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Complications Following Hemivertebrectomy for Congenital Scoliosis

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INTRODUCTION

- Hemivertebrae are rare congenital anomalies in which half of a vertebral body has not formed.
- Severe scoliosis is a common consequence, and often requires spinal fusion and surgical removal, called a hemivertebrectomy.
- Conservative methods, such as bracing, are often unsuccessful, especially for moderate to severe curves.

OBJECTIVE

- To evaluate whether severity of deformities is associated with more long-term surgical complications following surgical correction of hemivertebrae and scoliosis.

METHODOLOGY

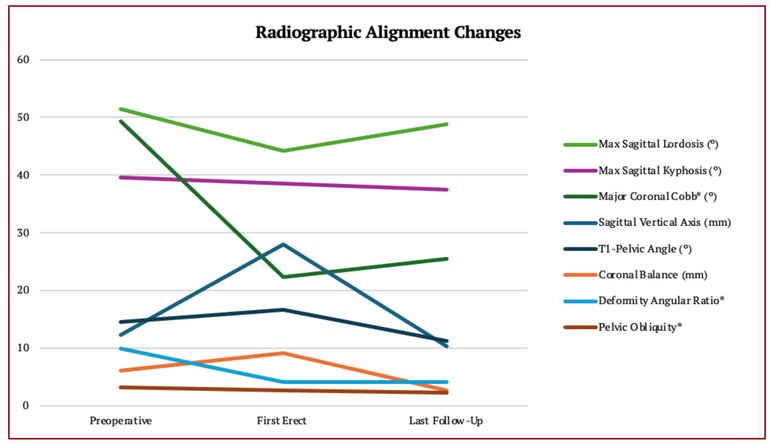
- A retrospective, single-institution review was performed with patients who underwent hemivertebrectomy and spinal fusion surgery for congenital scoliosis between 2008-2020.
- Pertinent data on demographics, radiographic parameters, operative details, and complication rates was extracted.
- Subgroup analyses were done by complication severity, deformity complexity, and construct length.

RESULTS

- In our series, **30 patients** underwent hemivertebrectomy and fusion. Demographics, procedural parameters and radiographic alignments are described below. Starred values are statistically significant.
- **43%** of patients were found to have complex deformities (n=13), defined as ⩾3 bony abnormalities identified on X-ray.
- **2 patients** had multiple hemivertebrae. In these cases, only the dominant lesion was excised.

Patient Demographics	
Mean Age, Years	9 ± 4.2
Gender, n (%)	Male: 20 (66) Female: 10 (33)
Mean Body Mass Index	18.7 ± 3.7
Median Follow-Up, Months (Range)	74.5 (1-108)

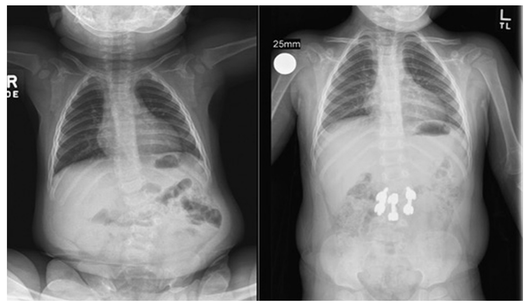
Procedural Parameters	
Segmental Fixation Lengths, %	Short (⩽ 5 levels): 53 Long (⩾ 5 levels): 47
Estimated Blood Loss, mL	533.7 ± 502.0
Operative Time, mins	388.3 ± 144.6



- **Intra-operative complications** (n=3):
  - Neuromonitoring changes (n=3)

  *All improved with no long-term deficits
- **Short-term complications** (n=5):
  - Pneumothorax (n=2)
  - T12 nerve root avulsion (n=1)
  - Retained surgical drain (n=1)
  - Postoperative pneumonia (n=1)
- **Long-term complications** (n=2):
  - Displaced and prominent hardware (n=1)
  - Pseudarthrosis with wound dehiscence (n=1)
- **Other complications** (n=3):
  - Disease progression needing revision (n=2)
  - Disease progression without revision (n=1)

Complex Deformities		
Parameters	**# with Complex Deformity**	**p-value**
Complications None/minor: n=28 Long-term: n=2	 12 1	0.82
Construct Length Short (⩽ 5 levels): n=16 Long (⩾ 5 levels): n=14	 7 6	0.66



Left: Fully segmented hemivertebra (HV) at L3 preoperatively **Right**: After HV resection and 2-level short fusion with a third midline rod at 3-year follow-up.[4]

CONCLUSIONS

- Surgical and long-term complication rates were 17% and 7%, respectively.
- There were no significant differences in demographics, surgical planning, or outcomes found in subgroup analyses comparing complications vs no complications, construct length, and deformity complexity.
- Complications of these procedures must be further evaluated in larger patient populations.
- Hemivertebrectomy resection and correction of congenital scoliosis should be approached with caution and careful planning.

ABSTRACT, TABLES AND REFERENCES

SCAN ME!

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