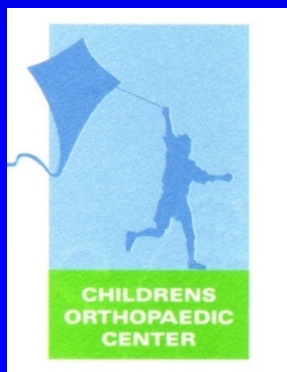


# Shortening of Growing Spinal Rods Reverses Cardiac Failure in Child with Marfan Syndrome and Scoliosis

**David L. Skaggs**      Medtronic a,b,d, Stryker Spine b,d DePuy d  
**Gerald Bushman**  
**Todd Grunander**  
**Wudbhav Sankar**  
**Vernon T. Tolo**      Medtronic a

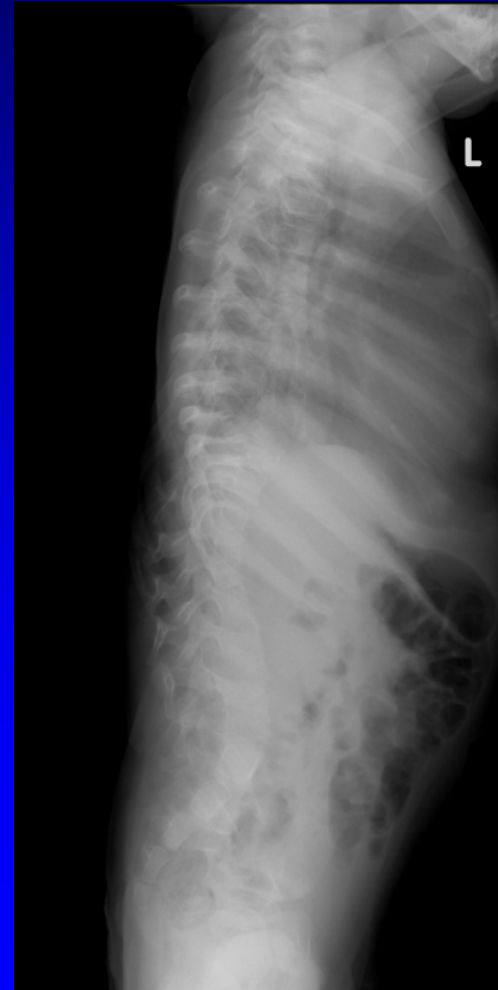


*Childrens Hospital Los Angeles*  
**ICEOS 2008**



# 16 mo old girl Marfans

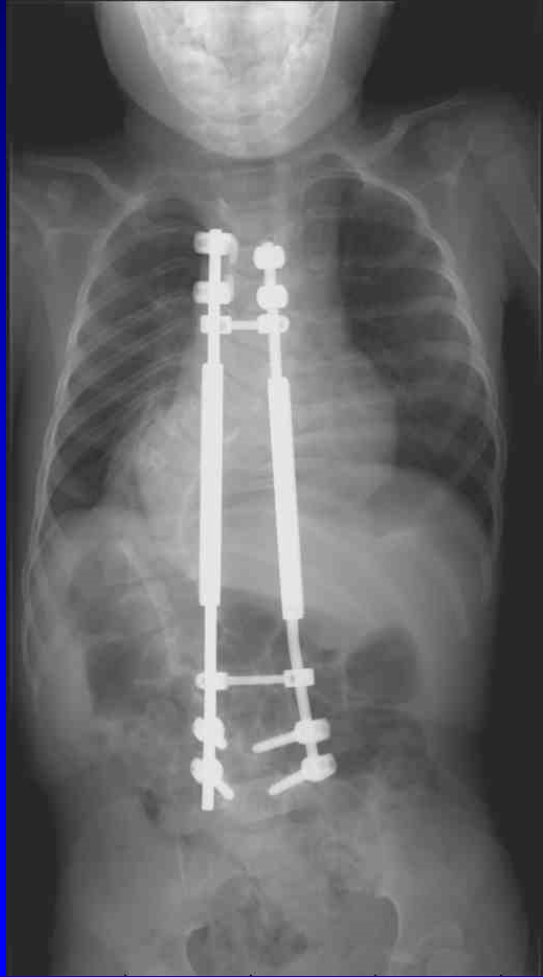
- Aortic root dilatation (z 5.5)
- Tricuspid insufficiency and prolapse



