Health-Related Quality of Life in EOS Patients Treated Surgically: EOSQ Scores in Traditional vs. Magnetically-Controlled Growing Rods

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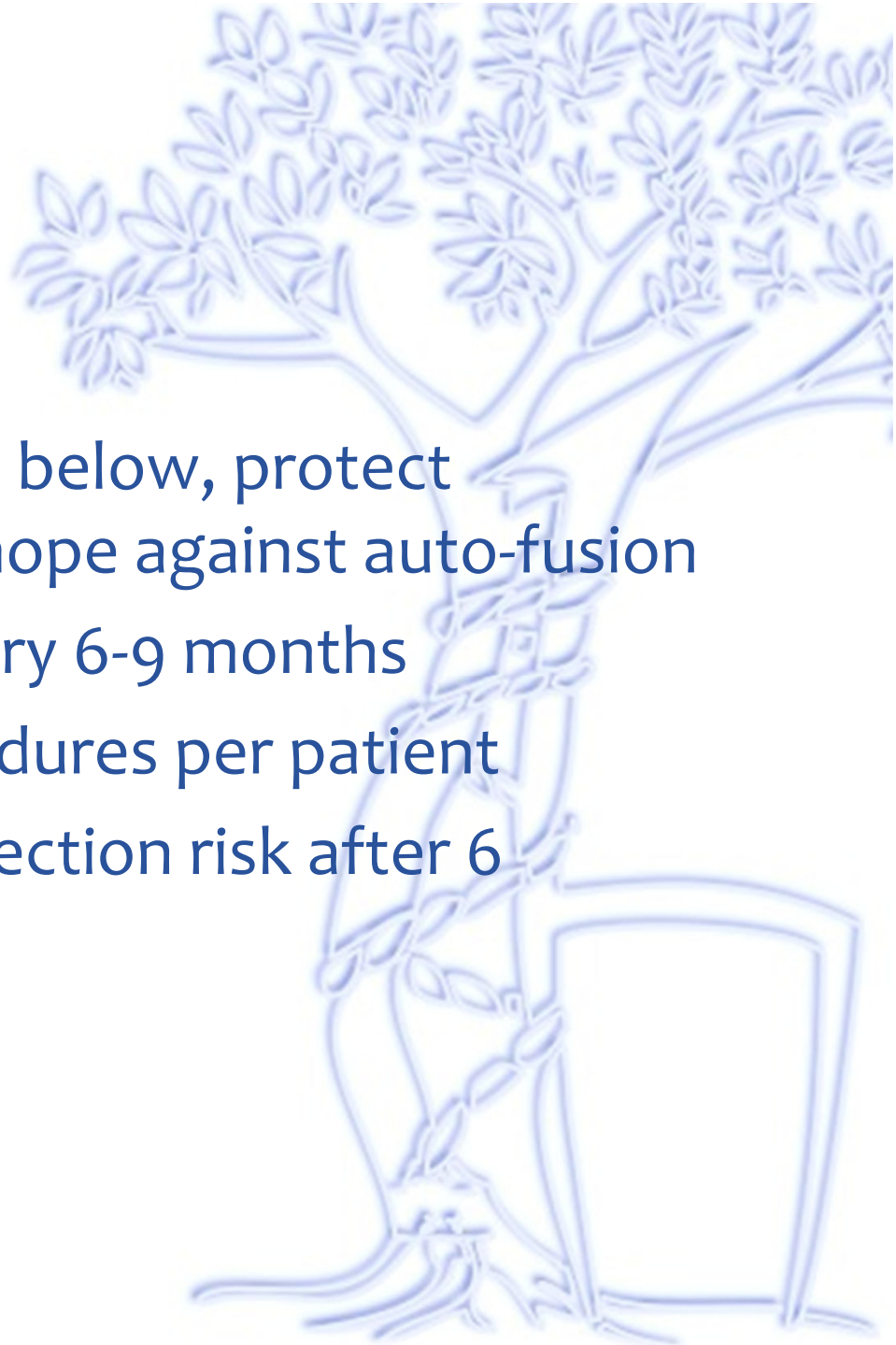
Early-onset Scoliosis

- Severely progressive curves in young children often unresponsive to conservative treatment
- Balance growth with appropriate spine control
- Traditional growing rods (TGR) work
- Magnetically-controlled growing rods (MCGR) the implant of the future?

