CORR Insights®: Surgical Technique: Results of Stabilization of Sternoclavicular Joint Luxations Using a Polydioxanone Envelope Plasty

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Where Are We Now?

Sternoclavicular joint instability problems generally are avoided by orthopaedic surgeons. Many consider this region to be the purview of thoracic surgeons, given the proximity to the great vessels in the mediastinum. However, patients often visit orthopaedic surgeons for recurrent instability of this joint or for symptomatic sternoclavicular arthritis. We usually start with nonoperative approaches, but surgery sometimes enters the conversation. What is the best surgical procedure for sternoclavicular joint instability? The answer is difficult to discern considering injuries to this joint are rather rare. Large clinical trials do not exist, but the literature is replete with case reports and case series. We may seek guidance from the biomechanics literature; if so, the work of Spencer and Kuhn [2] is perhaps most relevant. They compared a tendon weave with two other reported stabilization techniques: subclavius

tenodesis and the Rockwood technique. They found the tendon weave to be the strongest stabilization technique, but this approach involved bicortical drilling through the sternum and medial clavicle, which is not in the “wheel-house” of most orthopaedic surgeons—even those with shoulder and elbow fellowship training.

Where Do We Need to Go?

The technique described by Gardeniers and colleagues is a novel approach to address sternoclavicular joint instability. That said, the use of polydioxanone (PDS) in and around the shoulder girdle is not new. The material has been used in early transglenoid capsulorrhaphies for glenohumeral instability and to stabilize high-grade acromioclavicular joint separations with a coracoclavicular cerclage. It also has been used to stabilize acute sternoclavicular joint dislocations using the “safe” technique described by Thomas et al. [3]. The “safe” technique, like the technique described by Gardeniers et al., is intriguing. It avoids penetration of the dorsal surfaces of the sternum and clavicle and similarly obviates the risk of mediastinal injury. However, eight of 39 patients in the current study had recurrent instability, which somewhat decreases one’s enthusiasm to use this technique.

How Do We Get There?

The ideal approach would be an appropriately powered and randomized clinical trial comparing the tendon graft figure-of-eight reconstruction, the PDS-envelope plasty, and the “safe” method. This would need to be a multicenter study, as these cases are not particularly common. However, until

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this study is accomplished, I will continue to use a tendon graft, which is the strongest biomechanical technique tested to date, and the approach that has the best clinical track record. The authors correctly emphasize the risks with this technique, but mediastinal complications have not been reported in experienced hands. Bae et al. [1] reported nine successful cases, with simple shoulder test scores averaging 11.2 and no complications, failures, or reoperations. These results mirror my clinical experience with 15 similar cases using this approach. I encourage readers to check out the systematic review by Thut et al., which summarizes the literature quite nicely [4].

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