112°

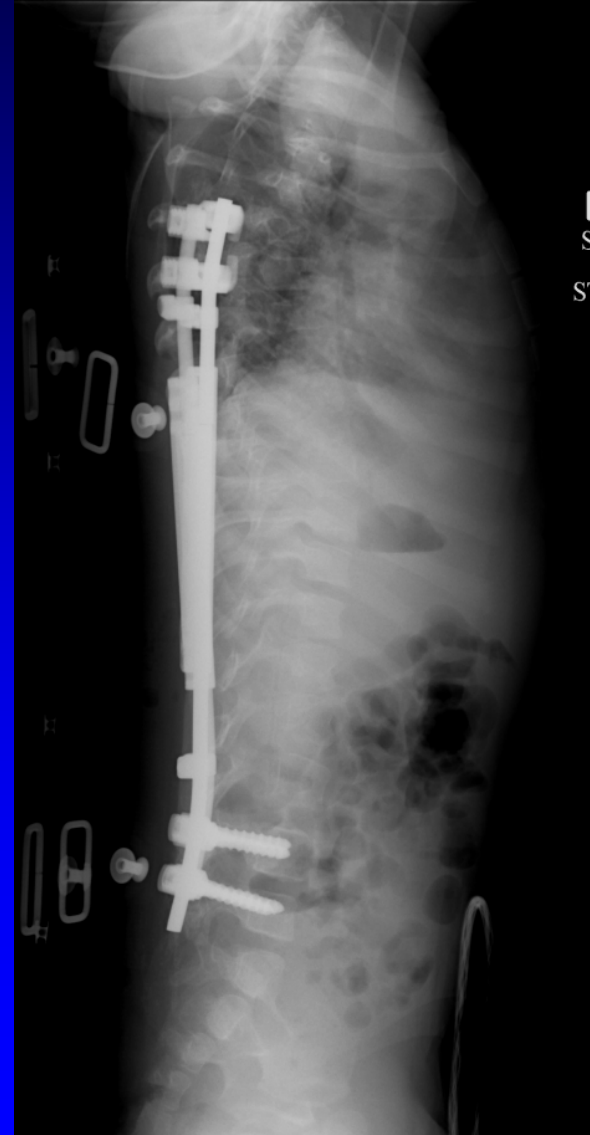
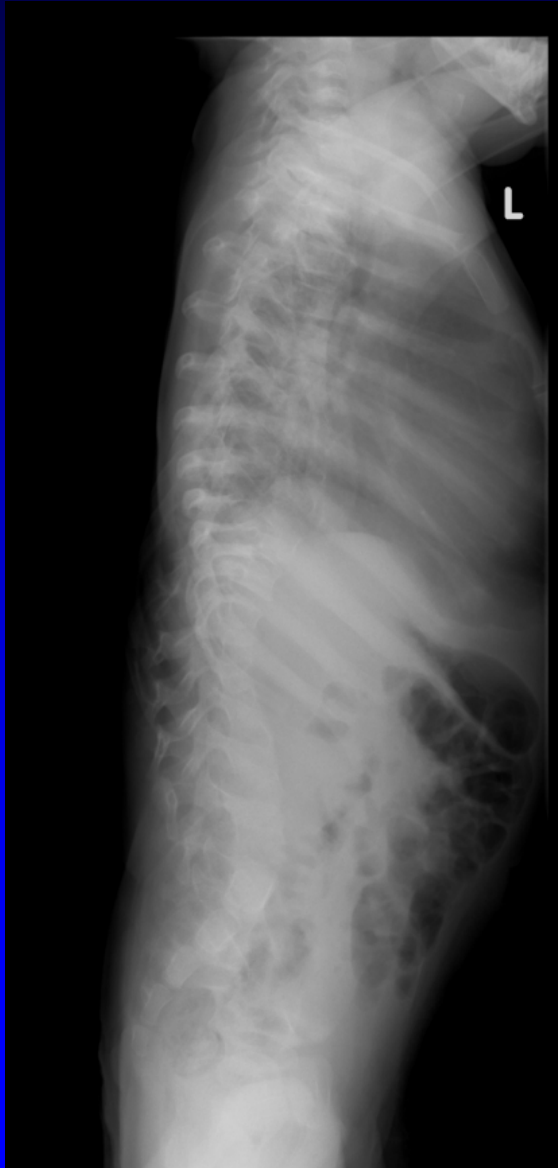


