

Re-operation after magnetically controlled growing rod implantation:

A review of 26 patients with minimum two-year follow-up

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Disclosures

- ▶ Research support and consultant for Ellipse Technologies



Magnetically controlled growing rods for severe spinal curvature in young children: a prospective case series



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THE LANCET

- ▶ Promising early results
- ▶ Effective and safe
- ▶ Reduced number of surgeries for child
- ▶ **Yet reoperations can occur**



Aim of the study

- ▶ Report the rate and causes of re-operations using MCGR in Early Onset Scoliosis (EOS)



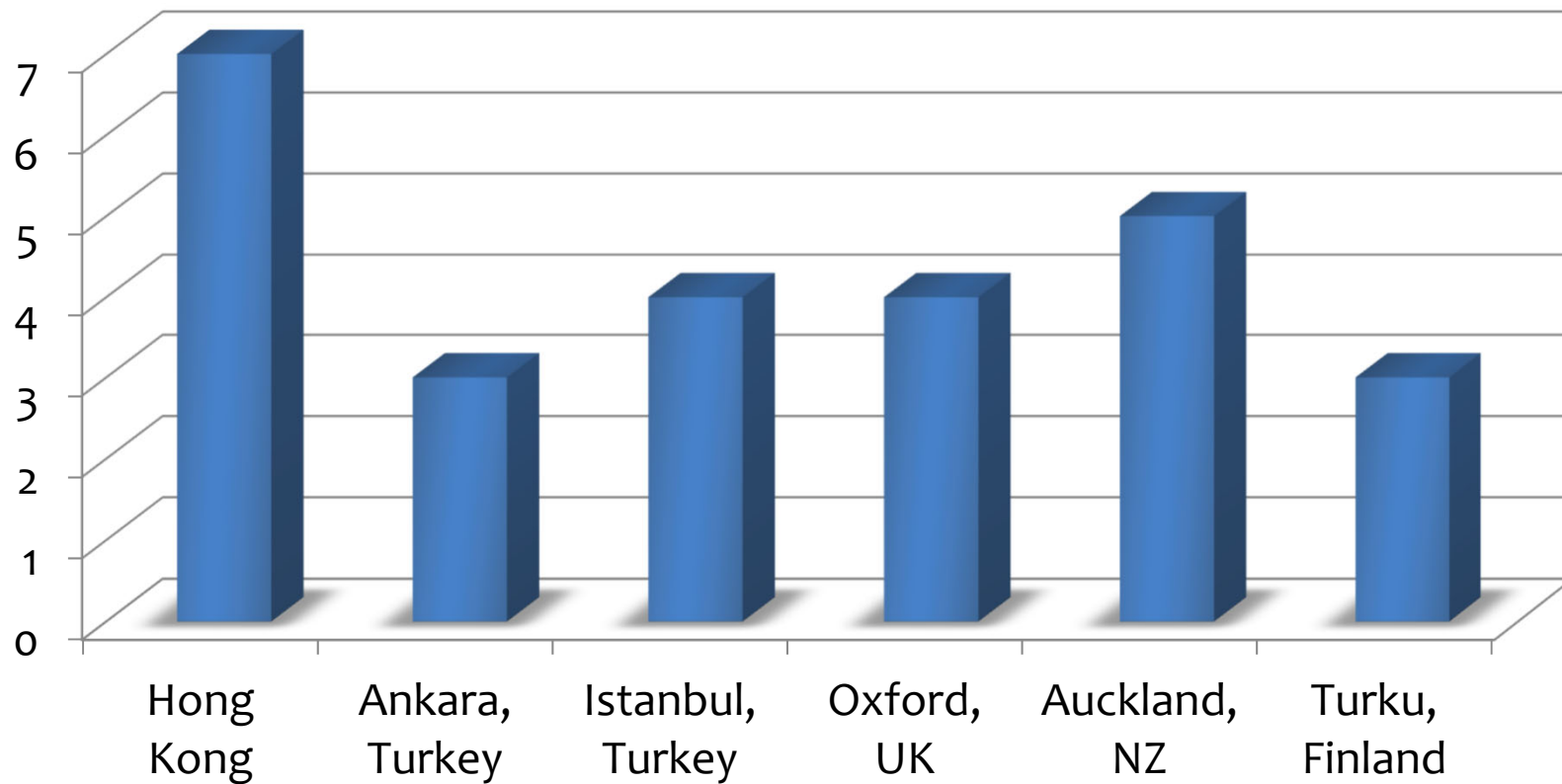
Method

- ▶ Retrospective analysis of prospectively collected data
- ▶ 6 centers
- ▶ Minimum 2 year follow-up
- ▶ Only EOS cases were included



