

How much do remote magnetic expandable devices truly expand. A radiographic evaluation of the Magec System

D Rolton, C Thakar, C Nnadi

Department of Spinal Surgery
Oxford University Hospitals NHS Trust,
Oxford, United Kingdom

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Disclosures

- Lindare Medical
 - Flights, accommodation and registration fees

Introduction

- Magnetic Controlled Growth Rods (MCGR) allow controlled distraction using the external remote controller (ERC)
- Theoretically the amount of distraction can be matched to patients own growth – ‘Tail-gating’
- Disparity between ERC and true distraction has not been evaluated



Objectives

- Primary
 - Evaluate the disparity between the intended (ID) and true distraction (TD)
- Secondary
 - Assess growth and development in our cohort after sequential lengthenings

Methods

- All patients undergoing insertion MCGR – Magec™ (Eclipse Technologies) with a minimum of 3 distractions.
- Three monthly distractions
- Amount of distraction determined by Dimeglio's annual T1-L5 growth velocity
- Rod actuator imaged with fluoroscopy
- Expansion gap within rod measured and calculated using width of the rod to allow for magnification
- Weight, standing height, sitting height measured at each distraction.



Calculating True Distraction

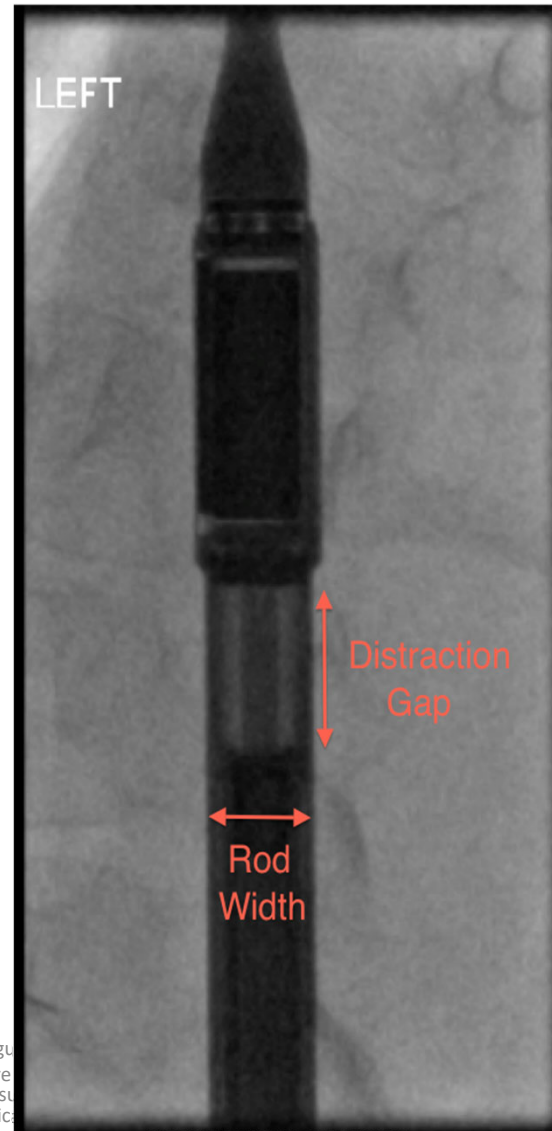
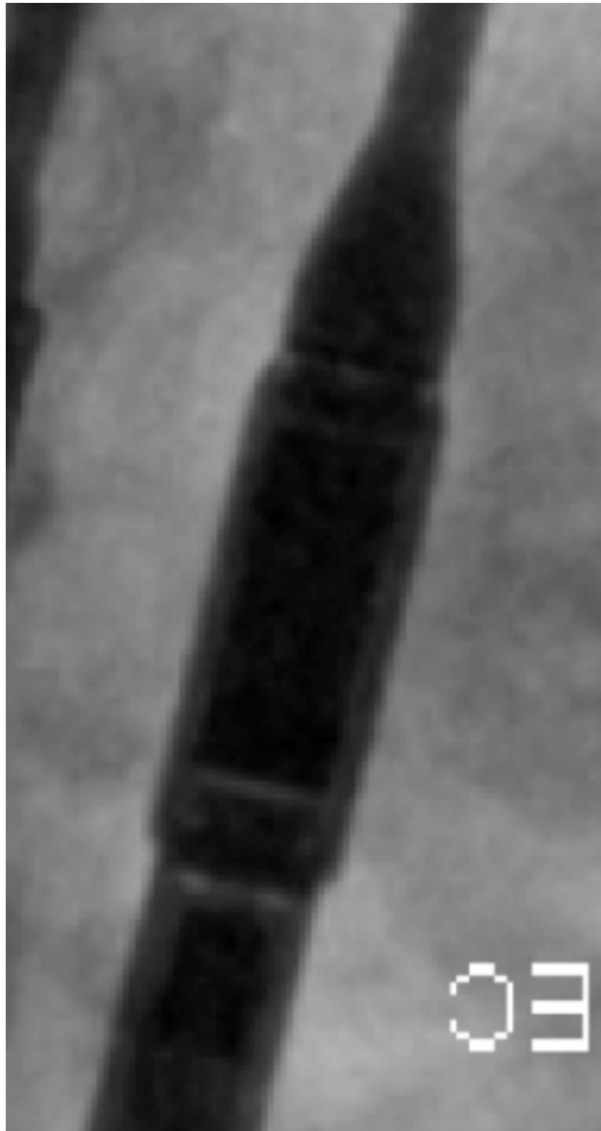


