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**Posterior Spinal Fusion with EXPEDIUM™ 4.5mm Titanium Rod System**

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**History & Physical Examination**

Patient is female with thoracic kyphosis of approximately 100 degrees of unknown etiology. She had been followed for several years. Her early treatment included serial cast correction of the kyphosis to approximately 50 degrees, and maintenance with a Milwaukee brace. She was lost to follow-up for the two years preceding the surgical procedure. Her history was otherwise unremarkable.

Neurological examination was completely normal. Her weight was 22 kilograms. Clinical photographs are presented in Figures 1A and 1B.

**Radiology**

Spinal axis MRI demonstrated no intra-medullary pathology. The conus was at the level Lumbar 1 body. Plain digital radiographs are presented in Figures 2A and 2B.

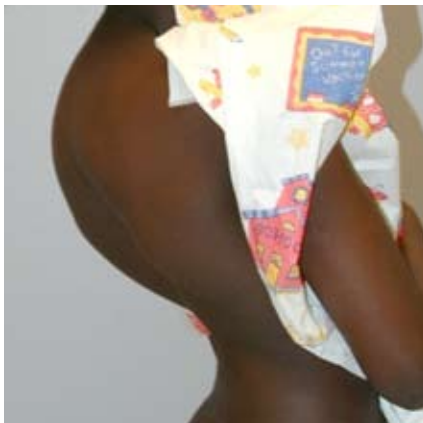


FIGURE 1A.



FIGURE 1A, 1B. Clinical and Posterior clinical view of patient with kyphoscoliosis of unknown etiology.



FIGURE 2A. AP digital radiograph which demonstrates significant coronal deformities.



FIGURE 2B. The lateral digital radiograph demonstrates a thoracic kyphosis of 110 degrees with the apex at thoracic 5.

## Surgical procedure

Initial SSEP's and transcranial MEP's were symmetrical and normal. Spinal exposure and thoracoplasty was accomplished. Multiple level Ponte osteotomies were done, from thoracic 2 to thoracic 11. Bilateral pedicle screws were placed from cervical 7 to thoracic 12, with the exception of thoracic 5. Asymmetric vertebral column resection from the left side was performed at thoracic 5. Instrumentation was completed with placement of bilateral 4.5mm titanium rods.

## Postoperative course

Excellent clinical and radiographic correction was obtained, as demonstrated in Figures 3A/B and 4A/B.

## Comment

The 4.5mm EXPEDIUM Spinal System provides an excellent solution to a difficult clinical problem; a patient whose weight is less than 30-35 kg. For this patient group, implants from systems based on a 5.5mm rod are usually too prominent. At the same time, use of an implant system based on a 3.5mm rod is not a good solution to correction of large deformities in small patients. The rod is not robust enough to obtain the desired correction. Use of a 3.5mm system proximal and a 5.5 system distally requires a transition rod, with the possibility of fracture at the transition. A 4.5mm rod system provides sufficiently small implants for this weight patient. And the rod is sufficiently robust to enable correction of very significant deformities as exemplified by this case report.



FIGURE 3A.



FIGURE 3A, 3B. Posterior view and Sagittal profile of the patient after correction of the kyphoscoliosis.

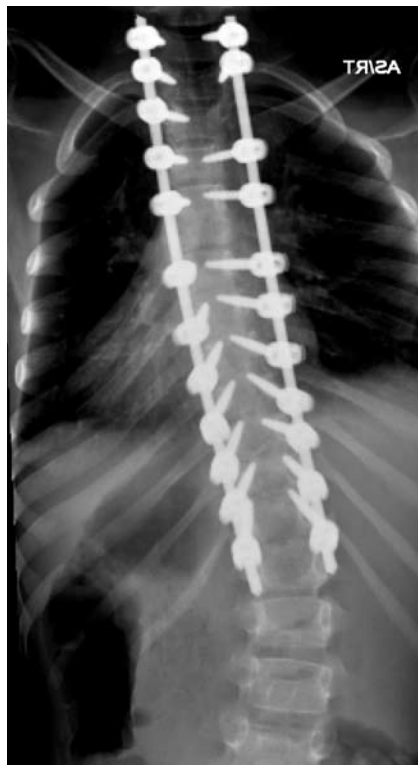


FIGURE 4A. AP digital radiograph demonstrates significant correction of the coronal thoracic deformity.



FIGURE 4B. The lateral digital radiograph demonstrates correction of the kyphosis to normal level. This was accomplished via multiple Ponte osteotomies and T-5 asymmetric vertebral column resection.