

A New Classification System to Report Complications in Growing Spine Surgery: A Multicenter Consensus Study

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A joint effort of the CWSDSG and GSSG

Disclosures

- Consultant: Depuy-Synthes spine
- Royalties: VEPTR 2 device
- Board Member: CWSDRF

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Complications in growing spine surgery

- Common
- Variable consequences on the course of care
- Lack a standardized reporting system
- Difficult to compare results



Purpose

- Develop consensus for a new classification system for reporting complications in growing spine surgery
- Pilot study to evaluate 'ease of use' of the system



Methods

- Phase 1: Consensus meeting to develop standardized classification for reporting complications*
- Phase 2: Test system on 10 patients from 5 centers for ease of use



Definitions

- ***Complication:*** An unexpected medical event in the course of treatment that may or may not affect final outcome.
- ***Severity:*** Severity refers to the level of care and urgency the required to treat a patient's complication.
- ***Device related complication:*** A complication that occurred as a direct result of a patient's device. To determine if the complication is device related, ask the following question: "If the patient did not have the device, would the complication occur?"
- ***Disease related complication:*** Complications which are not directly related to the growing spine device.



Categories of Complications Related to Growing Spine Surgery

- *Device Related*
- *Disease Related*



Severity Scores for Device Related Complications

- **Severity Grade I:** A complication that does not require an unplanned return to the operating room and can be corrected at the next planned surgery.
- **Severity Grade II:** A complication that requires an unplanned return to the operating room.
 - **IIA:** Requires a single trip to the operating room.
 - **IIB:** Requires multiple trips to the operating room (example, multiple I& D's for a persistent infection.)
- **Severity Grade III:** A complication that alters the planned course of treatment.



Severity Scores for Disease Related Complications

- **Grade I:** A complication that does not require hospitalization and can be treated on an out patient basis.
- **Grade II:** A complication that requires hospitalization
- **Grade III:** A complication that alters the planned course of treatment.



Results

- 65 patients (5 institutions)
- 56 pts had at least 1 complication; 9 with none
- Diagnosis: varied
- VEPTR:46; Growing Rods:14; Hybrids:4.
- Average Age: 4.7 yrs
- Minimum follow-up: 2 years
- Total surgical events: 423



Average procedures per patient

- Expansions: 5.3
- Revisions: 1.7
- Exchanges: 0.6



Complications: 181

- Migration: 60
- Infection: 31
- Pneumonia: 21
- Instrumentation failure: 23
- Other: 46



What does that mean?

- Complication rate = 400%?
- Complications per procedure = 42%?
- Average complication per patient = 2.8?



Overall Complications when classified:

- Grade I: (57)
- Grade IIA (95)
- Grade IIB (10)
- Grade III (6)



Disease Related Complications

Severity	number
I	4
II	15
III	1

Device Related Complications

Severity	number
I	53
IIA	80
IIB	10
III	5



Conclusions

- Complications are common in growing spine surgery, but....
- Only **9%** of patients in this pilot study had an event significant enough to alter their plan of care. (**ie: Grade III**)



Conclusions

- Complications are expected in growing spine surgery.....
- Classification was easy to use
- Provides meaningful information regarding the impact of an adverse event on the overall plan of care
- Allows for comparison of different techniques



Thank you

