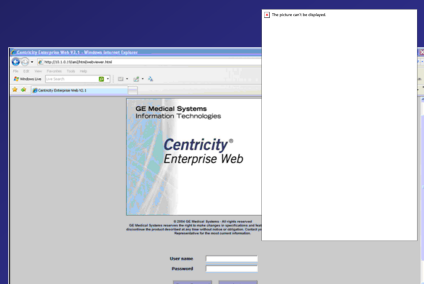


Screw Web PACS – Is Pedicle Sizing Accurate and Reproducible on CT?



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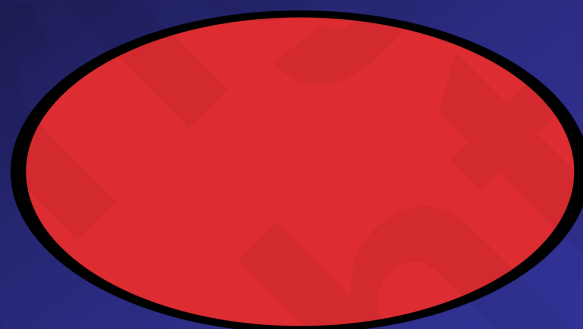
Introduction

- Web PACS is here and we're all using it
- Orthopaedics = PLANNING
- CT / MRI can be useful for planning pedicle screws
- But, how do we know the Web PACS ruler tool is accurate and reproducible?

Method

- Human spine and 6 geometric objects (Smuggled into radiology dept at midnight)
- Multislice spiral CT with 1mm cuts
- 2 observers
 - Measured objects and each pedicle (Left T1-L5) to nearest 0.1mm
- 3rd observer
 - measured objects / spine with Vernier callipers
- Repeated 2 weeks later

Results



Eyeball = accurate and reproducible
What is the error?...

Object	1	2	3
1	0.6mm		
2	0.6mm	0.6mm	
3			0mm

**Intra = Inter
Error = 0.6mm**

**Web Pacs Ruler
Tool Error = 0.6mm**

Pedicle	1	2	3
1	0.6mm		
2	0.8mm	1.0mm	
3			0.4mm

**Error Higher
0.6-1.0mm**

**Geometric versus
Non Geometric**

Main Source of Error = Ruler Tool - 0.6mm
Not the observer - 0 to 0.4mm

Conclusion

- Web PACS ruler tool on CT is accurate to 0.6mm of the true size of an object
- Error for pedicle measurements is marginally higher 0.6-1mm
 - Due to ill defined geometric shapes
- Measuring pedicle size on CT for surgical planning may have implications for small pedicles when sizing them up for a good screw