Spinal Height (T1-T12) in Shilla Patients Who Have Reached Maturity

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Disclosures

- The Primary Author is the Inventor of this procedure and its most vigilant critic
- Consultant for Medtronic (teaching courses, planning group, royalties)
Background

• The Shilla technique is a growth guidance technique that does not require scheduled returns to the operating room every 6 months.

• Spinal height of 180 mm is a minimal goal of treatment in EOS (Karol, et al.).

SYMPOSIUM: EARLY ONSET SCOLIOSIS
Early Definitive Spinal Fusion in Young Children
What We Have Learned
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• **16 patients** (13 males, 3 females) who underwent the Shilla procedure have reached sufficient skeletal maturity to undergo their definitive procedure
  
  – Skeletal maturity was determined by bone age, Risser sign, menarche, and/or closure of triradiate cartilage while considering menarche and chronologic age.

  – Diagnosis (important factor)
    
    • Idiopathic (4)
    • Syndromic (5)
    • Neuromuscular (6)
    • Congenital (1)
• **Definitive procedures** consisted of:
  – Removal of Growing Rods, Insertion of permanent instrumentation with fusion and any necessary further correction: **14 patients**
  – Implant removal alone: **4 patients**

• **Average age at definitive procedure**: **13+5 yrs**
  (Range 8+11 to 15+4 yrs)

• **Average growth period** with Shilla instrumentation preceding definitive procedure: **4+4 yrs**
  (Range 1+6 to 8+6 yrs)

![Preop films of 8 yr old with spinal cord injury](image1.png)

![Postop Shilla](image2.png)

![2 yrs after implant removal at age 12](image3.png)
T1-T12 measurements

• Initial measurement on first postop film after index procedure
  – Average T1-T12 was \(220\) mm (range 180-231 mm)
• Second measurement on film immediately prior to definitive procedure
  – Average T1-T12 was \(234\) mm (range 185-277 mm)
• Final measurement immediately following definitive procedure
  – Average T1-T12 was \(246\) mm (range 205-323 mm)
• At skeletal maturity, all patients reached or surpassed the goal of 180 mm (246mm)
• There was a 12.4% improvement in spinal height with growth alone
  – There was an additional 6.3% increase in height with final correction (representing the flexibility remaining in spine at end of growth)
Conclusion

*Shilla growth guidance technique does result in a satisfactory increase in spinal height without repeated artificial spinal distraction.*