

ICEOS 2009

Complications of VEPTR Anchors

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Disclosures: RMC

- Royalties from Synthes Spine for the VEPTR device
- Non-compensated volunteer member Medical Advisory Board SpineForm Co.
- Medical Advisory Committee member National Organization of Rare Disorders (NORD)
- Grants
 - NORD and FDA Office Orphan Product development
- Provide advocacy for companies or inventors trying to develop safe and effective devices for children

VEPTR Complications:

Problems with repetitive surgical approaches over the long run

- New incisions equals new opportunities for infection/skin slough
- No fusion, so the hardware has to drift through bone with time
- Co-morbidities
- Can compare to Growing rod complications, but should reformat analysis
(infection rate/ procedure, migrations/ year)

San Antonio VEPTR device complications

All patients (n=220) , 1989-2004

San Antonio Klemme et al. Tello

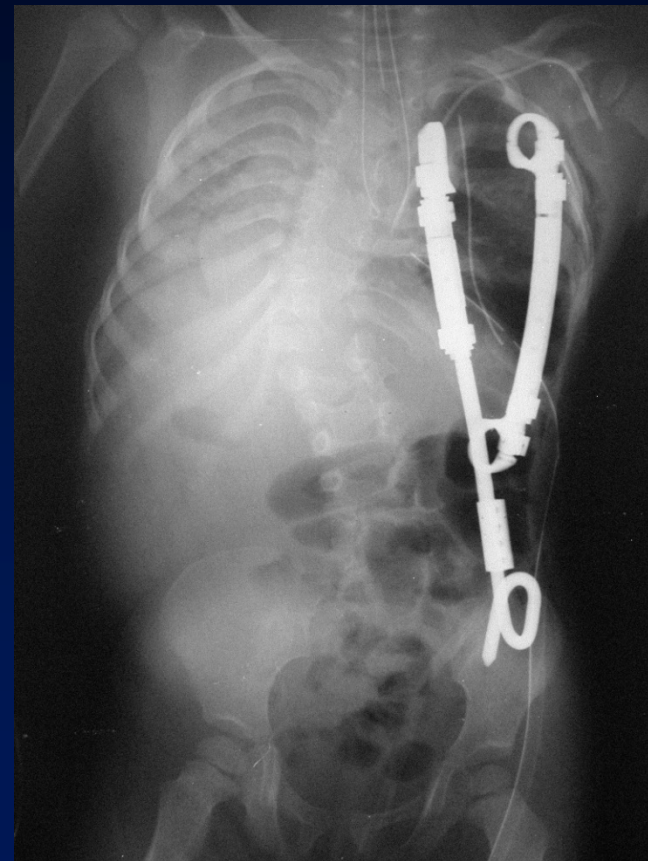
f/u 6 yrs 3.1 yrs 4.75 yrs

- **Migration index 0.09 mig/yr 0.1 mig/yr. 0.029 mig/yr**
 - **Percentage pts 27% 31% 14%**
 - **Time 3.2 yrs ? ?**
- **Infect rate/proc 3.3% 1.5% 5.3%**
- **Skin slough 8.5% 4.5% 13.6%**

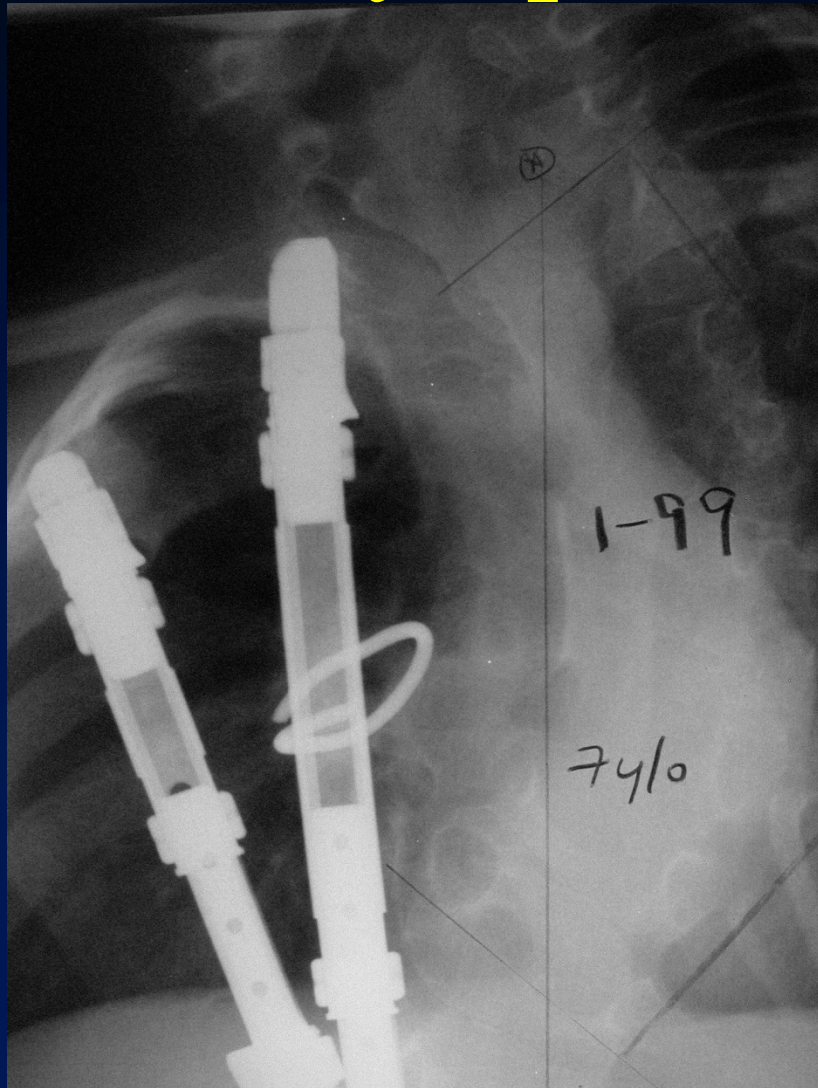
Rigid vrs Semi-Constrained

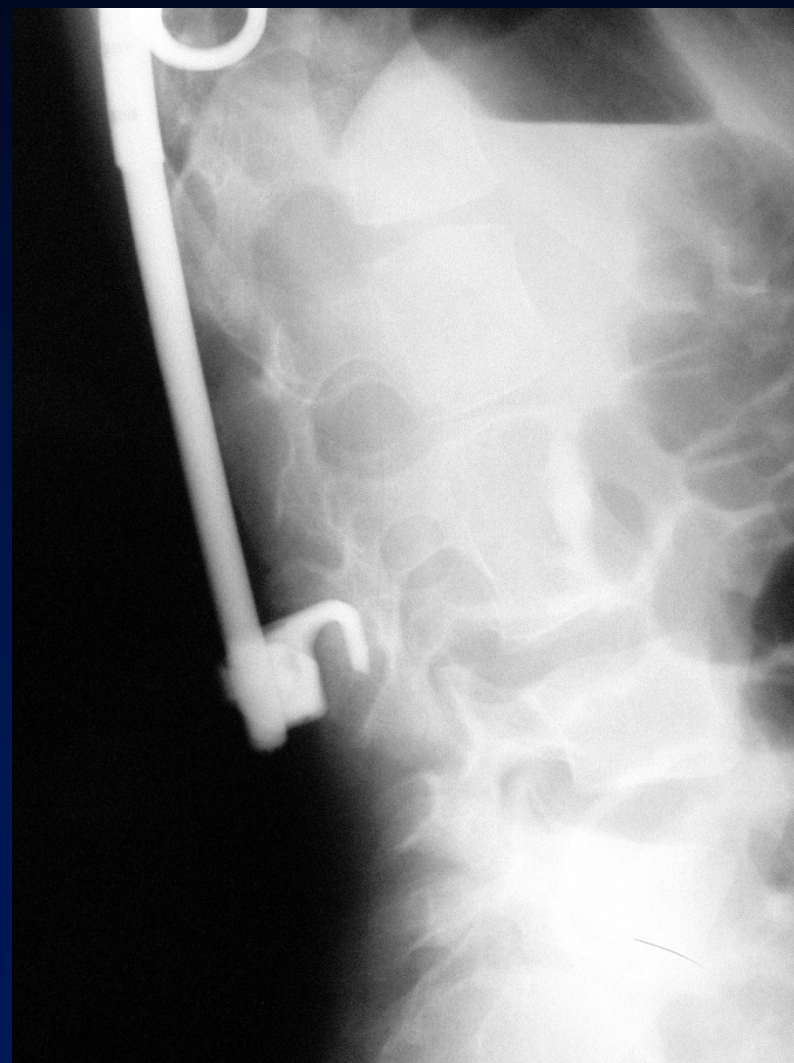
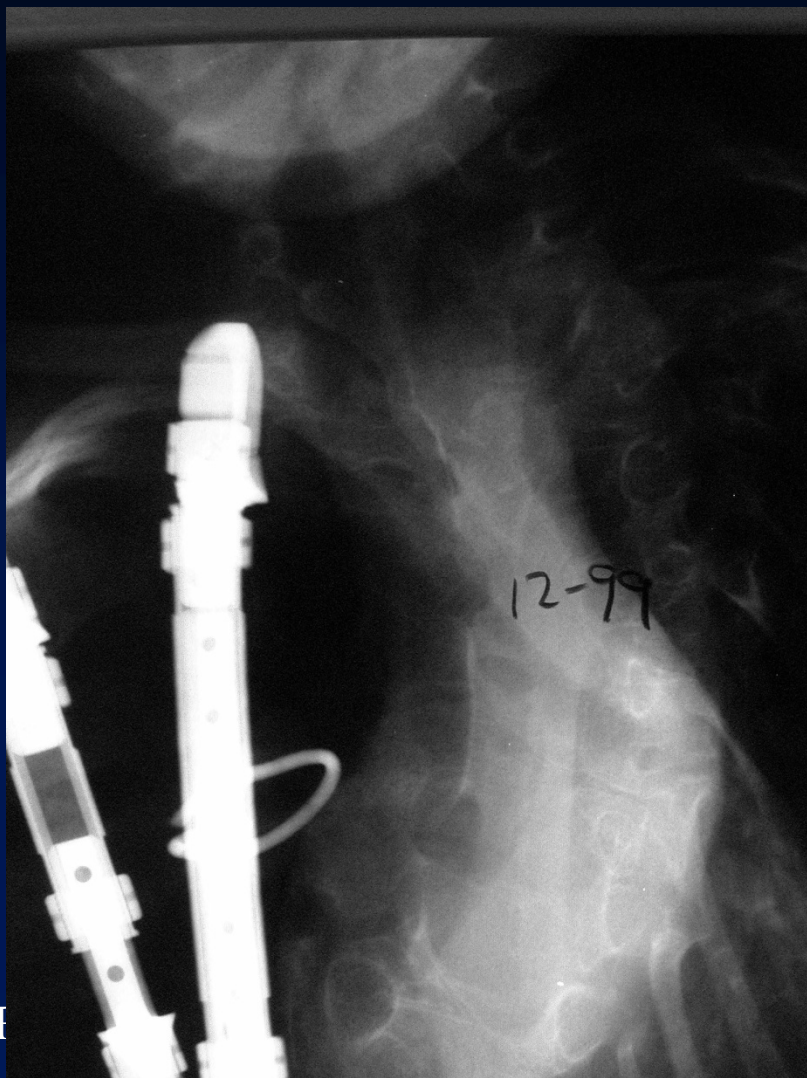
- Fusion fixation
 - Must be rigid to avoid pseudoarthrosis
- Semi-Constrained
 - Dissipates force
 - Lowers metal fatigue threshold
 - The cost is osseous drift

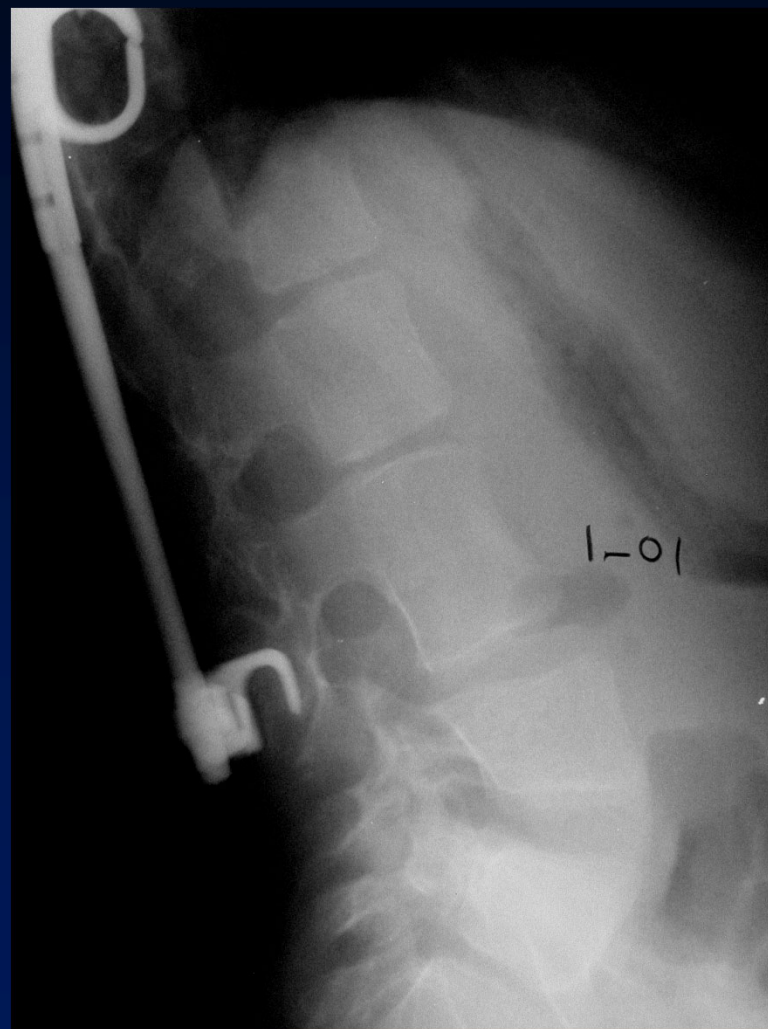
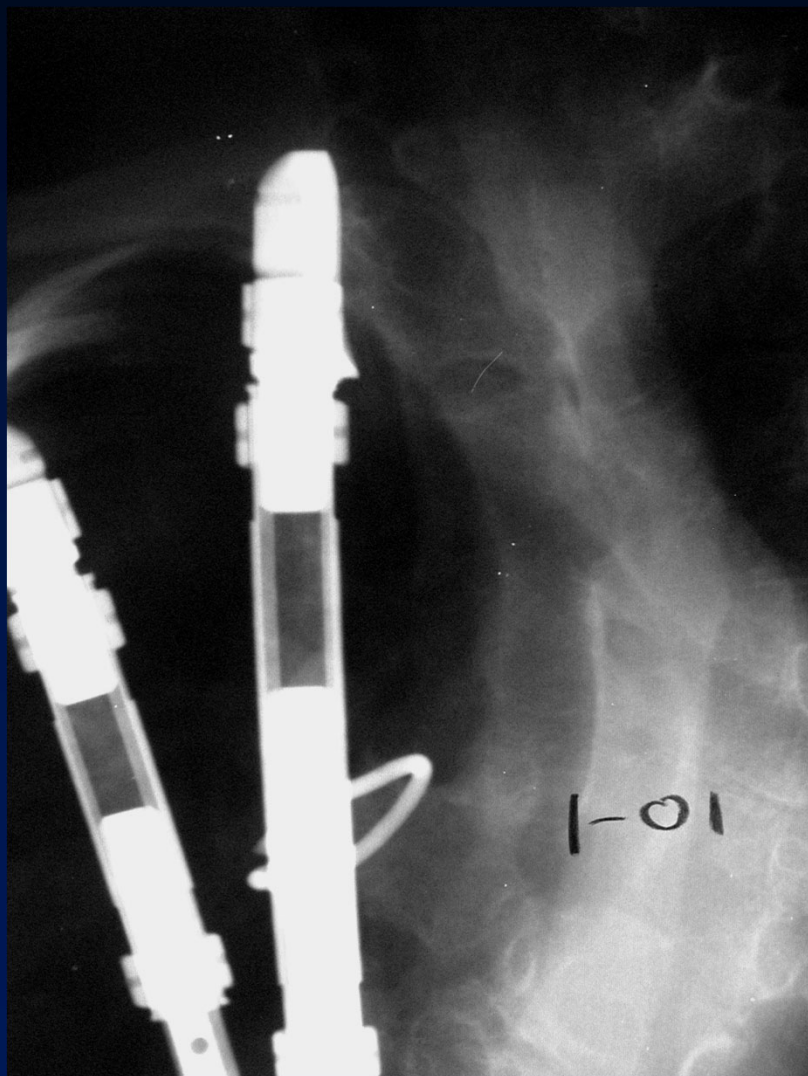
What's the Difference?

