



Author disclosures: Johan Heemskerk: None. Diederik Kempen: DePuy Synthes. Mark Altona: DePuy Synthes. Sebastiaan Wijdicks: None. René Castelein: None.

**Paper #20**

**Health-Related Quality of Life in Early-Onset Scoliosis Patients Treated Surgically: EOSQ Scores in Traditional Growing Rod vs. Magnetically-Controlled Growing Rods**

Muharrem Yazici, H. Gokhan Demirkiran, Z. Deniz Olgun, Gizem Irem Kinikli, Senol Bekmez, Mehmet Bertkas



**Summary:** In children with early-onset scoliosis, traditional growing rods and magnetically controlled growing rods are similar in most health-related quality of life scores as measured by EOSQ, except financial burden and patient satisfaction, and possibly physical activity. The MCGR is superior in these three domains.

**Hypothesis:** Magnetically controlled growing rod (MCGR) may provide better health-related quality of life than traditional growing rods (TGR).

**Design:** Cross sectional patient-reported outcome study.

**Introduction:** TGR causes repetitive stress on patients and requires a significant commitment of resources by their families. MCGR was developed in an attempt to decrease surgical sessions and achieve more natural growth by frequent, non-invasive lengthenings. Although the clinical indications for these treatments have largely been agreed upon, there is a lack of understanding of their impact on patients' and their families' health-related qualities of life.

**Methods:** Inclusion criteria: 10 years or younger at the time of index surgery, major curve 30 degrees or greater at implantation, thoracic height T1-T12 less than 22cm, no previous spine surgery, and minimum 2-year postop follow-up. Pre- and post-distraction radiographs were taken for all patients to confirm rods lengthened. Turkish version of the Early Onset Scoliosis Questionnaire (EOSQ) was utilized to assess health-related quality of life.

**Results:** Children in MCGR (n:19, mean age: 7.2 yrs, 68.4% female) and TGR (n:25, mean age: 6.5 yrs, 44.0% female) were similar in terms of gender and age at the time of operation ( $p > 0.05$ ). Median follow-up duration for MCGR and TGR groups were 21 and 93 mo, respectively ( $p < 0.001$ ). Mean EOSQ scores for economic burden and overall satisfaction of MCGR group were higher than TGR group ( $P = 0.002$  and  $0.006$ , respectively); all other scores were similar ( $p > 0.05$ ) (Table). Analyses adjusted for number of lengthenings revealed that scores of economic burden and overall satisfaction of MCGR group remained significantly higher; moreover, physical activity score become significantly higher for MCGR group (Table).

**Conclusions:** HQRL data obtained from MCGR and TGR reveal superior outcomes in the financial burden and patient satisfaction, and possibly physical activity when controlled for number of lengthenings, for MCGR. However, in all other domains, both techniques score similarly, indicating that the TGR is far from being obsolete at this time.

Table

EOSQ values and domain values of groups (adjusted lengthening count with analysis of covariance [ANCOVA] models)

Mean (95% CI)	MCGR (n=19)	TGR (n=25)	P
General health	60.8 (53.2 - 68.4)	57.3 (50.7 - 63.9)	0.495
Pain/Discomfort	73.9 (63.5 - 84.3)	74.9 (65.9 - 83.9)	0.889
Pulmonary functions	86.8 (77.1 - 96.5)	86.5 (78.1-94.9)	0.968
Transfer	62.2 (46.8 - 77.6)	53.7 (40.4 - 67.1)	0.418
Physical function	73.9 (60.8 - 87.0)	55.8 (44.5 - 67.2)	<b>0.046</b>
Daily living	50.6 (33.8 - 67.4)	61.1 (46.5 - 75.6)	0.355
Fatigue/energy level	71.6 (60.1 - 83.1)	76.6 (66.6 - 86.6)	0.520
Emotion	60.9 (49.3 - 72.5)	52.2 (42.2 - 62.3)	0.273
Parenteral burden	53.3 (42.0 - 64.6)	46.1 (36.3 - 55.9)	0.345
Financial burden	61.7 (50.2 - 73.3)	38.1 (28.1 - 48.1)	<b>0.004</b>
Satisfaction	82.7 (73.5 - 91.9)	67.6 (59.7 - 75.6)	<b>0.018</b>
Ortalama	67.1 (60.2 - 74)	60.9 (54.9 - 66.9)	0.186

Author disclosures: Muharrem Yazici: DePuy Synthes. H. Gokhan Demirkiran: None. Z. Deniz Olgun: None. Gizem Irem Kinikli: None. Senol Bekmez: None. Mehmet Bertkas: None.