



# Use of Intra-Operative CT Guided Navigation versus Freehand/Fluoroscopy in Spine Surgery for Patients Age 10 and Under

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# Disclosures

- Larson: Research support K2M, Orthopediatrics. Board member, POSNA.
- Milbrandt: Research support Orthopediatrics. Secretary, POSNA.

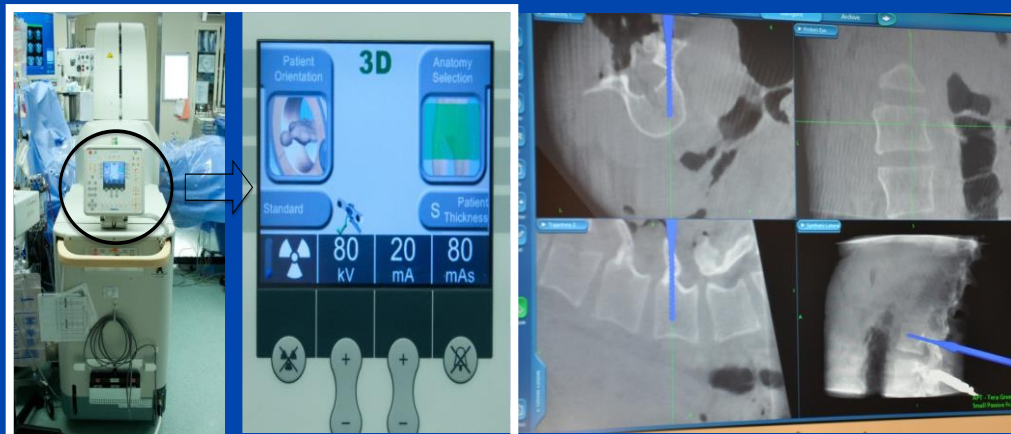
# Background

- Pedicle screws can be placed with freehand/fluoroscopic or intra-operative CT guided navigation.
- Effects of CT-guided navigation for EOS population not well-described



# Objective

- To review the outcomes for pedicle screw placement using fluoroscopic vs. CT-guided navigation.
- We hypothesized that placement of pedicle screws using O-arm guidance would result in longer OR times and blood loss, but decreased rates of screw malposition.



# Methods

- This was a single center retrospective comparative study.
- All included patients:
  - 10 years or younger
  - Pedicle screw placement 2009-2015
  - Minimum 2 years follow up
- Incidental CTs following the index surgery were reviewed to assess screw positioning

# Results

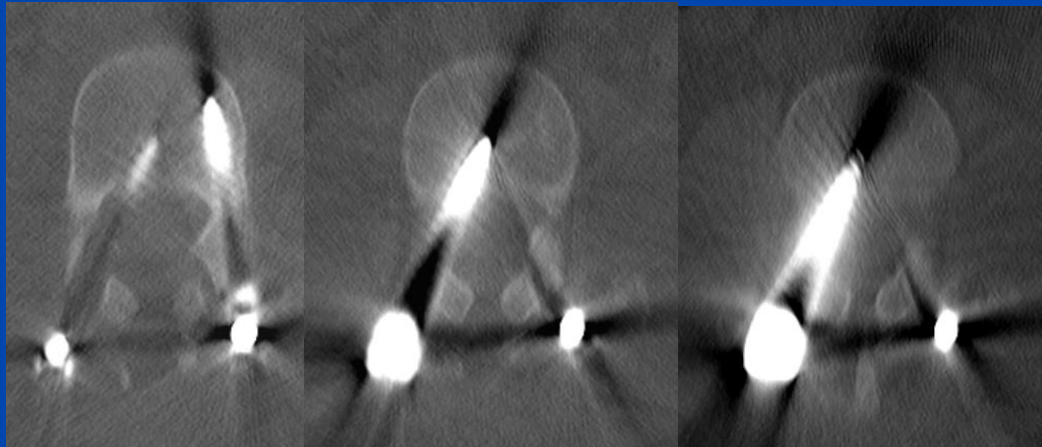
- 57 patients met our inclusion criteria
  - 30 patients – freehand/fluoroscopic guidance
  - 27 patients – CT-guided navigation
  
- No returns to OR for pedicle screw malposition in either group.

## Results: OR Time and Blood Loss

	Fluoro/ Freehand	Intraoperative CT	P-value
# of Cases	30	27	
Gender (F/M)	(16/14)	(12/15)	0.5
<b>EBL (ml)</b>	<b>924</b>	<b>436</b>	<b>0.04</b>
EBL/Level	105	70	0.3
OR Time	416	387	0.42
OR Time/ Level Fused	64	62	0.9

# Screw Malposition

- Postop CTs for 35 screws (freehand/fluoroscopy), and 72 screws (CT-guided navigation)
- No difference in rates of screw malposition
  - 11% vs. 19%,  $p=0.29$  2mm or less breach
  - 5.6%, 0%,  $p=0.4$ ,  $>4$  mm breach





# Conclusions

## CT-Guided Navigation vs. Freehand/ Fluoroscopy for EOS Pedicle Screw Placement

- No detected difference in operative time, blood loss, screw malposition (107 screws only) in EOS patients undergoing pedicle screw placement.
- No return to OR for malpositioned screws in either group, but study limited by small sample size.

Thank you!