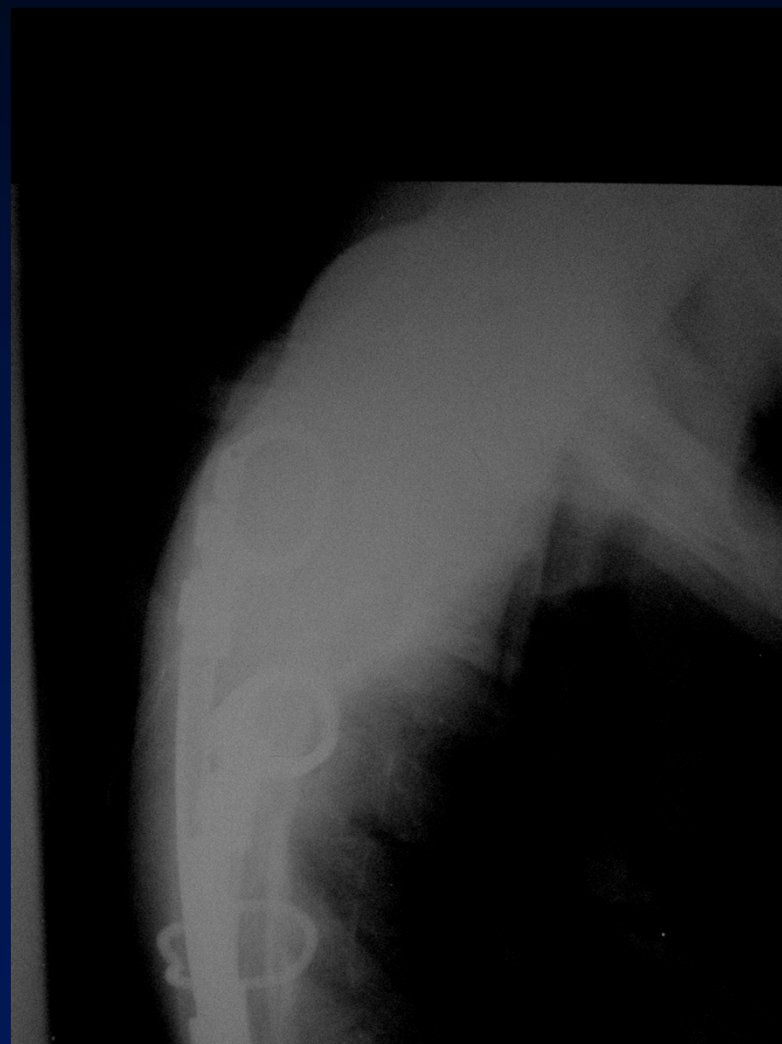
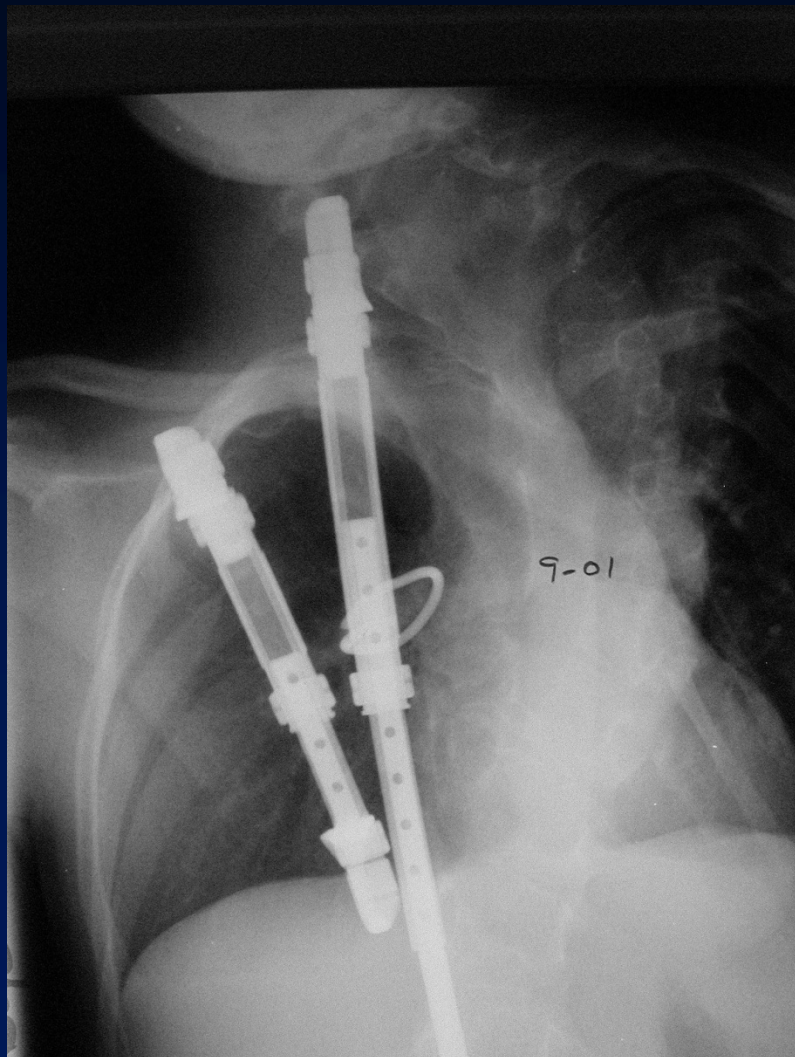


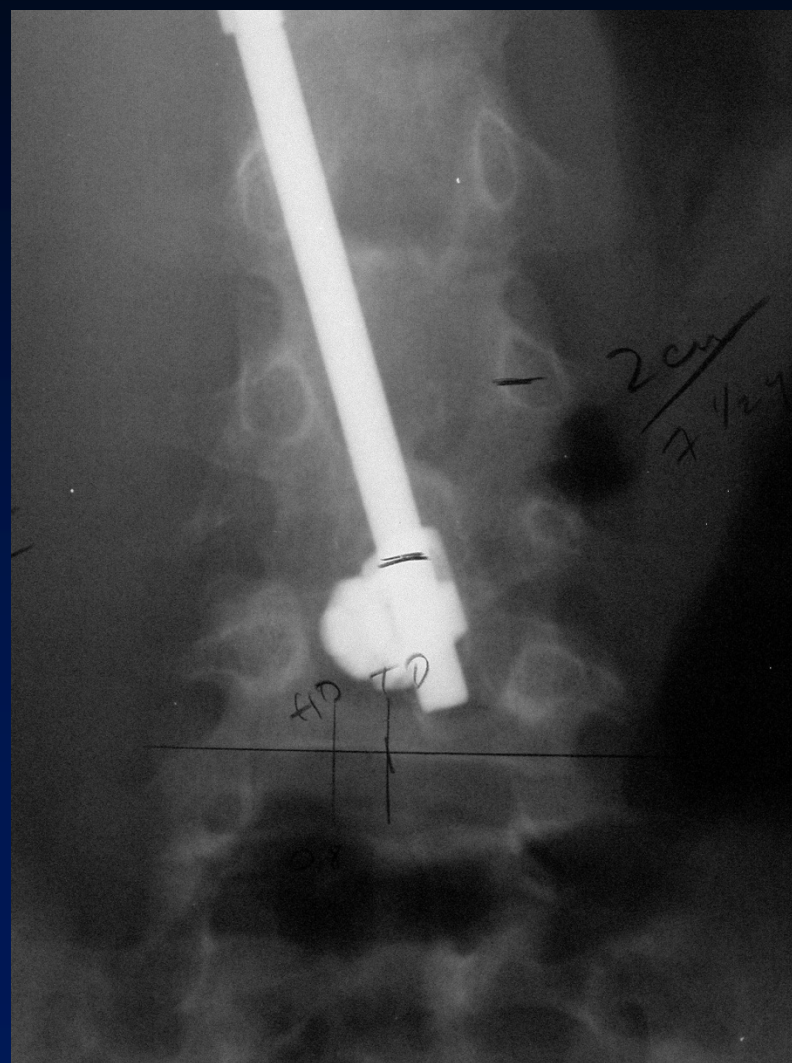
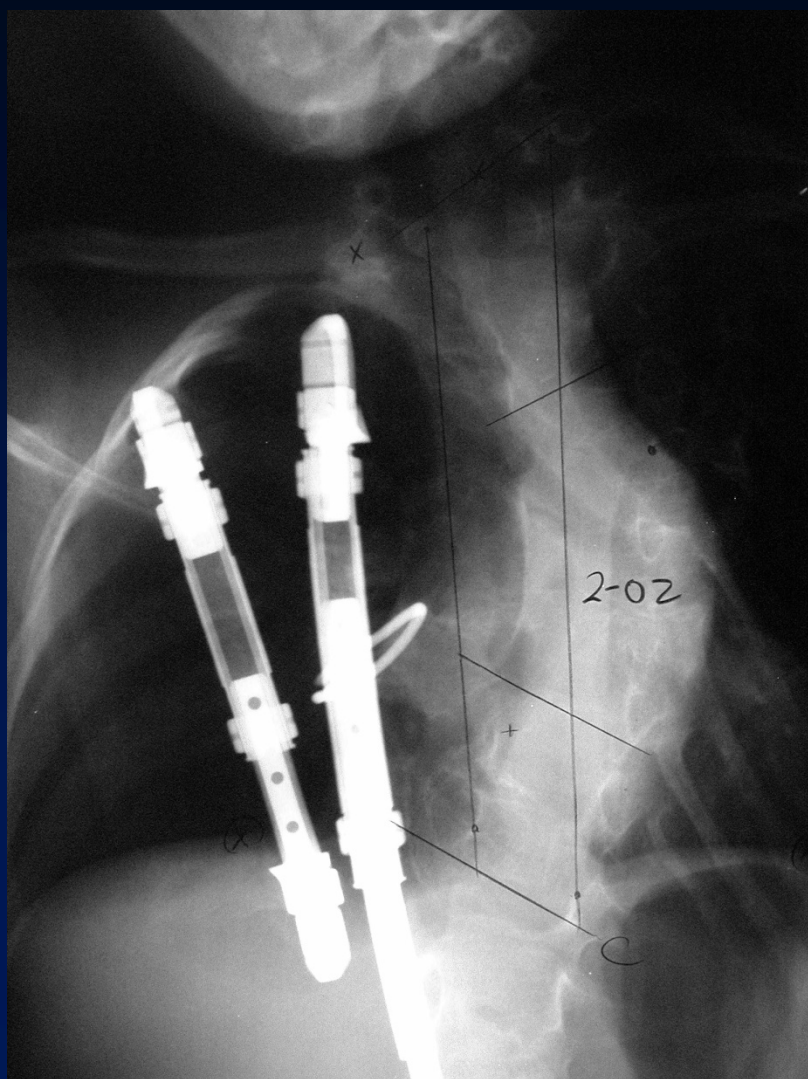
Proximal and Distal Anchors: Asymptomatic Migration

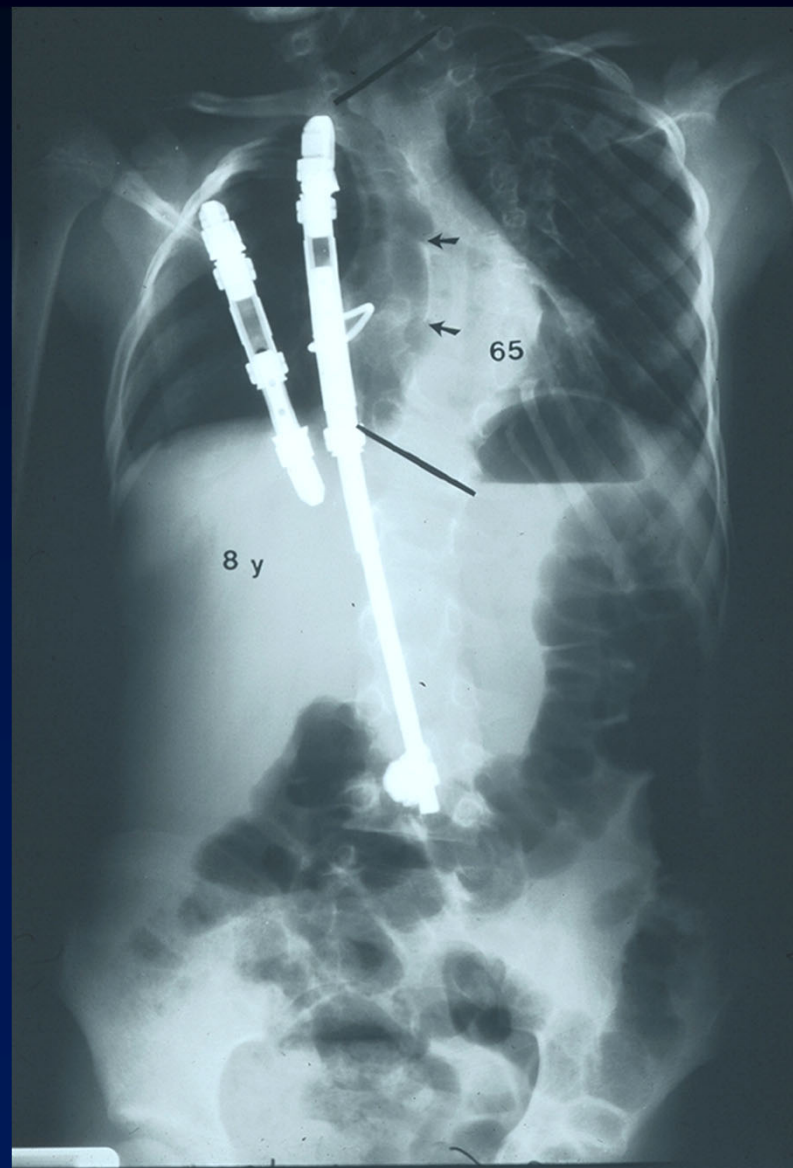
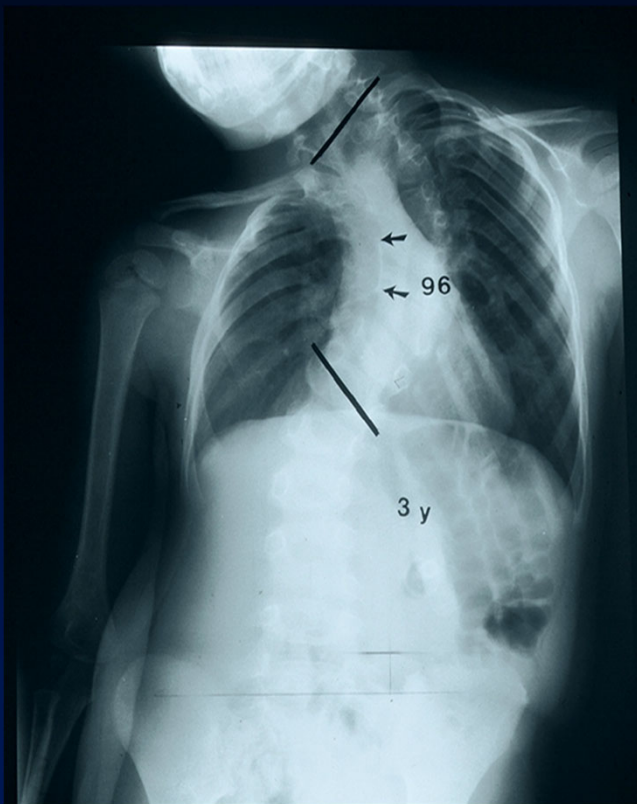