26 patients (14F; 12M) included

No of cases



Results

- ▶ Mean age at surgery = **7.6 years** (4-14)
- ▶ Mean follow-up = **35 months** (24-50)
- ▶ Diagnoses
 - ▶ Syndromic 10
 - ▶ Congenital 5
 - ▶ Neuromuscular 3
 - ▶ Idiopathic 8
- ▶ Primary in 12 cases; revision in 14 cases
- ▶ Single rod in 4 cases; dual rod in 22 cases



Distraction frequency

- ▶ Range = 1 week to 6 months
 - ▶ Mean = 2 months



Re-operations

- ▶ **11 out of 26 patients (42.3%)**
- ▶ **Mean time** to re-operation **17 months (5-29)**
- ▶ Causes of re-operation
 - ▶ Failure of rod distraction 5
 - ▶ Failure of proximal foundation 3
 - ▶ Proximal failure with infection 1
 - ▶ Rod breakage 2

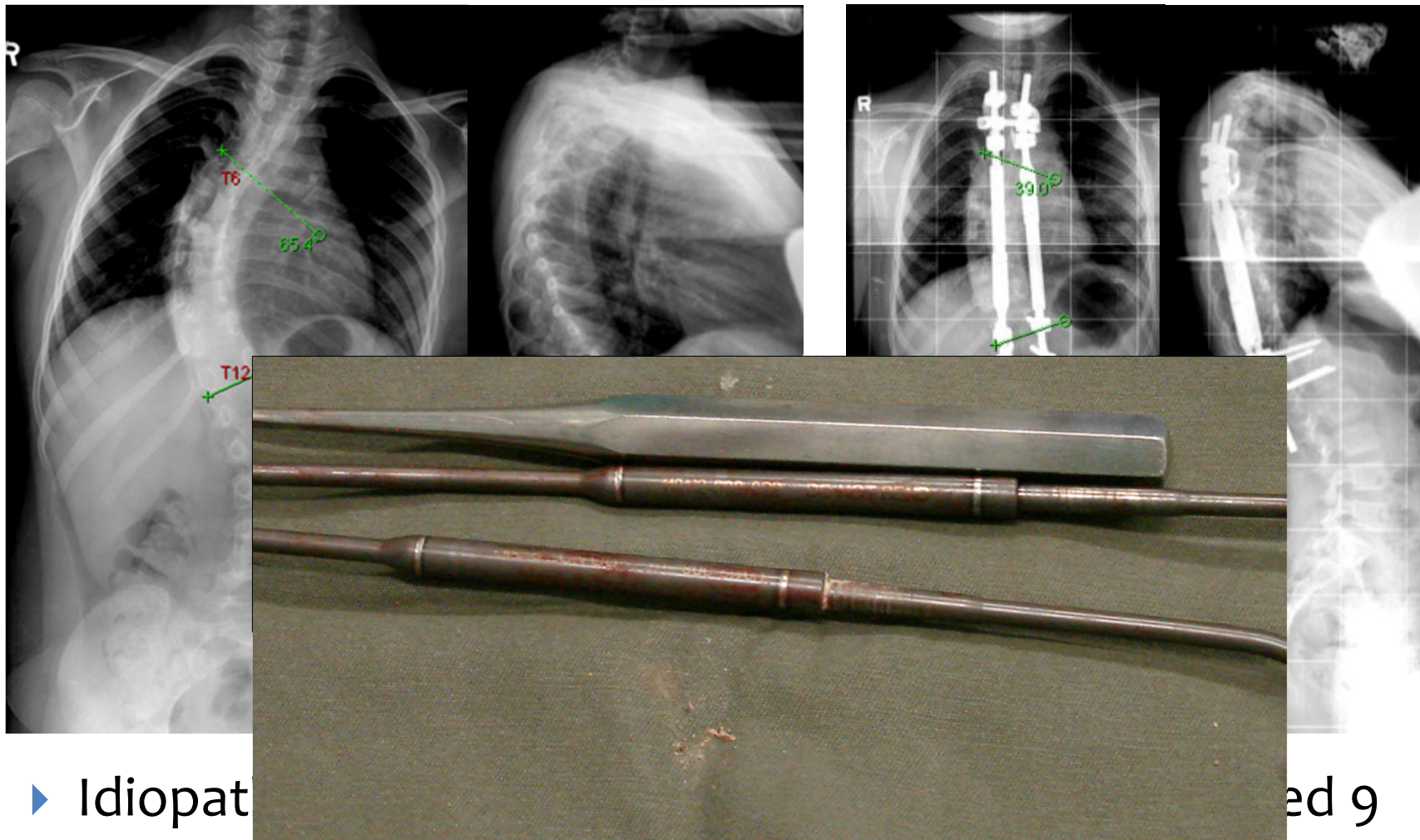


Risk factors for re-operation

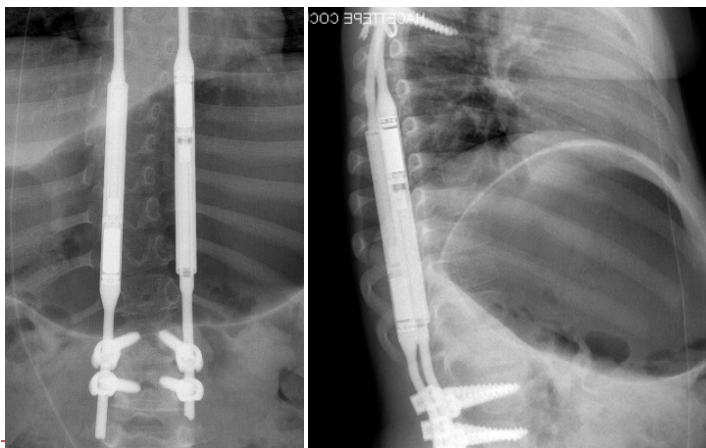
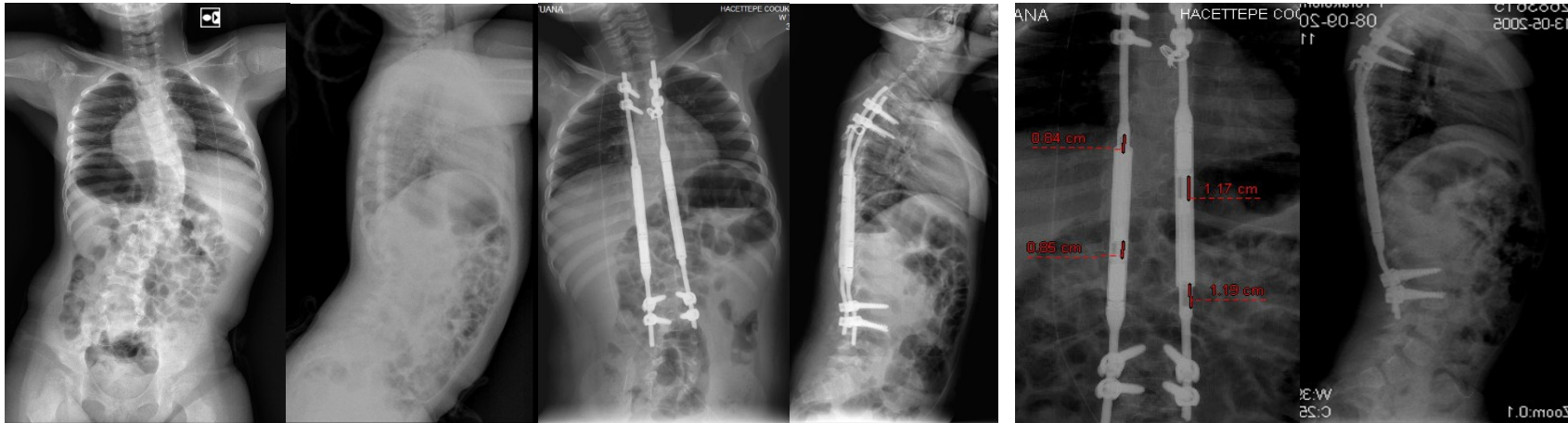
- ▶ No relationship between re-operation and
 - ▶ Pre-op diagnosis
 - ▶ Pre-op coronal / sagittal Cobb angle
 - ▶ Age at surgery
 - ▶ Levels of instrumentation
 - ▶ Number of distraction episodes
 - ▶ MCGR done as primary or revision cases



