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Are Unplanned Reoperation Rates Higher for Rib-based Implant Surgeries Initiated Before Age 2?

Catherine Qiu, MS

Carina Lott, MS

Nirupa Galagedera, BA

Jason Anari, MD

Patrick Cahill, MD



DISCLOSURES

- I (and/or my co-authors) have something to disclose:

Patrick Cahill:

- **Consultant:** Biogen, Inc.; Nuvasive, Inc.
- **Speaker:** Biogen, Inc.

All other authors have nothing to disclose

RESEARCH QUESTION

- Do patients status post VEPTR surgery before the age of 2 have a higher incidence of complications that lead to unplanned return to the operating room (UPROR)?
 - Definition of UPROR: An additional surgery that falls outside of scheduled procedures due to some complication



Wound breakdown of <2 y/o patient after VEPTR surgery

CURRENT LITERATURE

EARLY INTERVENTION

- Favorable long-term pulmonary outcomes
 - Increase vital capacity
- Does age at intervention actually contribute to complication rate
- May be necessary because of severe/progressive deformity

VS.

LATE INTERVENTION

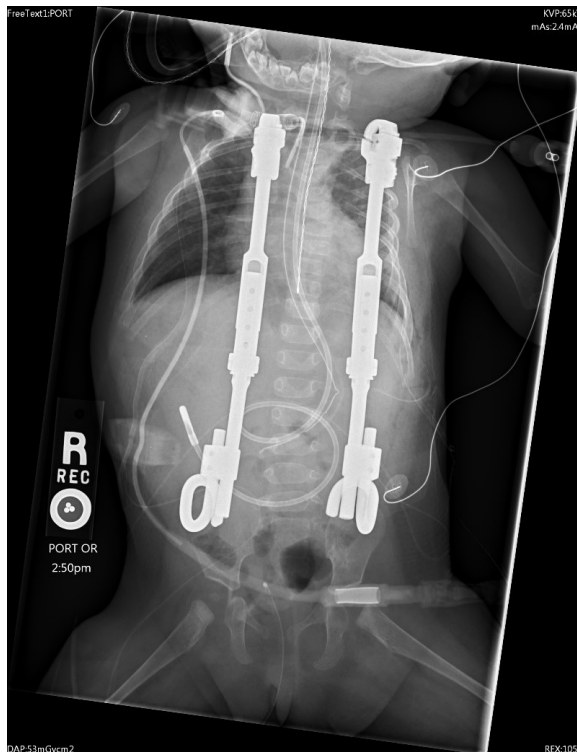
- Lower rate of complications
- Similar deformity control
- What thoracic growth
- Complications decreases
- Law of diminishing returns
- Delaying autofusion

Campbell 2003, Sankar 2010, Akbarnia and Emans 2010

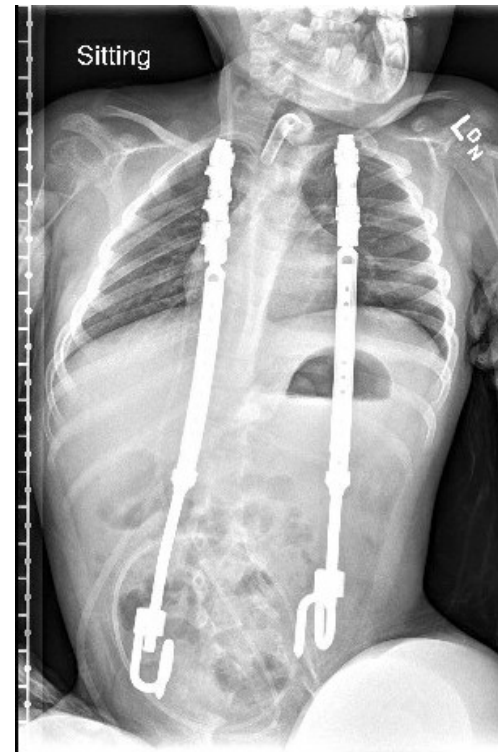
Fletcher 2012, Upasani 2016, Bess 2010, Latalski 2011, Sankar 2011, Cahill 2010

HYPOTHESIS

- Patients who've had their VEPTR placed before 2 years old will have **more unplanned reoperations**.