Primary  
implant

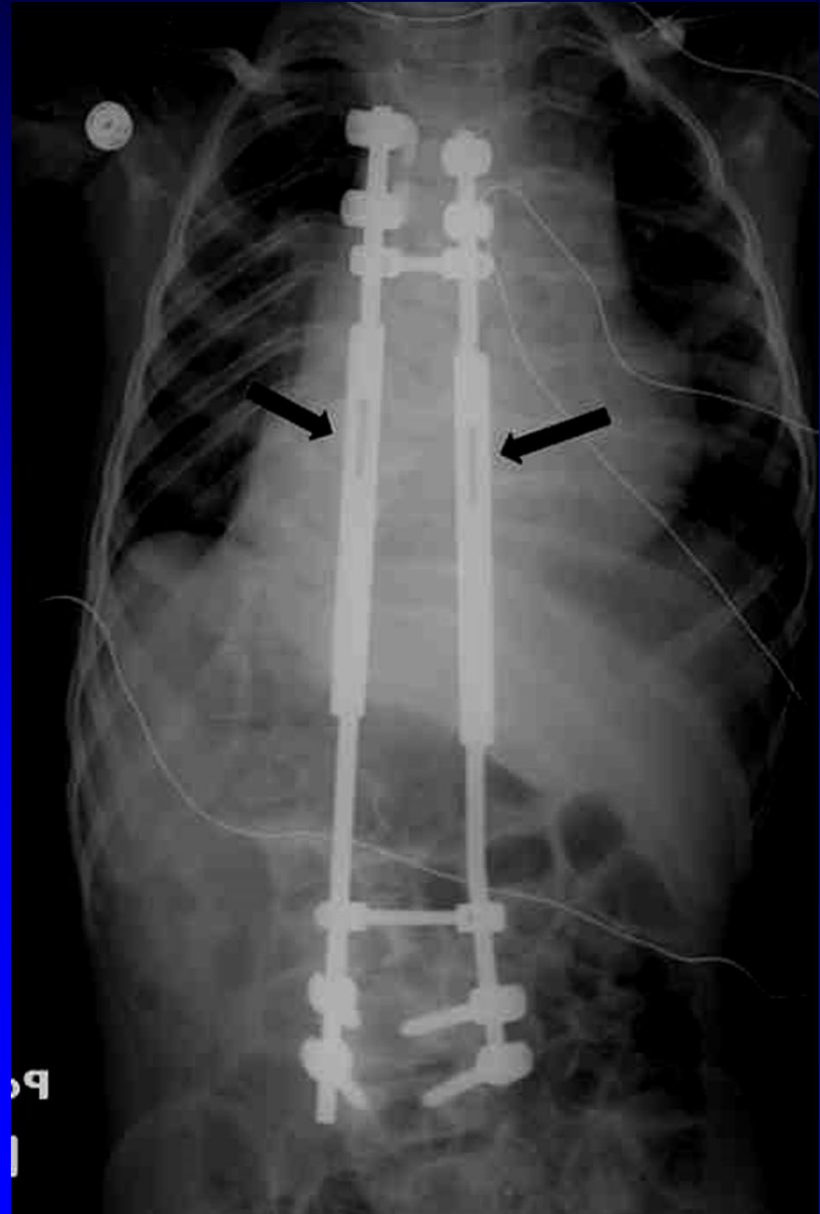
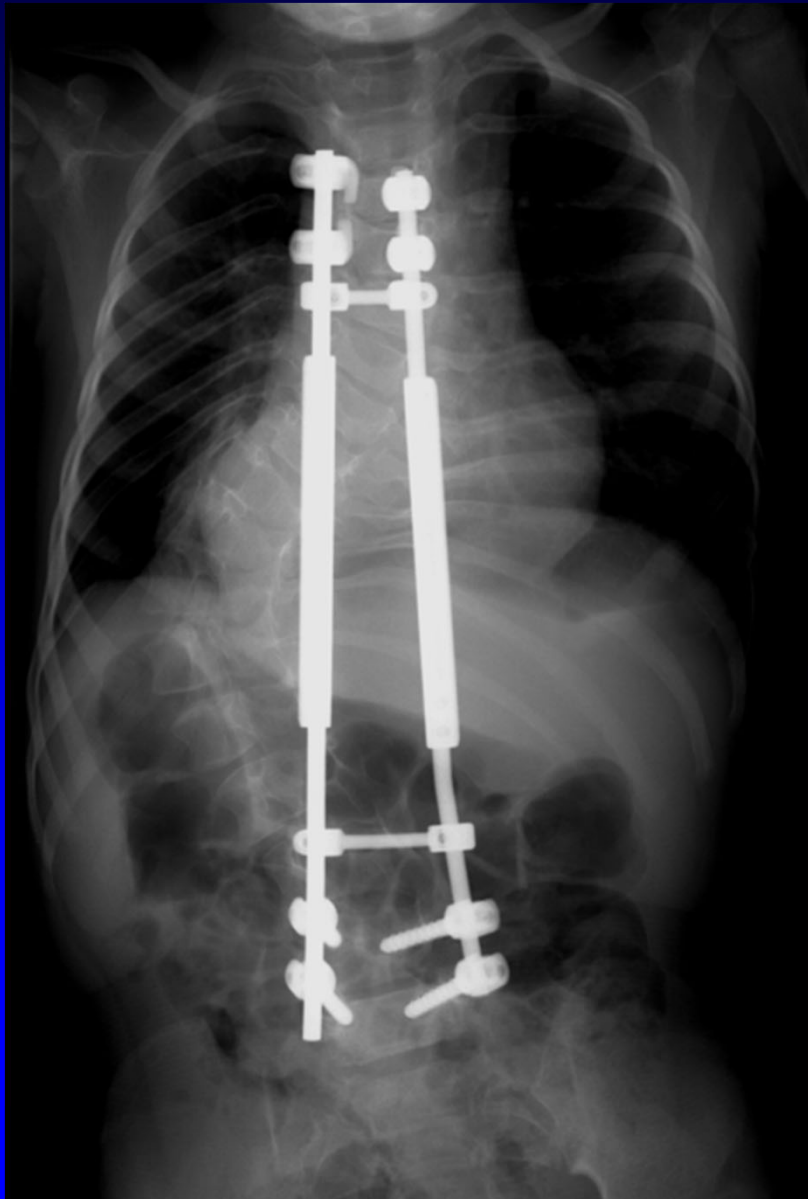