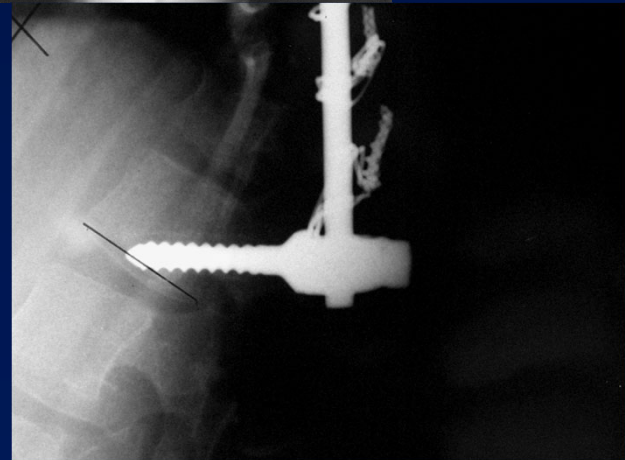
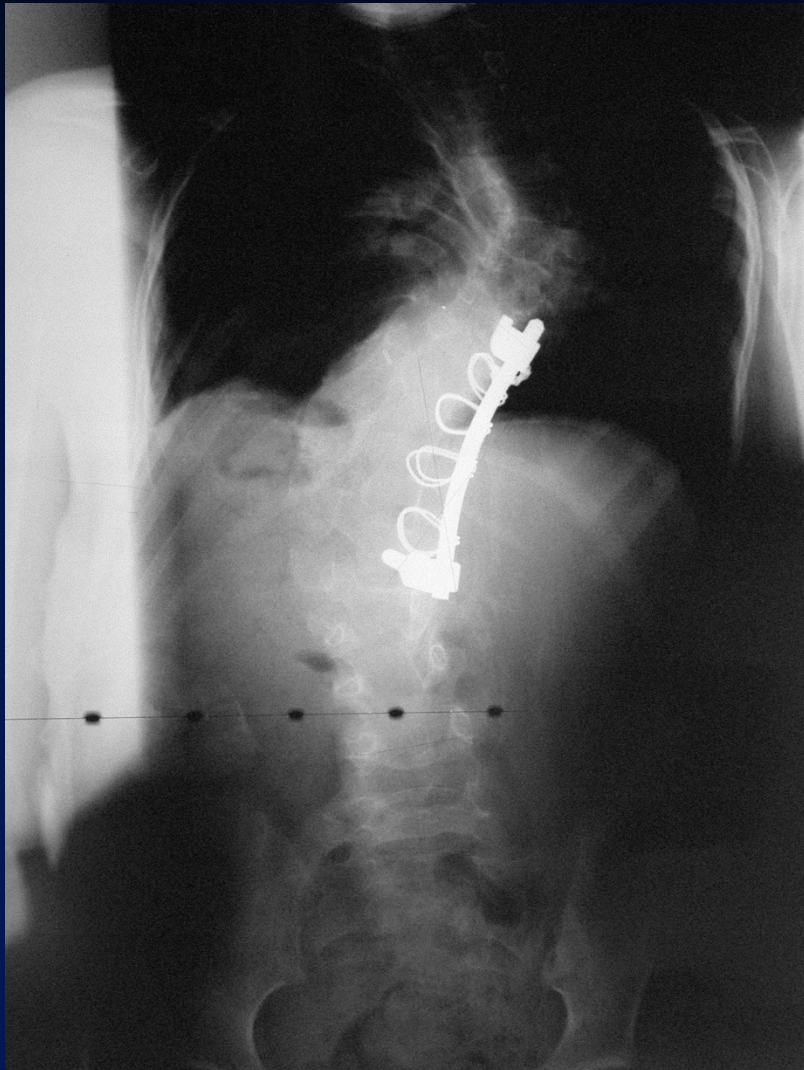




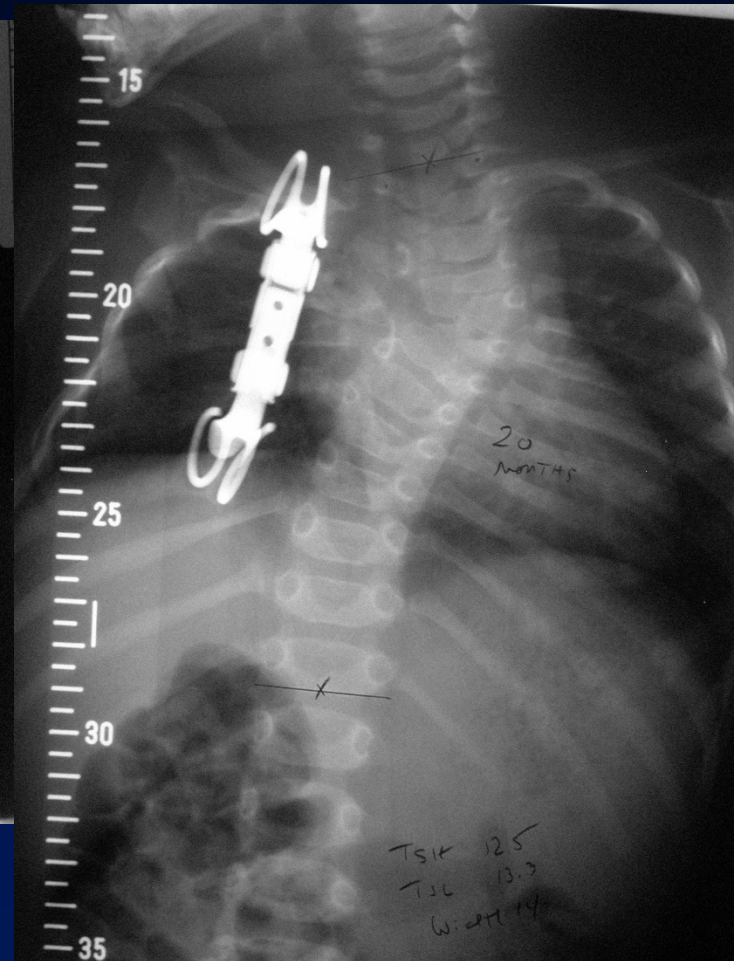


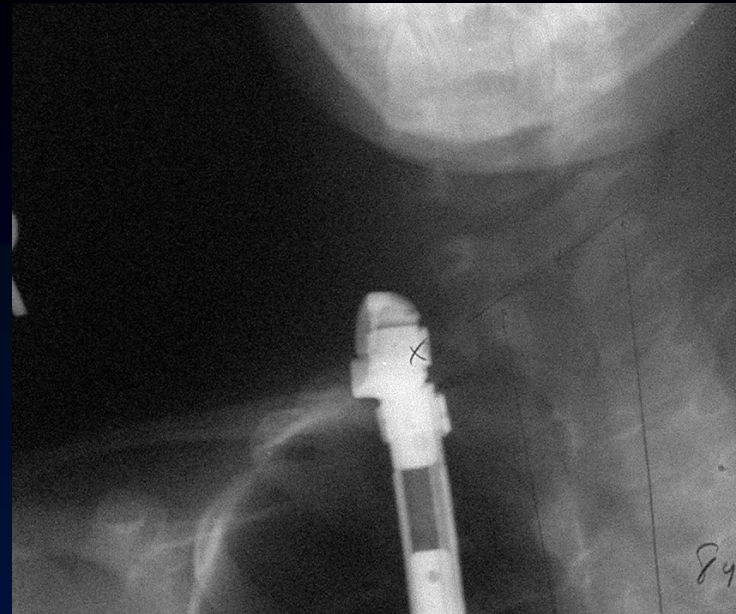
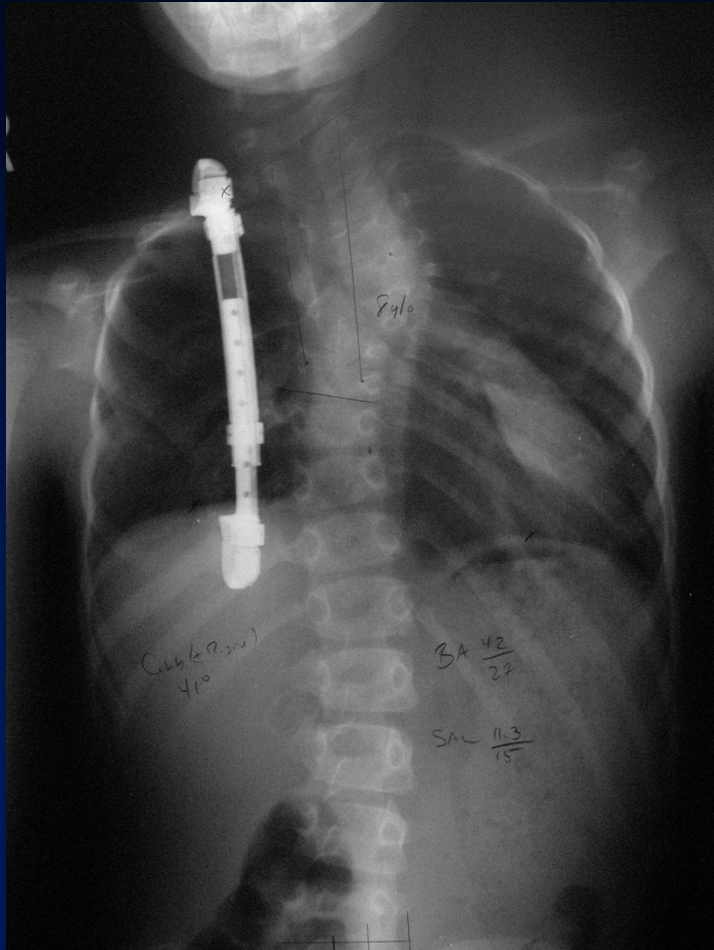


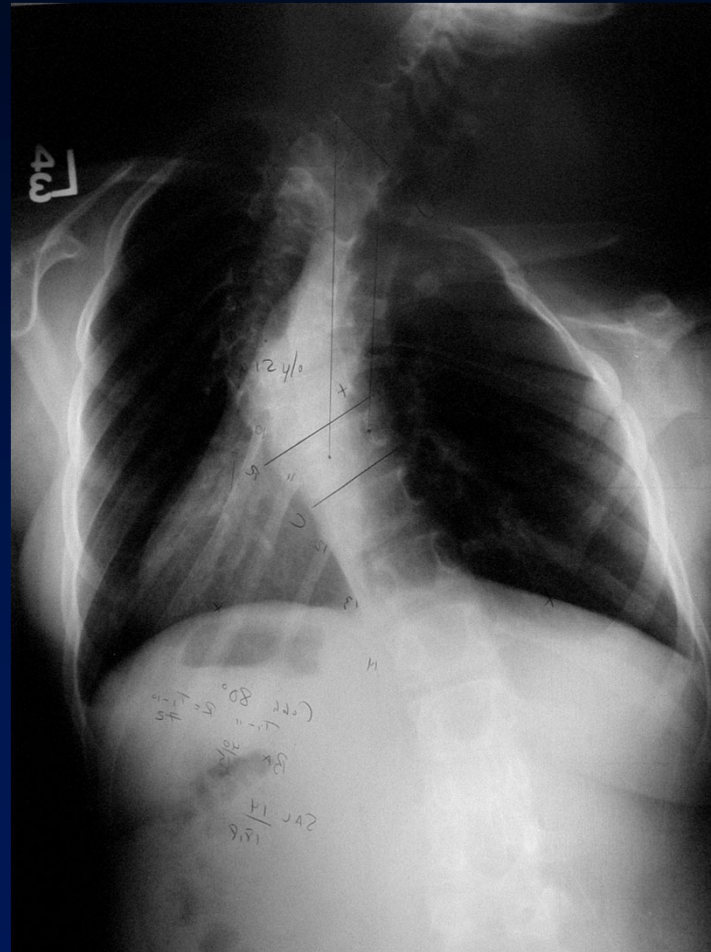
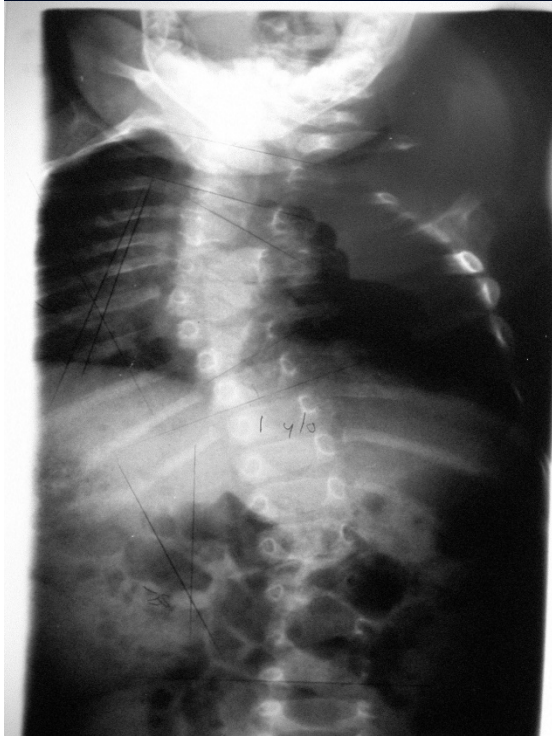
Pedicle Screws?

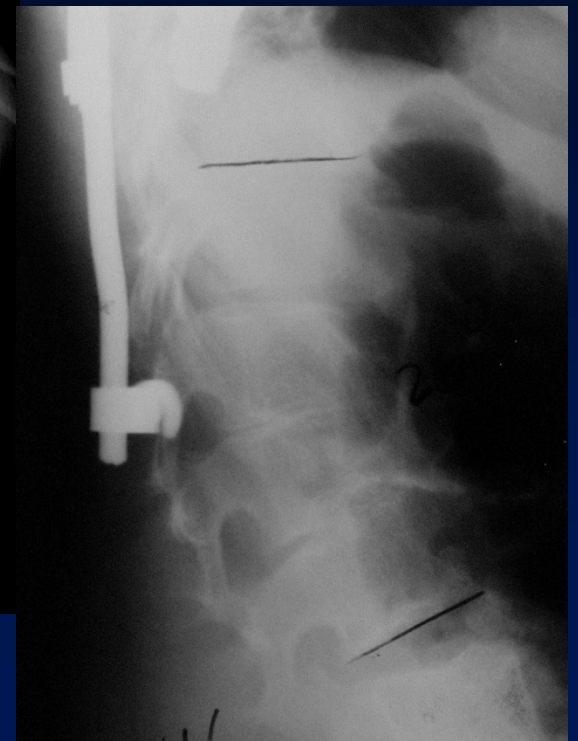
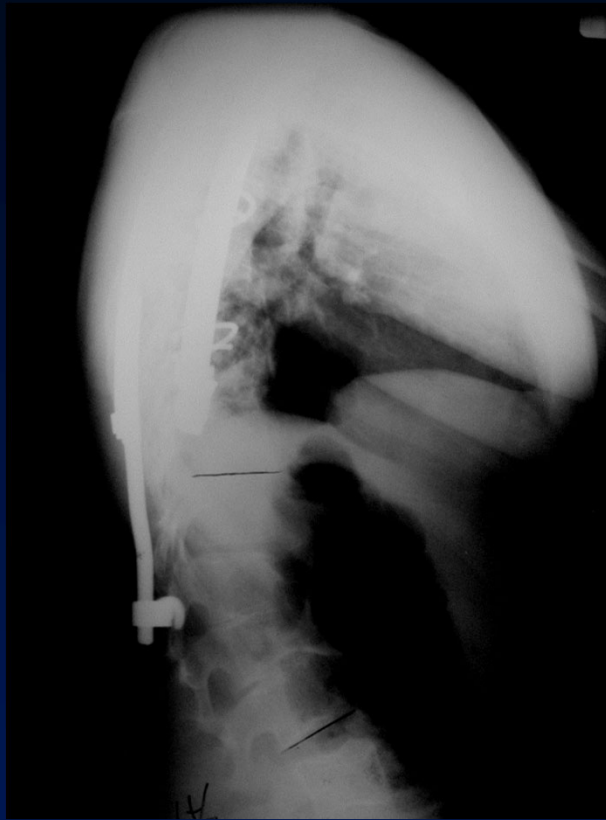
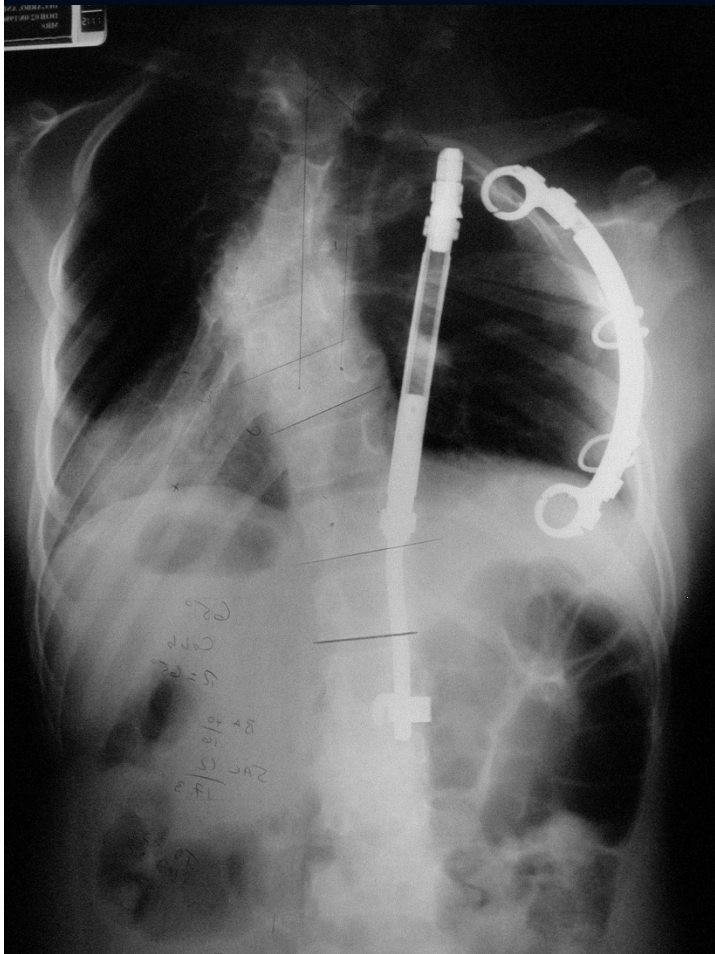