Figure 1. Diagram illustrating the measurement of the distraction gap. The gap is measured on hydroscopy. The figure can be used for distraction.

Results

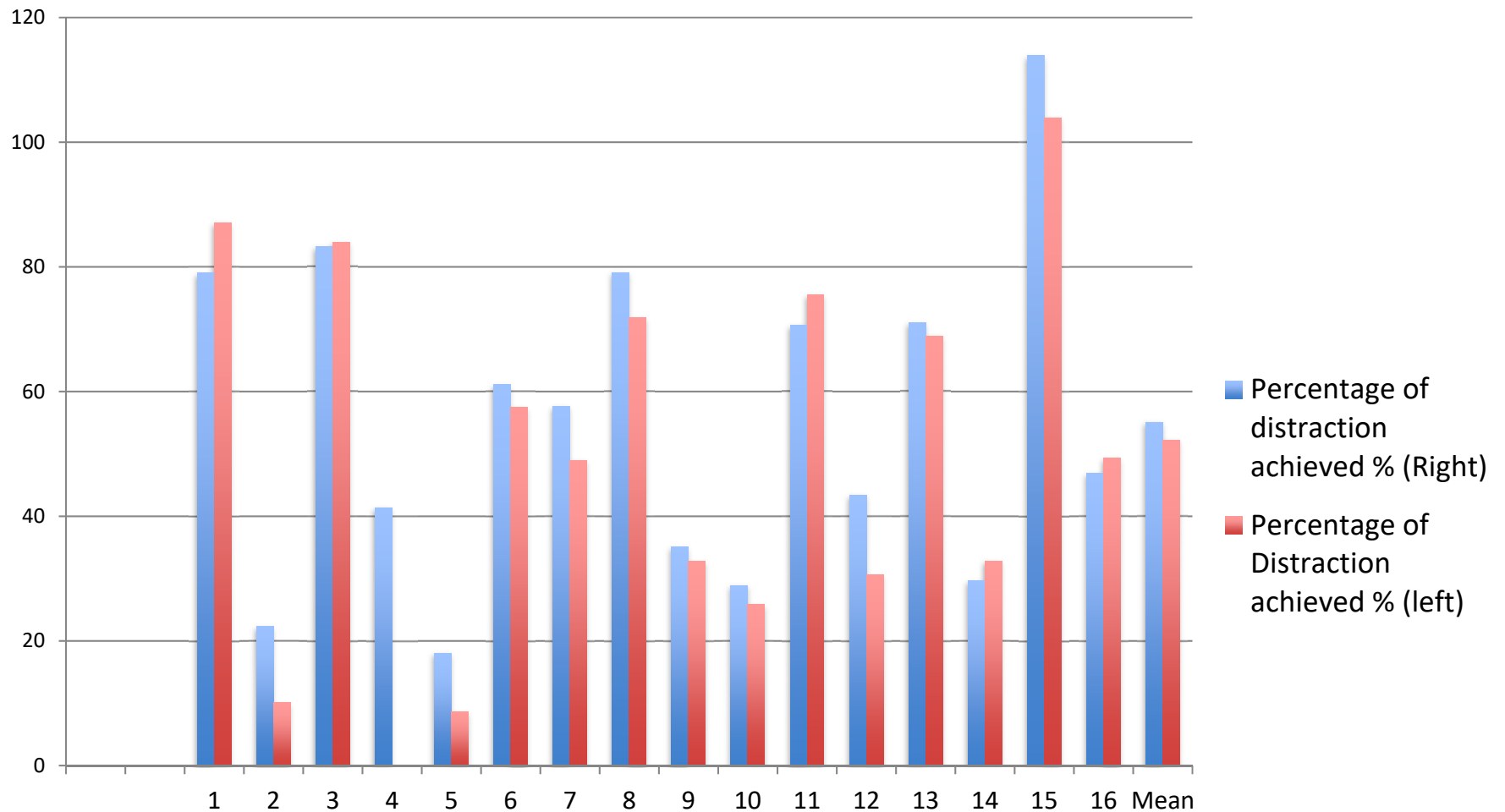
- 16 patients, 8 primary and 8 conversion cases
- Mean age = 5.6 years
- Mean follow up = 20 months (10-24 months)
- Average number of distraction = 6 (3-8)
- 15 dual rod and 1 single rod constructs

