

The Recognition, Incidence and Management of Spinal Cord Monitoring Alerts in Early Onset Scoliosis Surgery

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Disclosures

- None relevant to this study



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Introduction

- Genesis of this project:
- Sankar, Skaggs et al 2009 SPINE
- Data base study, multi centre
- Questioned need for routine monitoring in GR lengthening
- We differed in this opinion



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Methods, Materials

- Very different from Sankar
- Single Centre, three surgeons
- One neuro monitoring team
- No data base
- All charts reviewed
- All op notes and neuromonitoring reports analysed



Materials, Methods

- All alerts counted: 'zero tolerance' policy
- Some were minor
- Some total loss of signals
- SSEPs and MEPS
- Cross referenced dictated surgeon's note and dictated neuromonitoring note
- Analysed strategies for signal recovery
- Analysed permanent neuro loss



Results

- 30 patients underwent 180 cases.
- 30 cases were not monitored. These were implant removal, incision and drainage of infection, implant removal, no signals
- This left 150 cases monitored



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Results

- Nine year period
- 14 alerts
- Some were transient
- Some were 'non reversible' (surgery abandoned)
- Nine (9%) percent of surgeries
- 47% of the patient cohort
- No spinal cord injury (even transient)
- 1 L5 nerve root injury 90% recovery