Failure of rod distraction



Failure of rod distraction



Failure of proximal foundation

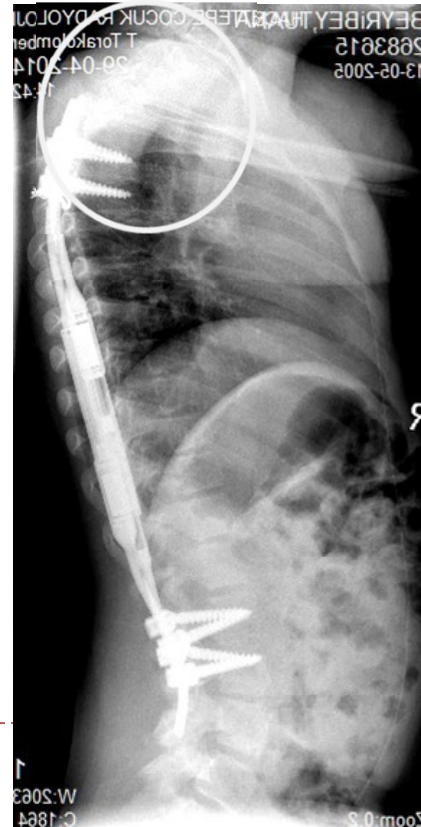
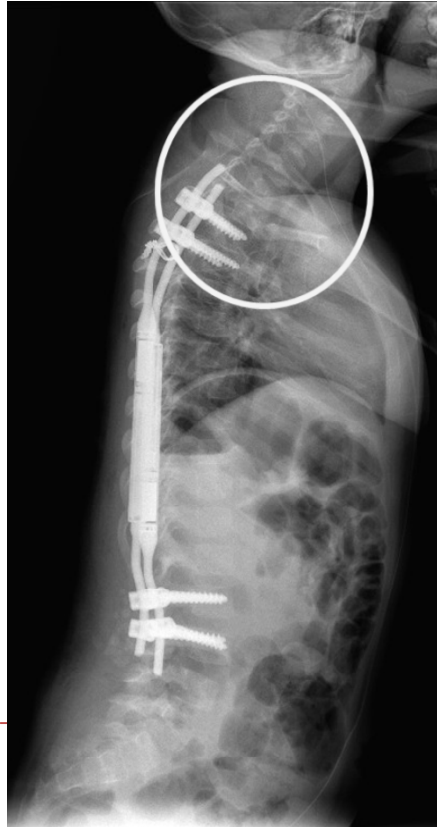


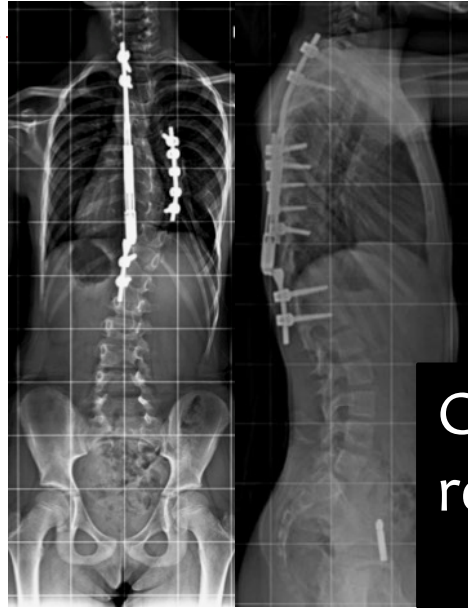
Failure of proximal fixation, lamina fracture and
wound infection - 2 years post-op
Inadequate fixation with sublamina tape construct



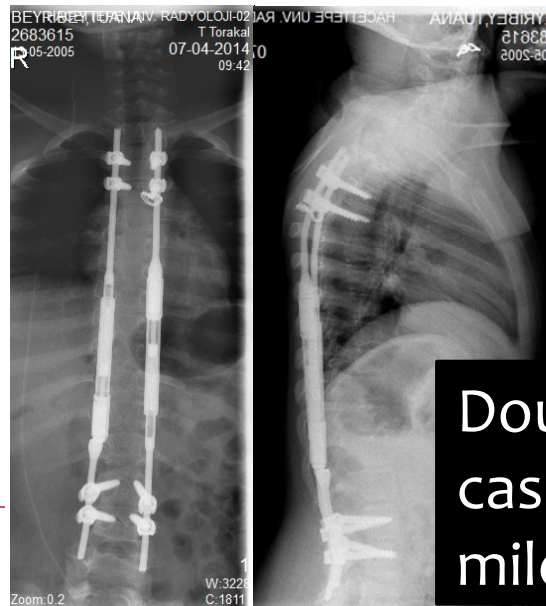
PJK

- ▶ 5 patients
 - ▶ Proximal anchor dislodgement
 - ▶ 3
 - ▶ Revised





Congenital, single rod and revision



Double rod, primary case, tiny girl and mild deformity

Discussion

- ▶ Heterogeneous group of EOS patients
- ▶ Reoperation rate = 42.3%
 - ▶ Still fewer procedures than traditional growing rod for the same period of FU!
- ▶ Reoperation
 - ▶ MCGR
 - ▶ Procedure-specific
 - ▶ Implant-specific
- ▶ Surgeon, patient and parents need to understand that more than one operation may be needed

