

# A Reconstructive Stabilization Technique for Nontraumatic or Chronic Traumatic Extensor Tendon Subluxation

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Subluxation of the extensor tendon results from a disruption to the sagittal band at the metacarpophalangeal joint. When conservative treatment fails to correct the subluxation, surgical treatment may be necessary. Surgical techniques for chronic cases vary in graft source and graft pathway. We present a surgical technique to recentralize and stabilize the extensor tendon using a residual ruptured sagittal band. This technique is simple and effective without donor site morbidity and seems to provide potential biomechanical advantages by restoring nearly normal anatomy. (*J Hand Surg Am.* 2016; ■(■):■–■. Copyright © 2016 by the American Society for Surgery of the Hand. All rights reserved.)

**Key words** Extensor tendon, reconstruction, subluxation, sagittal band, surgical treatment.



**S**UBLUXATION OF THE EXTENSOR TENDON at the metacarpophalangeal (MCP) joint is a rare condition in patients without rheumatoid arthritis. It is associated with a snapping, weakness, and pain in the MCP joint. Active finger extension may be impossible, but passive finger positioning can be maintained. The sagittal band (SB) is the primary stabilizer of the extensor tendon at the MCP joint, and failure of the SB to centralize the tendon, which may be the result of trauma, laxity, or congenital absence, causes the subluxation.<sup>1–3</sup> Usually subluxation occurs to the ulnar side in the middle finger because the radial component of the SB is more prone to injury than the ulnar component, the metacarpal head of the middle finger is more prominent, and the extensor tendon of middle

finger is attached more loosely to the transverse fibers than that of the other three fingers.<sup>4,5</sup>

Conservative treatment may provide satisfactory results in acute injuries, even for a Rayan and Murray type III injury.<sup>6</sup> When nonsurgical treatment fails to correct the subluxation, surgical treatment may be required. If a sufficient amount and quality of injured tissue remains, direct repair is possible.<sup>4,7</sup> However, because chronic or spontaneous cases are associated with degenerative insufficiency of the injured SB, various reconstructive techniques have been described using a variety of graft sources and attachment sites.<sup>8–11</sup> Reconstructive techniques using grafts are associated with a number of potential problems such as donor site morbidity and dysfunction at the MCP joint because of ineffective graft pathways or attachment sites.

We present a reconstructive technique that recentralizes and stabilizes the extensor tendon using a residual ruptured SB without a graft in chronic or spontaneous subluxation. A review of our results in 13 cases has shown effectiveness of this technique.

## SURGICAL ANATOMY

The SB, a part of the extensor retinacular system complex, forms a cylindrical tube that surrounds the metacarpal head and MCP joint together with the

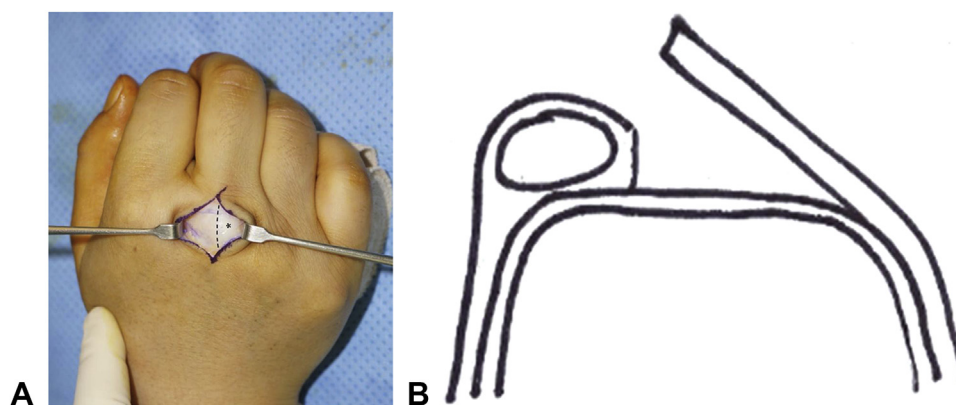
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Received for publication May 17, 2016; accepted in revised form October 17, 2016.