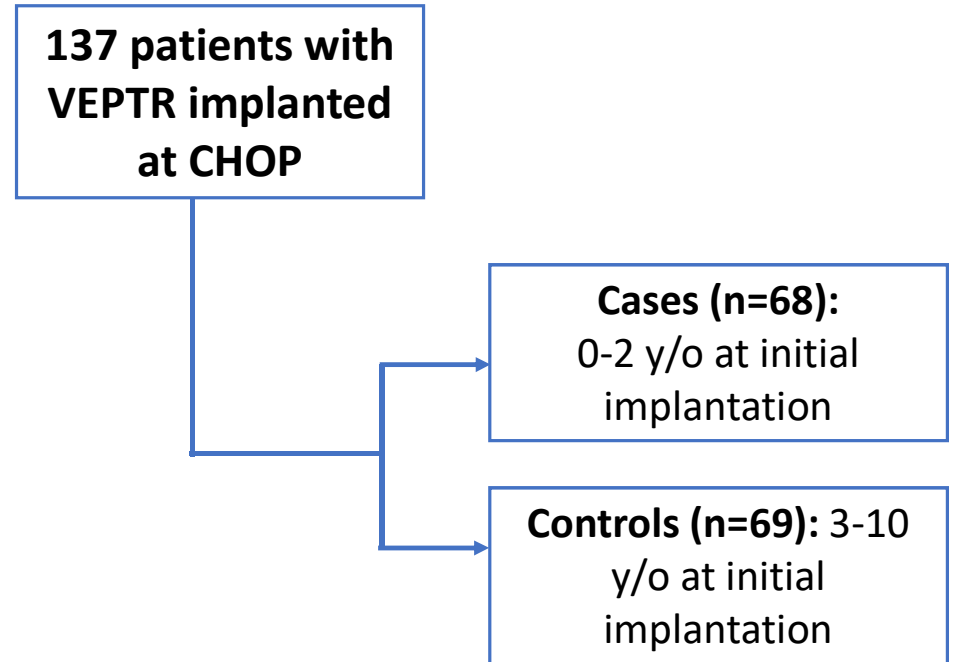
<1 y/o at time of insertion



~7 y/o at time of insertion

METHODS

- Retrospective review of patients who received VEPTR treatment and had follow-up care at CHOP
- Clinical parameters: Sex, Diagnosis, BMI, follow-up (minimum 2 years), surgical procedures, complications



DEMOGRAPHICS

	0-2 years (n=68)	3-10 years (n=69)
Female	41%	51%
Male	59%	49%
Diagnosis		
Congenital	59%	52%
Neuromuscular	10%	14%
Syndromic	28%	32%
Idiopathic	3%	2%
BMI	17.1 ± 0.7	17.3 ± 0.7
Follow-up (yrs)	4.8 ± 0.5	4.7 ± 0.5

RESULTS

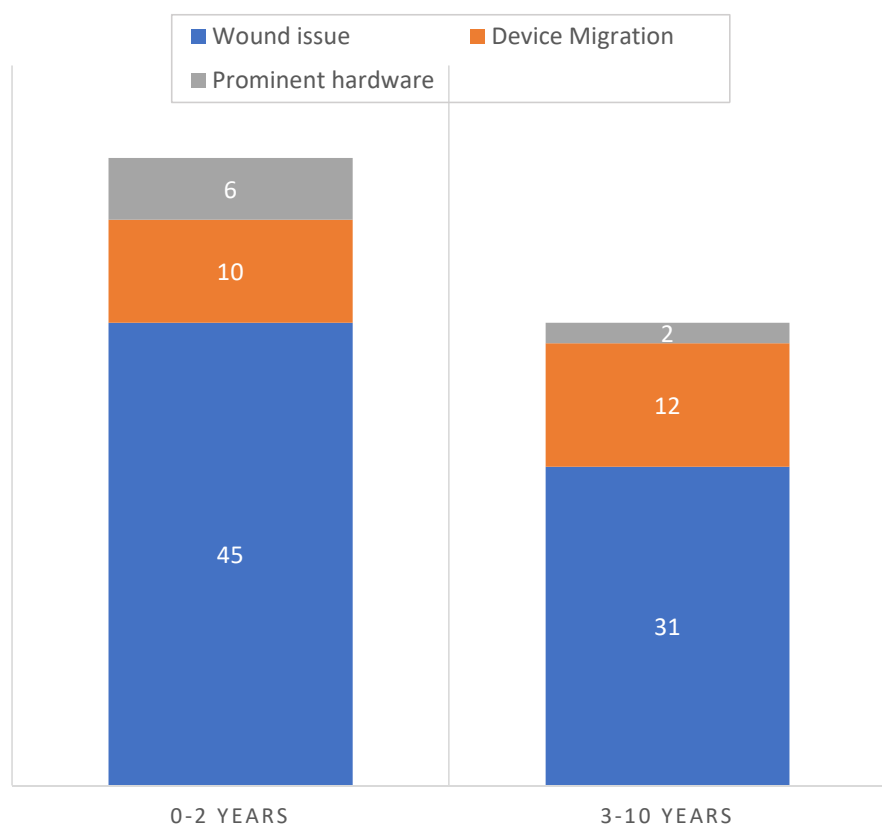
- 76 patients had at least 1 unplanned reoperation
 - Rate of 55%

