Modified DelSignore Suture Suspensionplasty for Thumb Carpometacarpal Arthritis

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Thumb carpometacarpal (CMC) osteoarthritis is a common cause of hand dysfunction and pain, traditionally managed by trapeziectomy with a form of interpositional arthroplasty. However, traditional techniques may result in first metacarpal subsidence and often require extensive dissection and hardware use. We present a dorsal, anchorless technique for hammock suspensionplasty using suture tenodesis between the abductor pollicis longus (APL) and flexor carpi radialis (FCR) tendon.

A dorsal approach is utilized to expose the CMC joint while preserving the integrity of the volar structures. After a complete trapeziectomy, the thumb is reduced with traction, restoring column alignment and correcting zigzag deformity. A suspension sling is created using a #2 FiberWire woven between the dorsal capsule/APL and the volar capsule/FCR five times to form a stable hammock construct. The capsule is closed primarily without the need for implants, anchors, or interosseous drilling.

This technique builds on prior descriptions of suture suspensionplasty, notably the DelSignore method, and is supported by recent biomechanical evidence demonstrating its non-inferiority to both APL suspension and LRTI techniques in resisting metacarpal subsidence under physiological loads (Lui et al., 2023). Our case demonstrates restoration of trapezial height, correction of deformity, and early clinical success. This procedure may offer reduced operative time, minimized morbidity, and faster rehabilitation due to the lack of hardware and minimal soft tissue disruption.

This video illustrates the indications, surgical steps, intraoperative pitfalls, and early outcomes of this emerging technique, with pre- and postoperative imaging included.

References:

Lui H, Galbraith JG, Meyers K, Bindra R, Lee SK. Biomechanical analysis of three techniques of suspensionplasty after trapeziectomy: a cadaveric study. J Hand Surg Eur Vol. 2023 Dec;48(11):1201-1206. doi:10.1177/17531934231186495. Epub 2023 Jul 27. PMID: 37496471.