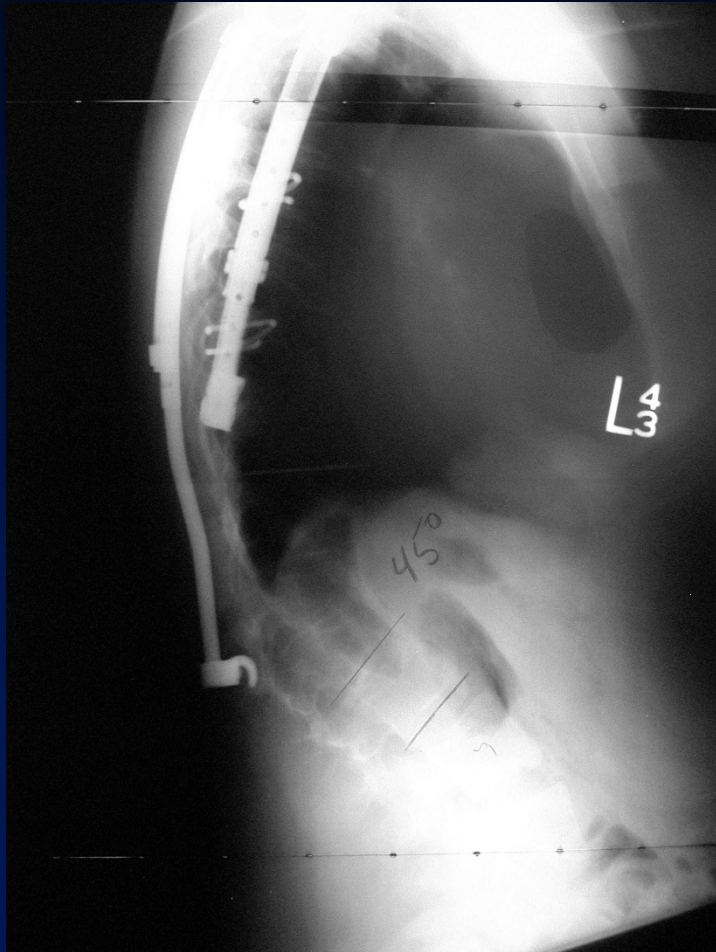
Rib to Rib VEPTR

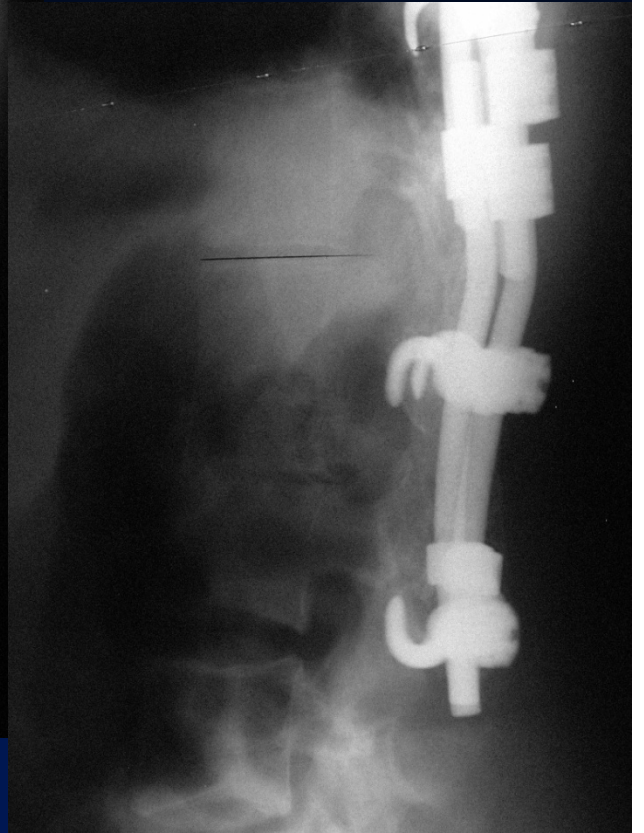
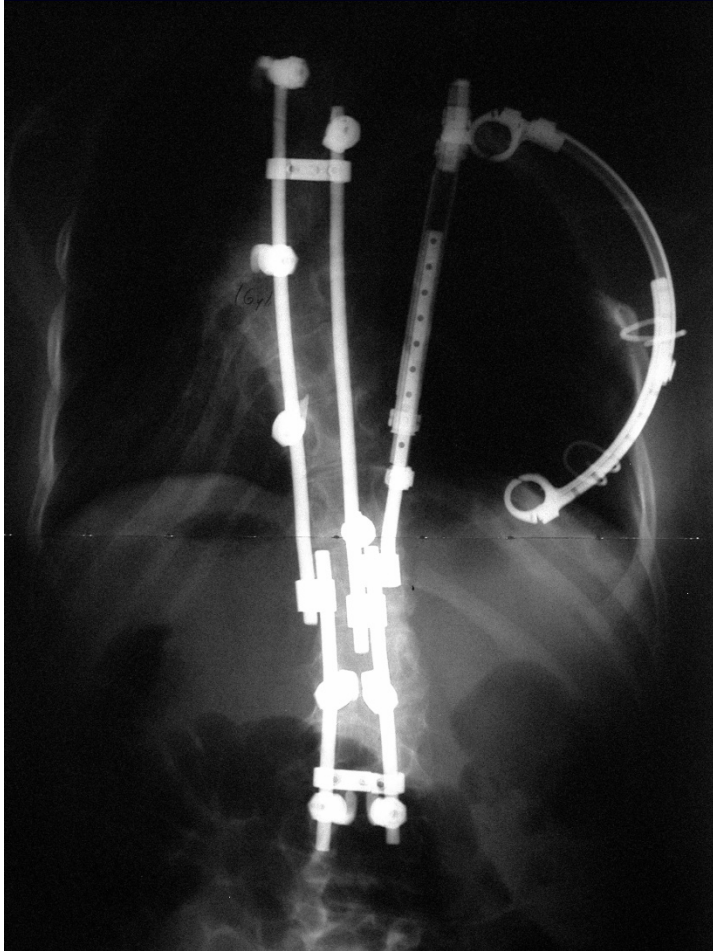




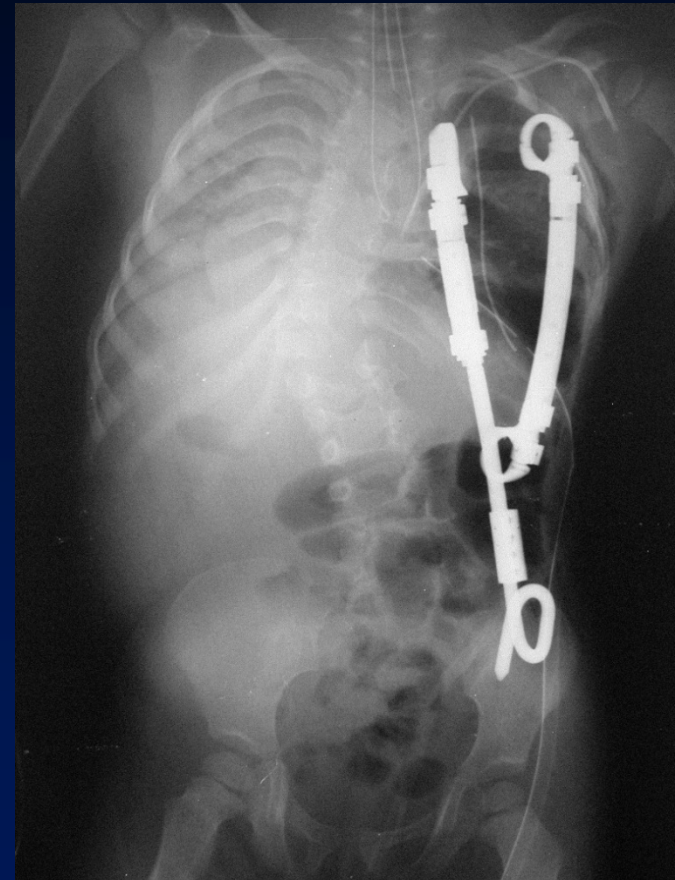
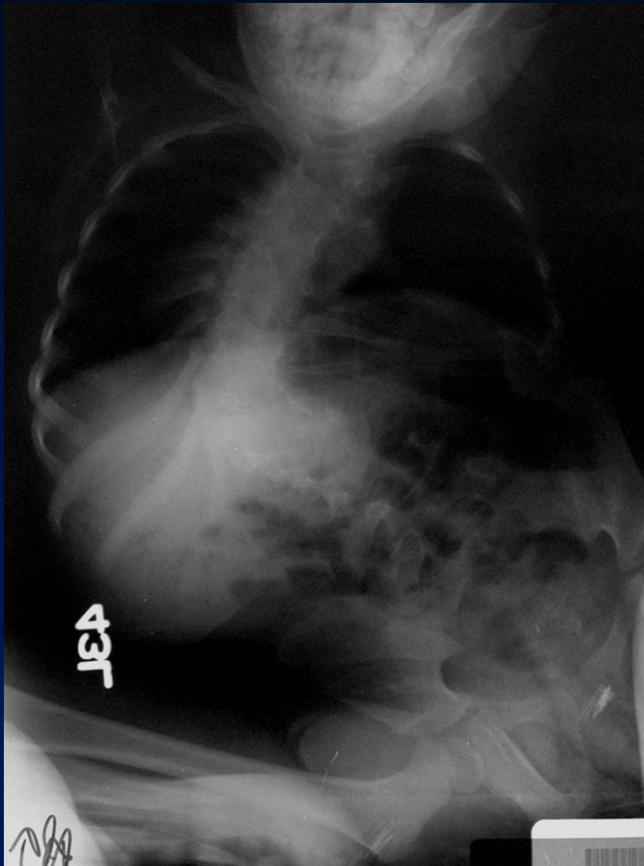


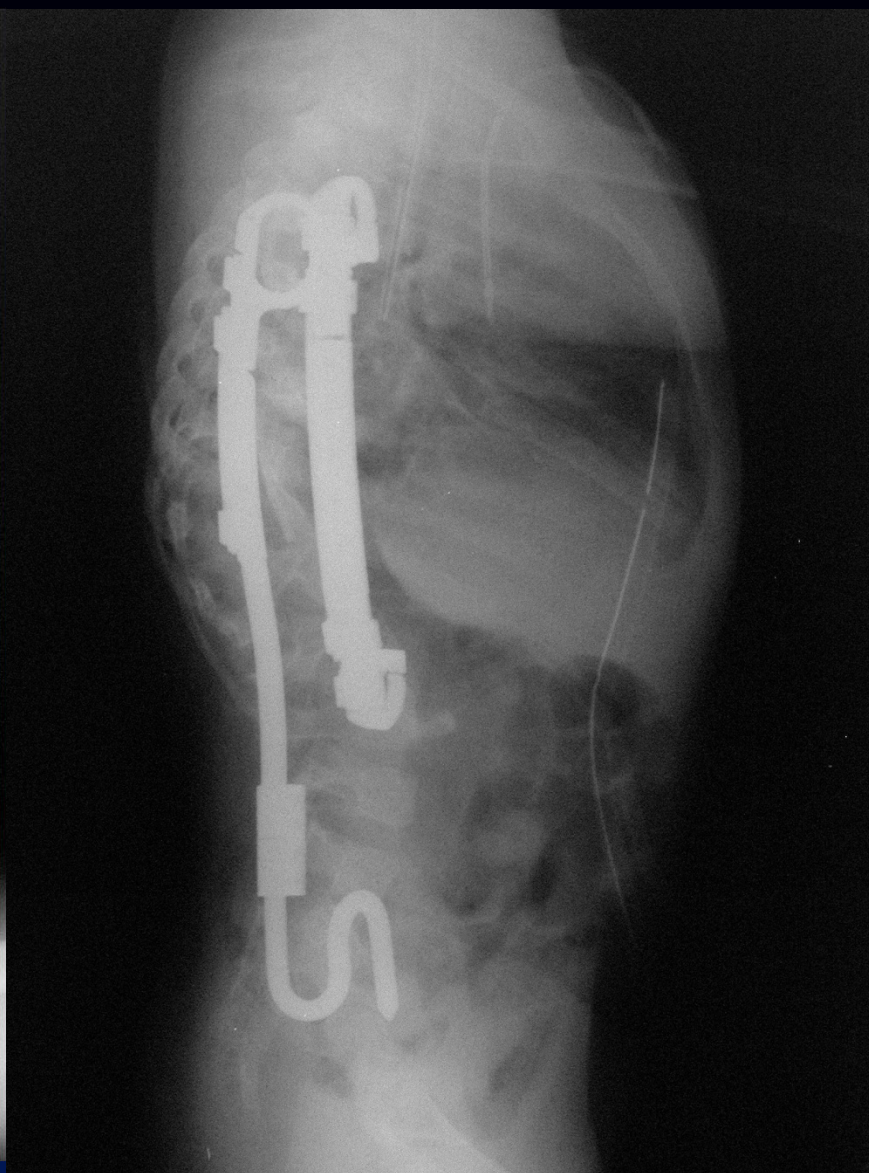
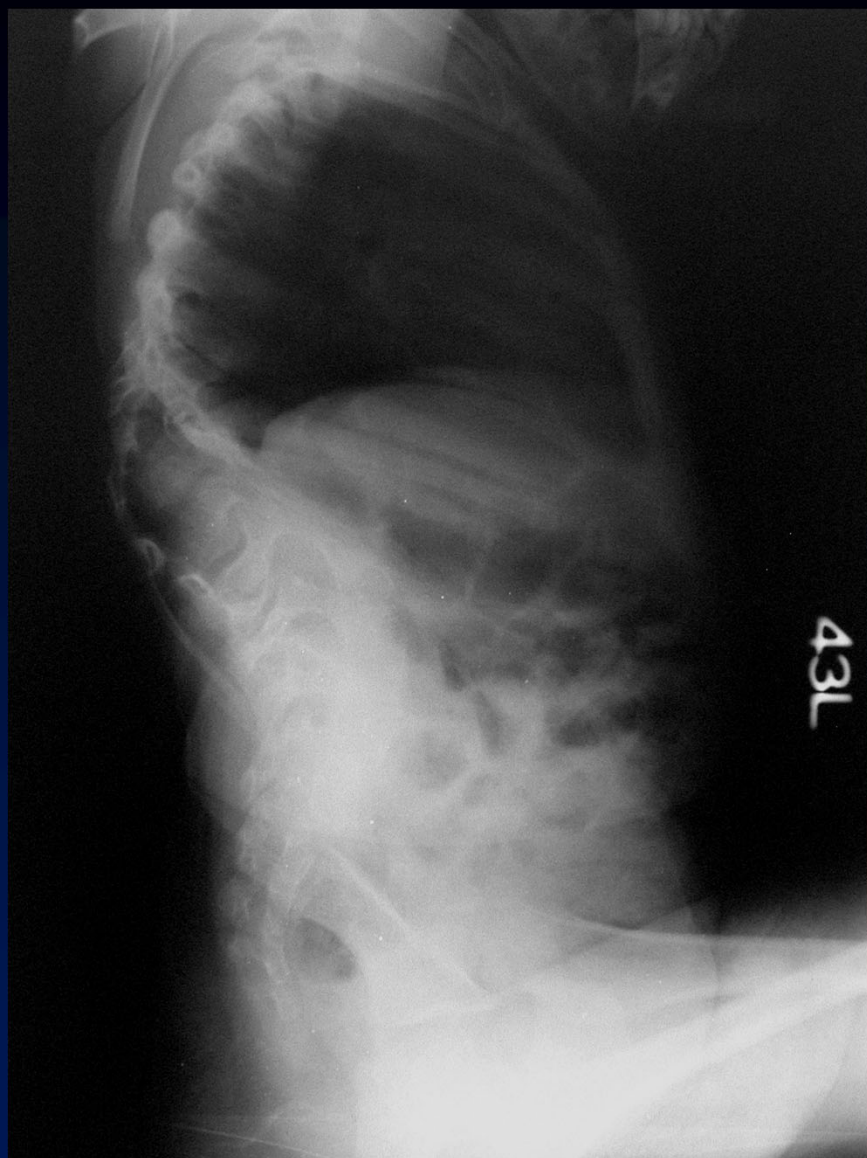




