Scoliosis surgery with hybrid system in osteogenesis imperfecta (OI)

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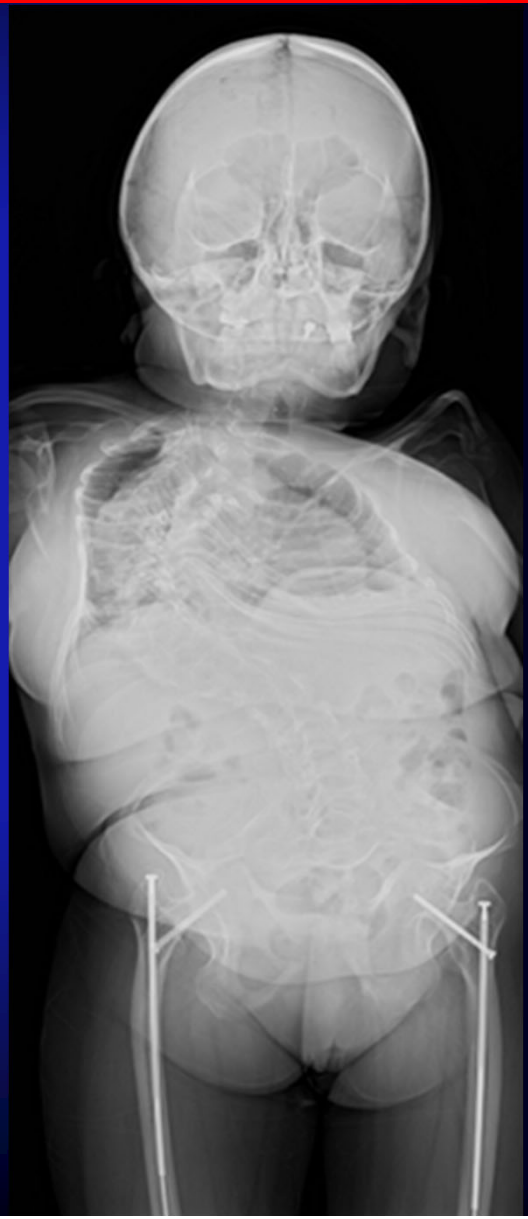
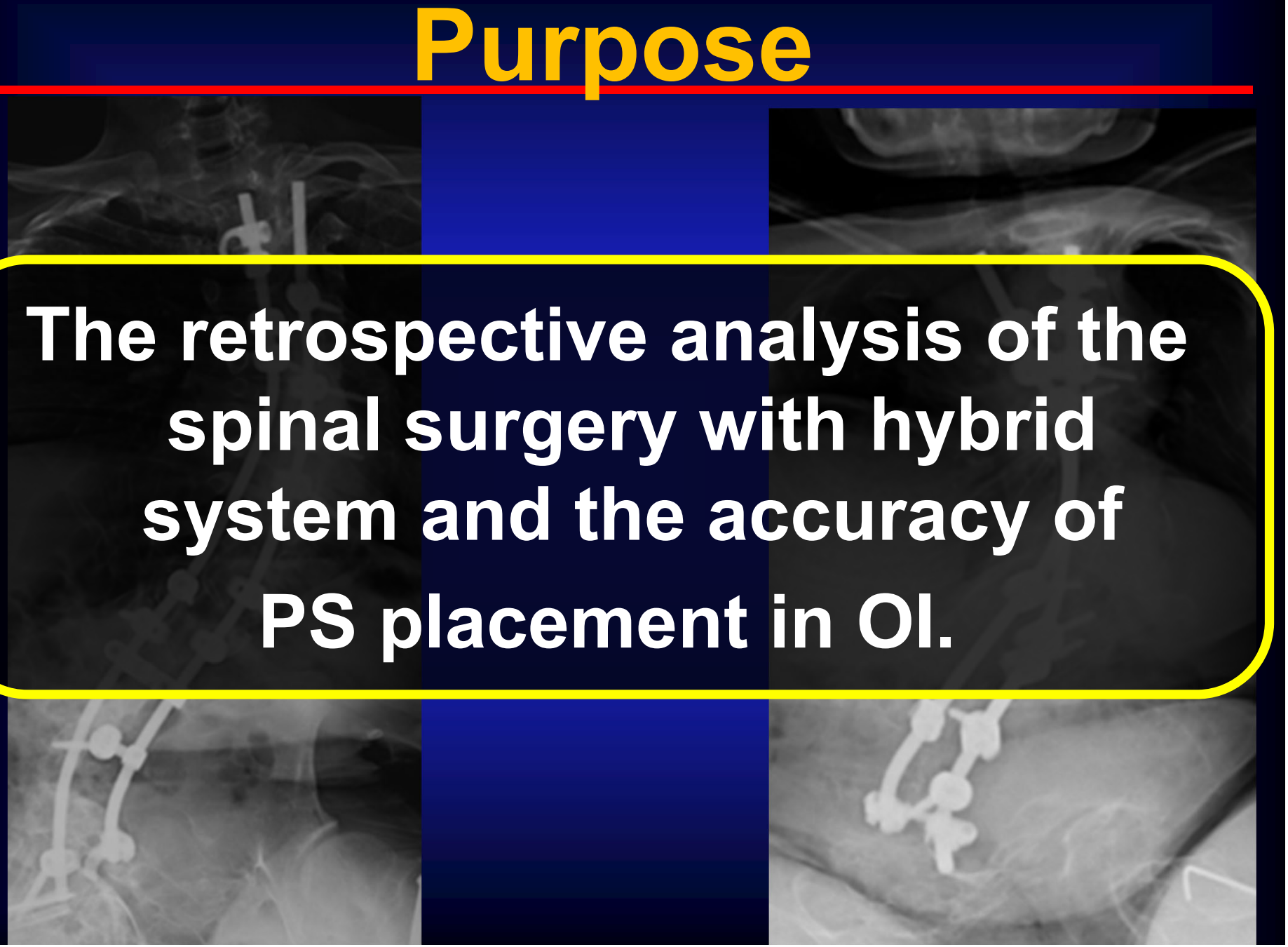
Introduction