TGR vs. MCGR

- Traditional growing rods
  - Short fusion above and below, protect periosteum between, hope against auto-fusion
  - Serial lengthenings every 6-9 months
  - Average of 10-20 procedures per patient
  - Up to 50% increases infection risk after 6 lengthenings



TGR vs. MCGR

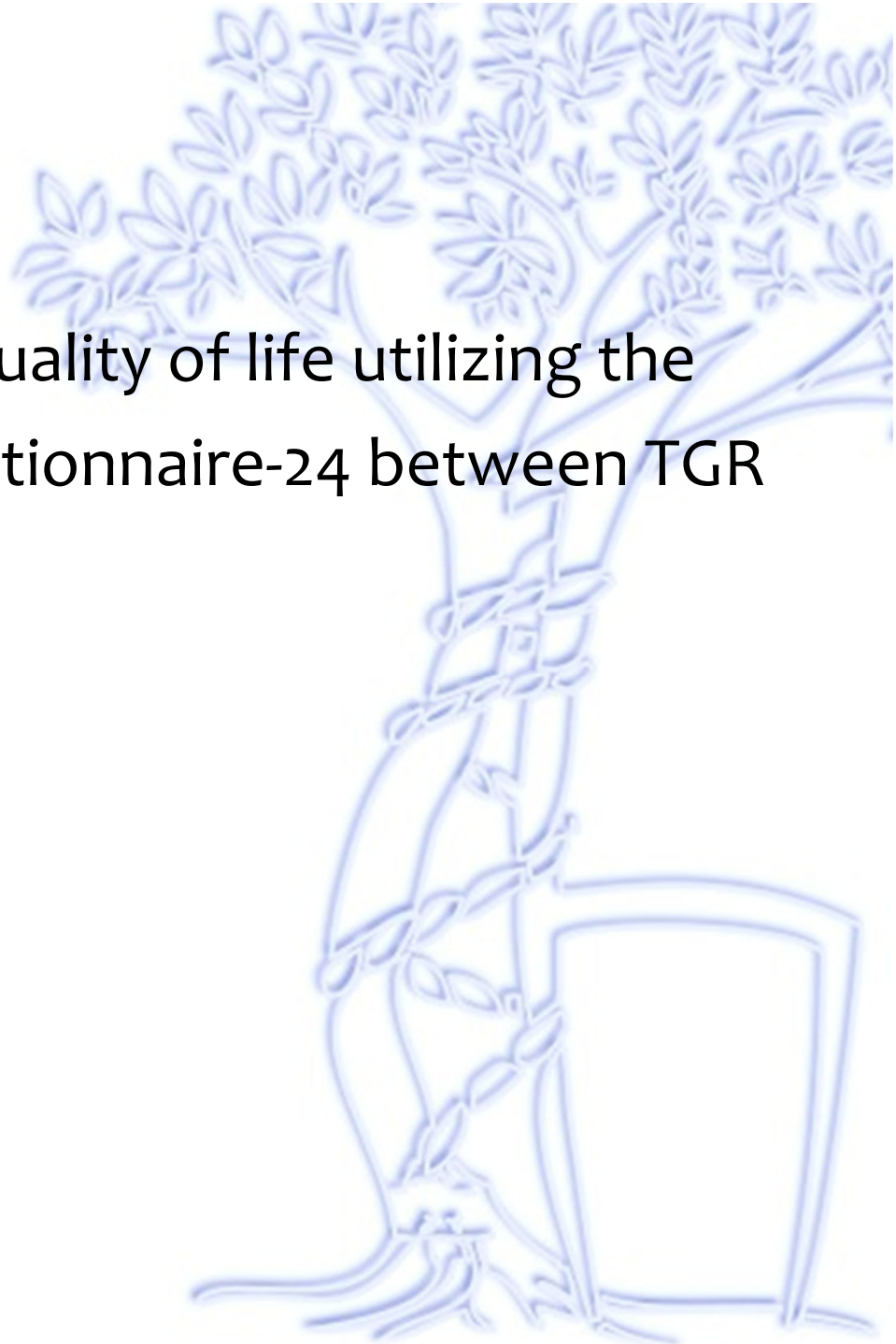
- Magnetically-controlled growing rods
  - The answer to all prayers
  - Expensive
  - Faulty first-generation led to unplanned surgical procedures
  - Complications reported including hardware breakage, motor-failure, metal ion release, etc.

Health-related quality of life

- Repetitive hospital admissions and surgical procedures detract from mental well-being of a fragile patient group
- No previous objective data comparing TGR vs. MCGR in a health-related quality of life setting

