

# Strap stabilization for proximal junctional kyphosis prevention in instrumented posterior spinal fusion

Francisco Rodriguez-Fontan<sup>1,2</sup> · Bradley J. Reeves<sup>1,2</sup> · Andriy Noshchenko<sup>1</sup> · David Ou-Yang<sup>1</sup> · Christopher J. Kleck<sup>1</sup> · Christopher Cain<sup>1</sup> · Evalina Burger-Van der Walt<sup>1</sup> · Vikas V. Patel<sup>1</sup>

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## Abstract

**Study Design:** This is a retrospective, single-institution, cohort study.

**Objectives:** To evaluate the association of Mersilene tape use and risk of proximal junctional kyphosis (PJK), after surgical correction of adult spinal deformity (ASD) by posterior instrumented fusion (PIF).

**Summary of Background Data:** PJK, following long spinal PIF, is a complication which often requires reoperation. Mersilene tape, strap stabilization of the supra-adjacent level to upper instrumented vertebra (UIV) seems a preventive measure.

**Methods:** Patients who underwent PIF for ASD with Mersilene tape stabilization (case group) or without (control group) between 2006 and 2016 were analyzed preoperatively to 2-year follow-up. Matching of potential controls to each case was performed. Radiographic sagittal Cobb angle (SCA), lumbar lordosis, pelvic tilt, sacral slope, and pelvic incidence were measured pre- and postoperatively, using a deformity measuring software program. PJK was defined as progression of postoperative junctional SCA at UIV  $\geq 10^\circ$ .

**Results:** Eighty patients were included: 20 cases and 60 controls. The cumulative rate of PJK  $\geq 10^\circ$  at 2-year follow-up was 15% in cases versus 38% of controls (OR = 0.28; P = 0.04) with higher latent period in cases, (20 vs. 7.5 months), P = 0.018. Mersilene tape decreased risk of PJK linked with the impact of the following confounders: age,  $\geq 55$  years old (OR = 0.19;  $0.02 \geq P \leq 0.03$ ); number of spinal levels fused 7–15 (OR = 0.13;  $0.02 \geq P \leq 0.06$ ); thoracic UIV (T12–T1) (OR = 0.13;  $0.02 \geq P \leq 0.06$ ); BMI  $\geq 27$  kg/m<sup>2</sup> (OR = 0.22;  $0.03 \geq P \leq 0.08$ ); and osteoporosis (OR = 0.13;  $0.02 \geq P \leq 0.08$ ).

**Conclusions:** Mersilene tape at UIV + 1 level decreases the risk of PJK following PIF for ASD.