EOS Graduates: Where are we in 2019?

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Professor of Orthopaedic Surgery
Introduction
EOS treatment rapidly changing field.

Graduate cohort increasing.

Improved systematic study of EOS patients.
Introduction

EOS treatment rapidly changing field.

Tremendous technologic advances.

Improved systematic study of EOS patients

Early Onset Scoliosis PubMed Articles

<table>
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<tr>
<th>Years</th>
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<td>2015</td>
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<td>2019</td>
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1968 -- 2019
Introduction

Definition of “Graduate”

No long term studies – expert opinion.

Very little is known about EOS patients in adulthood.

Information important for families and health care systems.
Graduates 2019: Where are we now?

Pulmonary Function Following Early Thoracic Fusion in Non-Neuromuscular Scoliosis

By Lori A. Karol, MD, Charles Johnston, MD, Kiril Mladenov, MD, Peter Schochet, MD, Patricia Walters, RRT-NPS, and Richard H. Browne, PhD

Early in-situ fusion bad: \( \downarrow \) thoracic height

T1-T2 fusions worse
Graduates 2019: Where are we now?

Not all graduates with EOS are the same

cEOS classification
Graduates 2019: Where are we now?

Fusion after growing treatment:
- minimal gain in thoracic height
- minimal curve correction
- high complication rate
Graduates 2019: Where are we now?

“Final fusion” may not be final
100 pts mixed etiology (4.2 years mean f/u)
mean age 12.2 yrs

20% patients UPROR (30 complications/57 procedures): 1.5/pt
infection
instrumentation
curve progression

Final Fusion After Growing-Rod Treatment for Early Onset Scoliosis
Is It Really Final?

Connie Poe-Kochert, RN, CNP; Claire Shannon, MD; Jeff B. Pawelek, BS; George H. Thompson, MD; Christina K. Hardesty, MD, David S. Marks, FRCS, Behrooz A. Akbarnia, MD, Richard E. McCarthy, MD, and John B. Emans, MD

JBJS 2016
Observation viable option in some patients

Jain et al. (JBJS 2016) 30 patients (mean 3.7 years)
26/30 no further surgery
4/30 infection

Sawyer et al (Spine Def 2016) 12 patients (mean 4.0 years)
12/12 patients no further surgery

Cheung et al
Graduates 2019: Where are we now?

Observation viable option in some patients

Graduation Protocol After Growing-Rod Treatment: Removal of Implants without New Instrumentation Is Not a Realistic Approach

Ismail Aykut Kocyigit, MD; Z. Deniz Olgun, MD; H. Gokhan Demirkiran, MD; Mehmet Ayvaz, MD; and Muhtarrem Yazici, MD

removal instrumentation is not

9/10 patients deformity progression
Graduates 2019: Where are we now?

Growth Sparing Treatment
spine elongation
preservation of baseline pulmonary
similar activity as peers – higher energy

small series (12 pts)

Functional and Radiographic Outcomes Following Growth-Sparing Management of Early-Onset Scoliosis

Charles E. Johnston, MD, Dong-Phuong Tran, MS, and Anna McClung, BSN, RN
Graduates 2019: Where are we now?

Spinal fusion at end of growing treatment
minimal correction
high complication rate

Instrumentation removal at end of growing treatment – failure

Observation may be best.

Is there something better?
Graduates 2019: Where do we need to go?

Define “Graduate”

Patient/etiology specific care plans? (cEOS)

Patient/family outcome measures.
Graduates 2019: Where do we need to go?

What will live be like as an adult?
  live independently?
  get married?
  work?
  be alive?
Graduates: Long term outcome study

- developed 2018
- **EOS patients**: age > 18 years, >5 years from surgery
- Multicenter study
- Validated outcome scores
Graduates: Long term outcome study

70 question survey

3 validated outcome measures:

- SRS-22: Spine related
- FACIT-Dyspnea: Pulmonary related
- SF-12: QOL related

Demographic: married/working/living
Graduates: Long term outcome study

Data collection started 10/19

Descriptive cohort study – long term follow up

Develop “Graduates” database – future study
Conclusions:

Tremendous advances made in treatment of EOS patients.

Changes more rapid than our knowledge of outcomes.

Long term outcome: parents & families, research, health care systems/payors
Conclusions: Stay Tuned

STAY TUNED FOR SOME EXCITING NEWS...