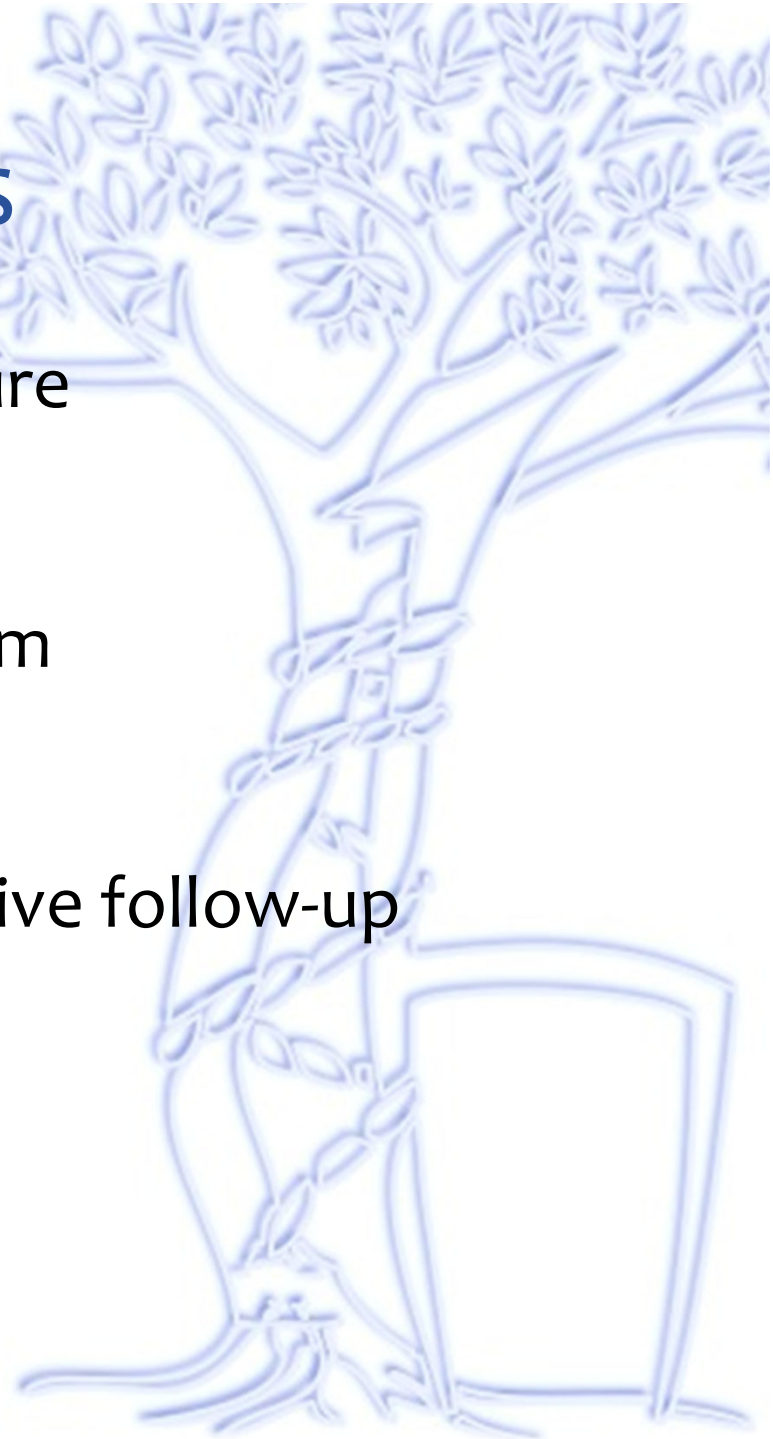
Objective

- Compare health-related quality of life utilizing the Early-onset Scoliosis Questionnaire-24 between TGR and MCGR patients



Patients and Methods

- <10 yrs at time of index procedure
- Pre-operative major curve ≥30°
- Radiographic T1-T12 height <22cm
- No previous spine surgery
- Minimum 12-month post-operative follow-up



Patients and Methods

- Lengthening in both groups confirmed with plain radiographs
- HRQL assessed with the previously validated EOSQ-24
- Statistical analyses run with original follow-up duration, and then after controlling for follow-up

Results

	MCGR	TGR	p
n	19	25	
Age (years)	7.2	6.5	
Follow-up (months)	24.6	91.6	<0.01
# Lengthenings	6.6	9.2	0.028
Pre-op Cobb (°)	60.68	55.5	
Post-index Cobb (°)	32.94	29.77	
Unplanned procedures/per patient	0.3	0.7	

