

# Five Year Follow-Up for First Forty Patients with Shilla Procedure

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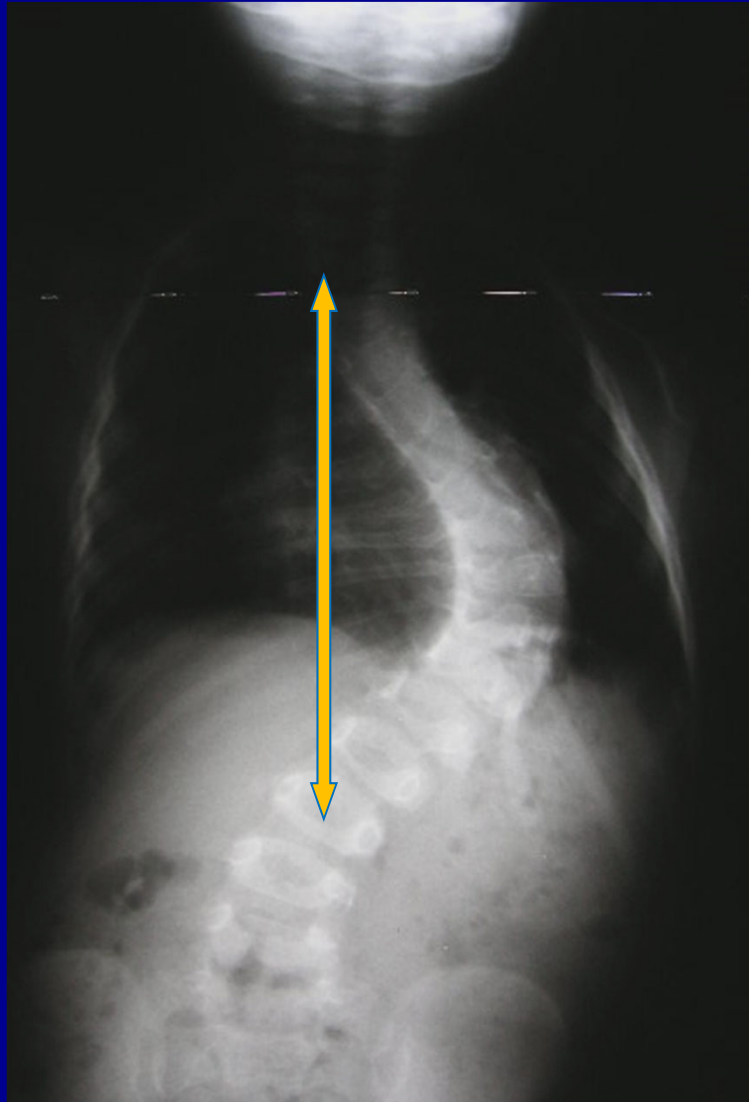
# Shilla Procedure: depends upon growth guidance

- Essentials:
  - Correction of the apex to neutral
  - Maintenance of correction with dual rods
  - Using spinal growth as the engine
  - Use of growing screws to slide along rods at the top and bottom