- Spinal surgery in OI is difficult due to the extreme bone fragility.
- The application of the pedicle screws (PS) to the weak and fragile vertebrae in OI was still unclear.



Purpose



The retrospective analysis of the spinal surgery with hybrid system and the accuracy of PS placement in OI.

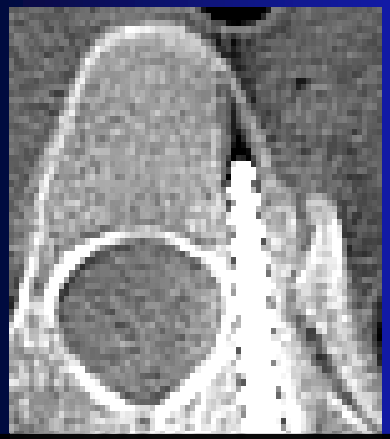
Methods

Between 2006 and 2011, single institution

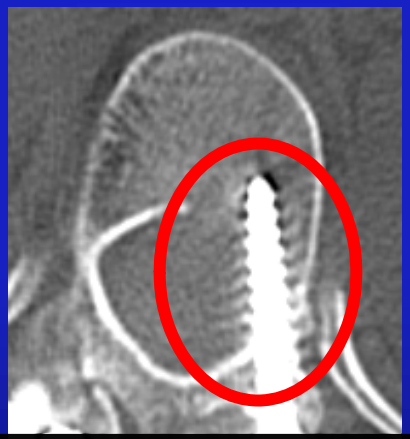
No. of patients	12
Gender (F:M)	8 : 4
Age at surgery	23.4±11.0 y.o.
Duration of follow-up	3.3±1.5 yrs
Sillence type 1 type 3	8 cases 4 cases

Accuracy of PS

We defined the displacement from the pedicle more than 2mm as perforation in postoperative CT scan.