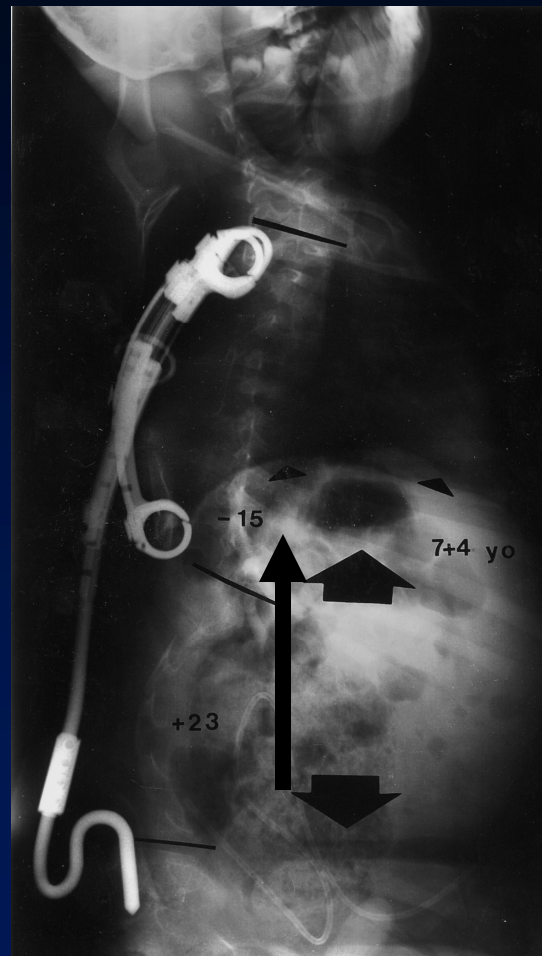
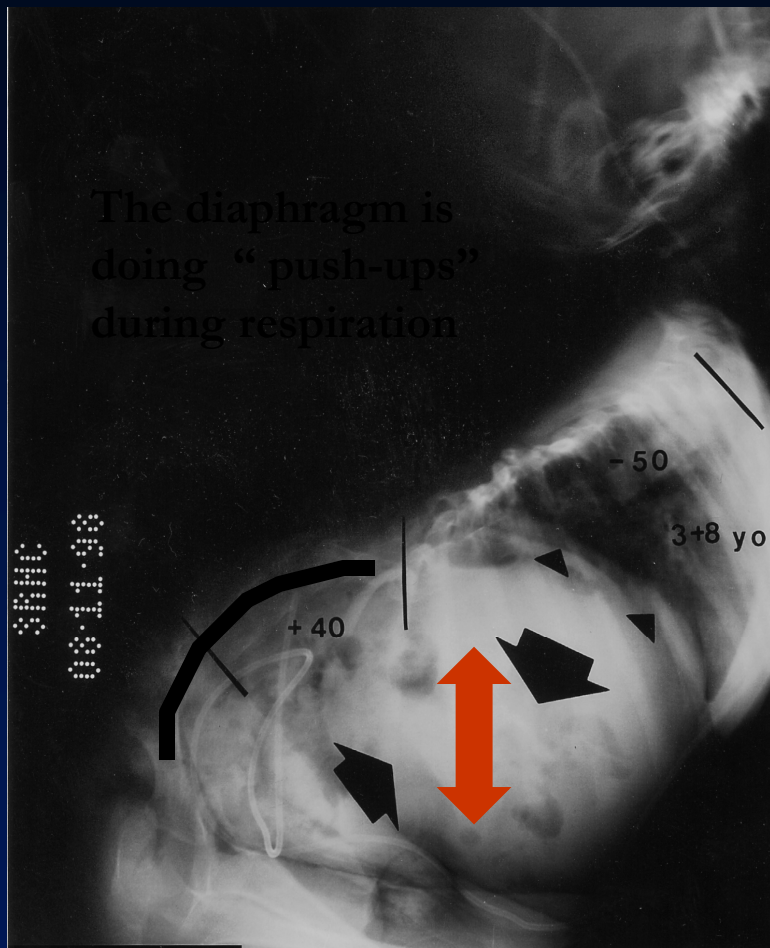


VEPTR S Hooks





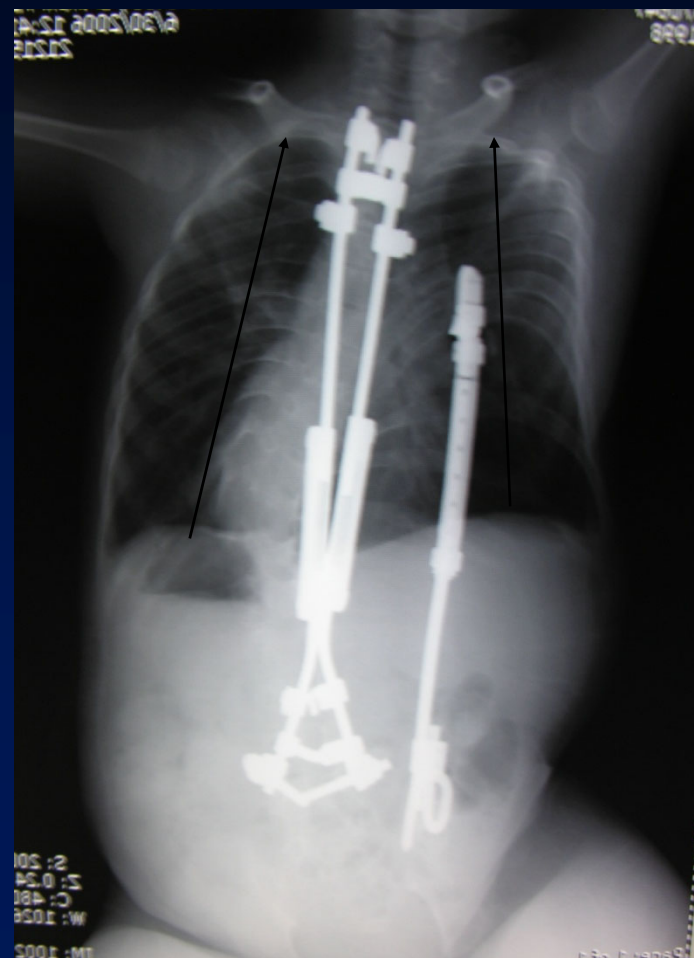
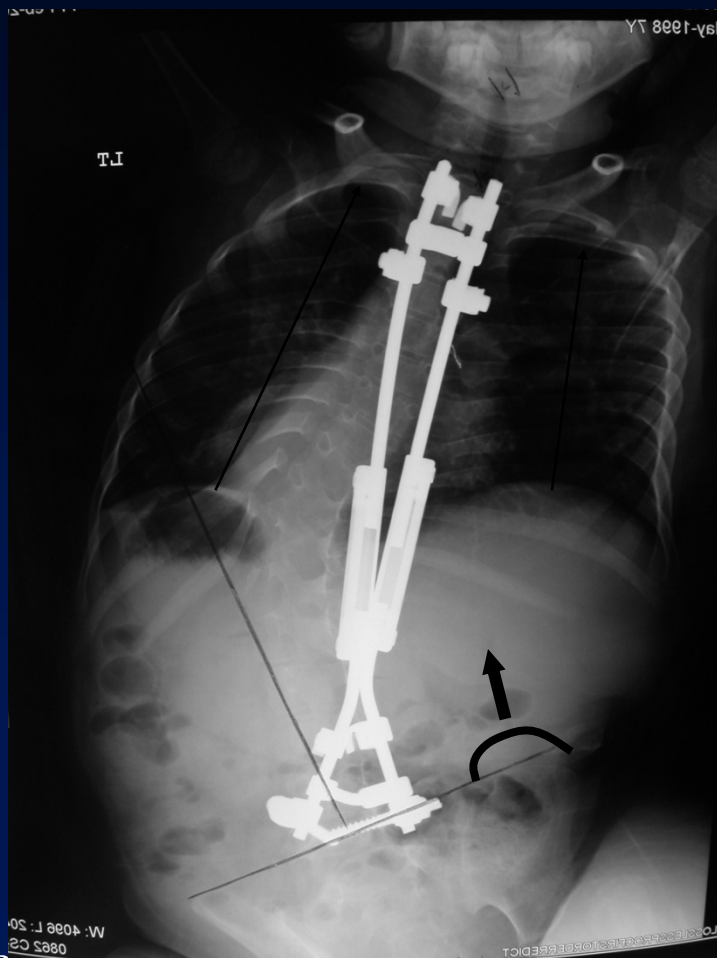
Secondary Thoracic Insufficiency Syndrome

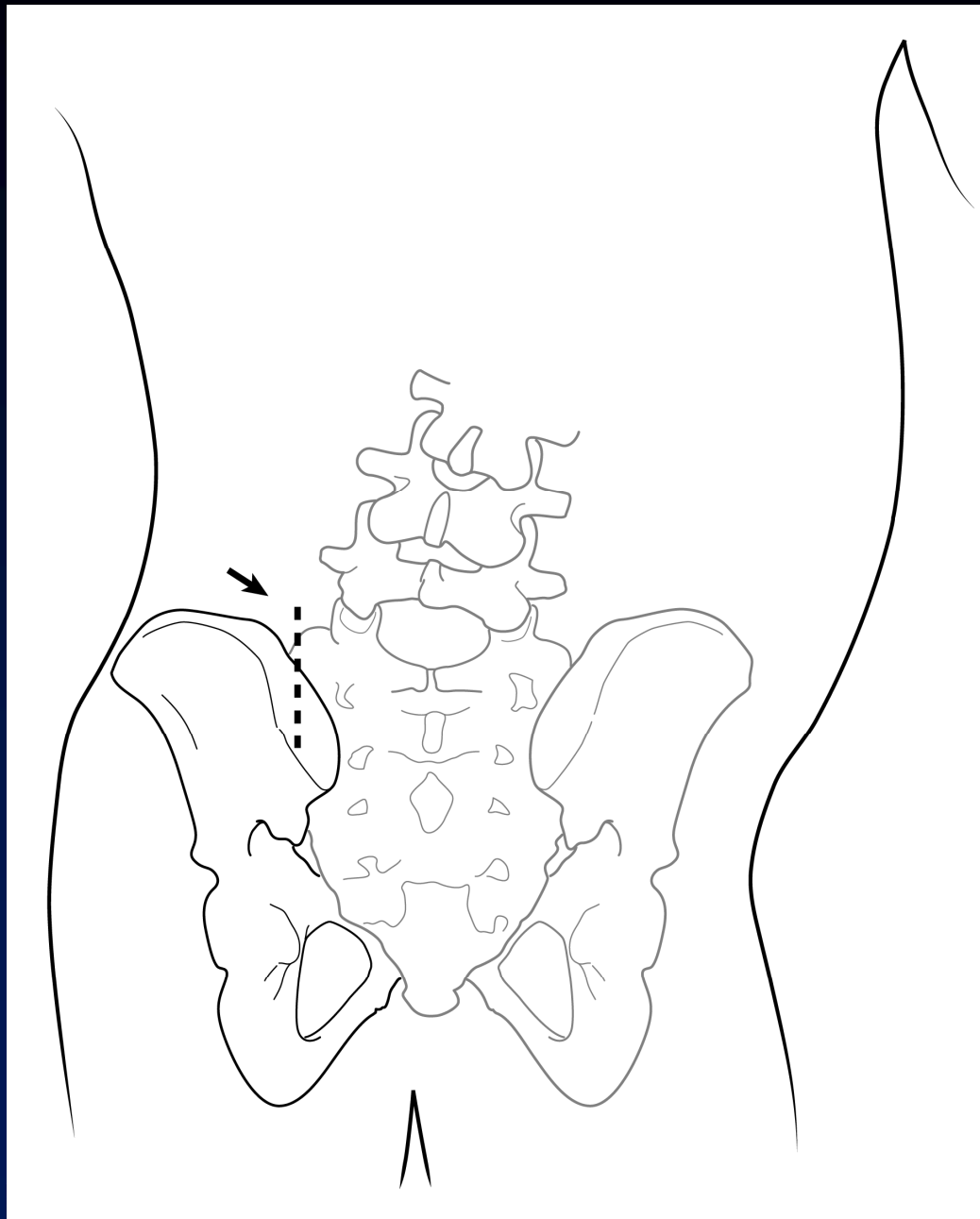


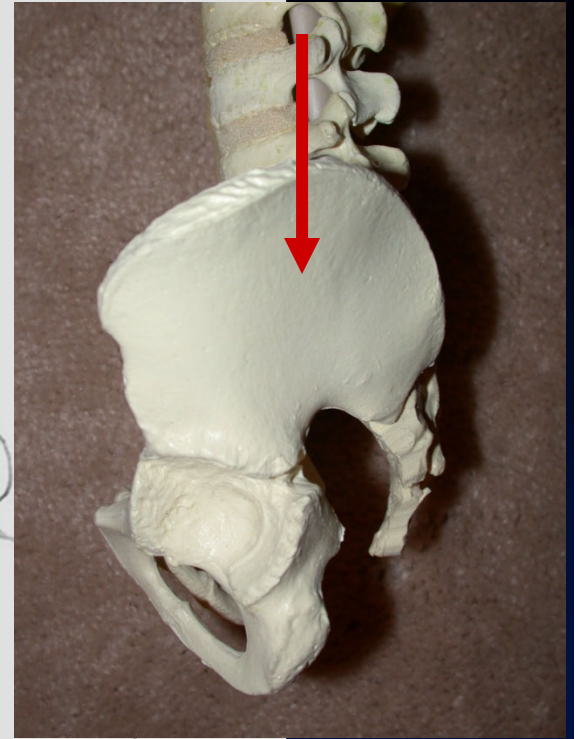
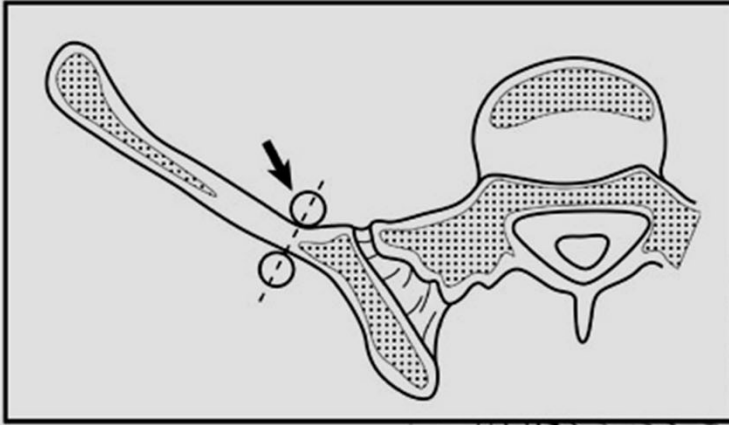
-Campbell, Smith, et al
JBJS, 2004