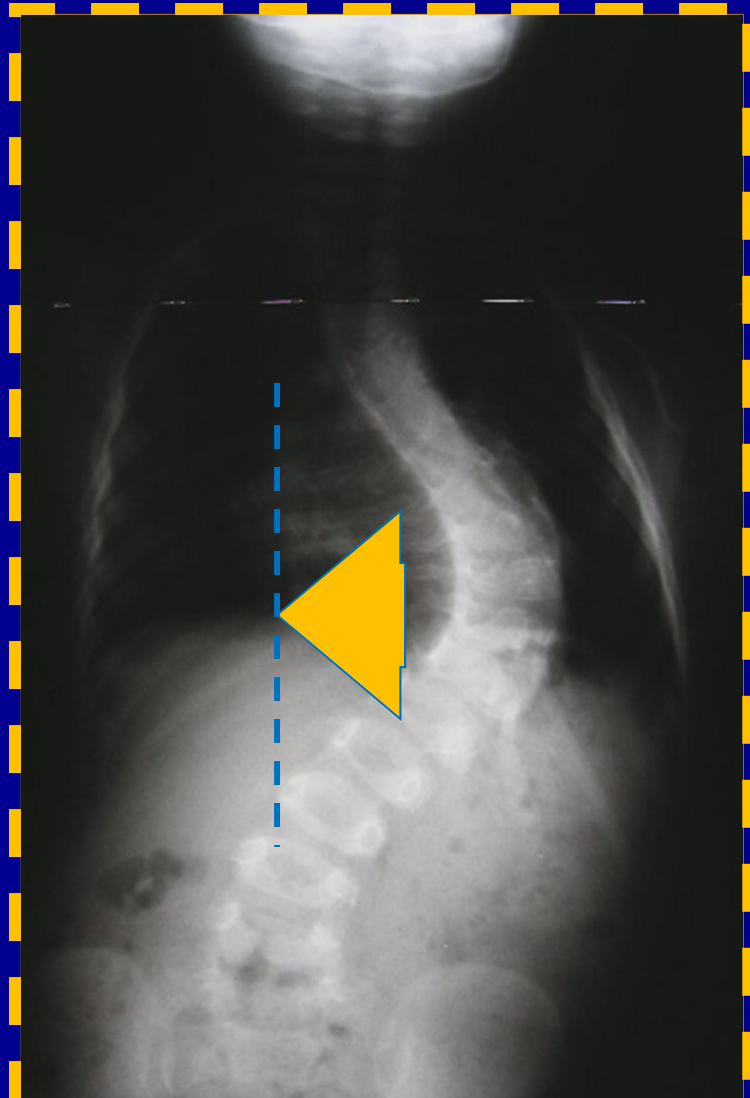


# Shilla

- The apex is the center of maximal deformity



VS



# Materials

- 40 patients: Shilla procedure (2004-2009)
  - Followed for average **5 yrs**
  - 17 male, 23 female
  - Idiopathic, (7), Neuromuscular (17), Syndromic (15), Congenital (1)
  - 2 deaths (1 MVA 6 mo postop, 1 assoc. with underlying disease 1 yr postop)
  - 1 moved out of state - treated at TSRH

# This study constitutes 100% follow-up of the first 40 patients with the original Shilla procedure

- Most patients reviewed every 6 months
- Average 5 yr follow-up (3+1 to 8+3 yrs)

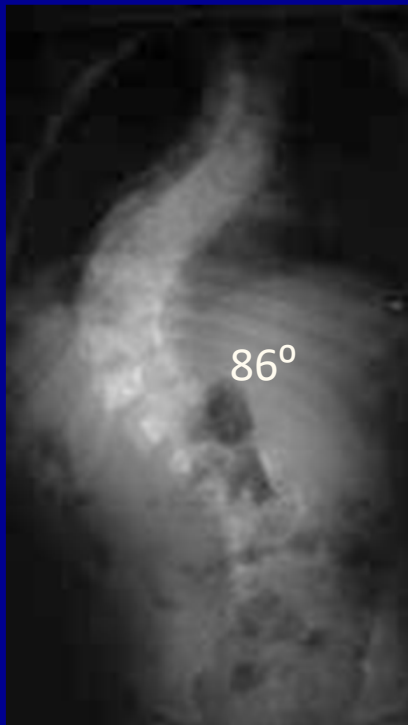


Shilla growing screw and cap



# Results

- Age at surgery average 6+11 yrs (23 mo to 11+10 yr)
- Curve average 67 degrees (40-115)



