

SURGERY FOR SEVERE IDIOPATHIC SCOLIOSIS USING THREE RODS SYSTEM



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INTRODUCTION

Posterior fusion with instrumentation is the standard surgical treatment for scoliosis. We present a case of a severe thoracolumbar scoliosis treated with posterior instrumentation and fusion using a three rods system.

MATERIALS & METHODS

A 17-year-old girl presented with thoracolumbar scoliosis from T6 to L3 with an apex at T12. The curve was measured 100° by Cobb's method. The Risser sign was 4 and the neurological examination was normal (Fig. 1).

She underwent a two-stage surgery. First surgery was performed mainly for soft tissue release. It was shortened due to massive bleeding requiring blood transfusion and vasopressor support. She was subsequently stabilized in intensive care unit (ICU). Second surgery followed after five days. Intra-operative neurophysiologic monitoring was used. Two senior surgeons inserted 15 pedicle screws at the pre-planned key vertebrae using free-hand technique. Two separate rods were inserted on the concave side, with the shorter rod placed at the apex. The two primary rods on both side of the curve were connected with transverse connector at both end of the construct. Ponte osteotomies were done at the curve apex. Facetectomies were also performed on each segment.

RESULTS

Post-operative radiograph showed excellent balance and correction of deformity (Fig. 2). She started ambulating after seven days and was discharged on day nine with a thoracolumbar brace.

DISCUSSION

Severe scoliosis (main curve >90°) results in a complex three-dimensional deformity. Pedicle screws instrumentation allows satisfactory deformity corrections and preservation of motion segments^{1,2}. Correction techniques include rod cantilevering, translational technique and concave rod rotation maneuver³. Pedicle screw instrumentation and cantilever bending technique by Chang achieved 67% correction in 26 thoracic scoliosis between 75° to 135°⁴. In the three rods system for correction of severe scoliosis, the addition of the third rod on the concave side of apex aids in large curve correction by facilitating linking of contoured rod to pedicle screws.