Kyphosis not an issue

Primary  
implant

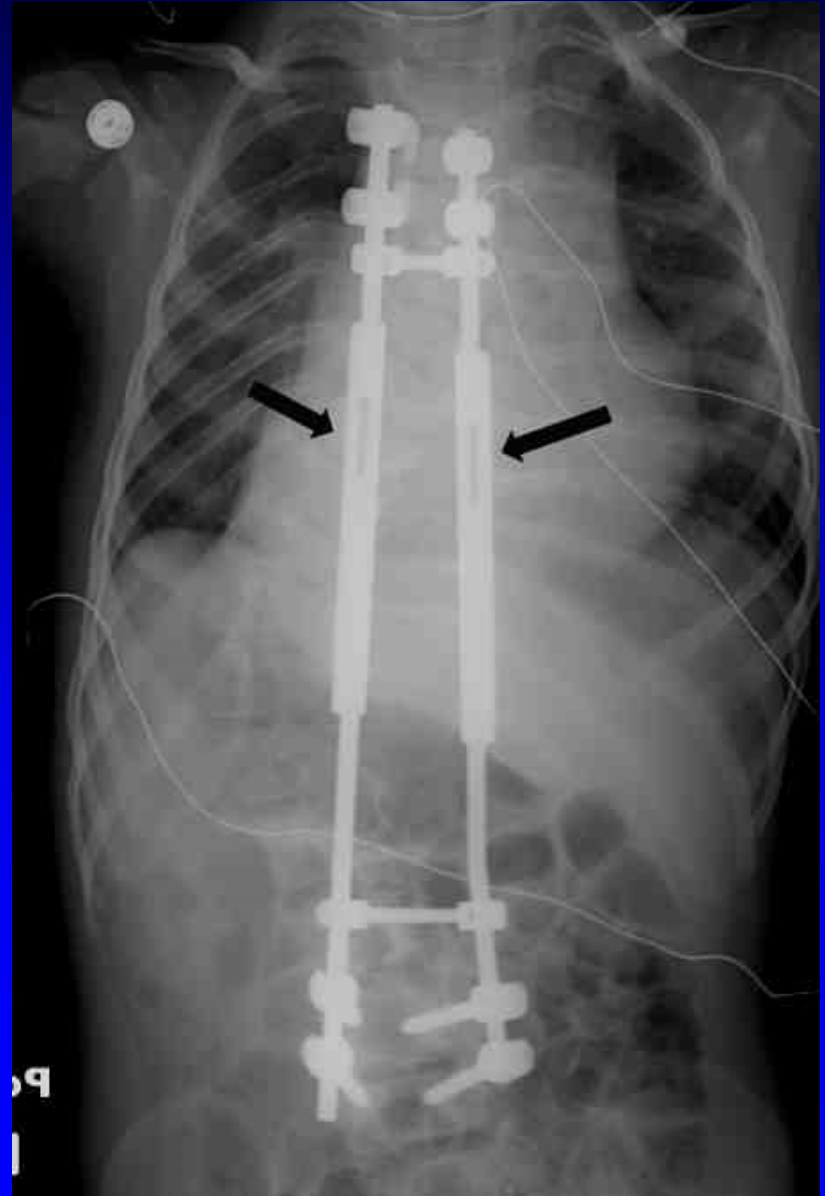


6 months later, Lengthening – 19mm



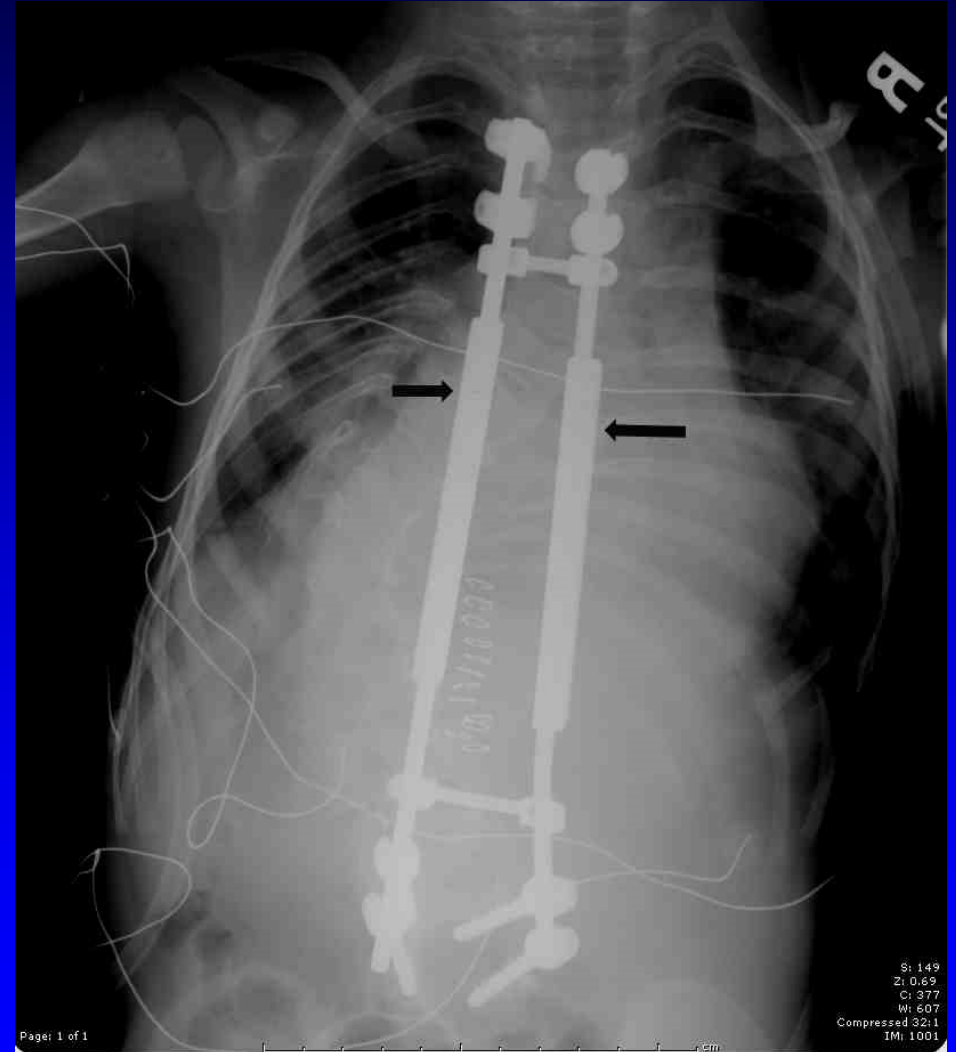
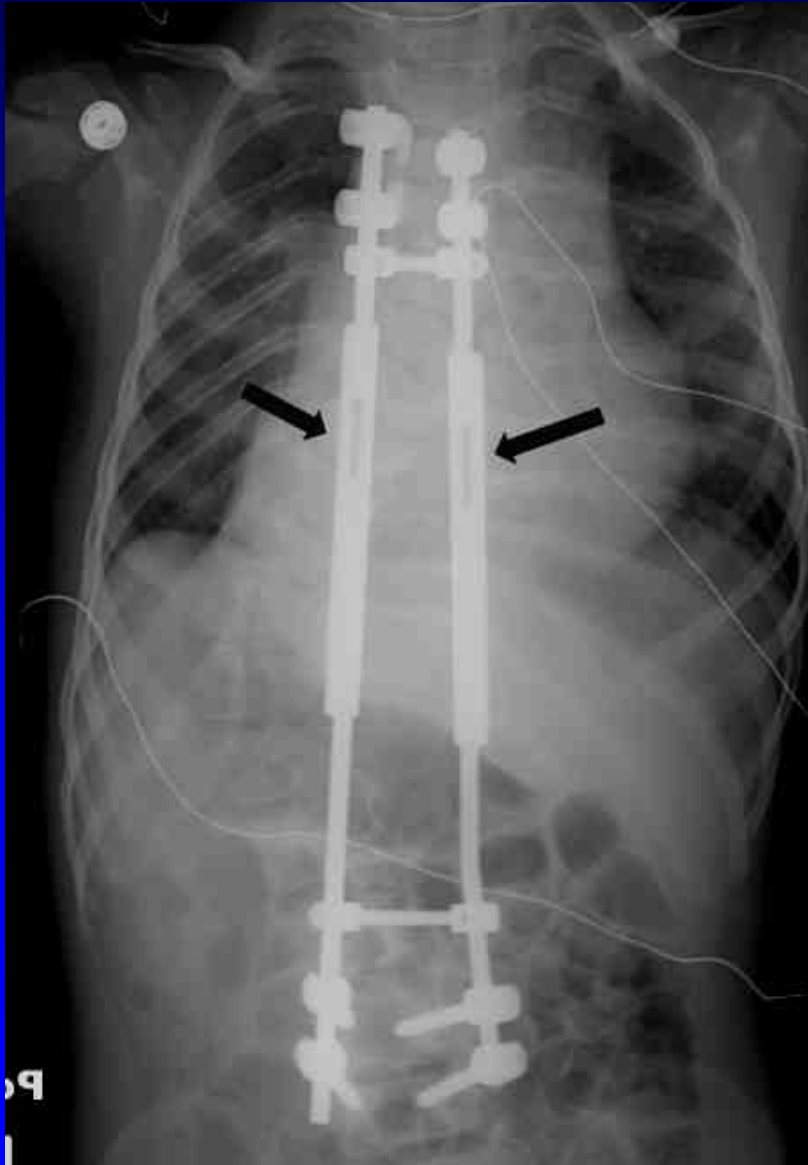
# Cardiac Failure — 24 hours after lengthening

- ↑ heart rate (170)
- ↑ CPK-MB (21)
- ↑ Troponin (1.63)
- ↓ Shortening fraction (8% Vs. 28% pre-op)
- Steadily Worsening Clinically
- Expected to Die

