Complications Incidence in Early Onset Scoliosis treated with Growing Spinal Implants

T. Greggi, F. Lolli, M. Di Silvestre,
E. Maredi, F. Vommaro, K. Martikos

Spine Deformity Department - Istituti Ortopedici Rizzoli; Bologna (Italy)

4rd International Congress on Early Onset Scoliosis & Growing Spine (ICEOS)
Toronto, Canada, November 19-20, 2010

Background

Previous studies reported a complications incidence in early onset scoliosis treated with growing spinal implants ranging from 0.38 to 2.37 per patient*.

**Comparison of Complications Among Growing Spinal Implants. Sankar WN, Acevedo DC, Skaggs DL. Spine (Phila Pa 1976). 2010 Jun 18.*

Aim of Our study was to evaluate complications incidence in Our experience and to identify possible risk factors.

Materials and Methods

- A retrospective clinical and radiographic analysis was performed on a consecutive series of 18 paediatric patients (8 males and 10 females; mean age 7.4 years)

- affected by:
  - idiopathic scoliosis: 6 cases
  - congenital scoliosis: 5 cases
  - scoliosis + congenital heart disease: 2 cases
  - scoliosis + syringomyelia + Chiari type I: 1 case
  - scoliosis + NF1: 1 case
  - scoliosis + Prader Willi syndrome: 1 case
  - scoliosis + trisomy 8: 1 case
  - scoliosis + arthrogryposis: 1 case

Materials and Methods

- treated with growing rod instrumentation in 10 cases (dual rod construct in 9 cases, single rod in 1) and with VEPTR-like instrumentation in 8 cases (always rib to spine construct).

- All patients were surgically treated under continuous intraoperative neuromonitoring (SSEP, NMEP, EMG)

- and completely reviewed at a mean follow-up of 28 months (range, 6 to 53).

Results

At a mean follow-up of 28 months (range, 6 to 53)

- a total of 8 unplanned surgeries occurred in 7 patients (36.8%).
- Growing rod: 3 complications occurred in 3 patients (30.0%).
- VEPTR: 5 complications occurred in 4 patients (50.0%).

Growing Rod

- Among patients treated with growing rod, 3 revision surgeries were performed due to proximal anchors migration.

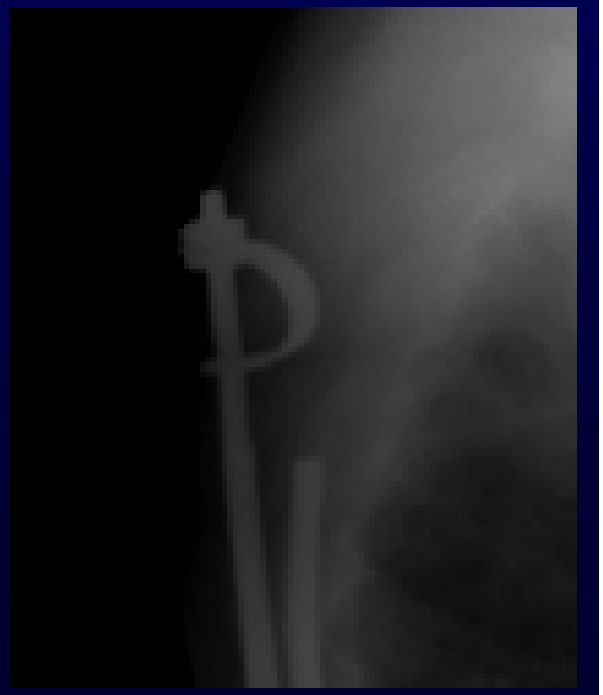
- In 2 cases proximal anchors were represented by pedicle screws, in 1 case by hooks (with a single rod construct).

- Revision surgery: substitution of screws with hooks and conversion of single rod construct in a dual rod construct.

VEPTR

- Among patients treated with VEPTR-like instrumentation, 5 revision surgeries were performed due to vertebral anchors migration in 1 case, to rib fracture with anchors migration in 4 cases.

- Revision surgery: hardware revision was performed in 4 cases, hardware removal in 1 case.



Conclusions

- In Our series, all unplanned surgeries were performed due to mechanical complications, with an overall incidence of 36.8%.

- No one patient presented neurological complications.

- Among growing rods, anchors migration involved in 2 cases pedicle screws (33.3% of cases with screws as proximal anchors), in 1 case hooks (25% of cases with hooks as proximal anchors).

- Moreover, the case with hooks mobilization was the only one with a single rod construct.

Conclusions

Our strategy

1. always use hooks as proximal anchors
2. avoid single rod construct (in case of growing rod)
3. use of a brace as external support until final surgery is performed.