Acceptable <2mm from the pedicle



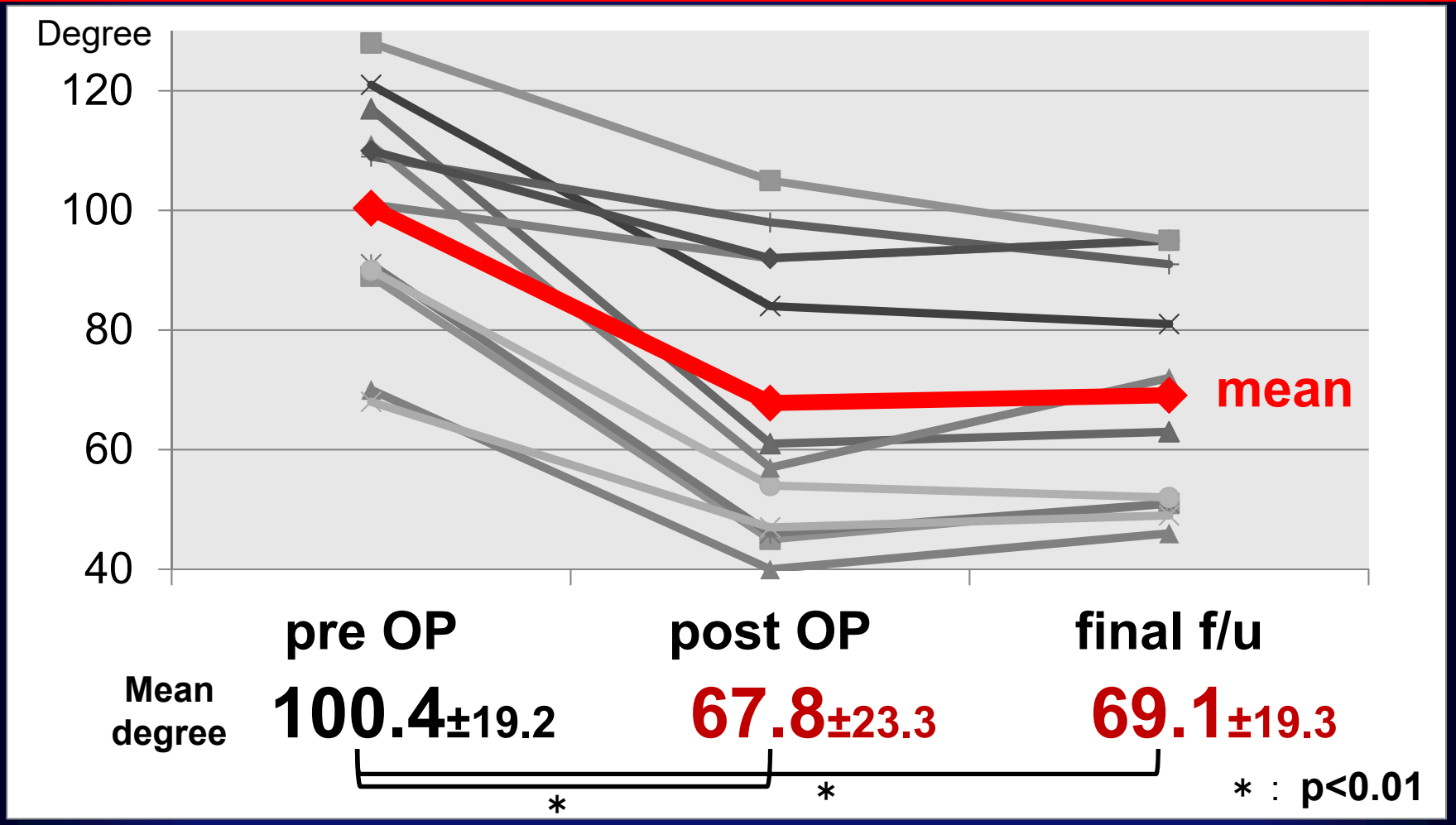
Medial perforation >2mm

Lateral perforation >2mm

Surgical procedures

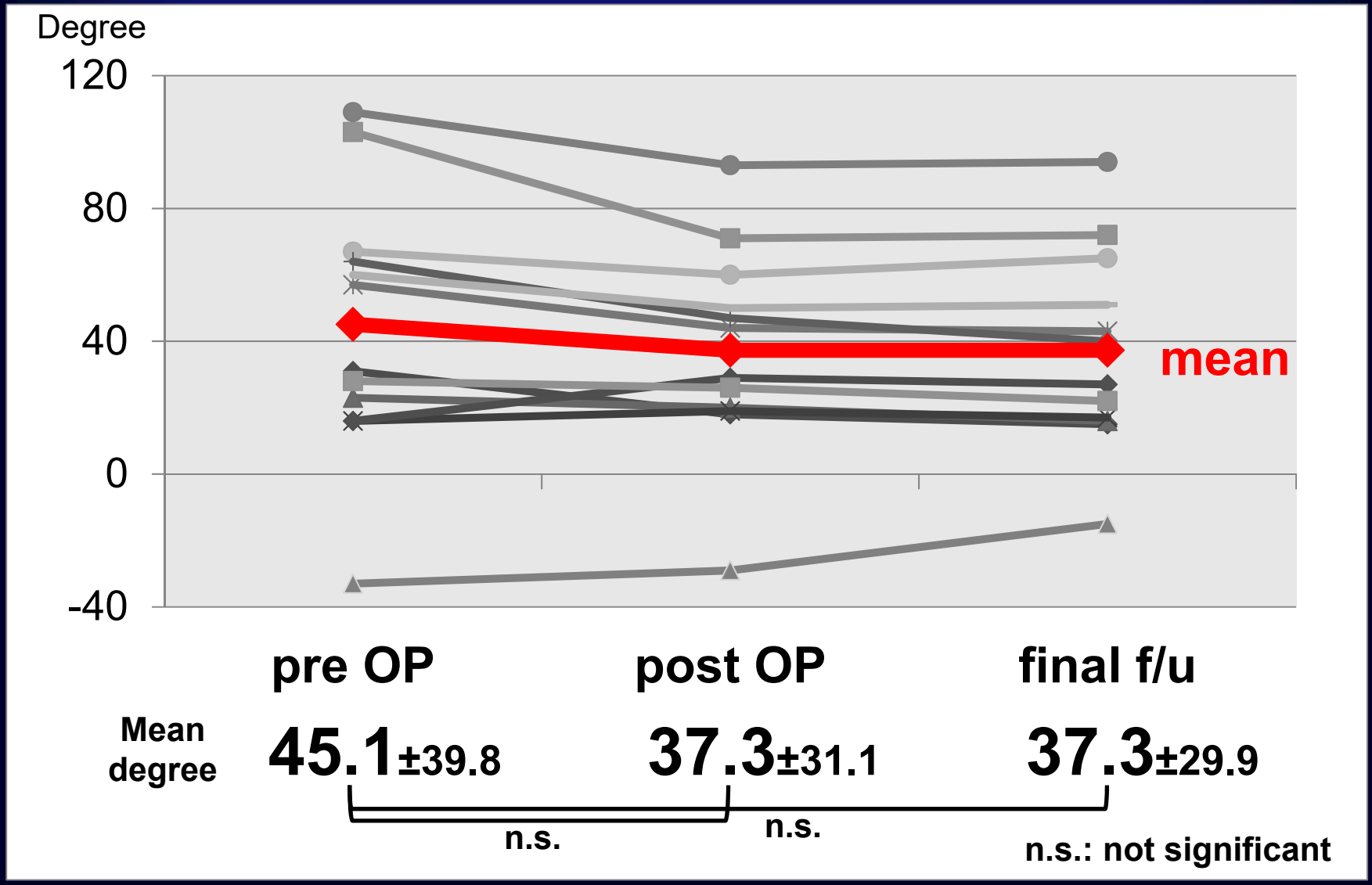
<table>
<tr><td rowspan="4">12
cases</td><td rowspan="2">Anterior release(AR)
+
Posterior fusion(PF);
9 cases</td><td>Halo-gravity traction(HGT) ;
6 cases</td></tr>
<tr><td>Without HGT;
3 cases</td></tr>
<tr><td rowspan="2">PF only; 2 cases</td><td>HGT; 1 case</td></tr>
<tr><td>Without HGT; 1 case</td></tr>
<tr><td colspan="2">Dual growing rod surgery; 1 case</td></tr>
</table>