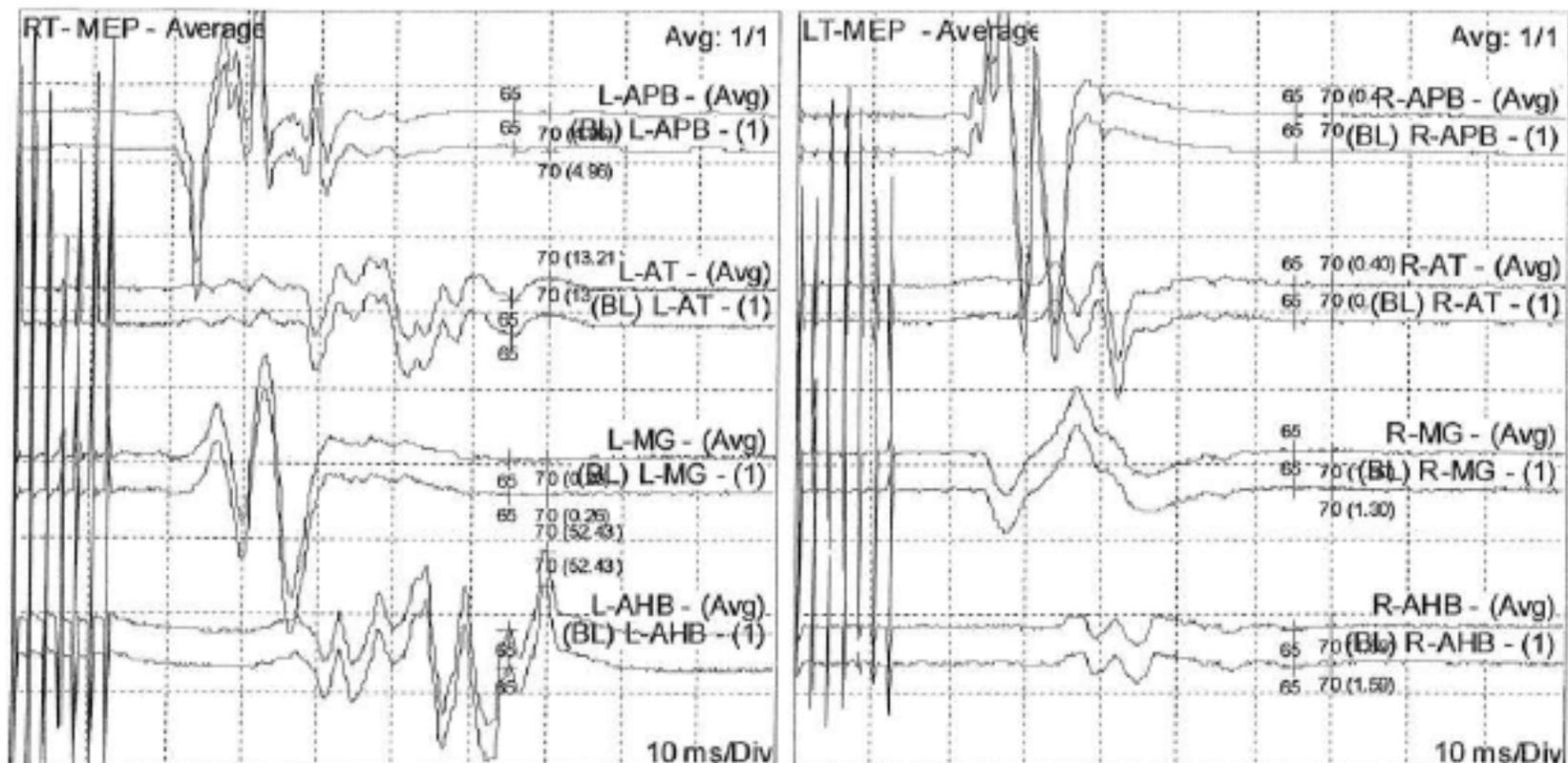
Results

- Recovery Strategies:
- Elevating blood pressure if low
- Immediate flip supine off table for total flat line (now three patients on 5 occasions)
- Lessening rod distraction
- Repositioning ploughed pedicle screw
- Lessening neck extension
- Anterior cervical fusion



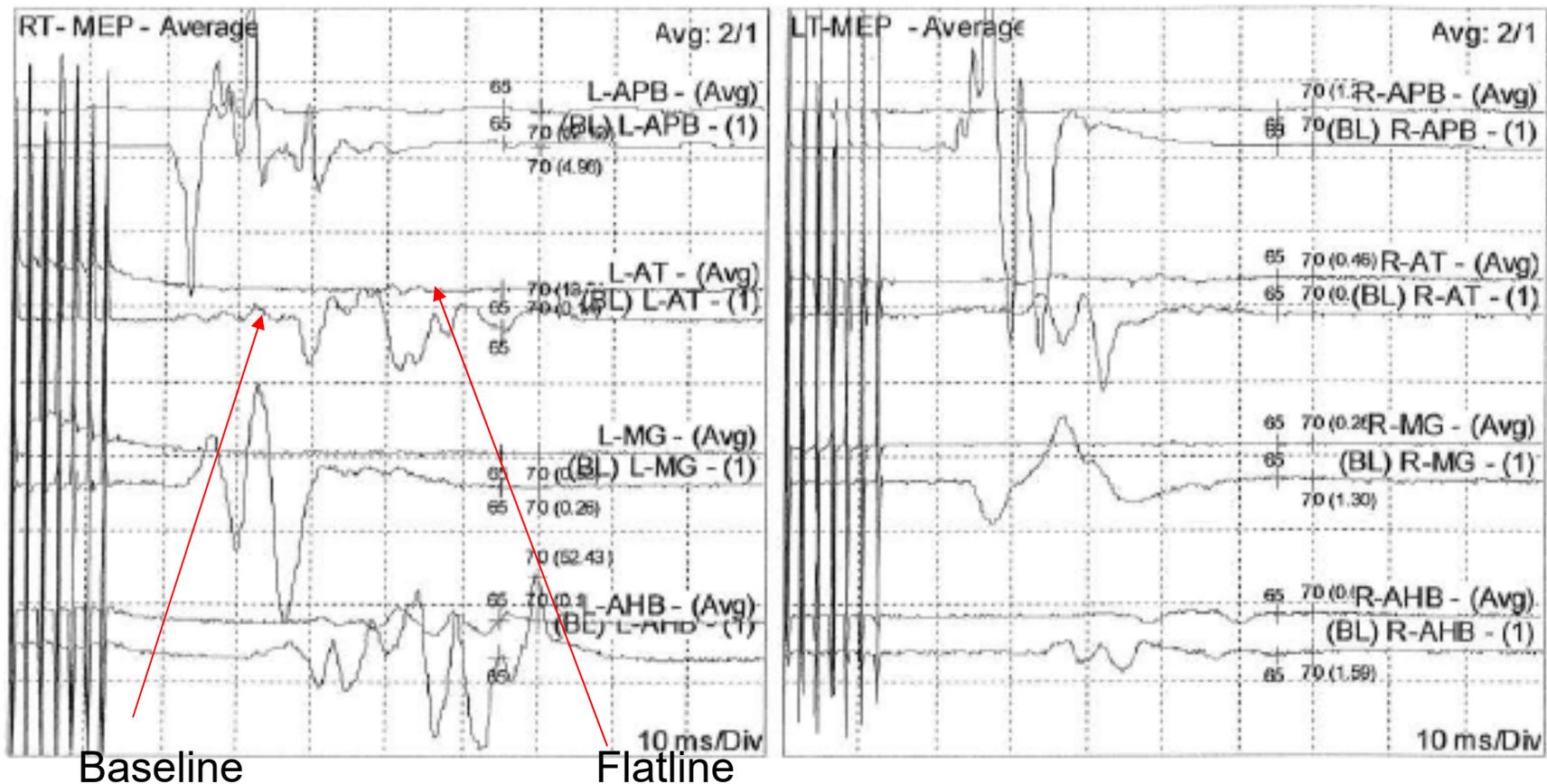
Case example: Duplication chromosome 1, 7 yr female

