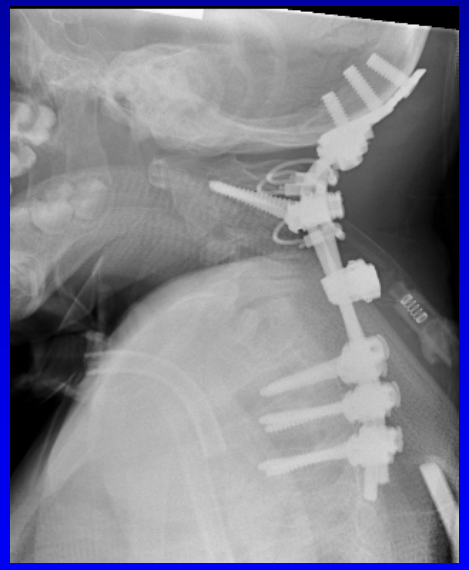
Rigid Segmental Cervical Spine Instrumentation is Safe and Efficacious in Younger Children

Ana Mitchell, BS
Vidyadhar V. Upasani, MD
Carrie E. Bartley, MA
Peter O. Newton, MD
Burt Yaszay, MD



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Rady Children's Hospital

Disclosure

- **Ana Mitchell, BS** - none
- **Vidyadhar Upasani, MD** - Orthopediatrics – consultant, speaker bureau
- **Carrie Bartley, MA** – None
- **Peter Newton, MD** – Depuy Synthes – royalties, consultant, speaker bureau, grants; K2M – speaker bureau, consultant, grant; Cubist – consultant; Electrocore – stock
- **Burt Yaszay, MD** – Depuy Synthes – consultant, speaker bureau, grants; Nuvasive – consultant, speaker bureau; K2M – consultant, royalties; Orthopediatrics – royalties; Stryker – speaker bureau

Introduction

- **The utilization of cervical spine instrumentation in the young pediatric patient in not well reported in the literature.**
  - Kennedy et al – J Neurosurg Ped 2016 → less than 6 yo
    - Occ-cervical and AA fusion – good results
  - Hedequist – HSS 2015 → review article
  - Hwang et al – J Neurosurg Spine → 8.3 ave age
  - Multiple case reports

Purpose

- **To report on the safety and efficacy of cervical spine instrumentation in the young pediatric population**