Cobb angles of Main curve

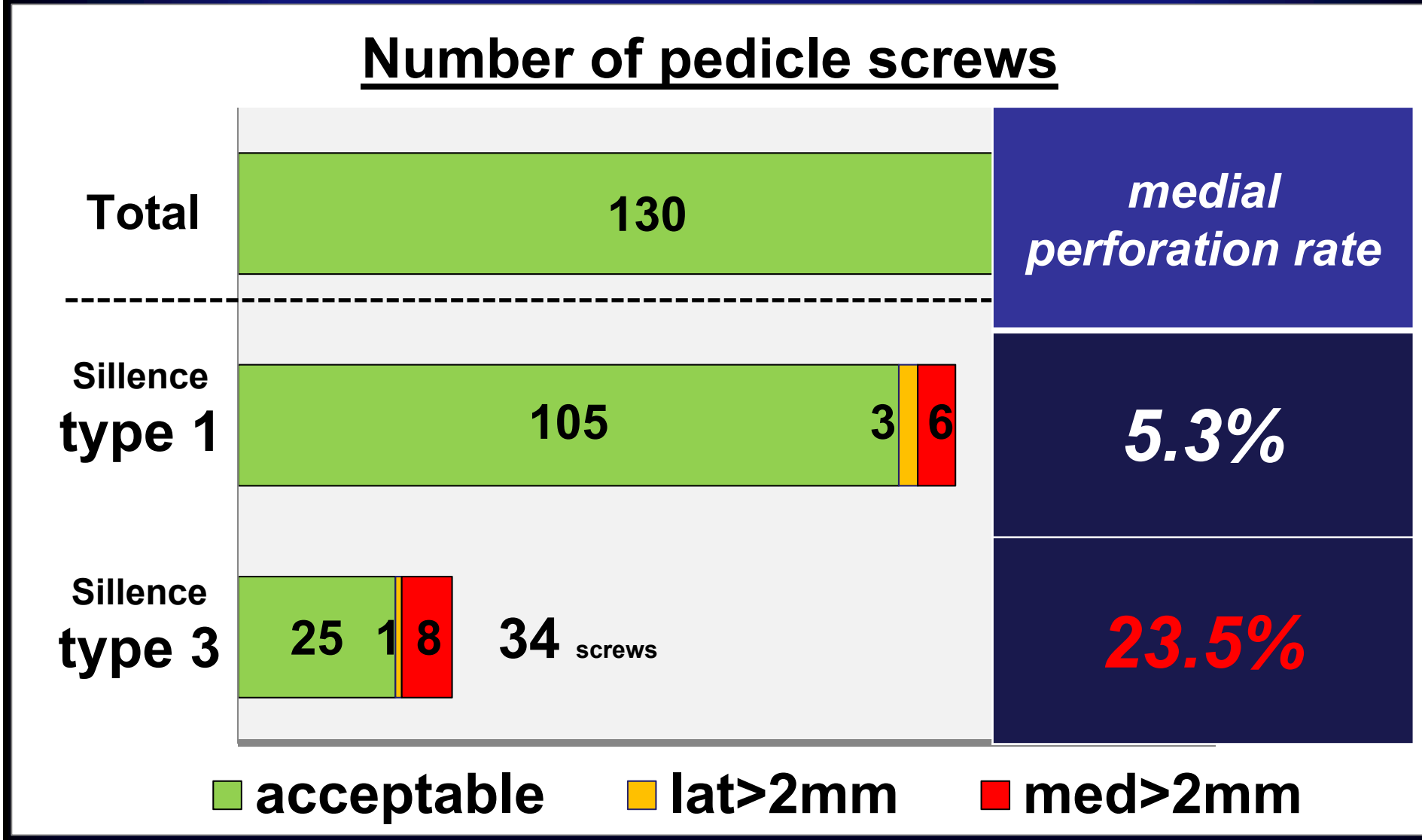


Correction rate was 33% at post OP.
Loss of correction rate was 1.8% at final f/u.

Cobb angles of Kyphosis



Accuracy of pedicle screws



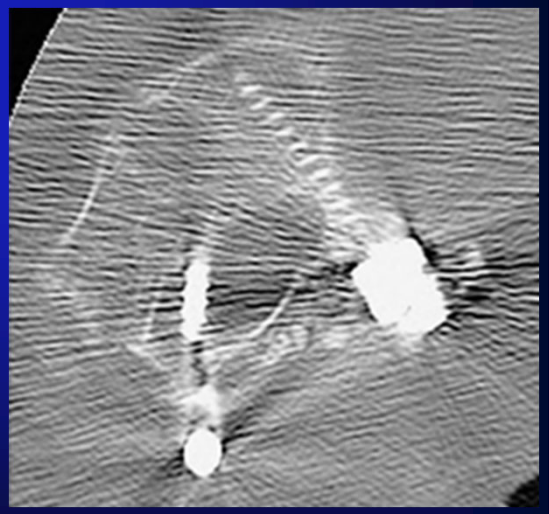
Complications

- Deep infection : 2 cases

  Treated with antibiotics and debridement.

- Transient neurological disturbance : 2 cases

  One case related to the medially perforation of PS.



Discussion

	Janus GJ et al. Spine2000	Our study
No. of patients	20 cases	12 cases
Correction rate at Post OP	35.5%	33.3%
Failure of instrumentation	4 cases	none
Loss of correction rate at final f/u	8.9%	1.8%
Complications rate	30%	33%

No implant dislodgement and loosening were observed in our series.

Summary

- We reviewed 12 cases of OI who underwent spinal surgery with hybrid system including PS.
- There were no significant loss of correction and no dislodgement of the implants at final f/u.
- Hybrid system including PS may provide better results in this very challenging pathological condition.