Preop  
2 yrs old

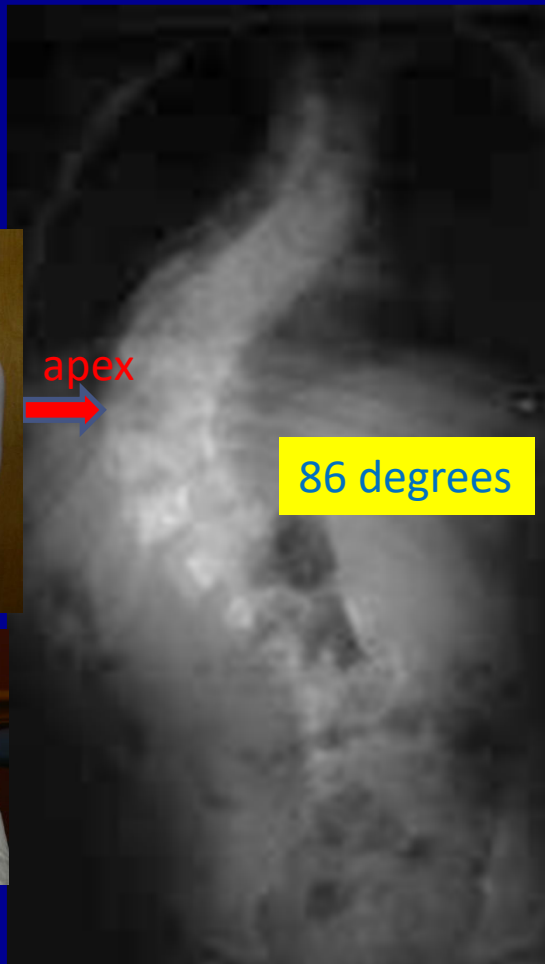


Immed postop

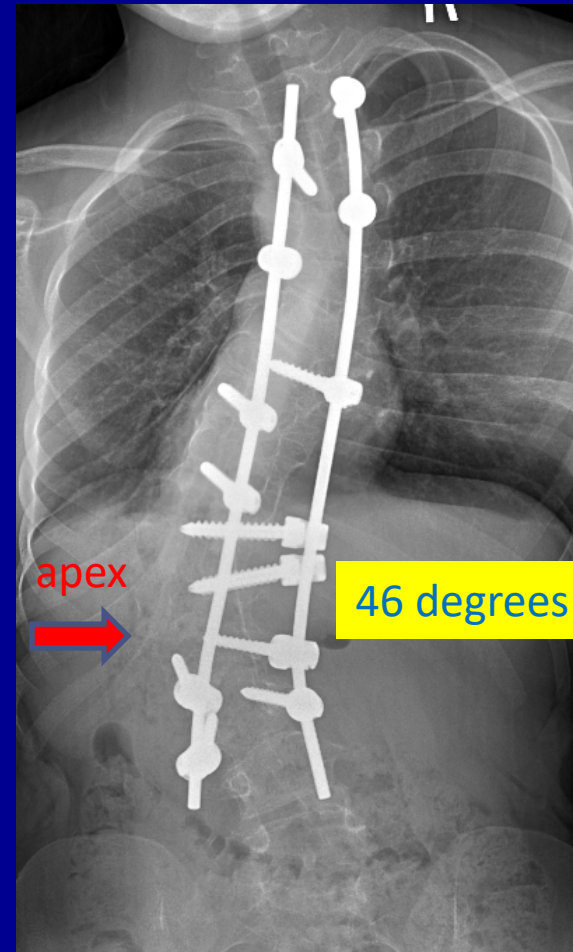


7 yr follow-up  
9 yrs old

# Changes over Nine Years



2 years old



11 years old

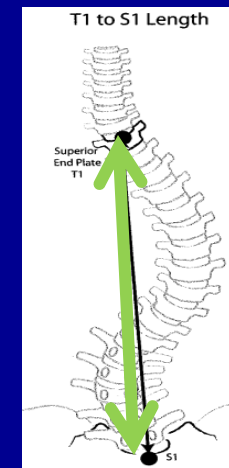
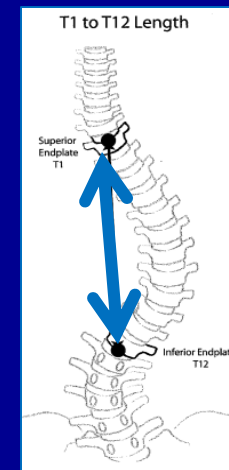


