Figure 1 Technique demonstrated on a three-way catheter

A novel technique to reduce proximal junctional kyphosis in adults

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BACKGROUND

Proximal junctional kyphosis (PJK) is a recognised complication of adult spinal deformity surgery. Incidence is reported to be 5–46%.¹ The most significant risk factor is increased age.² The difference in stiffness between the instrumented spine and the spine above the construct is thought to also contribute. Attempts to reduce this difference by ‘soft landing’ using hooks at the top of the construct or transition rods have been described.³ Disruption of soft tissues above the construct may also predispose to PJK.

TECHNIQUE

Following insertion of the pedicle screws, rods were cut 5cm longer than normally required, applied to the screws and then tunnelled

Figure 1 Rods tunnelled under paraspinal muscles and attached to rib clamps

cranially through soft tissues, ending at the vertebra that is cranially adjacent to the upper instrumented vertebra (UIV+1) (Fig 1). The transverse process of the UIV+1 is palpated, and the plane between the multifidus and longissimus muscles is developed with blunt dissection, extending laterally to the rib. Subperiosteal exposure of the medial 3cm of the rib allows passage of the woven polyester band, which is then attached to the clamp and applied to the rods.

DISCUSSION

This novel technique maintains the posterior tension band above the upper instrumented vertebra while ‘soft landing’ the construct via the costotransverse and costovertebral joints. Potential complications include pleural breach and damage to the neurovascular bundle. This is an early report of a new technique; only when our patients have reached two-year follow-up will it be possible to assess the impact on rates of PJK. There have been no early cases of PJK in patients where this technique has been employed.

References

1. Kim HJ, Lenke LG, Shaffrey CI *et al.* Proximal junctional kyphosis as a distinct form of adjacent segment pathology after spinal deformity surgery: a systematic review. *Spine* 2012; **37**(Suppl 22): S144–S164.
2. Lau D, Clark AJ, Scheer JK *et al.* Proximal junctional kyphosis and failure after spinal deformity surgery: a systematic review of the literature as a background to classification development. *Spine* 2014; **39**: 2,093–2,102.
3. Cahill PJ, Wang W, Asghar J *et al.* The use of a transition rod may prevent proximal junctional kyphosis in the thoracic spine after scoliosis surgery: a finite element analysis. *Spine* 2012; **37**: E687–E695.