Results

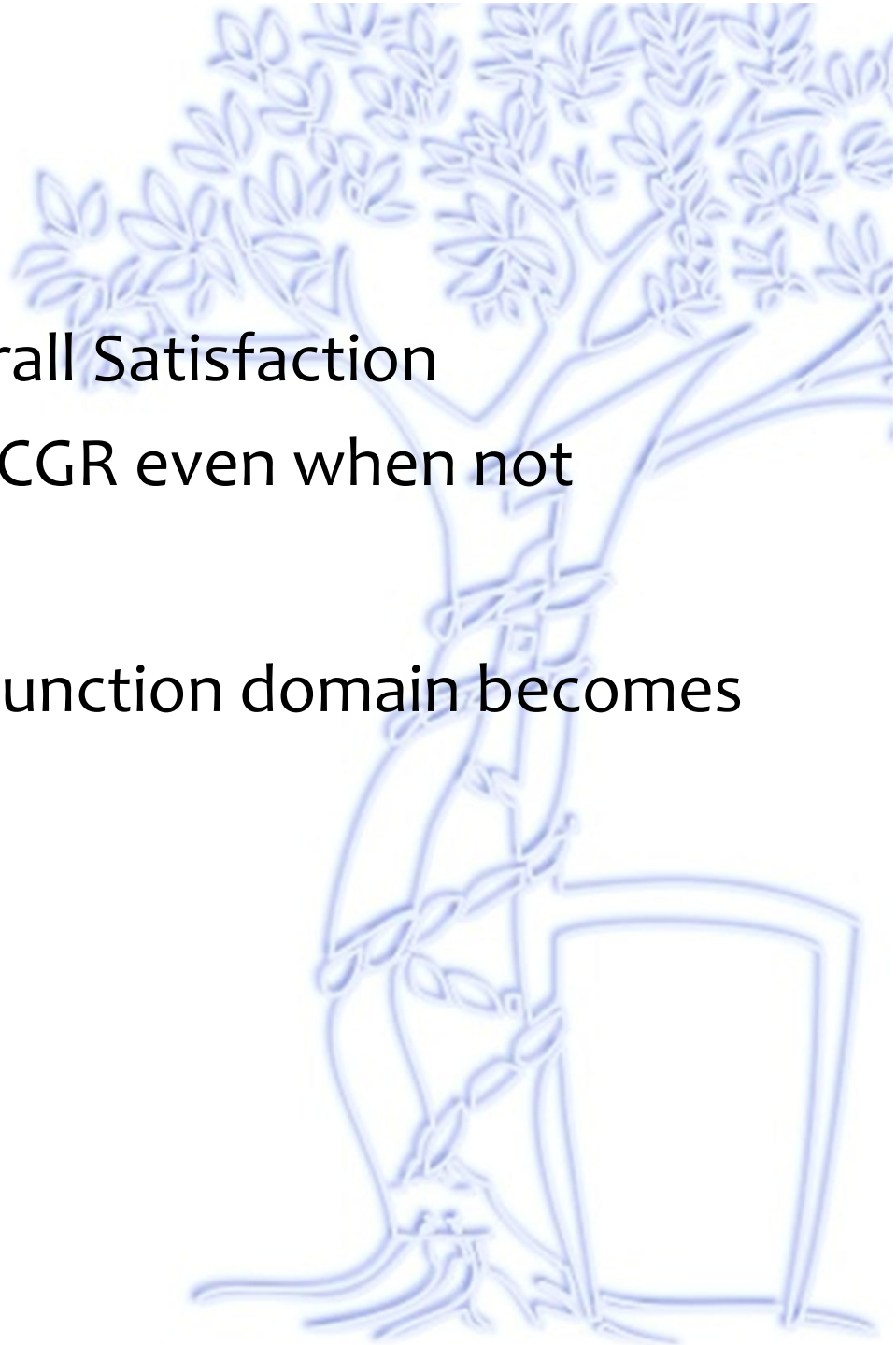
	MCGR	TGR	*p*
General Health	59.9	58	0.826
Pain/Discomfort	71.1	77	0.306
Pulmonary Function	86.2	87	0.280
Transfer	65.8	51	0.186
Physical Function	72.4	57	0.100
Daily Living	50	61.5	0.281
Fatigue/Energy Level	71.1	77	0.254
Emotion	61.2	52	0.190
Parental Burden	53.4	46	0.379
Financial Burden	61.8	38	0.002
Satisfaction	82.9	67.5	0.006
Mean	66.9	61.1	0.166

Results (adjusted for follow-up)

	MCGR	TGR	*p*
General Health	60.8	57.3	0.495
Pain/Discomfort	73.9	74.9	0.889
Pulmonary Function	86.8	86.5	0.968
Transfer	62.2	53.7	0.418
Physical Function	73.9	55.8	0.046
Daily Living	50.6	61.1	0.355
Fatigue/Energy Level	71.6	76.6	0.520
Emotion	60.9	52.2	0.273
Parental Burden	53.3	46.1	0.345
Financial Burden	61.7	38.1	0.004
Satisfaction	82.7	67.6	0.018
Mean	67.1	60.9	0.186

Results

- Financial Burden and Overall Satisfaction significantly superior in MCGR even when not adjusted for follow-up
- When adjusted, Physical Function domain becomes statistically significant



Discussion

- Financial Burden likely decreased due to fewer costly travel to and admission into hospital
- Overall Satisfaction (and Physical Function) likely increased due to fewer surgical procedures (and complications)

Conclusion

- MCGR superior to TGR in a few select domains out of 11 when measured with EOSQ-24 in this population
- MCGR has its advantages; however, TGR is far from obsolete at this time and remains an acceptable treatment method