Photos just prior to revision



# Results

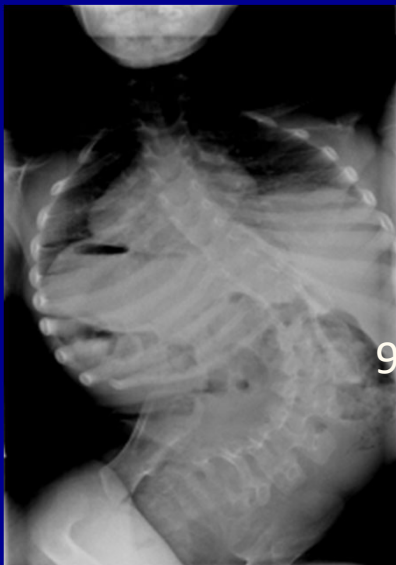
- **Curve correction**-initial 64%, w/growth f/u 40%
- **Thoracic height (T1-T12)**
  - initial 17% increase
  - f/u additional inc 8% (4 mm/yr)
- **Spinal height (T1-S1)**
  - initial 12%
  - f/u additional inc 10% (7 mm/yr)





# Results

- SAL increased 28% right/31% left lung
- Blood loss: 516 cc
- LOS: 4.8 days



# Complications

poorly defined by most

## Definitions:

- Undesirable effects of surgery
- Unexpected effects of surgery

## Our Definition:

- “Any return to the hospital”
- **Implant:** 51 (broken rods, screw pullout, implant prominence)- some more than 1
- **Wound:** 7
- **Infection:** 7
- **Alignment:** 7

# Complications

- We recognize the effect of the learning curve in developing a new surgical technique
- However-