- Baseline MEPs, supine, third lengthening of VEPTR



Duplication chromosome 1

- Immediate (one minute) after prone

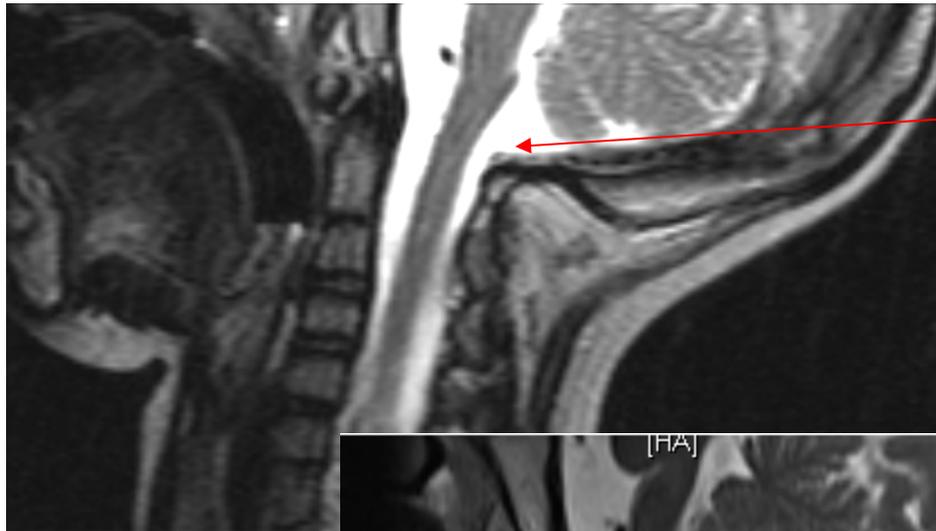


Management?

- Neck flexed, signals returned to baseline
- Surgery aborted
- MRI under same anaesthetic showed FM stenosis, recently decompressed