R Campbell, et al
Positive Marionette " Sign

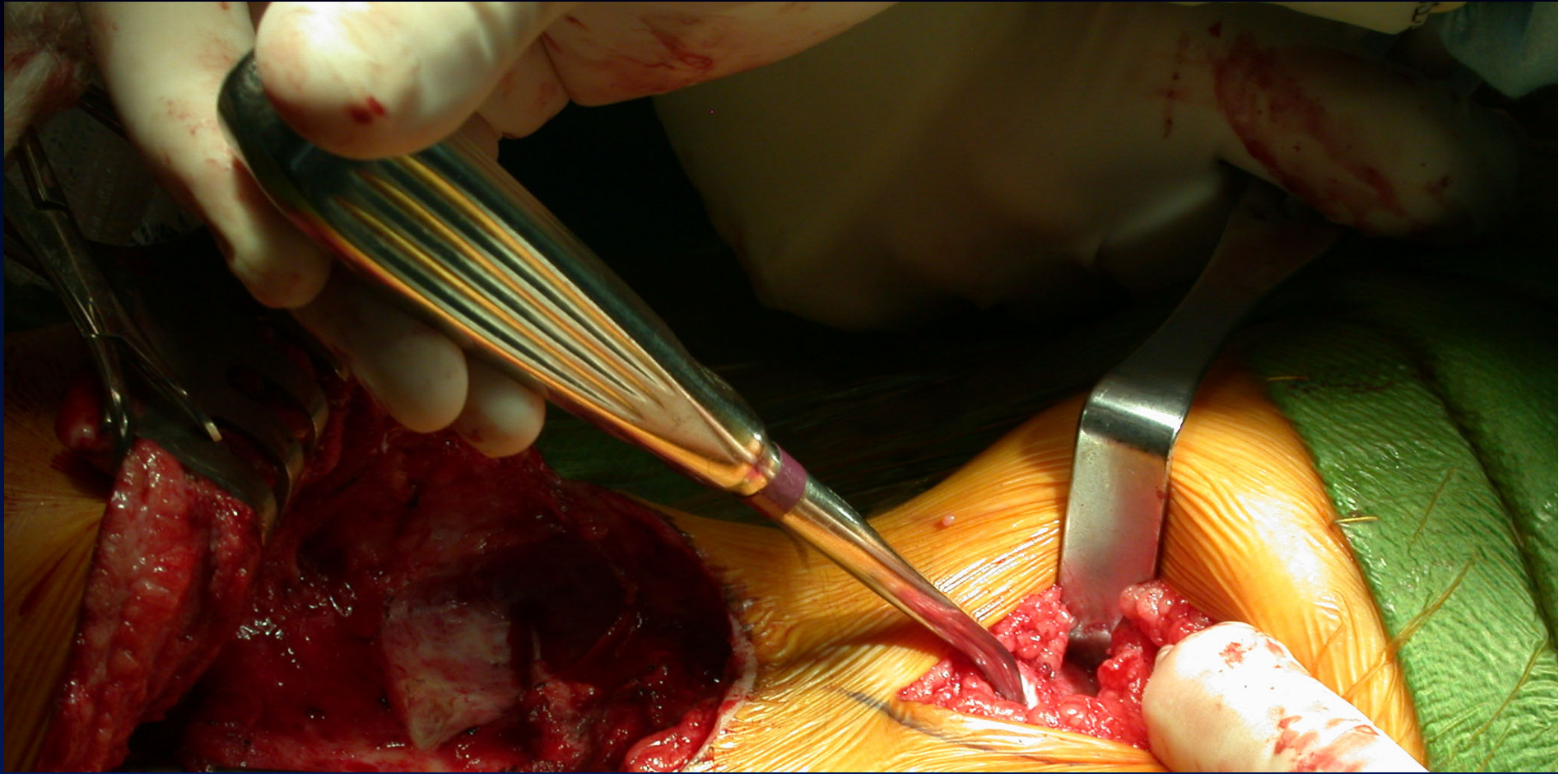
VEPTR/ Growing Rod Hybrid











SN 1237.2

Ln: 47

DFOV 26.5cm

STND

5 F 6162694

DOB: Oct 29 1998

Dec 21 03

512

FLT:s1

R

1
1
2

L

1
5
3

kV 140

mA 70

Large %

5.0 mm/1.0:1

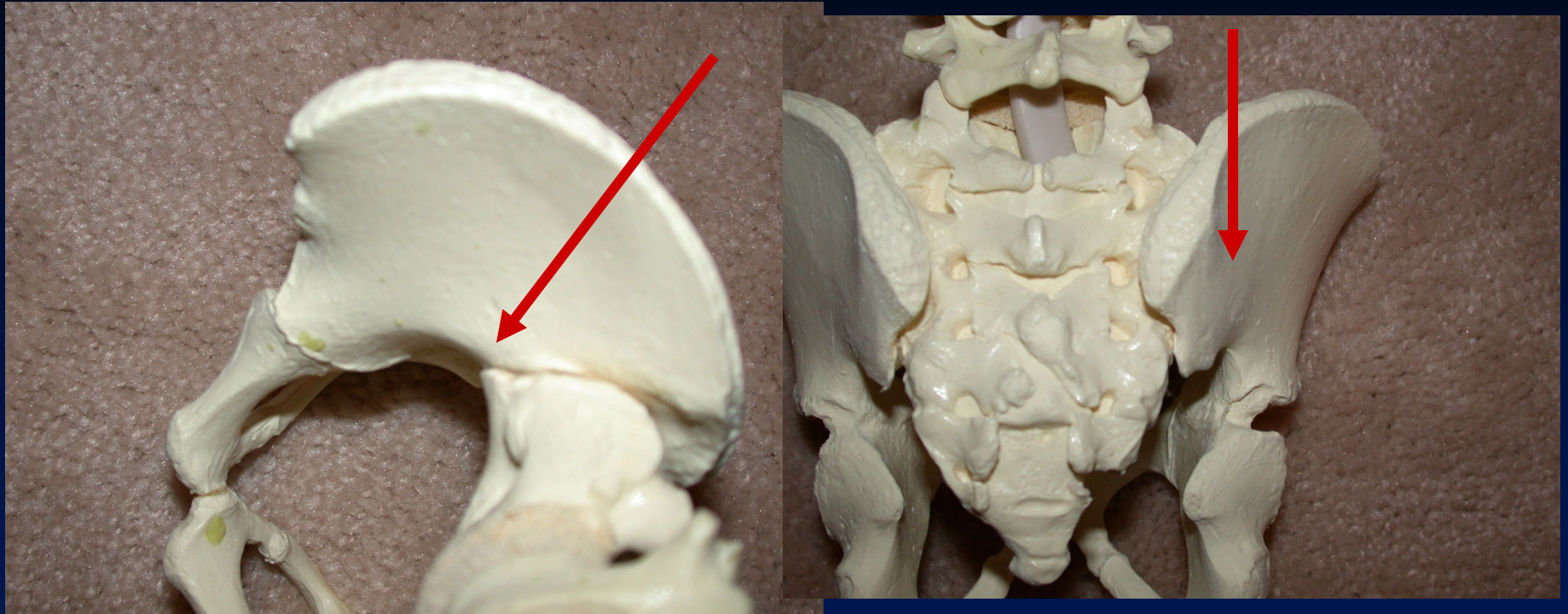
Tilt : 0.0

1.0 s/HE 14:20:18/12.00

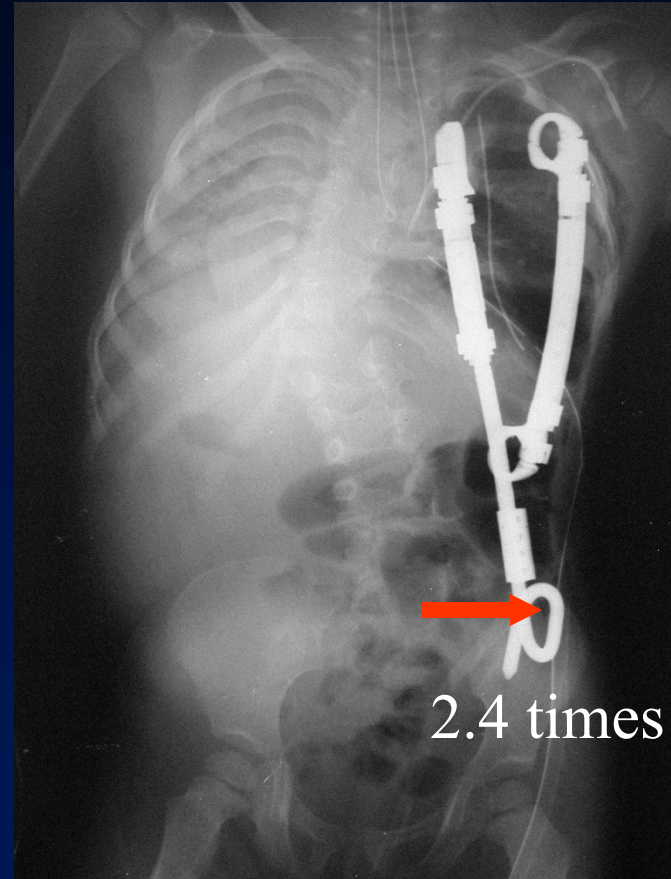
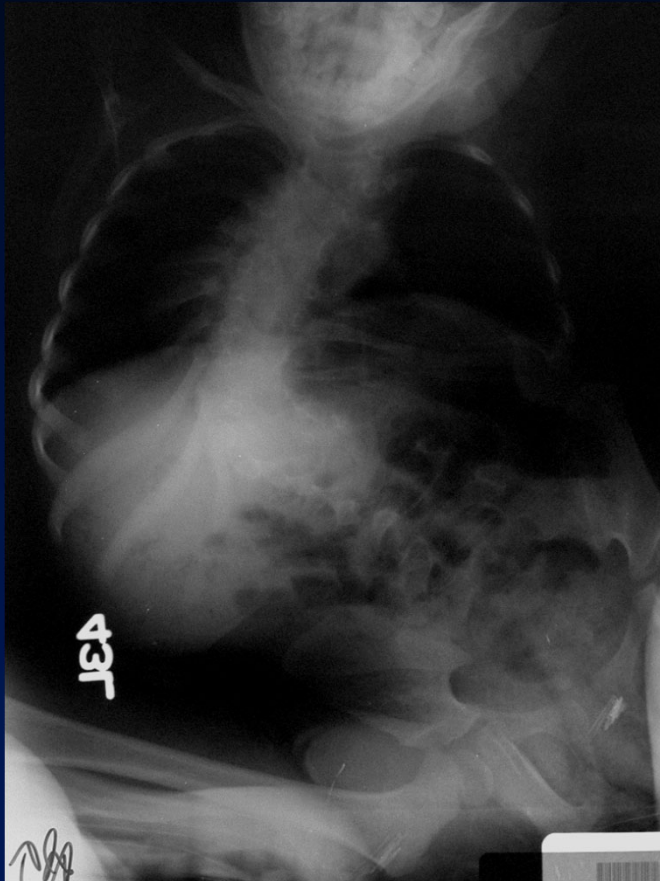
R Campbell



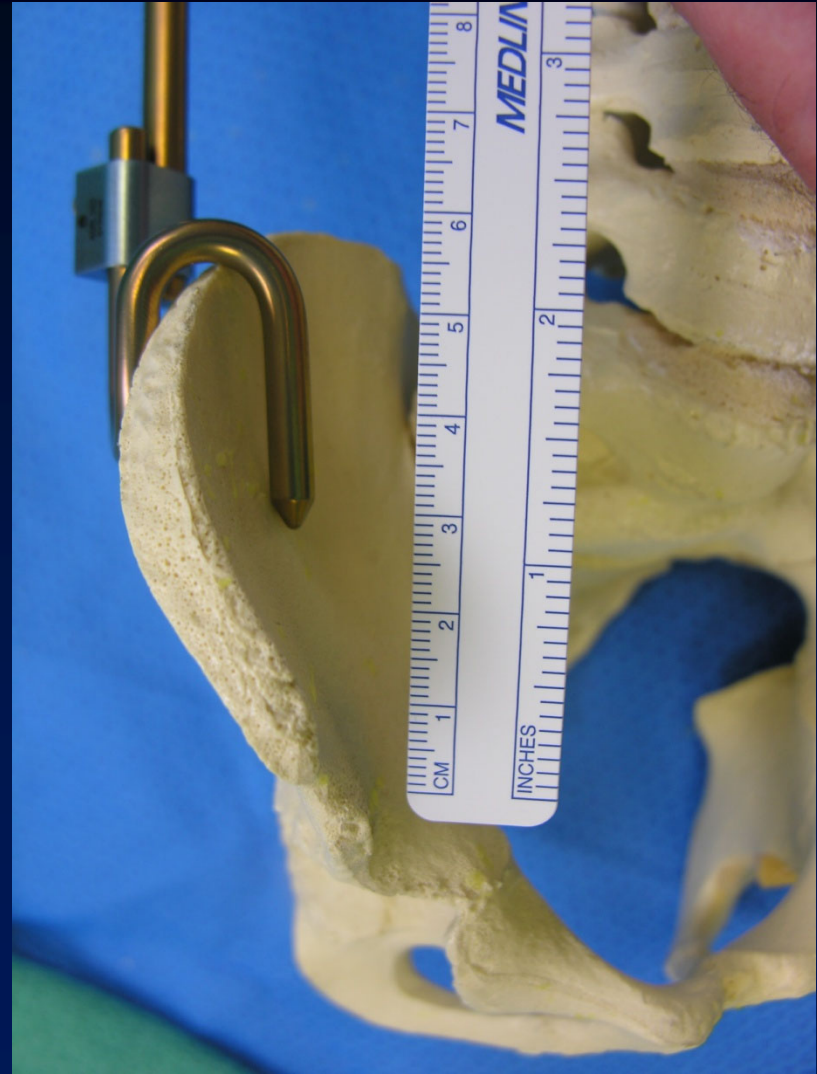
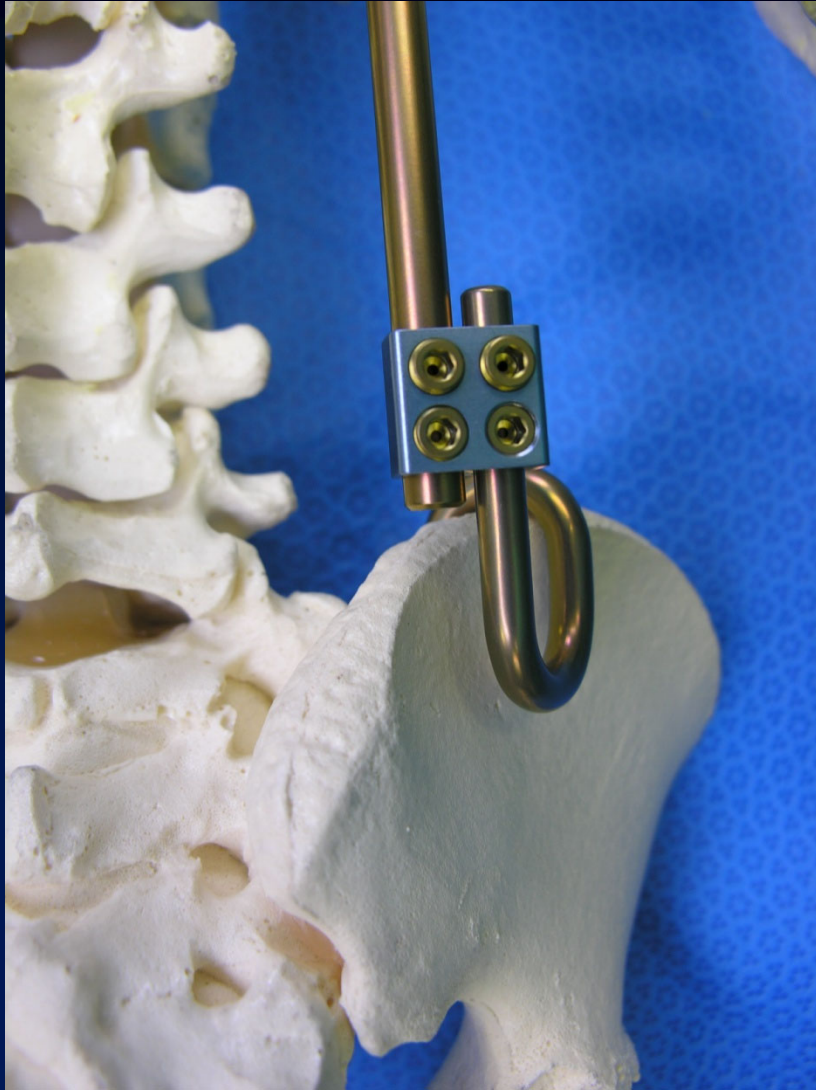
Good Mechanical Advantage