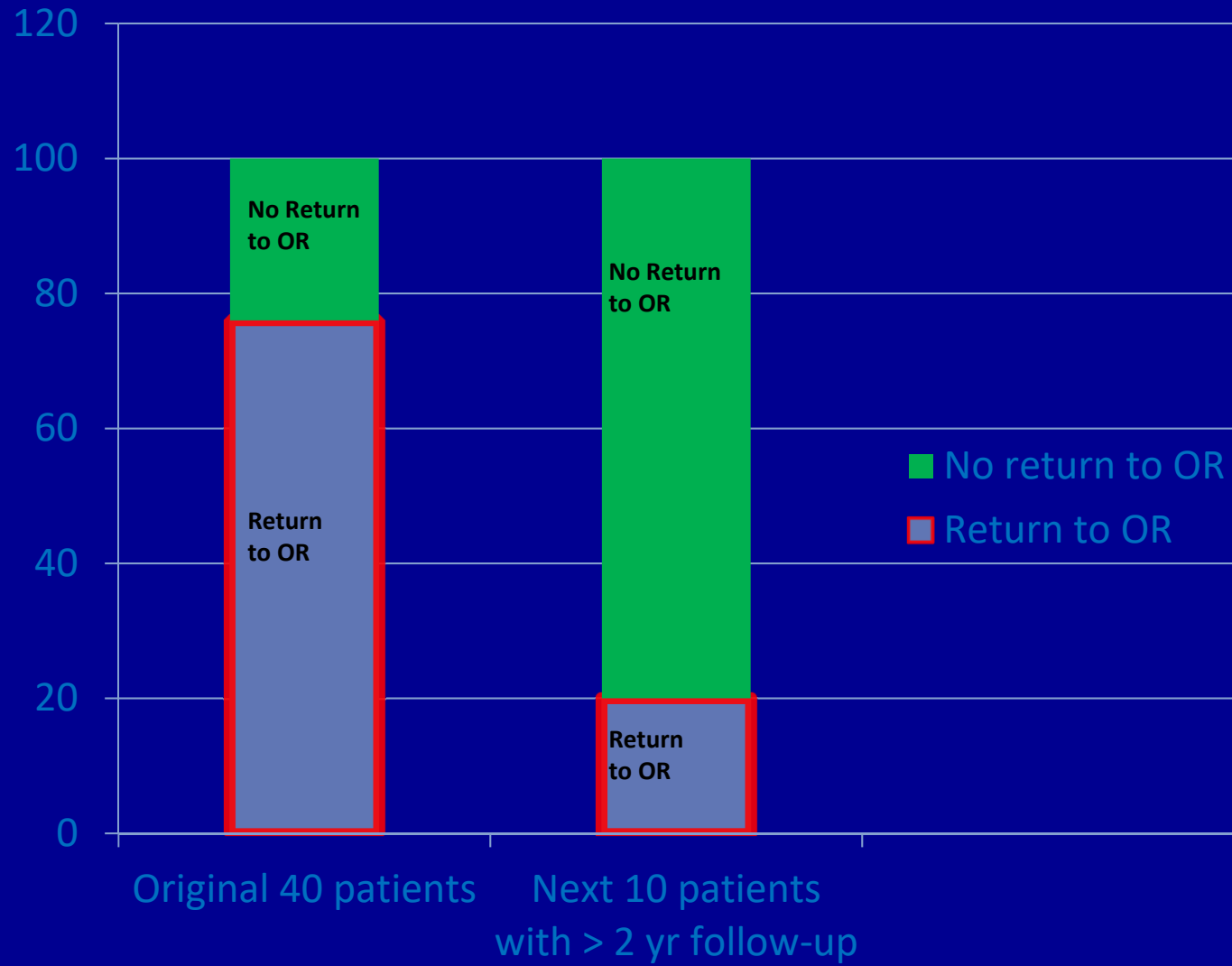
24%

No complications

No return to hospital

In contrast to distraction techniques which 100% returned to surgery

## Percentage Return to OR

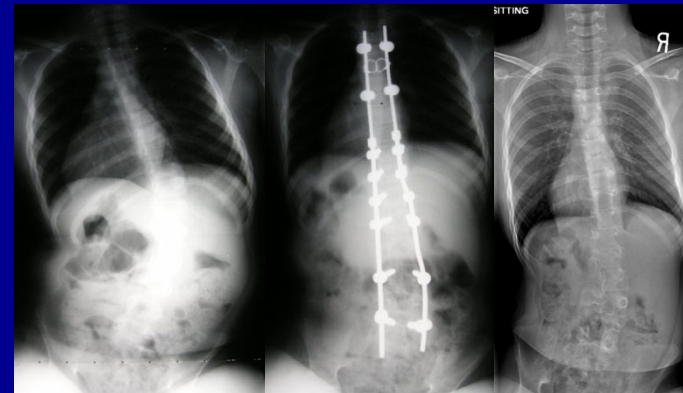


# Outcome

- 10 patients reached maturity

- 1 eliminated implant only

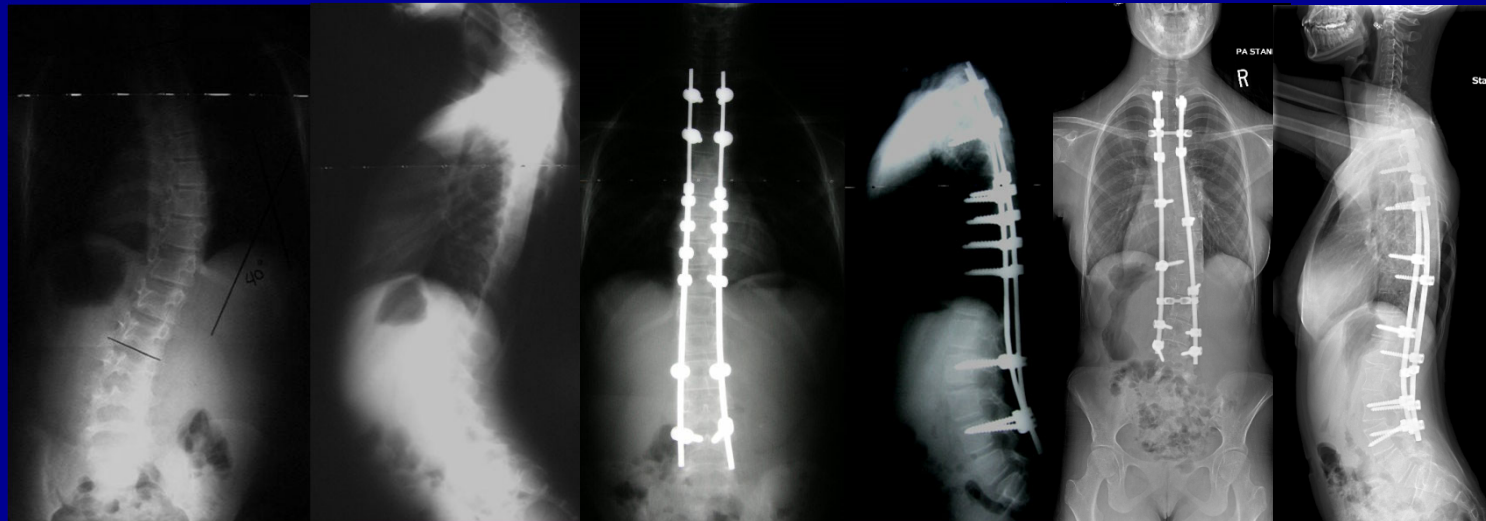
- 9 fused with final correction



Preop

Post Shilla

Post implant  
removal