	0-2 years (n=68)	3-10 years (n=69)	P-value
Number of Procedures*	13.1 ± 1.5	10.6 ± 1.1	0.01
Subjects w/ Unplanned Reoperations	44 (65%)	32 (46%)	0.03
Mean Reoperation Procedures	2.6 ± 0.6	2.3 ± 0.6	0.5

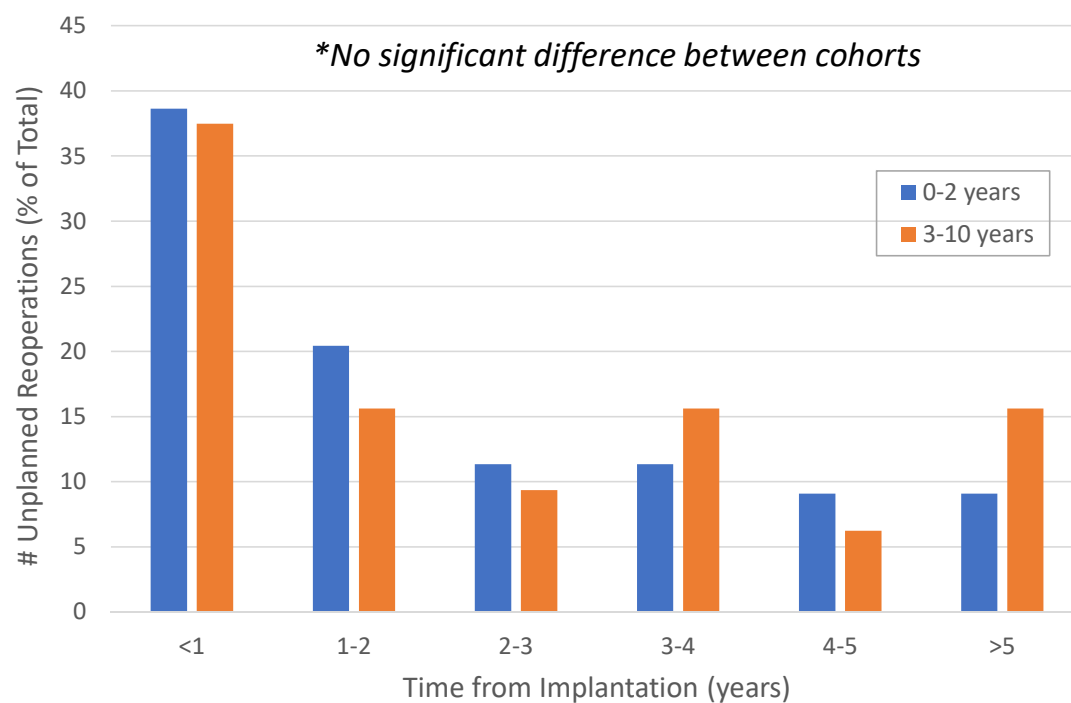
*Total procedures including, lengthening revision, and I&D surgeries

RESULTS

REASONS FOR REOPERATIONS



TIME FROM INITIAL IMPLANTATION TO FIRST UNPLANNED REOPERATION



CONCLUSION

- VEPTR at a **younger age** (before 2 y/o) → **higher risk** of UPROR
- UPROR risk is highest in the **first year** after implantation
 - Steadily decreases annually thereafter
- **Delaying intervention**, exploring alternative methods should be carefully considered when deciding when to proceed with growing instrumentation

THANK YOU

