

Modified unit rod technique in scoliosis surgery—a case report

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A 12-year-old girl had paralytic scoliosis related to a paraplegic cerebral palsy caused by herpes meningitis at the age of 6 months. After 10 years of successful bracing, she could no longer keep her trunk straight. When seated, her thoraco-lumbar curve was 102° between Th3 and L3 (Figure 1).

After numerous cadaver experiments, we performed a modified spinal fixation using a custom-made unit rod 5 mm in diameter with a total length of 750 mm. We folded it 180° so that both parts were parallel for 300 mm at a distance of 45 mm between them. The two ends were placed in both iliac bones with a 40-mm long part deviating 45°

in the frontal plane and 20° anteriorly in the sagittal plane (Figure 2). This rod shape is similar to that recommended by Bell et al. (1989). The sublaminar wires were normal cerclage wires of 1.2 mm in diameter. Our modification of this technique involved placing a CD device for transverse traction (DTT) at the caudal end of the 2 rods, which increased the stabilization, and also facilitated the introduction of the rod into the iliac bone. The DTT distraction, performed at the same time while driving in the rod from the cranial direction, guided it into the posterior superior iliac crest (Figure 3). The driving in of the rod and the DTT distraction



Figure 1. Preoperative radiograph showing severe scoliosis (102°).



Postoperative radiograph showing the montage.

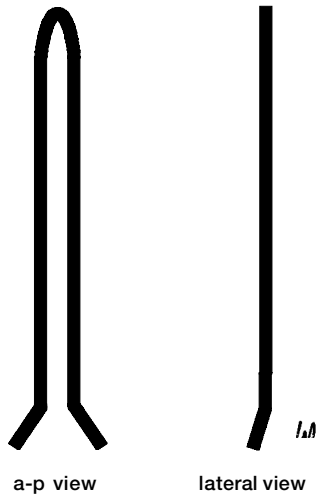


Figure 2. A-P and lateral views of the custom-made rod.

were alternated, which ensured that the oblique vector for the anchoring part was correct.

The scoliosis was reduced from 102° to 40° . The trunk was balanced in both the frontal and sagittal planes (Figure 1).

Discussion

Our modification and simplification of the unit rod method, based on Luque's sublaminar wiring technique (1982), is an alternative to Cotrel's and Dubousset's so-called CD system (1984). With our method, it is easier to bend and insert the rod and no aiming device is needed. Postoperative stability is ensured by the use of a DTT.

In the wide spectrum of neuromuscular scoliosis, the special surgical indication sets a common goal—i.e., correction and stabilization of the spine in patients who can no longer walk by themselves, and whose poor muscle tone also prevents them from sitting down with a straight upper body. In these cases, surgical correction is indicated to maintain a vertical body posture and prevent compression of the thoracic and abdominal organs. The parents of patient sought our help because their child could not sit at the table with the family.

The postoperative period was uneventful. During the 2-years of follow-up no angular loss of correction has occurred. Therefore we can indirectly conclude that fusion has occurred, thereby ensuring a long-lasting correction and preventing breakage of the rod.

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Bell D F, Moseley C F, Koreska J. Unit rod segmental spinal instrumentation in the management of patients with progressive neuromuscular spinal deformity. *Spine* 1989; 14: 130-3.

Cotrel Y, Dubousset J. Nouvelle technique d'ostéosynthèse rachidienne segmentaire par voie postérieure. *Rev Chir Orthop* 1984; 70: 489-94.

Freeman B L III. Scoliosis and kyphosis. In: Campbell's Operative Orthopaedics (Ed. Canale S T). St. Louis, Mosby 1998: 2874-90.

Luque E R. Segmental spinal instrumentation for correction of scoliosis. *Clin Orthop* 1982; 163: 192-8.

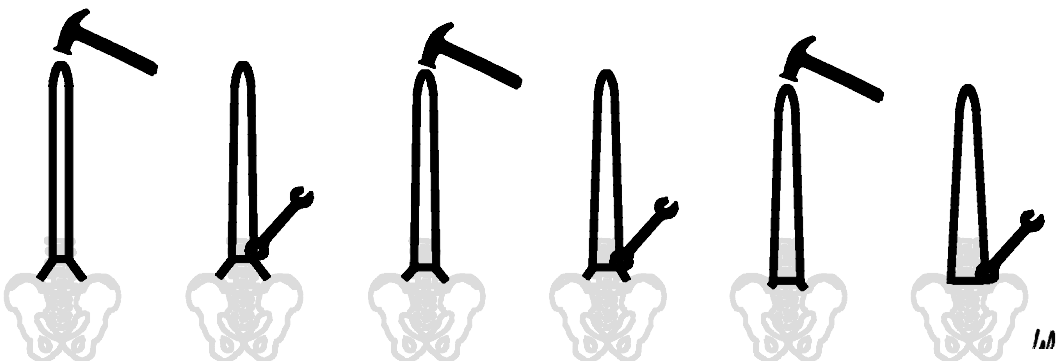


Figure 3. Diagram showing the method of insertion of the rod.