**What Did We Learn about AIS:  
To Brace or Not?**

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**INDICATIONS FOR BRACING**

**SRS Indications:**

**1. Curve magnitude 25-40 deg**

**2. Risser 0,1, or 2**

**3. Less than one year post-menarchal**

**Nachemson and the SRS study group:**

286 females 10-15 yo with curves 25-35 deg

120 observed vs 111 TLSO’s

48% failed observation / 15% failed bracing

Brace prevented surgery (p<0.0005)

**Compliance Study (Katz and Herring)**

**Criteria for Inclusion**

**Adolescent idiopathic scoliosis**

**Risser 0, 1 or 2**

**Curve of 25 – 45 degrees**

**Boston brace with temperature logger**

**Followed to maturity or surgery**

**Hours of brace wear statistically related to success (p=0.008)**

**Only 16/82 wore the brace ≥12 hrs per day**

**To determine the effect of compliance *counseling* on daily brace wear and curve progression**

**Would you cheat if you knew you would be caught?**

**INDICATIONS FOR BRACING**

**1. Curve magnitude 25-45 deg**

**2. Risser 0,1, or 2**

**Less than one yr post-menarchal**

**No previous treatment**

**Temperature loggers**

**Counseling (Group 1)**

Compliance data collected

Physician, orthotist, and patient given wear data each visit and discussed

**Non-Counseling (Group 2)**

Patients aware “temperature” monitored

Physician, orthotist, and patient blind to compliance data

**171 patients done bracing**

* + 93 counseled

Init curve magnitude ave 33.2° (25-45°)

78 not counseled

Init curve magnitude ave 33.9° (25-45°)

Counseled (n=93)

Ave daily wear 13.8 hours

Not Counseled (n=78)

Ave daily wear 10.8 hours

**Counseled group wore brace average 3.0 hrs more daily (p=0.002)**

**Effect of Ave Wear on Success**

**No progression (n=91) : 14.4 hrs/day**

**No surgery (n=119) : 13.1 hrs/day**

**Surgery (n=51) : 11.0 hrs/day**

**Ave wear 3.4 hrs greater for nonprogression**

(no surg v surg p=0.0295; no prog v surg p<0.0001)

**Counseled**

**59.1%** < 6° progression

**24.7%** surgery or > 50°

**Blinded**

**46.2%** < 6° progression

**35.9%** surgery or > 50°

**BRAIST Study**

**Included curves 20 to 40 degrees**

**Ave curve in both groups 30.3 degrees**

**242 patients completed treatment**

**146 braced (60%) and monitored for 6 mos**

**96 observed (40%)**

**Success defined as curve less than 50 and/or no surgery**

Braced patients 72% success (TSRH 70.2%)

Observed patients 48% success

Odds ratio for success with bracing 1.93

NIH halted study

**1st 6 mos compliance…**

**12.9 hrs linked with success in 90%**

**BRAIST vs TSRH**

**BRAIST measured compliance only the first 6 months**

**Includes advanced Risser patients**

**Didn’t separate results for different Rissers**

**Let’s compare hours worn THROUGHOUT treatment at TSRH in just curves between 25 and 35 degrees in Risser 0 and 1 patients…(n=97)**

**To determine the influence of the Risser sign and compliance on the likelihood of surgical progression in children wearing orthoses for AIS.**

**Hours of Brace Wear**

**Risser 0 = 33.1 degrees**

**Risser 1 + 2 = 34.6 degrees**

**Risser 0 (n=121): 11.3 h/d**

**Risser 1 (n=30): 13.4 h/d**

**Risser 2 (n=19): 14.2 h/d**

**Trend for increased wear not significantly different (p=.13)**

**Incidence of Prog to Surgery**

**Risser 0 (open triradiate, n=77): 63%**

**Risser 0 (closed triradiate, n=44): 32%**

**Risser 1 (n=30) : 6.9%**

**Risser 2 (n=19) : 0%**

**Change in curve vs Risser (p=0.00003)**

**Risser One**

**Only 1 patient who wore her brace more than 12 hours daily required surgery**

**The BRAIST recommendation holds up in Risser one patients!**

**Risser 0/Closed Triradiate**

**BRAIST recommendations inadequate**

**31 wore brace >12.9h/d (BRAIST rec)**

22.6% surgery

**10 wore >18 h/d**

**0 surgery**

**Risser 0/Open Triradiate**

**15 wore brace < 12.9 h/day**

80% surgery

**29 pts >12.9h/d (BRAIST rec)**

48.3% surgery

**18 pts >15h/d**

50% surgery

Even 18 h not protective vs surgery if curve ≥33 °

**My Recommended Hours**

**Risser 0/open tri: full time (start at 20 deg)**

**Risser 0/closed tri: 18 hrs**

**Risser 1: 12.9-15 hrs**

**Risser 2: ???**

**So Who Does Bracing Work For?**

**Average BMI**

**Risser zero closed tri thru Risser 1**

**Lumbar > Thoracic**

**Ideally curve < 33 degrees, but notably < 45 degrees**

**And compliant!**

**Who is Likely to Fail?**

**Underweight (BMI 10.8)**

**Risser 0, open triradiates**

**Curve > 33 degrees (43 degrees)**

**Thoracic curve**

**Compliance not indicative of success (she wore 18 hours daily)**

**CONCLUSION TODAY…**

**I still prescribe braces**

**Our study and the BRAIST study agree that bracing works for many/most kids**

**CONCLUSION TODAY…**

**I monitor compliance with family’s permission**

**I don’t fight noncompliance (stop bracing)**

**I still brace Risser zero open triradiate girls**

**Start earlier at 20 degrees**

**23 hours/day**

**Might switch brace designs (Cheneau?)**

**Role for tethering?**

**CONCLUSION TODAY…**

**Visit with me q 6 mos for xray (EOS)**

**Visit with orthotist every 3 mos for adjustments and compliance counselling**

**Graduated wear schedule based on Risser sign (dose it like a drug)**