
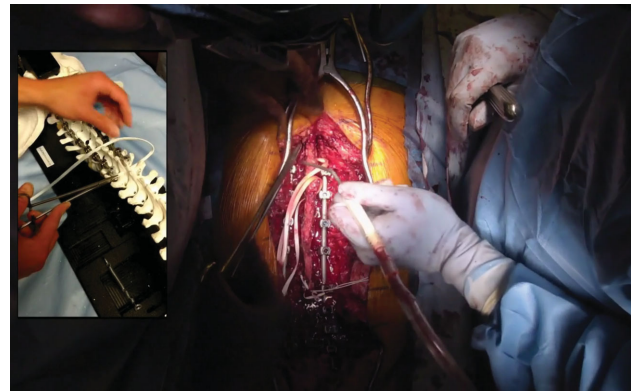


A Novel Junctional Tether Weave Technique for Adult Spinal Deformity: 2-Dimensional Operative Video

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Proximal junctional kyphosis (PJK) is a common problem after multilevel spine instrumentation for adult spinal deformity. Various anti-PJK techniques such as junctional tethers for ligamentous augmentation have been proposed. We present an operative video demonstrating technical nuances of junctional tether “weave” application. A 70-yr-old male with prior L2-S1 instrumented fusion presented with worsening back pain and posture. Imaging demonstrated pathological loss of lumbar lordosis (flat back deformity), proximal junctional failure, and pseudarthrosis. The patient had severe global and segmental sagittal malalignment, with sagittal vertical axis (SVA, C7-plumbline) measuring 22.3 cm, pelvic incidence (PI) 55°, lumbar lordosis (LL) 8° in kyphosis, pelvic tilt (PT) 30°, and thoracic kyphosis (TK) 6°. The patient gave informed consent for surgery and use of imaging for medical publication. Briefly, surgery first

involved re-instrumentation with bilateral pedicle screws from T10 to S1. After right-sided iliac screw fixation (left-sided iliac screw fixation was not performed due to extensive prior iliac crest bone graft harvesting), we then completed a L2-3 Smith–Petersen osteotomy, extended L4 pedicle subtraction osteotomy, and L3-4 interbody arthrodesis with a 12° lordotic cage (9 × 14 × 40 mm). Cobalt Chromium rods were placed spanning the instrumentation bilaterally, and accessory supplemental rods spanning the PSO were attached. An anti-PJK junctional tether “weave” was then implemented using 4.5 mm polyethylene tape (Mersilene tape [Ethicon, Somerville, New Jersey]). Postoperative imaging demonstrated improved alignment (SVA 2.8 cm, PI 55°, LL 53°, PT 25°, TK 45°) and no significant neurological complications occurred during convalescence or at 6 mo postop.

KEY WORDS: Proximal junctional kyphosis, Proximal junctional failure, Spine surgery, Deformity, Scoliosis, Surgical technique, Tether

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Disclosures

Dr Shaffrey is a consultant for Medtronic, Nuvasive, Zimmer-Biomet, K2M, has royalties with Medtronic, Nuvasive, Zimmer-Biomet, is a stock holder for Nuvasive, and has grants from NIH, DOD, and NACTN. Dr Smith has royalties from Zimmer Biomet, is a consultant for Zimmer Biomet, Cerapedics, Nuvasive, K2M, AlloSource, has honoraria from Zimmer Biomet, Nuvasive, K2M, receives research support from DePuy Synthes, ISSGF, and has fellowship support from

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COMMENTS

There are many strategies to try to thwart proximal junctional kyphosis. There has not been one technique (eg, proximal hooks)

more efficacious than the others. The most significant factor is a full correction of sagittal balance. Polyester tethers have been previously suggested as a solution. However, the authors show in their preferred technique in a clear and concise video.

Andrew Jea
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Proximal junctional kyphosis remains a common problem after long segment fusions for spinal deformity. Numerous strategies (eg, proximal hooks, cement, spinous process wiring, etc) have been tried to avoid PJK. The authors effectively demonstrate a junctional tethering technique that may help reduce the occurrence of this challenging complication.

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