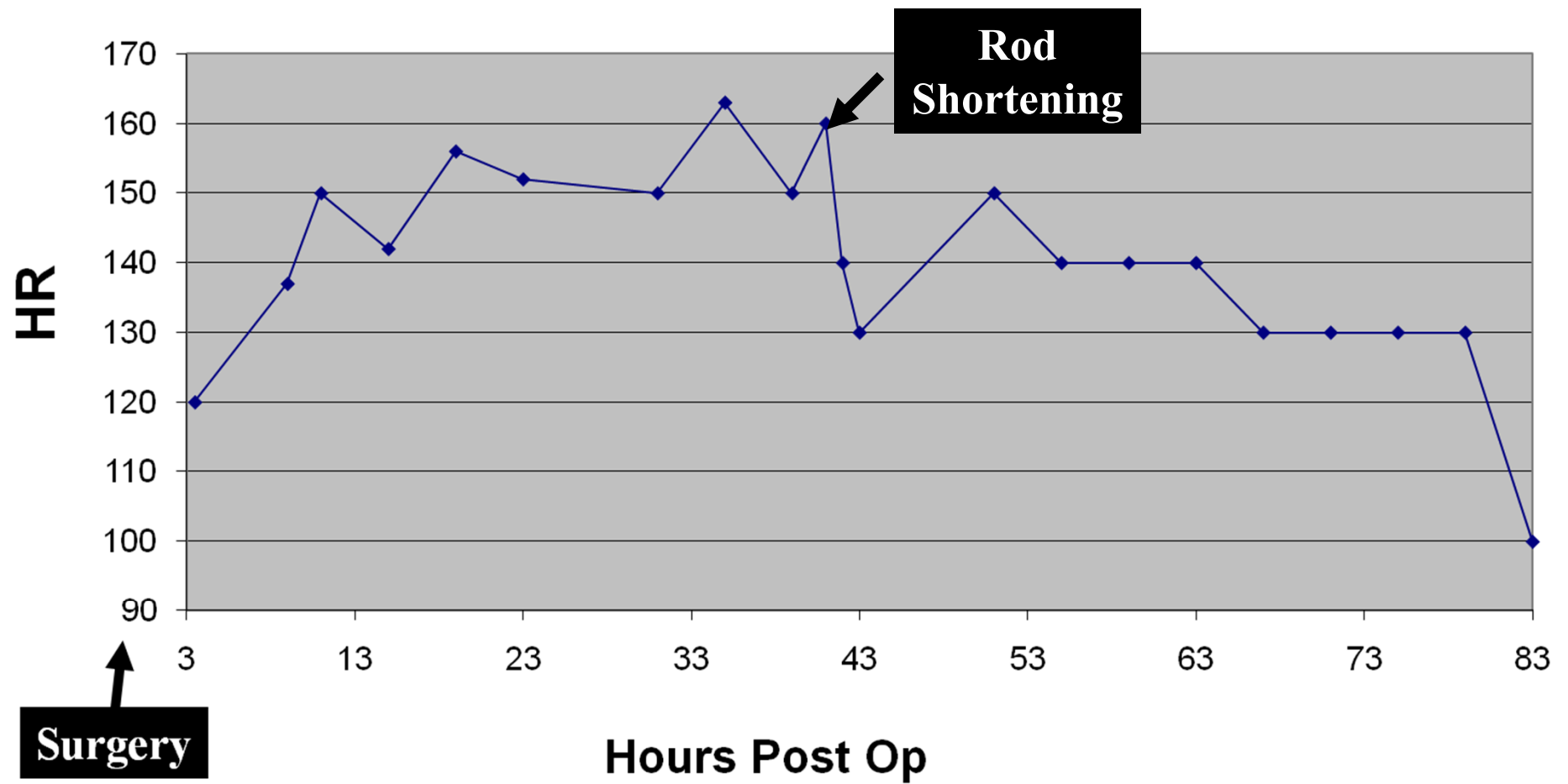


# Shortened Rods in ICU Urgently

- All returned to baseline



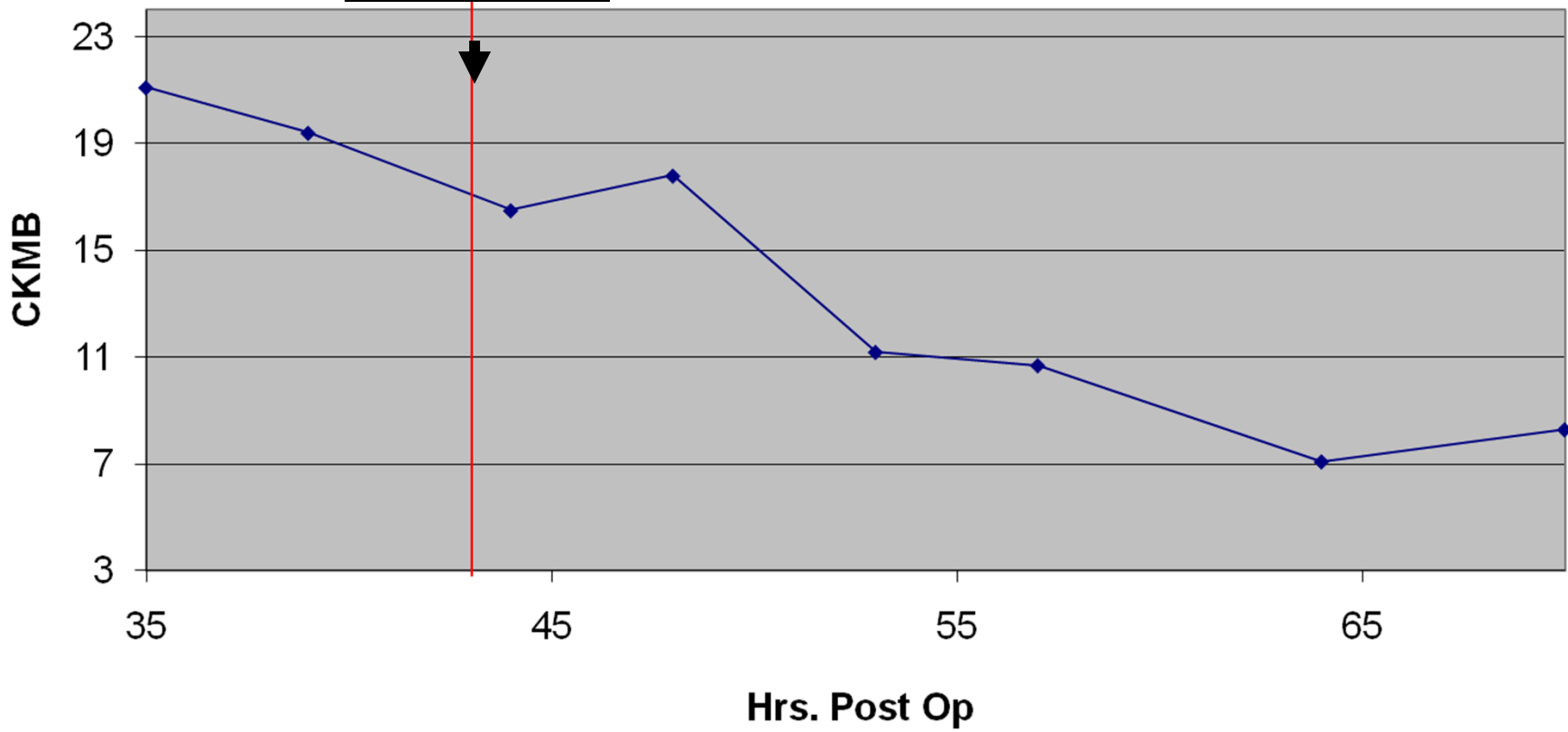
# Heart Rate



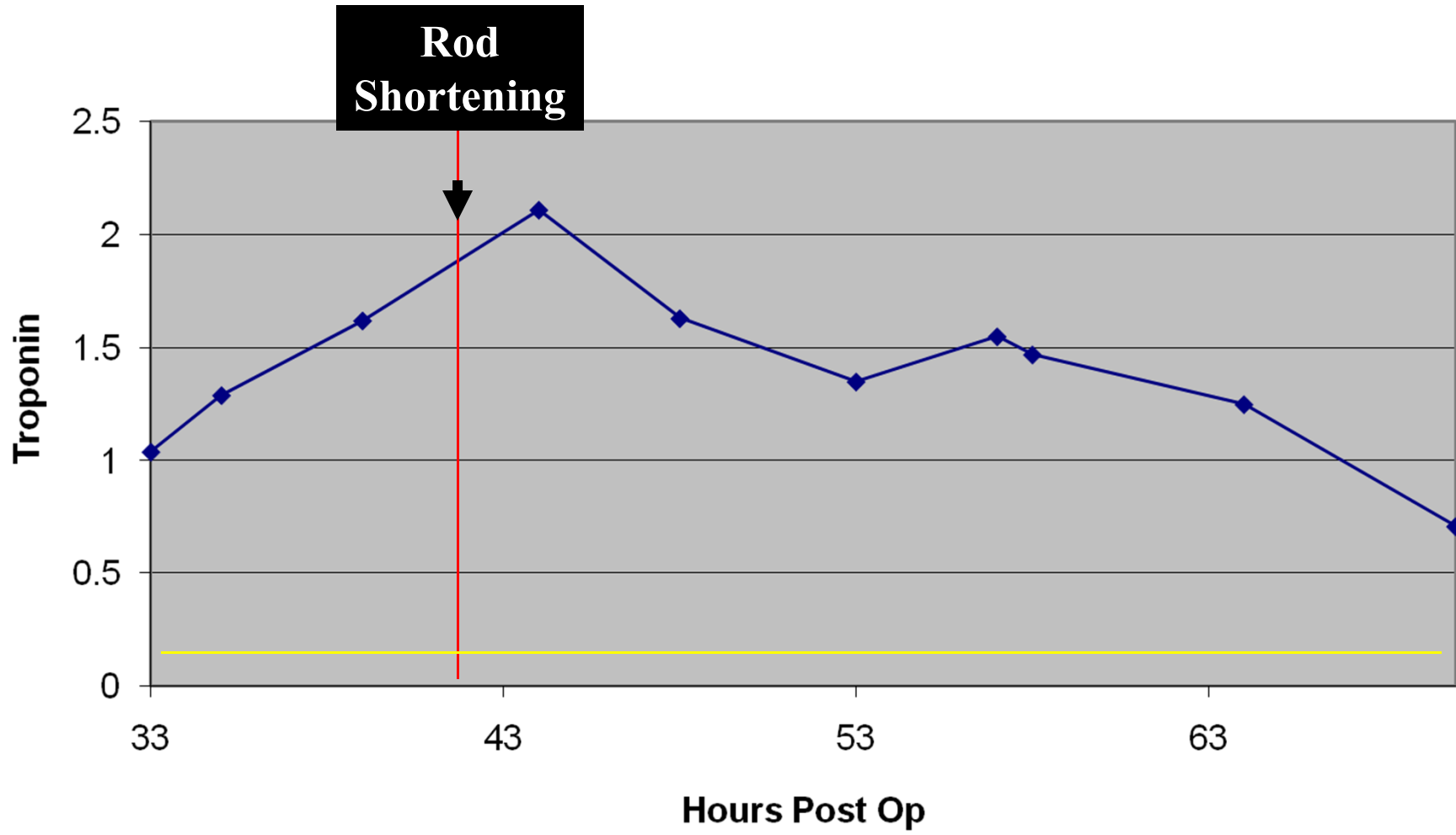