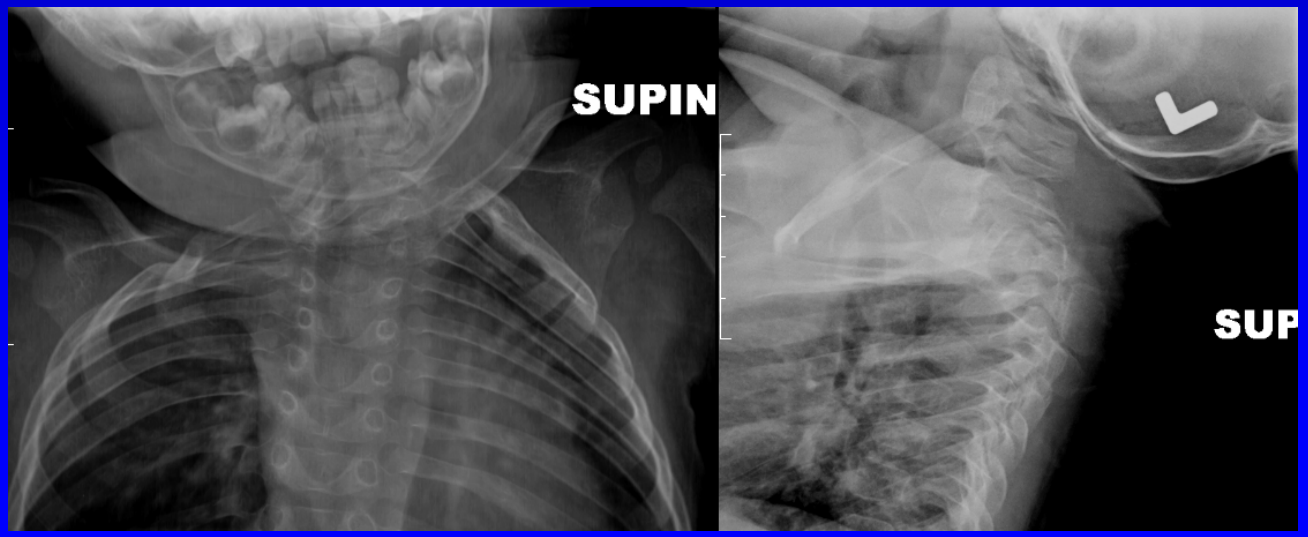
Methods

- Retrospective Review
- Single institution
- January 1, 2006 and March 31, 2015.
- Age ≤ 10 years at the time of surgery
- Any diagnosis

Methods

- **Clinical data**
  - demographics, diagnosis, procedure

- **Radiographic data (pre and postop)**



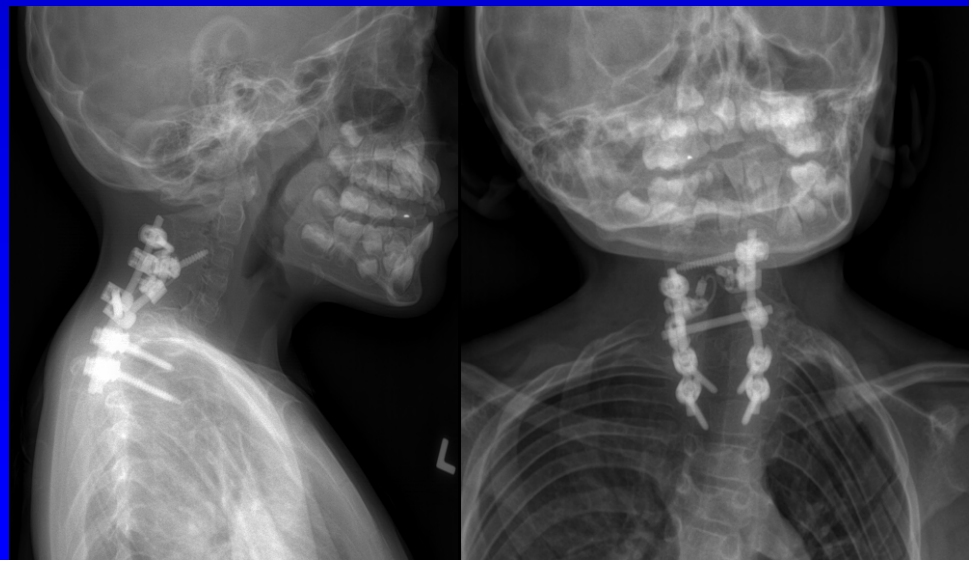
Results

- **20 children → mean f/u 10 mo**
- **Initial indication for cervical spine correction surgery included**
  - deformity (7)
  - trauma (6)
  - instability (3)
  - stenosis (2)
  - rotary subluxation (1)
  - infection (1)

Results

- **Surgical Info**
  - 15 cases - adult 3.5mm cervical spine instrumentation
  - 3 with wiring (1 sublaminar, 2 spinous process)
  - 2 with cannulated screws (3.5 mm)

- **Postop immobilization**
  - 16 Halo fixations
  - 3 collars
  - 1 CTO.



Results

- **Overall there were 5 major complications related to the surgery.**
- **Nonunion → 1 sublaminar and 1 spinous wiring**
  - 18 mo → traumatic AOD
  - 23 mo → traumatic C4-5 distraction injury
- **1 dural tear/CSF leak requiring a lumbar drain**
- **1 wound infection → I&D**

Results

- **2 neurologic complications (in 2 deformity patients)**
  - 1 loss of lower extremity signals intraop, decreased sensory/motor function post-op.
  - 1 left arm weakness → deformity correction
- **None were associated with c-spine instrumentation → deformity correction**

Conclusion

- **Rigid segmental fixation can be safe and efficacious when used in pediatric cervical spine patients.**

- **Whether used with Halo or orthosis, patients experience minimal to no complications from the instrumentation and achieved successful fusion.**

Conclusion

- **Cervical spine wiring on the other hand had a high risk of non-union requiring revision surgery (66%).**

- **All underwent successful revision with segmental fixation**