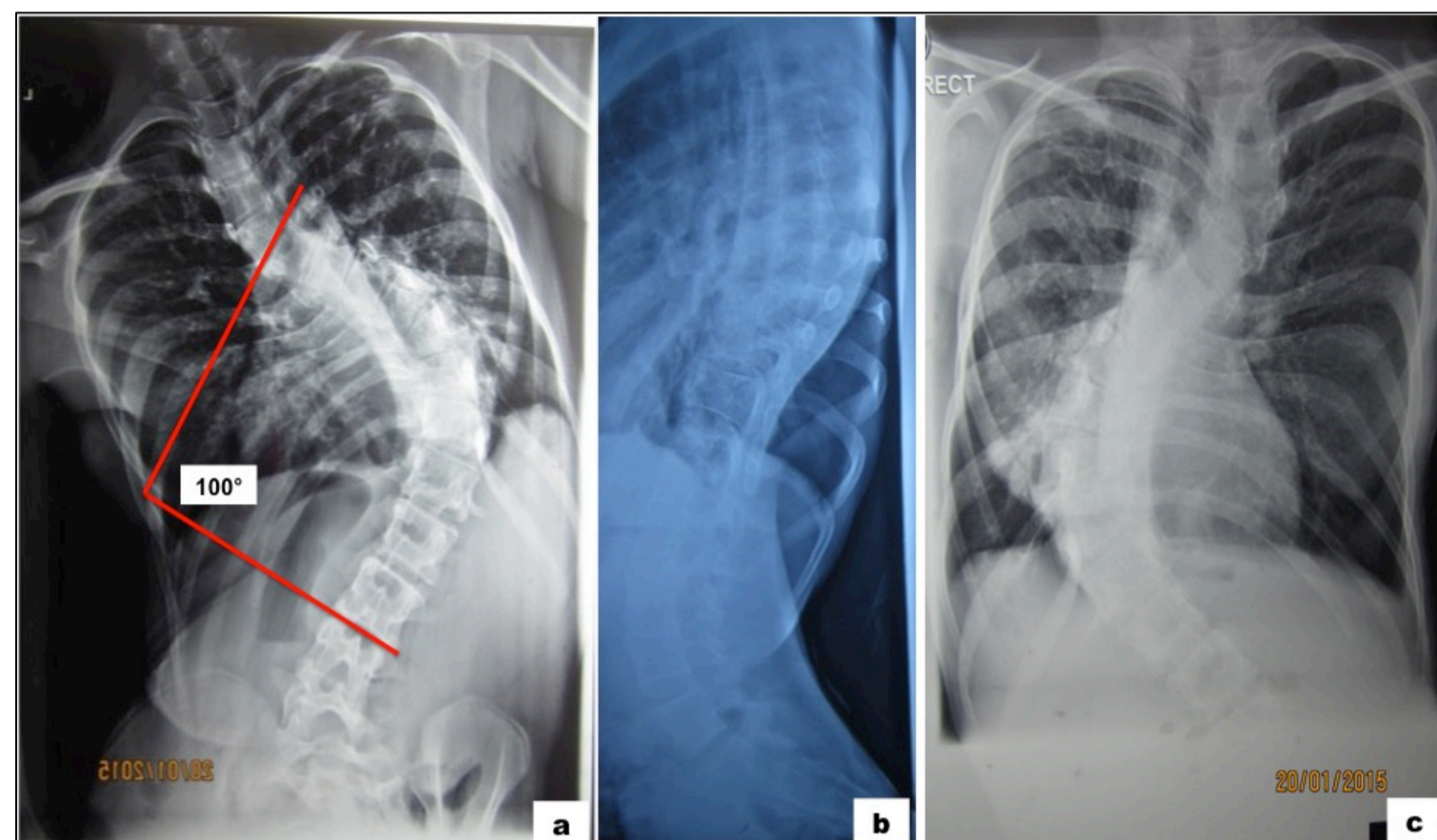


Fig. 1: Right thoracolumbar curve with Cobb's angle 100° (a,b). Pre-operative chest radiograph (c).

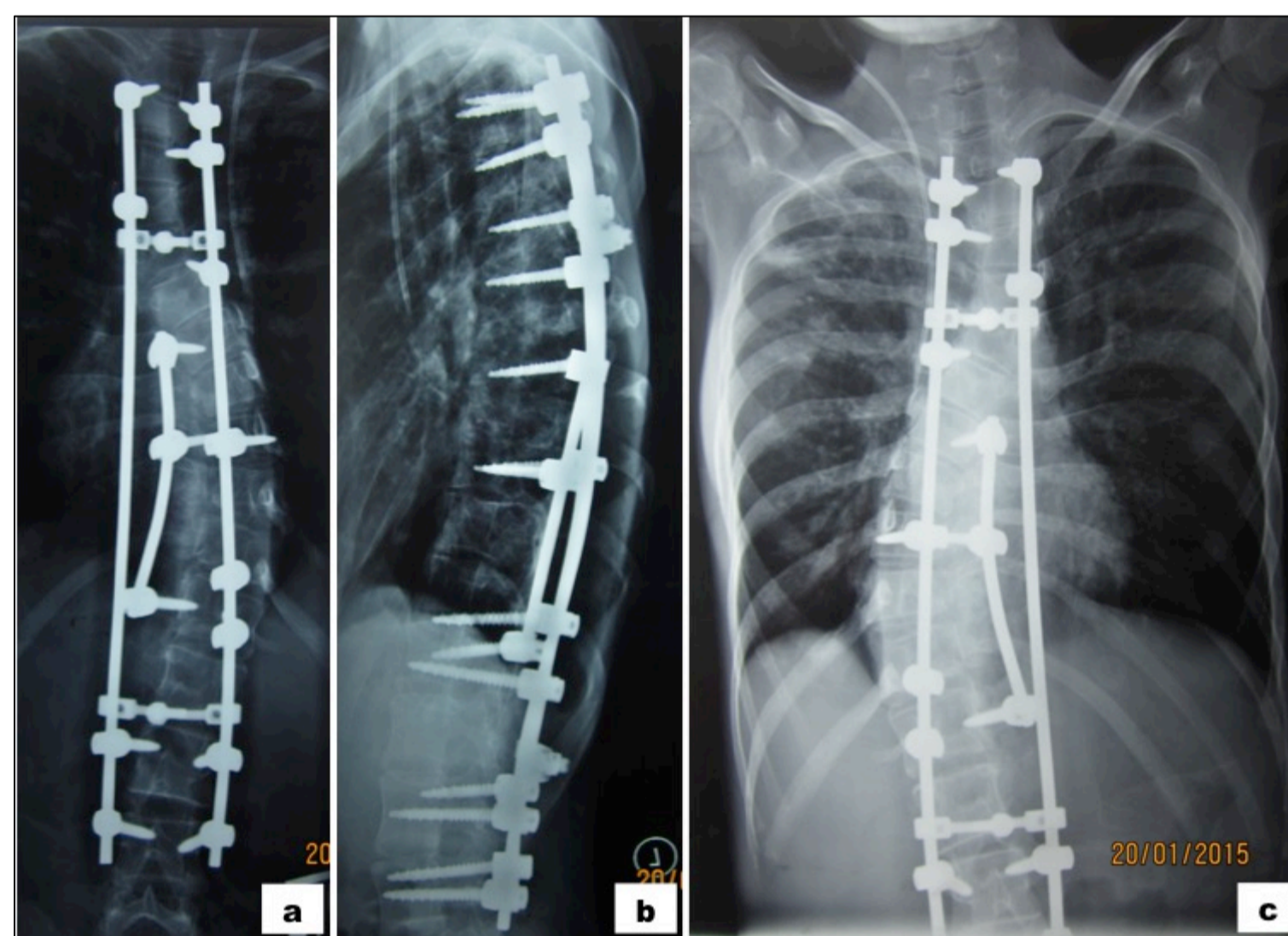


Fig. 2: Good deformity correction was achieved (a,b). Post-operative chest radiograph (c).

CONCLUSION

Posterior spinal fusion with pedicle screw only instrumentation and three rods system result in good deformity correction in severe scoliosis.

REFERENCES

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