A Technical Report on The Phénix M Rod

a mechanical expandable rod linkable to the spine, ribs or the pelvis and controllable at home by hand trough the skin with a palm size permanent magnet for the treatment of scoliosis





ICEOS Montreal, Novembre 7-8 2008

1996: Early Expandable Spine Rod Design

Early Design Based on the Phenix Tumor Prosthesis Technology



1997 : Phenix 1st Generation Expandable Spine Rod







- Uses a spring and radiocontrolled phase change to control its release
- A rigid 25cm long, 8 mm diameter device
- 8 neuromuscular patients



Looking for a more compact, bendable user-friendly device: the "Push Buttons" Mechanical Distractor



0.02 mm steps
distraction force limited only by the bending of the rod

BUT SELF-LENGTHENED













The Phenix M Rods Technology

Purely Mechanical Lengthening System with a Permanent Magnets Transmission instead of the "Push Buttons"





Phénix M Lengthening Procedure 1mm = 50 mvts = 1mn

Phenix M Rod Lengthening



The Phénix M Rod : a Family Member in a Global Quest for Less Surgeries and Improved more Physiological Treatments





Any age



Natural Load System

Phénix M Prostheses



Short resections

Any locations





Phénix M Bone Lengthening Nail











Phénix M Rods : Versatile

Adapt to any patient and any location:
Compatible with any existing connectors –except 316L's-to the spine, ribs or the pelvis –screws, hooks...-,
various shapes, diameters, growth potential







Phénix M Rods : Bendable

I Shape versus J Shape







parallel design allows compact Mechanism:
 Non bendable length < Growth Potential + 20mm
 J SHAPE : allows the Mechanism to be located outside the treated area



Phénix M Spine Rod Redefines "Minimal Invasive Device"

- A device that can be inserted a minimal invasive way :
- 2 small incisions
- AND do not need further surgeries to achieve a goal:
- no planned lengthening surgeries





Phénix M Rod : Failures and Solution

Breakage (2) – D4.5mm, no Brace Bolt "glued" to the Screw by stuffed Biological Material (4)
rods designed to allow rotation and attached to the spine -





Solution : improved screw design



Phénix M CONTRAINDICATIONS

PACEMAKERMRI







Promises of Home Gradual Lengthening

1- With no additional surgery: Improving the surgical correction especially in case of a rigid curvature Keeping the achieved correction during growth whatever the patient's age and rate of growth 2- Earlier Surgery and suppression of braces and casts - Right Time for Surgery: as soon as a Progressive Curvature is confirmed ?-3- ultimately allowing to remove the device at adult age without Fusion 4- Improved Easier Treatment at a Lower Cost



Phénix M Rods Early Conclusion



The Phénix M Technology:

 allowed to successfully replace Planned Distraction Surgeries by Daily Gradual Home Lengthening of Rods and improved Initial Surgery Deformity Correction for some Spine Patients

BUT in order to reach all the Promises of Continuous Gradual Lengthening for all Spine Patients:

- Best way(s) of using Phénix M Rods :
 - Early Detection of Progressive Curvature
 - Spine or Ribs?
 - Initial Distraction?
- Long Term Reliability

Still need more Efforts and Time



THANK YOU!