6, 10]. However, the presented data also emphasize that surgical fixation of olecranon fractures remains a challenging procedure and is associated with a very real risk of substantial complications. Despite overall satisfactory functional long-term outcomes, the recorded reoperation rate was as high as approximately 7%, and the recorded rate of ulnar nerve compression was as high as 13%.

How Do We Get There?

Tension band wire fixation of transverse olecranon fractures has established itself as an inexpensive and reliable standard technique with a well-known track record. However, the treatment of olecranon fractures continues to be associated with a variety of postoperative complications. It must be emphasized that the study by Flinterman et al. strictly focused on the evaluation of transverse and noncomminuted fractures. It has been suggested that with higher degrees of comminution and instability, plate fixation constructs seem to provide superior outcomes [5]. Future studies need to investigate if any degree of comminution should be considered a strict indication for plate fixation or if there are certain types of

comminuted olecranon fractures that could still be amenable to tension band fixation constructs. Meanwhile, emerging implants, such as locked intramedullary nails, must be scrutinized carefully for their cost-effectiveness and their clinical outcomes must measure up against the well-known functional long-term outcomes of tension band wire fixation.

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