

## **To Prevent PJK in Scheuermann's Kyphosis, Restore Kyphosis to Patient's PI Value and Choose Proximal UIV**

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**INTRODUCTION:** Incidence of proximal junctional kyphosis (PJK) in Scheuermann's Kyphosis (SK) varies between 24 – 40%. Multiple factors have been implicated, including: overcorrection of kyphosis, failure to include the proximal end vertebra and choice of implants. Recently, studies have attempted to analyze pelvic parameters in SK, including lumbopelvic mismatch. However, the issue remains unresolved. This study aimed to determine the goal correction parameters based upon patients' kyphosis, pelvic incidence, and UIV to prevent PJK in Scheuermann's Kyphosis.

**METHODS:** X-ray and chart review of all SK patients operated with all pedicle screw (PS), hybrid fixation (HF), and anterior/posterior fusions with hybrid fixation (AP). Kyphosis minus pelvic incidence  $> -10^\circ$  was determined to be normal. T1/T2 were grouped together as proximal fusion group compared to T3 and distal group.

### **RESULTS:**

96 total patients: PS (n=41), HF (n=24), and AP (n=31). Overall, at early postop 12/96 (12.5%) patients had PJK. At final follow-up 33/96 (34.4%) had PJK. There was no significant difference between groups at early postop ( $p = 0.86$ ) or final follow up ( $p = 0.67$ ).

When correcting Kyphosis-PI to  $> -10^\circ$  and UIV was chosen to be T1 or T2, PJK developed in 6% of patients. When fusing to T1/T2 and having kyphosis-PI  $< -10^\circ$ , 38.9% of patients developed PJK.

When having Kyphosis-PI to  $> -10^\circ$  but UIV chosen at T3 or below, 77.8% of patients developed PJK. When fusing to T3 or below and failing to correct kyphosis-PI to  $> -10^\circ$ , 37% of patients developed PJK.

**DISCUSSION AND CONCLUSION:** While surgical techniques and implants do not seem to have a substantial role in development of PJK, selecting proximal UIV and avoiding Kyphosis-PI mismatch can significantly decrease this possibility. Surgeons treating Scheuermann's Kyphosis should, therefore, aim to correct kyphosis closer to patient's pelvic incidence.