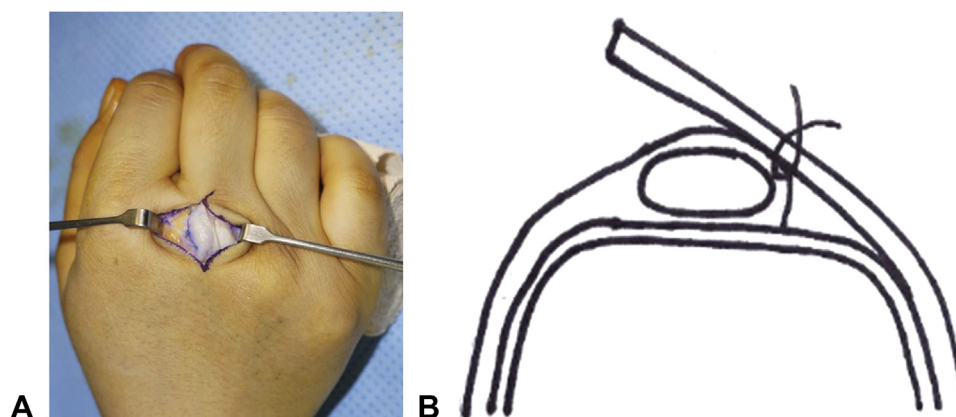
No benefits in any form have been received or will be received related directly or indirectly to the subject of this article.

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0363-5023/16/ ■ ■ -0001\$36.00/0  
<http://dx.doi.org/10.1016/j.jhsa.2016.10.008>



**FIGURE 1:** **A** Intraoperative photograph of the middle finger after skin incision shows the ulnarly subluxated extensor tendon (star) and line of separation (dotted line). **B** The drawing shows a schematic cross-sectional image after separation of the radial component of the SB from the paratenon.



**FIGURE 2:** **A** Intraoperative photograph and **B** drawing (schematic cross-sectional image) show that the paratenon is sutured to the radial side of the radial component after recentralizing the subluxated extensor tendon.

volar plate.<sup>5</sup> Because the radial component of the SB is longer and thinner than the ulnar component, and is, thus, easily injured, subluxation of extensor tendons more commonly occurs to the ulnar side.<sup>12</sup> Subluxation also tends to occur in the middle finger. This is because the middle metacarpal head is prominent and lacks multiple shared extensor tendon slips and juncturae tendinum that provide additional stability, compared with the ring or little finger.<sup>12</sup> Unlike in acute cases, when there is chronic or spontaneous ulnar subluxation, the radial component of the SB may be poorly defined as a result of degeneration. However, in our cases, there were no cases of the absence of the radial component, and in most cases, the injured radial component maintained continuity through fibrous healing.<sup>1</sup>

### INDICATIONS AND CONTRAINDICATIONS

Patients who have weakness of extension or snapping with persistent pain in chronic (> 6 weeks after injury)

or spontaneous extensor tendon subluxations are candidates for surgical treatment. Joint contracture and arthritic deformity were considered contraindications.

### SURGICAL TECHNIQUE

The ulnarly subluxated extensor tendon is exposed using a dorsal 3-cm curved incision over the MCP joint. Then, the radial component of the SB is separated from the joint capsule just to the radial side of the paratenon (Fig. 1). After recentralizing the subluxated extensor tendon, the paratenon is sutured to the radial sides of the radial component (Fig. 2). The extensor tendon is wrapped using a remnant radial component, then the radial component is sutured to the ulnar component (Fig. 3). After suturing the extensor tendon, one confirms that centralization is maintained without subluxation through a full range of motion of the MCP joint. If this is done with the patient under local anesthesia, active finger range of motion can be tested.

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