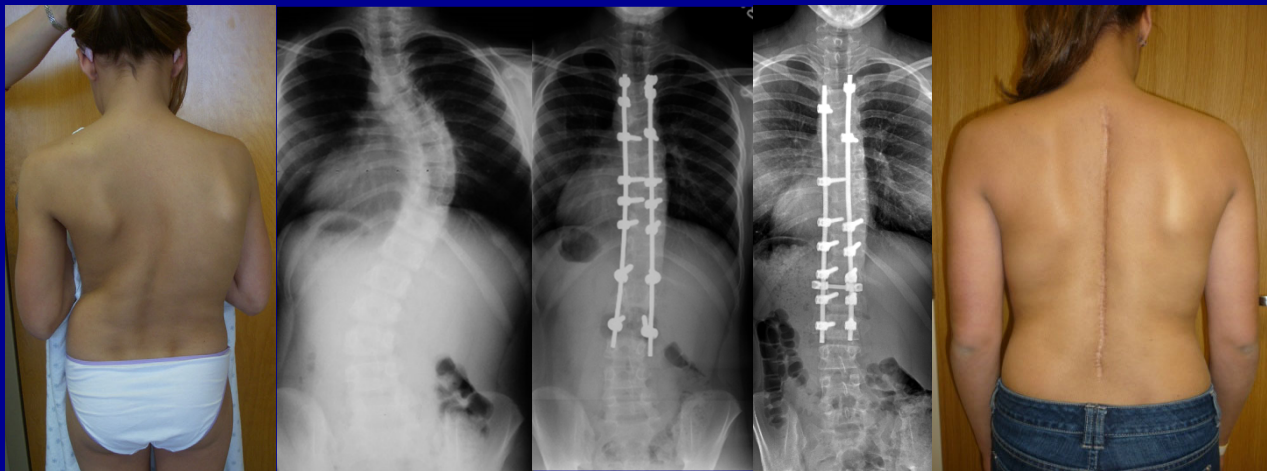
Preop  
Congenital myopathy

Post Shilla

Post fusion

# Summary

- First **40** patients
  - 37 continue to be followed (2 deaths, 1 moved)
  - Original Shilla growing screws
  - Spinal height improved in all
  - Growth-7mm/yr average (most patients were not normal children)
  - Acceptable rate of complications



Preop  
6 yrs old

Post Shilla

Post definitive fusion  
13 yrs old

# Thank You

