

Outcomes of Syndromic Scoliosis patients treated with magnetically controlled growth rods

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Conflict of interest

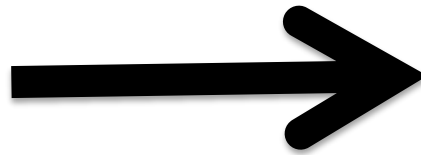
- Mr Sha Haleem – Teaching for DePuy Synthes
- Mr DA Rothenfluh – Consultant for NuVasive
- Mr Colin Nnadi – Consultant for NuVasive
- No other COI declared for any of the other authors

Introduction

TGR



MCGR



Syndromic Scoliosis

- Syndromic patients
 - Larger and more rigid curves
 - Distorted anatomy and small/absent pedicles
 - Poor bone stock
 - Propensity to fracture
 - Predilection for wound complications
 - Known to have increased blood loss
 - Literature rate of PJK 26-45%!!

Patients and Methods

- Progressive thoracic or thoracolumbar EOS of syndromic aetiology who underwent treatment with MCGR between December 2011 and October 2015 at our spinal unit were included.
- Compared to a cohort of idiopathic aetiology.

Patients and Methods

- Data was collected prospectively for
 - length of surgery
 - intraoperative blood loss
 - neuromonitoring abnormalities
 - change in coronal and sagittal Cobb angles
 - T1-T12/T1-S1 height
 - proximal junctional kyphosis (PJK)
 - complications.

Results – Comparative baseline data

	Syndromic	Idiopathic
n (M:F)	13:6	7:2
Mean age at surgery (months) (range)	101.4 (43-171)	94.6 (35-133) (p=0.6383)
Mean f/u (months) (range)	45.5 (24-69)	34.2 (24–52) (p=0.0314)
Levels included in construct (range)	8.1 (6-13)	10.2 (10-16) (p=<0.0001)
Mean length of procedure (minutes) (range)	195.2 (136-305)	129.1 (88-157) (p = 0.0001)
Mean blood loss (ml) (range)	459 (200-1112)	282.7 (100-618) (p = 0.049)

Results – Overall mean (+/- 1SD) radiographic outcomes

		Pre- operative	Immediate post- operative	Latest follow-up	p value
Major curve cobb angle (°)	Syndromic	55.9 (14.3)	40.5 (14.0)	42.4 (14.2)	0.001
	Idiopathic	45.6 (22.1)	28.1 (20.4)	28.8 (19.3)	0.0032
Thoracic kyphosis (°) (T1-T12)	Syndromic	50.5 (21.9)	40.9 (17.3)	48.6 (17.3)	0.7519
	Idiopathic	29.6 (24.5)	35.4 (25.7)	29.3 (21.4)	0.2296

Results – Overall mean (+/- 1SD) radiographic outcomes

		Pre-operative	Immediate post-operative	Latest follow-up	p value
T1-T12 height (mm)	Syndromic	169.2 (35.0)	174.4 (27.2)	191.2 (35.1)	0.0017
	Idiopathic	186.2 (28.4)	194.9 (27.0)	213.3 (32.0)	0.0056
T1-S1 height (mm)	Syndromic	289.6 (45.5)	298.7 (41.9)	333.3 (51.4)	0.0001
	Idiopathic	310.4 (39.5)	334.8 (36.2)	347.9 (44.4)	0.0050

Complications

- Syndromic patients
 - two rod breakages
 - two implant failures with actuator pin breakage
 - one proximal anchor pull-out
 - one deep infection.
- Three patients revised for fully distracted MCGR before reaching full spinal growth potential.
- Idiopathic patients
 - One proximal screw pull-out.

Conclusions

- Operative intervention with MCGR in syndromic EOS improves radiographic parameters and spinal alignment.
- However, it has a longer operative time, higher blood loss and increased complication rate compared to idiopathic EOS.
- Surgeons should be aware of these risks and manage patients accordingly.

Thank you

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