Results

Distraction Achieved

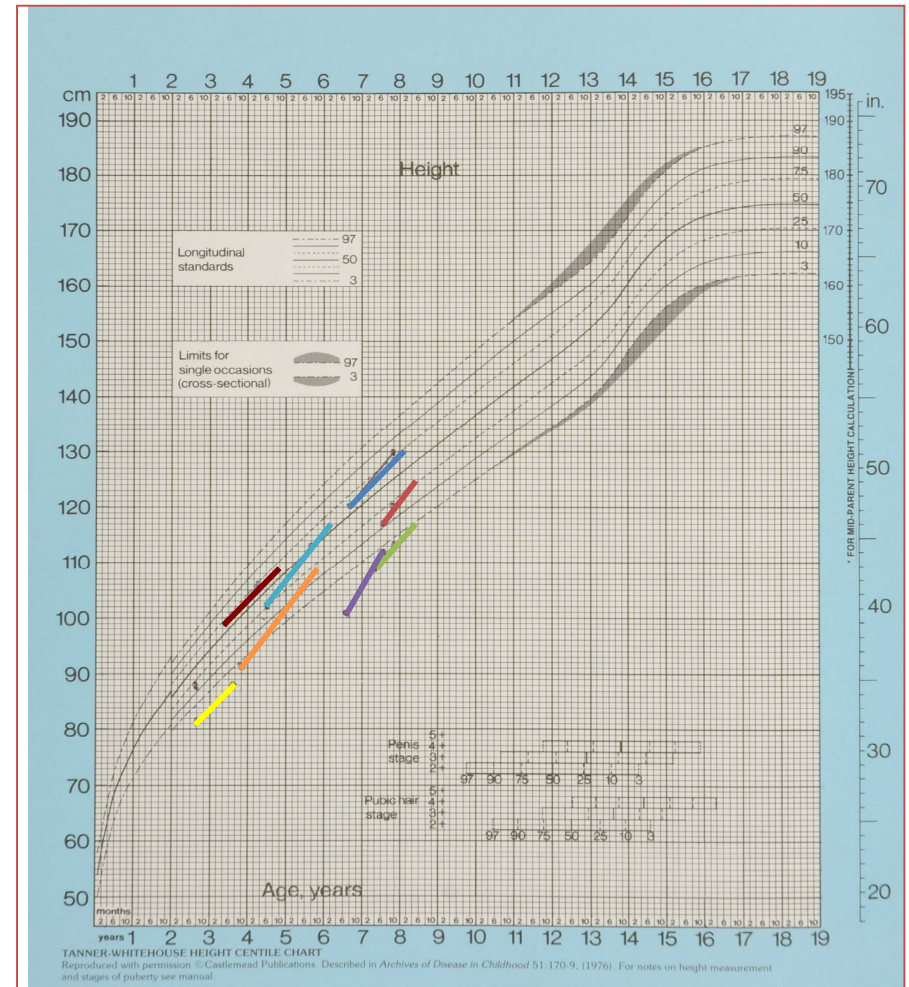
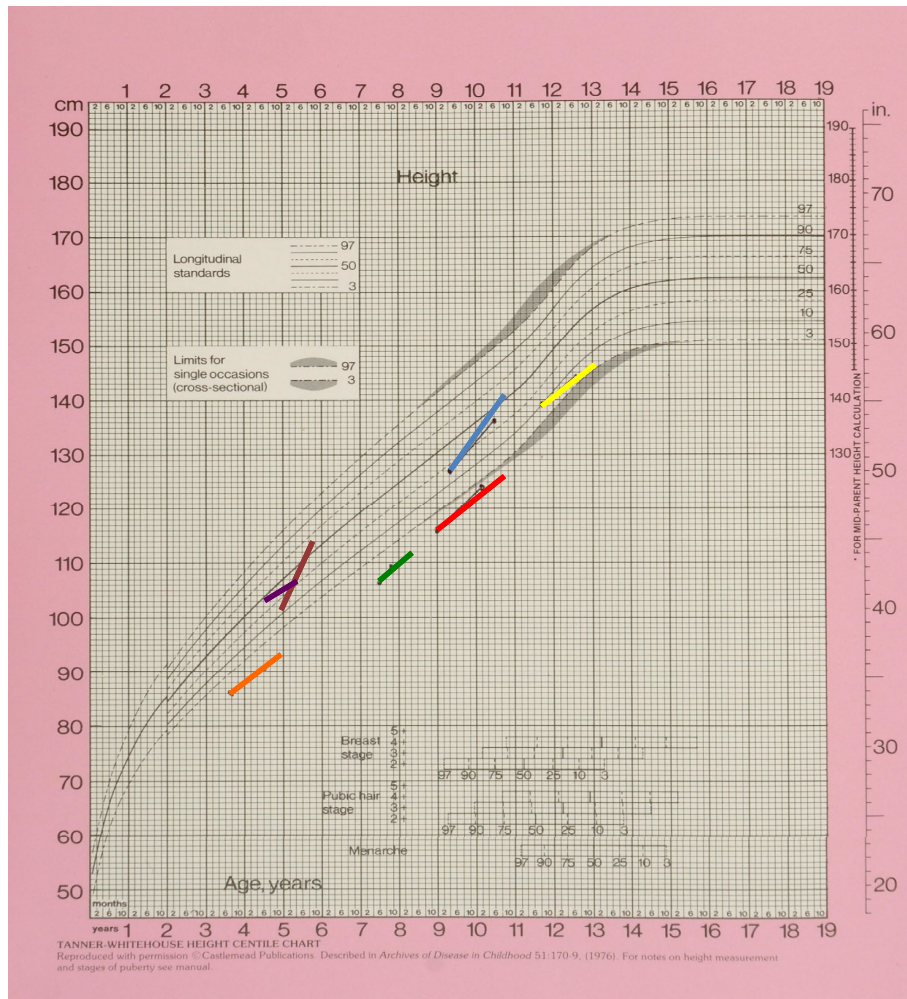
- Mean Intended 22.5mm(11.9-32.3) : Mean True 11.8mm (4.2-22.3)
- 53.7% of intended distraction achieved in **all patients**
- 65% achieved in **primary patients**
- 43.7% achieved in **conversion patients**

Percentage of Distraction Achieved



Growth and Development

Standing Height



Discussion and Conclusions

- Spines stiffer following surgery?
 - 1.45 x more distraction achieved in primary patients
 - ‘Law of diminishing returns’
- 15/16 patient under distracted
 - 14/16 under 50th centile
- All patients continued to grow and gain height

Thank You

