Center for Children's Surgery
SCHOOL OF MEDICINE
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Children's Hospital Colorado

Single institution review of operative management of giant omphalocele

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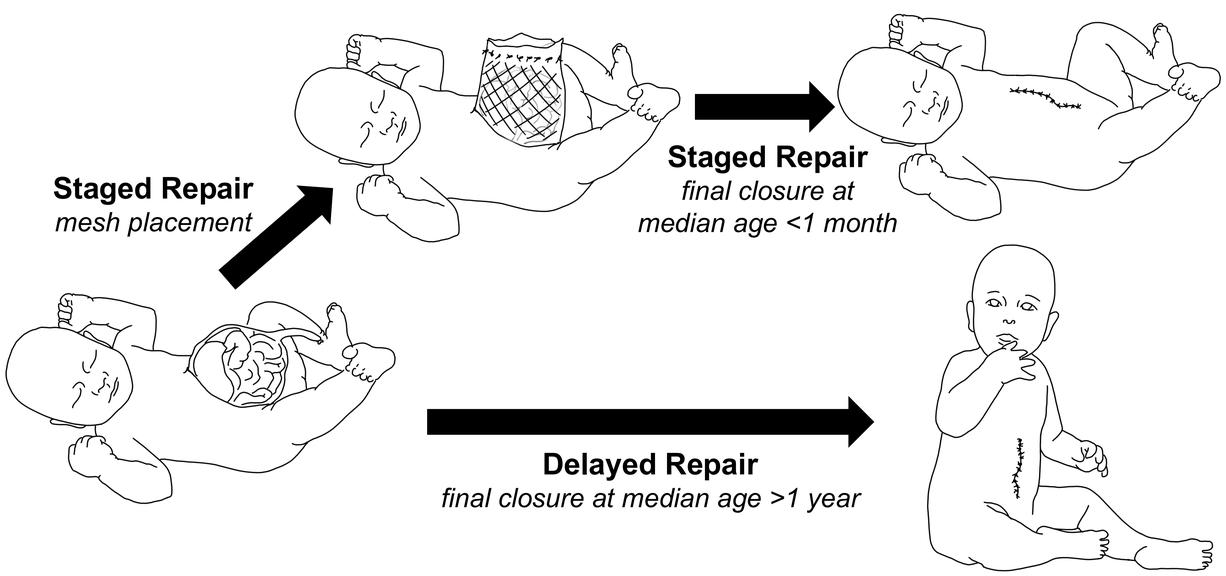
Research in Outcomes for Children's Surgery

Background

- **Giant omphalocele:**
  - congenital abdominal wall defect
  - 2.5 in 10000 births
  - defect measures greater than five centimeters in diameter and/or contains ≥75% of the liver
- **Two options for closure:**
  - Stage closure during neonatal period
  - Delayed closure
- Operative management of giant omphalocele varies based on:
  - size of defect
  - presence of liver or other viscera within sac
  - associated conditions
  - degree of pulmonary hypoplasia
- There are currently little data to guide choice of operative approach and how this impacts long-term outcomes



Objective

Characterize whether surgical approach – staged closure during the neonatal period, or delayed closure – affects short- and long-term outcomes.

Methods

- Retrospective review of children diagnosed with giant omphalocele from 1/2010-1/2022 at Children's Hospital Colorado (CHCO)
- **Inclusion criteria**
  - Patients with giant omphalocele whose initial operative therapy was at CHCO
- **Exclusion criteria**
  - Children whose initial operative therapy was at another institution
- **Outcomes evaluated**
  - Total ventilator days
  - Total hospital days
  - Death after closure
  - Follow-up length
  - Need for ventral hernia repair
  - Patients meeting developmental milestones
- **Analysis**
  - Patients able to undergo primary closure of their giant omphalocele were excluded from analysis

Main Findings

Table 1. Clinical course and outcomes

	Staged Closure (mean)	Delayed Closure (mean)	p value
Age at Final Closure (weeks)	2.25	59.5	<0.001
Total Hospital Days	59.5	34	0.09
Total Ventilator Days	19	3	0.07
Follow-up Length (months), median	60	60	0.8
Deaths after Closure (n)	3	1	1
Need for Ventral Hernia Repair, frequency	56%	0%	0.05
Patients meeting developmental milestones	56%	67%	0.6

- **Patient characteristics**
  - 29 total patients
    - 5 planned primary closure
    - 6 delayed closure
    - 16 staged closure
    - 2 died prior to closure
- Staged and delayed repair groups did not differ with regard to:
  - sex, number of associated comorbidities, birth weight, gestational age at birth, or need for tracheostomy
- Age at final closure was younger in the staged group (median 2.25 weeks vs 59.5 weeks, p<0.001)

Results

Table 2. Demographics

		#	Frequency
Sex	Male (n)	17	59%
	Female (n)	12	41%
Comorbidities			
	Pulmonary Hypoplasia (n)	11	50%
	Cardiac Anomalies (n)	9	41%
	Pentalogy of Cantrell (n)	1	5%
Tracheostomy (n)		4	18%
Gestational age at Birth, median (weeks)		37	-
Birth Weight, median (kgs)		2.7	-

Short-term Outcomes

- **Trended towards longer in the staged group:**
  - Total hospital days
  - Total ventilator days

Long-term Outcomes

- **No difference in the following between groups:**
  - Overall mortality
  - Development at 5 years of age
  - Infectious complications
- **Need for ventral hernia repair was greater in the staged group**

Conclusion

- Long term outcomes are equivalent between staged repair in infancy and delayed repair of giant omphalocele
- Staged repair may be associated with more ventilator days, total hospital days and higher risk of future ventral hernia.
- Future work will aim to evaluate patient centered outcomes as current literature lacks a description of family desires regarding management of giant omphalocele.