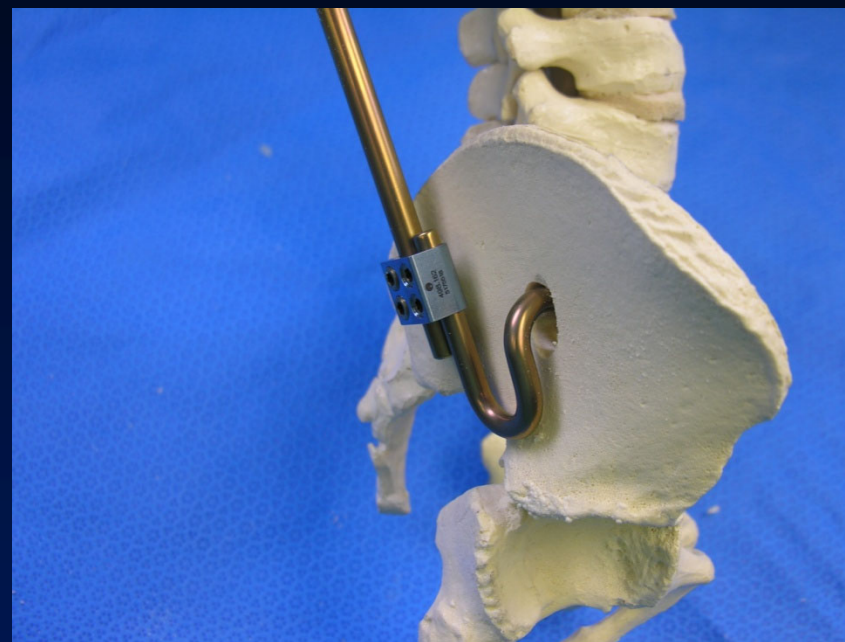
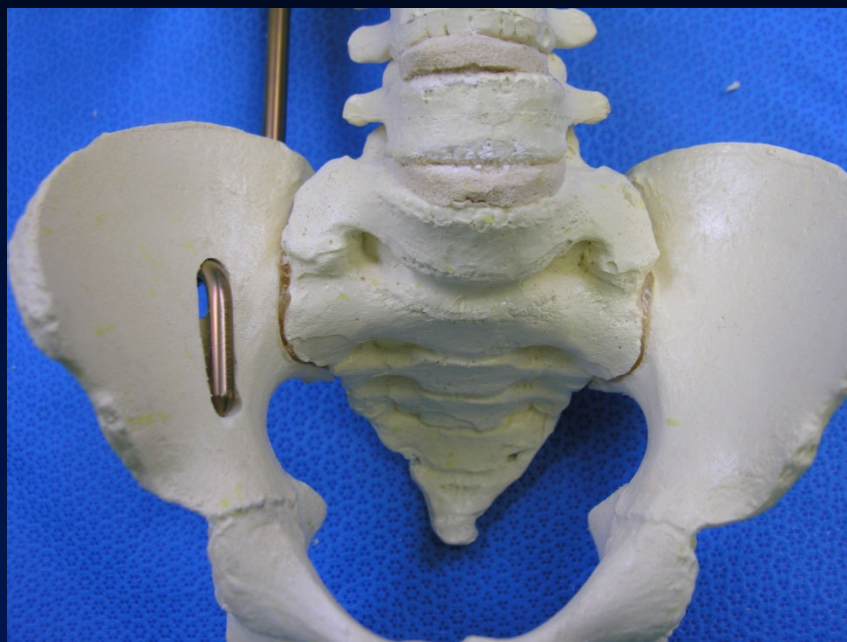
Lever Arm