# CKMB

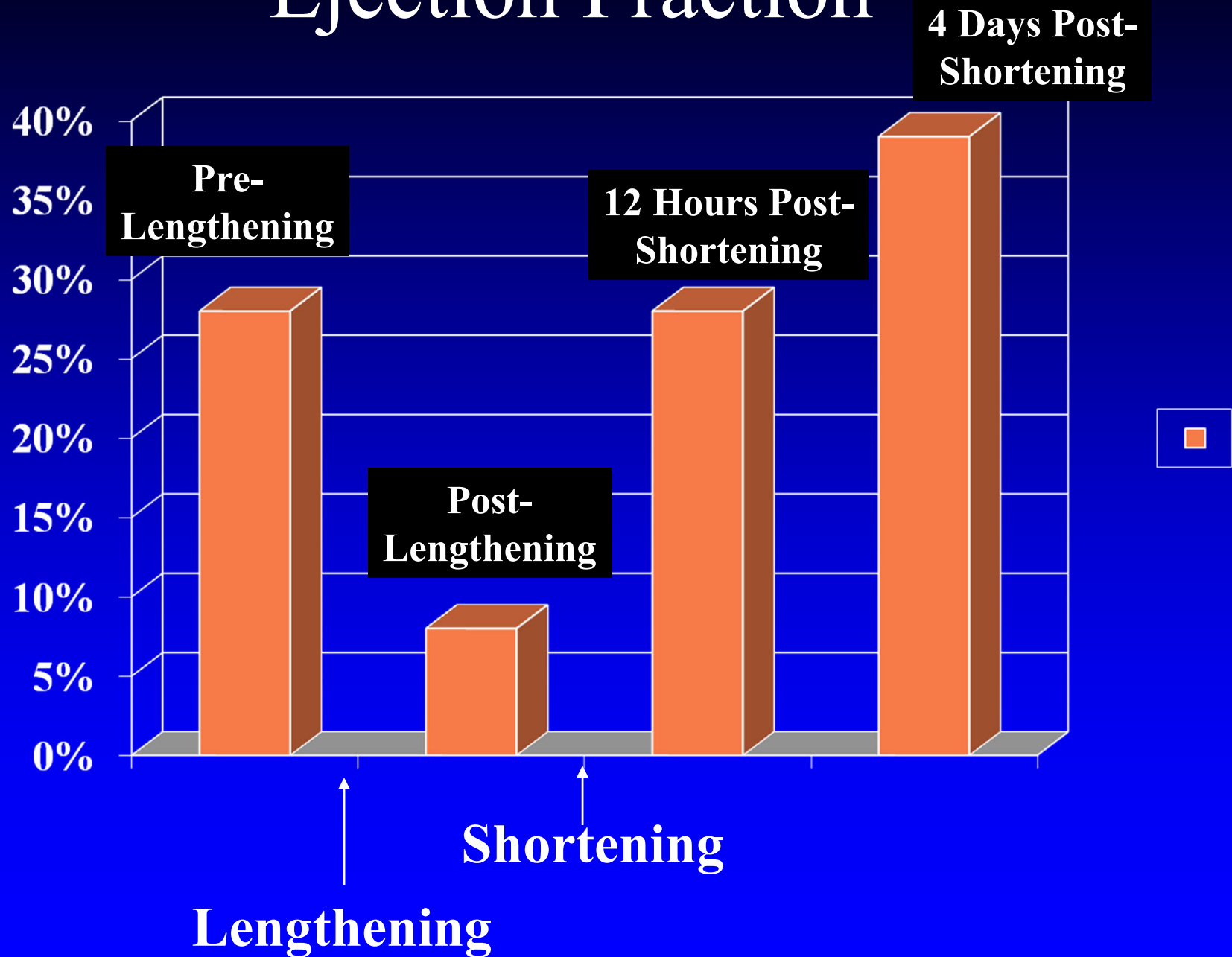
**Rod Shortening**



# Troponin



# Ejection Fraction



# Lesson

- ❖ Lengthening growing rods led to cardiac failure
- ❖ Shortening rods corrected this immediately
  
- ❖ This may be unique to Marfan Syndrome,
  - ❖ But it may not be....

Thank  
You



Thank You!



# Thank You