Duplication chromosome 1

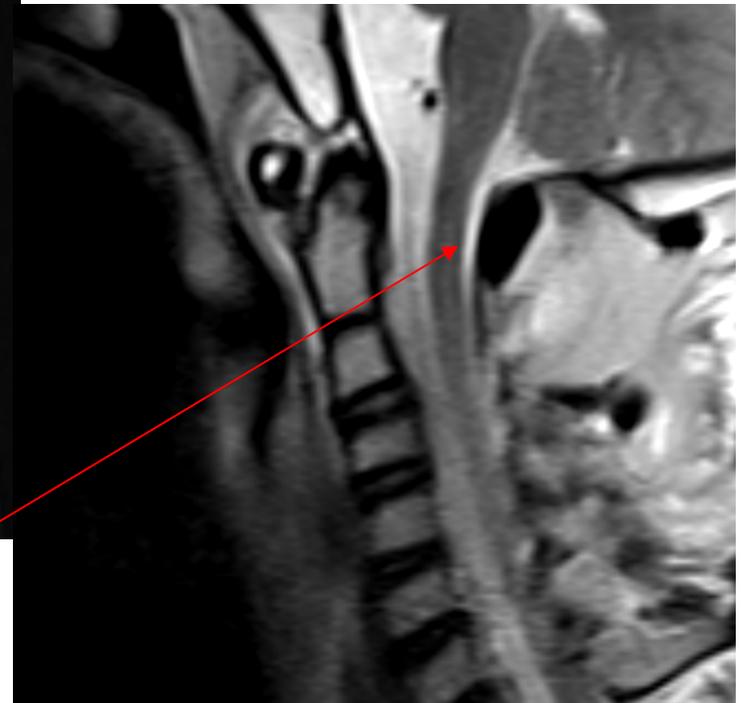


2010, pre first
VEPTR

2012 at time
of Alert



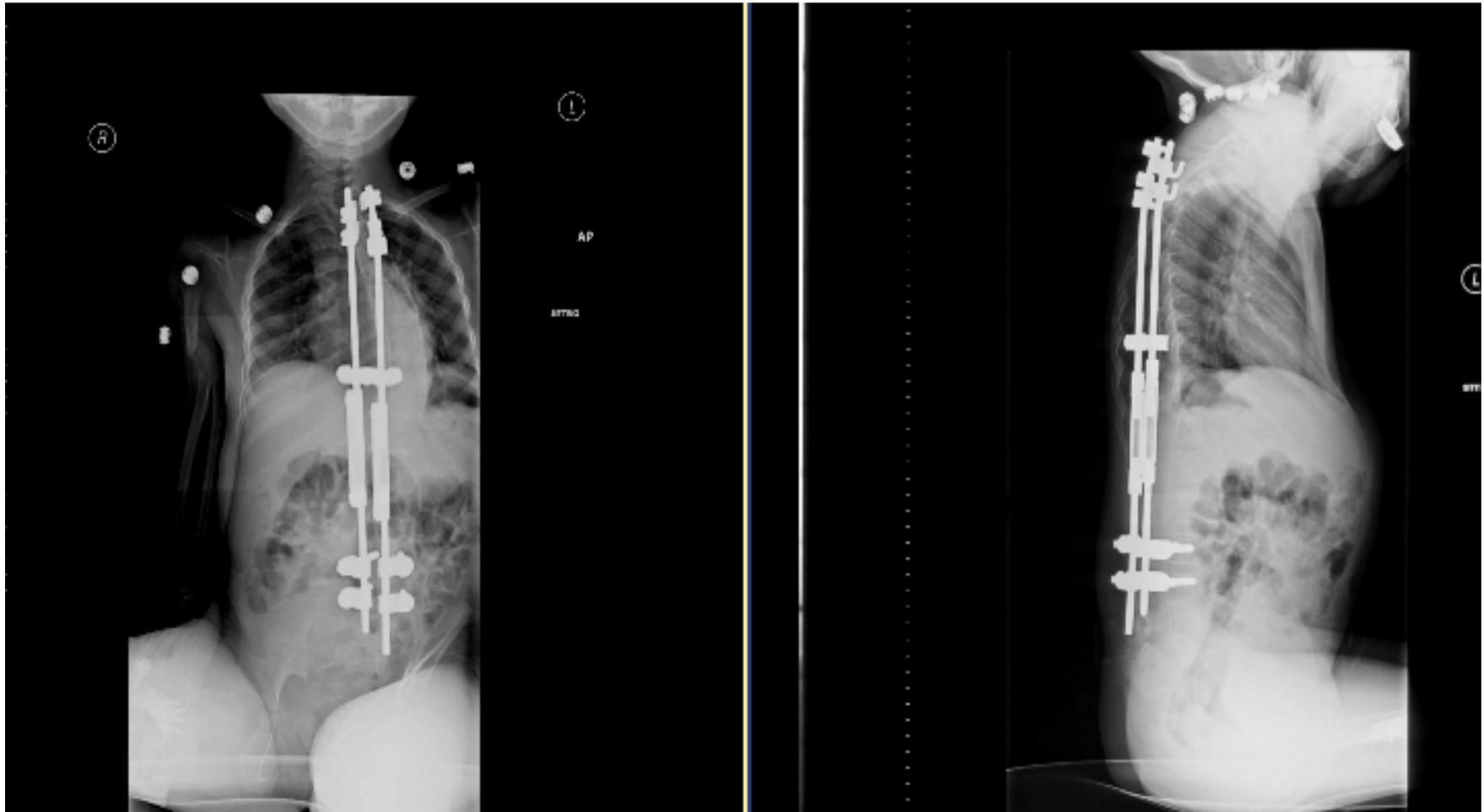
Post FM decompression



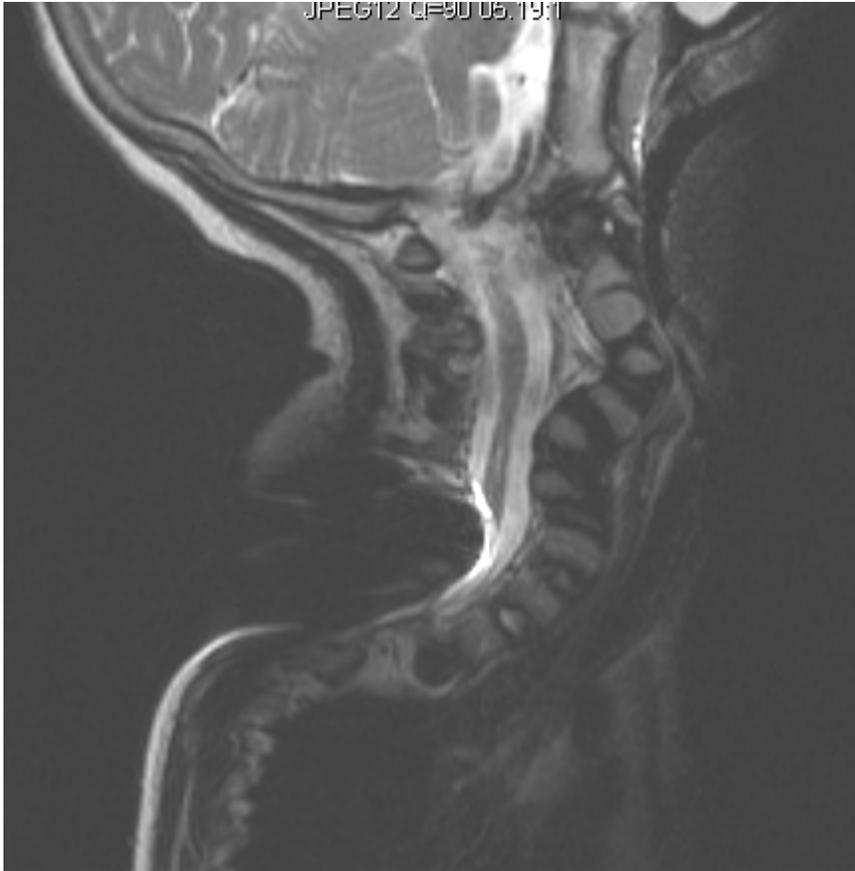
Atelosteogenesis III

Several successful GR distractions

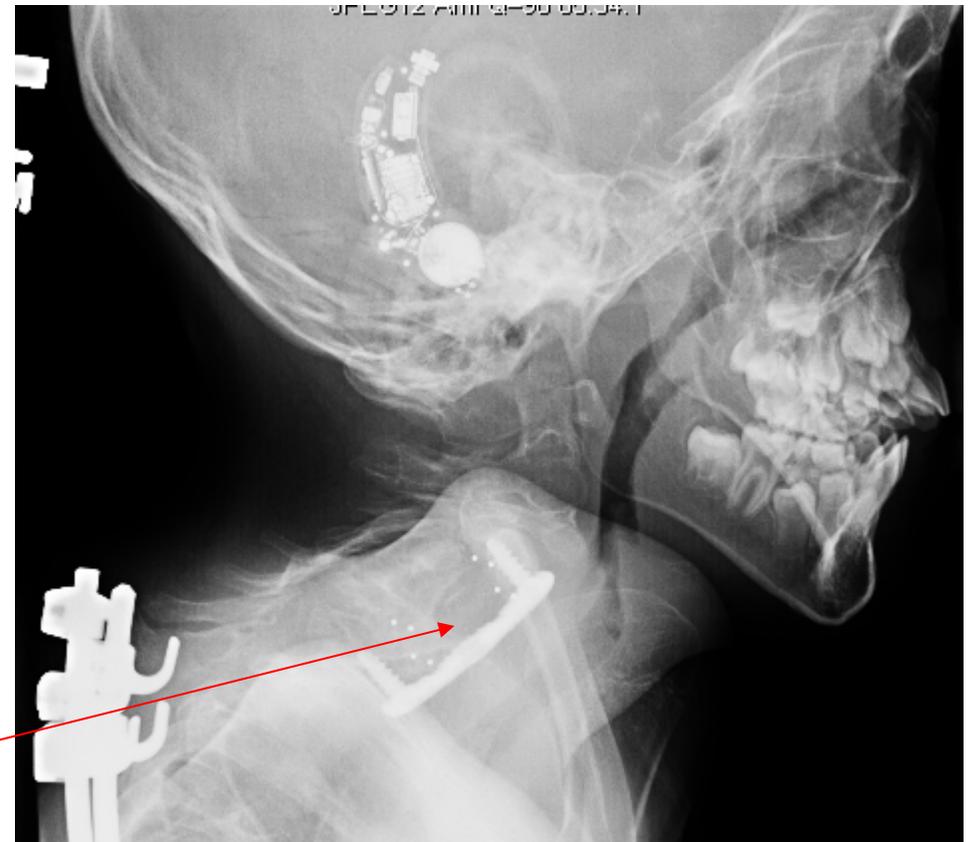
8yr female



Complete loss of potentials at subsequent lengthening Swan Neck Cspine deformity



2 level corpectomy and cage/plate



Conclusion

- EOS surgery has a spinal cord monitoring alert rate approaching ten percent
- There is no case to be made for not monitoring these patients