3 cm safe zone



Inferior Migration DM Hook : Safe Failure Mode



Unilateral S hook : 7.9 mm/yr

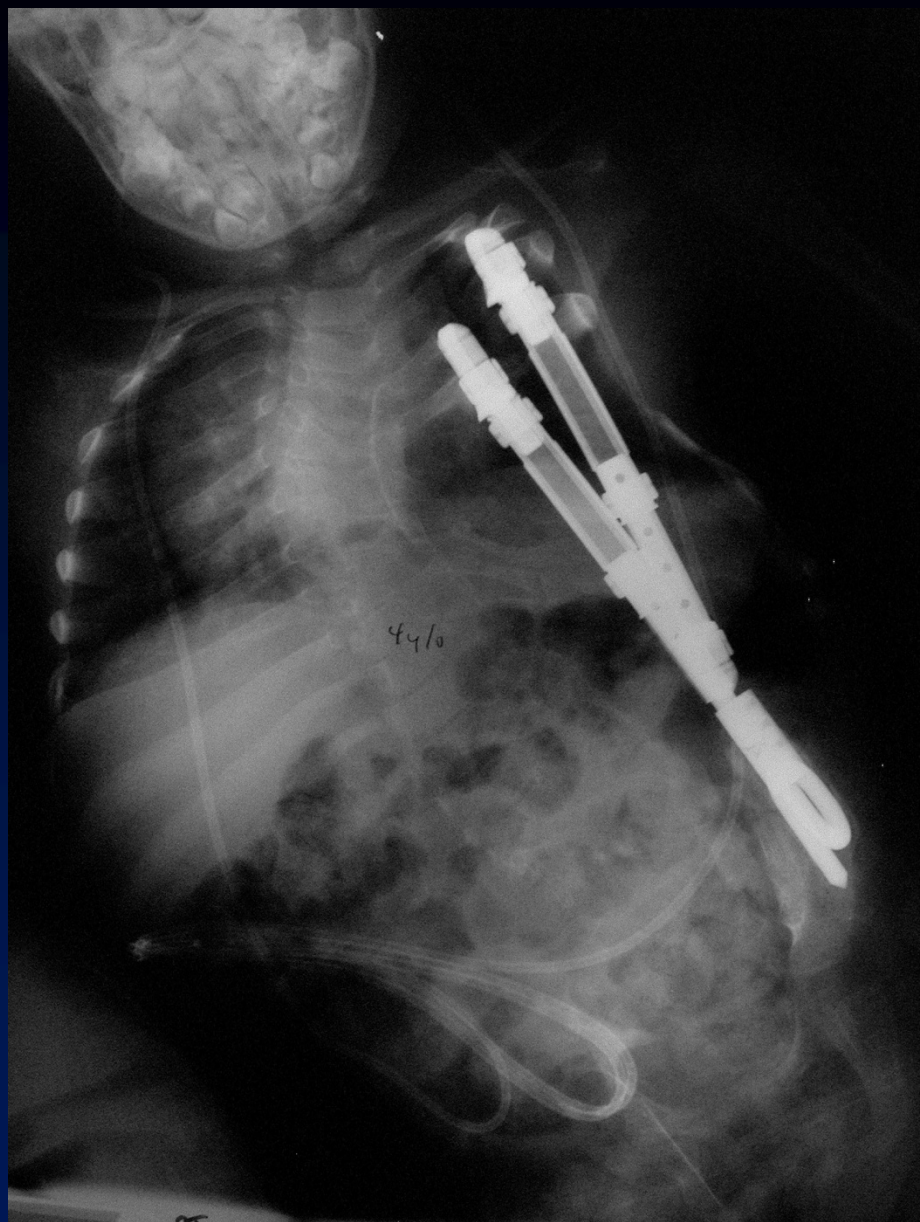
Bilateral S hook : 8.4 mm/yr

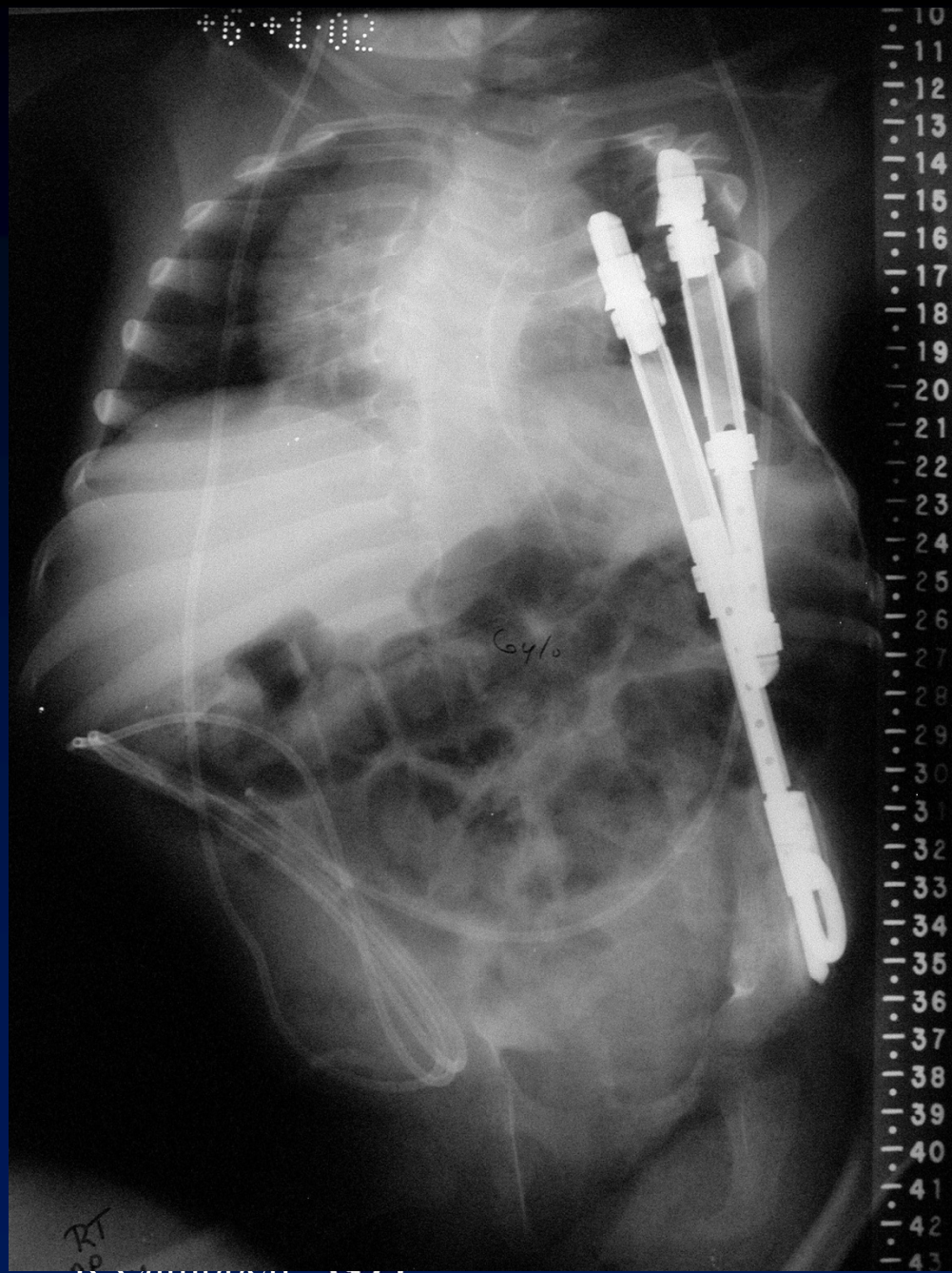


R Campbell 

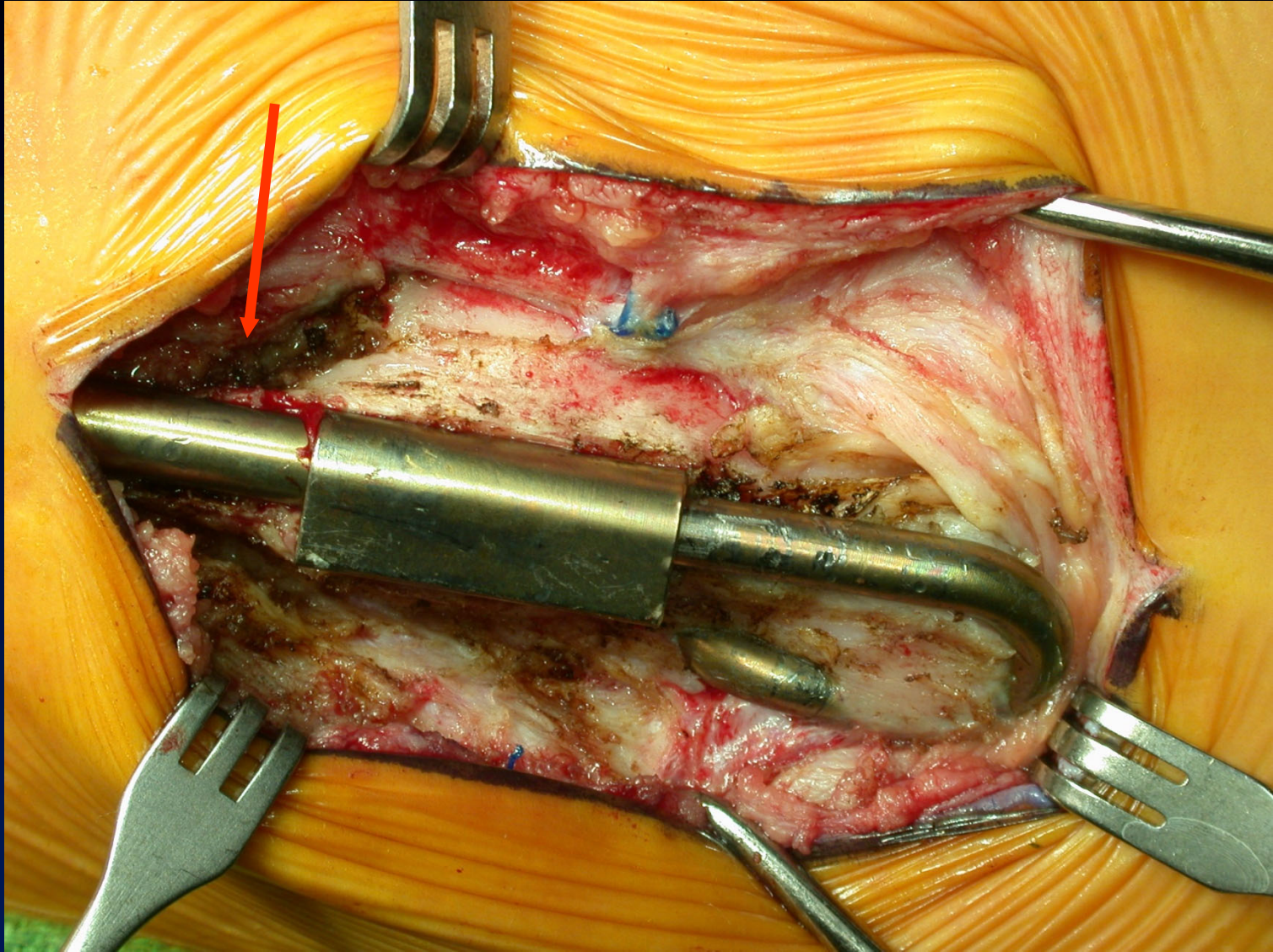


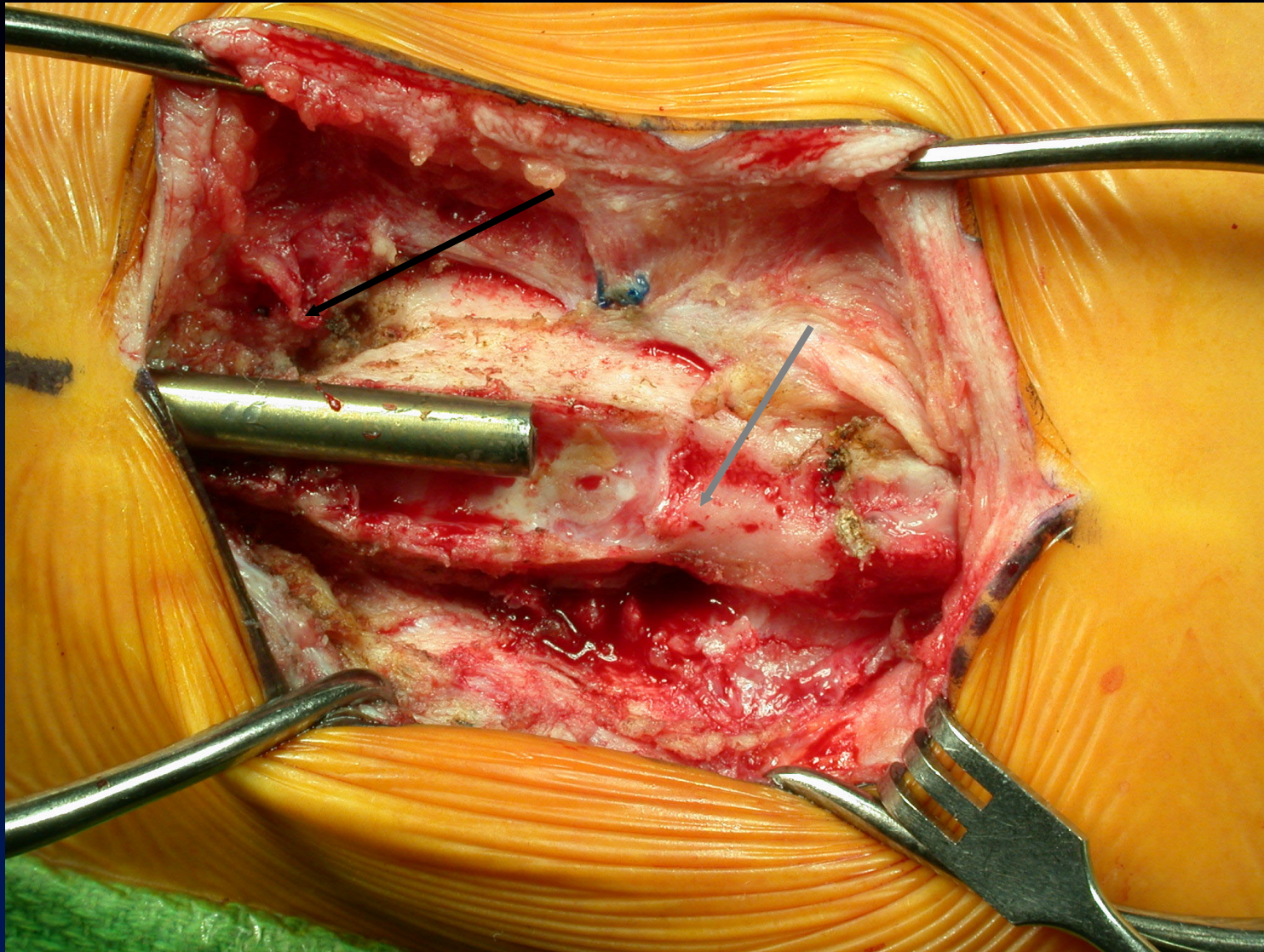


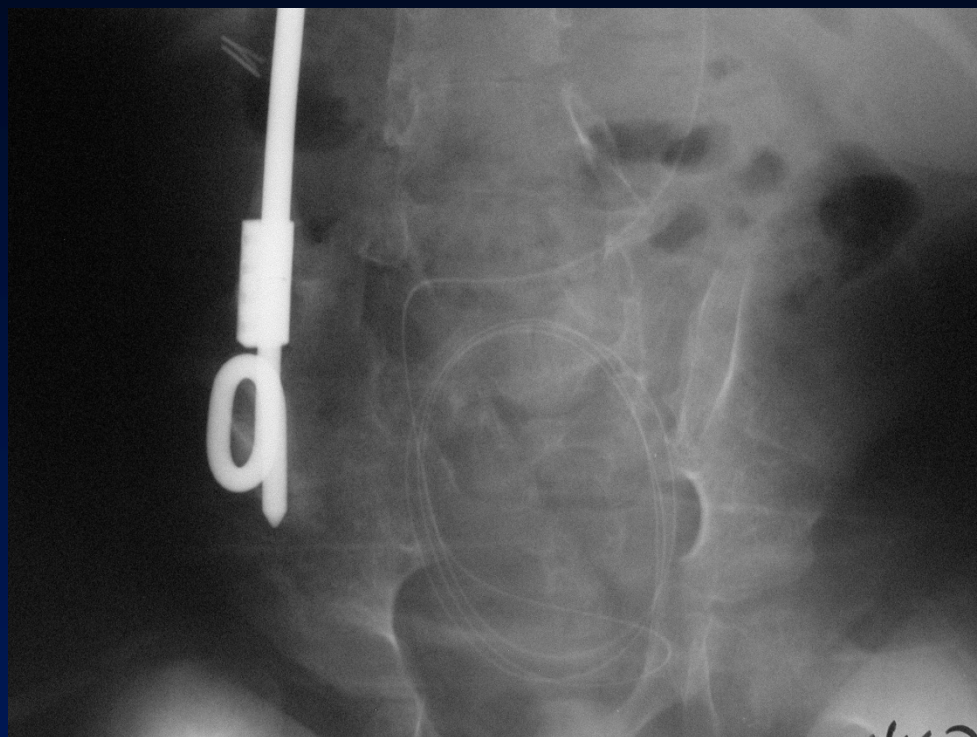












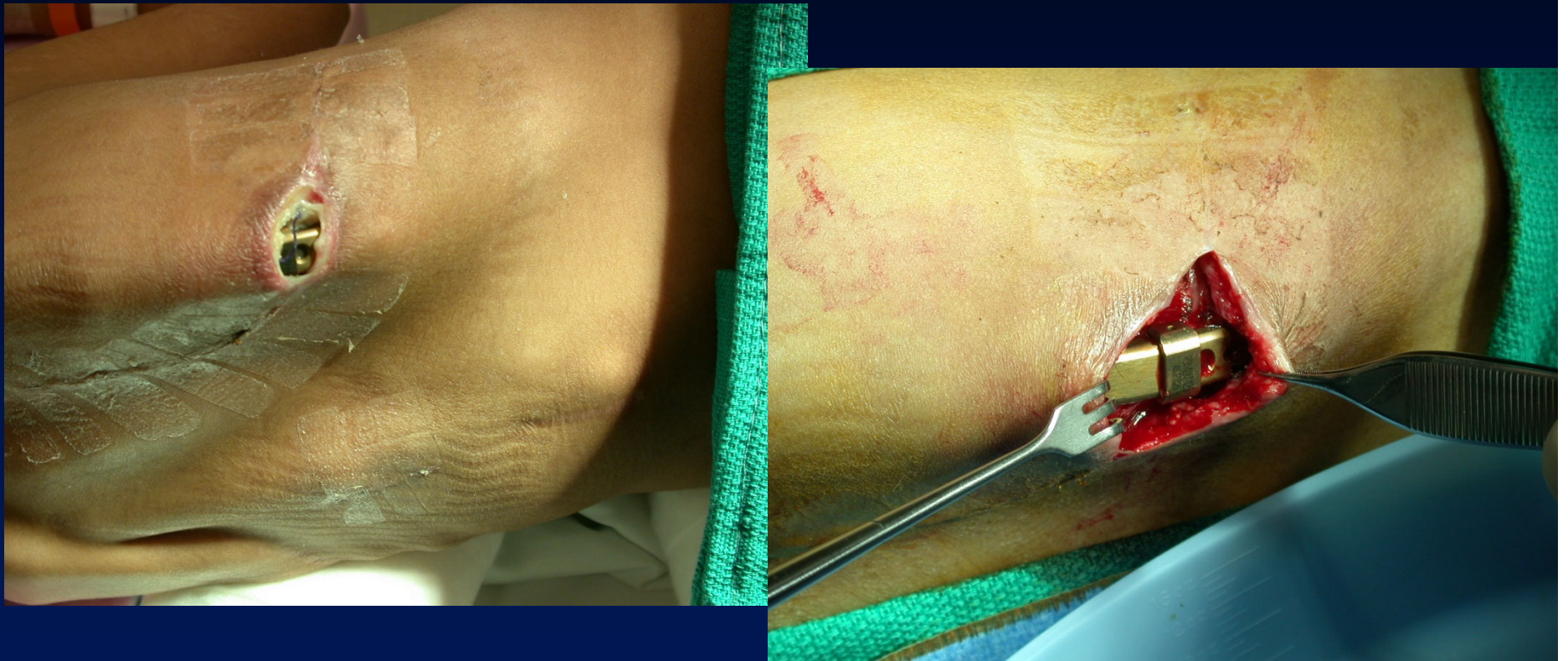
Summary Thoughts

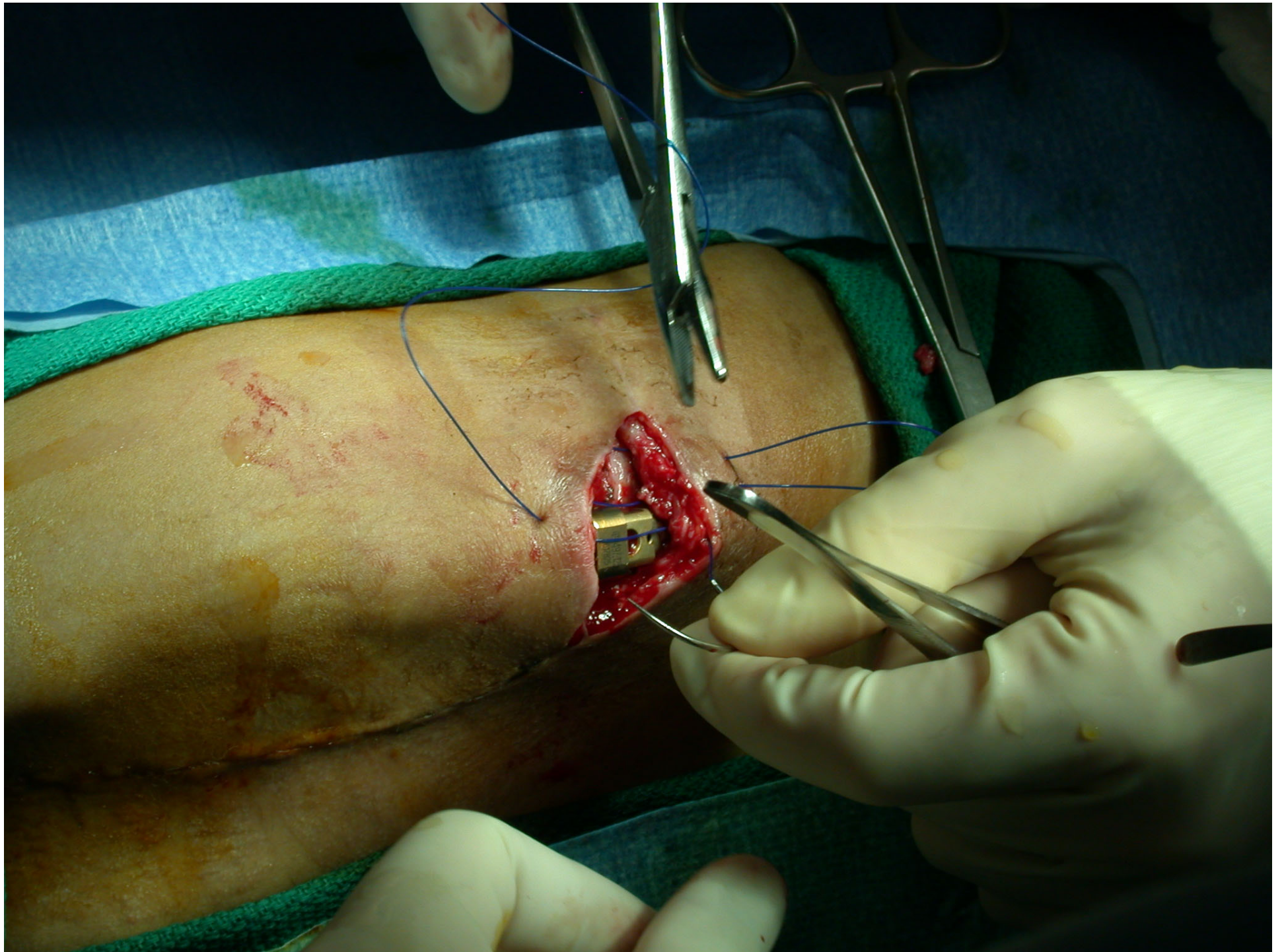
- VEPTR anchors drift long term
 - They are supposed to drift
- Usually asymptomatic
- Reseating is minor and usually accomplished during scheduled procedures

Soft Tissue problems



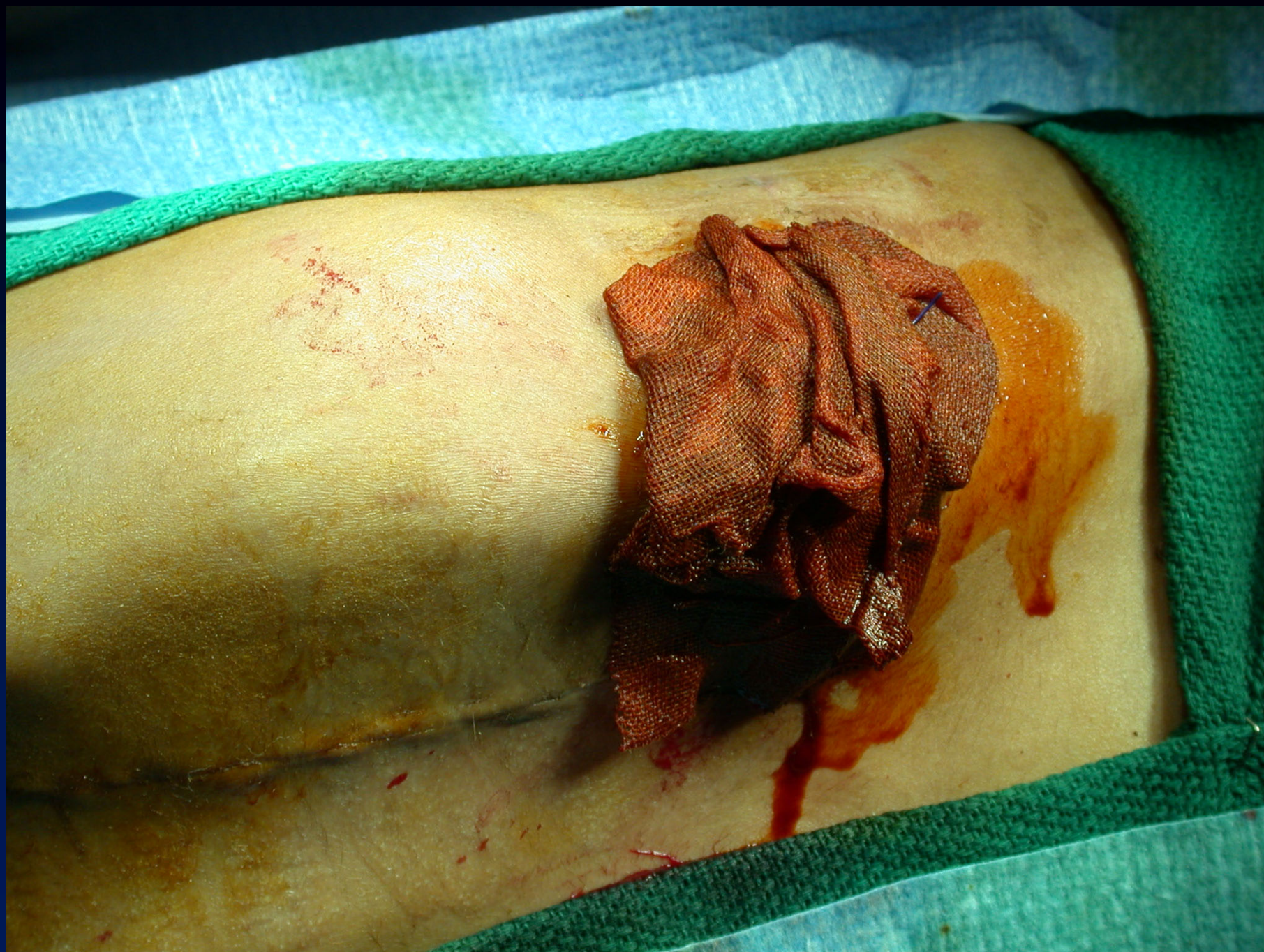
Skin Slough











4 week f/u



R Ca



R Campbell

Thank
You!

