

## **One Year Outcomes of Neonatal CDH Repair: Predictors of Recurrence and Complications**

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### **Purpose:**

Congenital diaphragmatic hernia (CDH) is a congenital anomaly associated with lifelong multi-system morbidity. This study sought to identify factors contributing to hospital readmission after CDH repair.

### **Methods:**

The Nationwide Readmissions Database from 2010-2014 was used to identify patients with CDH who underwent surgical repair on index admission. Patient factors, hospital characteristics and complications of CDH were compared by readmission rates (30-day, 1 year). Chi-squared analysis was used for comparison between cohorts and significance was set at  $p < 0.05$ . Results were weighted for national estimates.

### **Results:**

511 patients were identified as having CDH repair during index admission. 59% (N=303) underwent open abdominal repair, 36% (N=183) underwent open thoracic repair, and 5% (N=25) underwent minimally invasive (MIS) repair. Readmission rate within 30-days was 32% (n=163), and 97% (n=495) within 1 year. The most common reasons for readmission within 1 year were gastroesophageal reflux disease (GERD) (20%), CDH recurrence (17%), and admission for gastrostomy tube or fundoplication (16%). Patients with MIS repair had a significantly higher recurrence rate (48%) compared to those with open repair via either approach (16%),  $p < 0.001$ . Surgeries performed at small hospitals were also associated with higher recurrence rate, highest income quartile was associated with a lower recurrence rate, and ECMO requirement had no association (Table 1).

### **Conclusions:**

This is the first study to evaluate nationwide readmissions in patients with CDH. The most common causes of readmission were for reflux related complications and CDH recurrence. MIS approach and bed size of hospital were both associated with higher rates of recurrence.

**Table 1. Effect of patient characteristics on readmissions and on CDH recurrence rates.**

		<b>Readmitted within 30 days n=163 (32%)</b>	<b>Readmitted within 1 year n = 495 (97%)</b>	<b>CDH Recurrence n = 88 (17%)</b>
<b><i>Demographics</i></b>				
Gender	Male	40.4%	97.7%	12.7%
	Female	22.8%	95.9%	<b>23.3%*</b>
Income Quartile	Highest	5.5%	100.0%	<b>8.3%*</b>
	Lowest	63.4%	99.0%	15%
<b><i>Index Admission Characteristics</i></b>				
Open Abdominal		40.3%	94.7%	7.3%
Open Thoracic		21.4%	100.0%	30.6%
Minimally Invasive		8%	100.0%	<b>48.0%**</b>
ECMO Requirement	Yes	40.4%	100.0%	16.4%
	No	28.3%	95.5%	18.4%
Hospital Size	Small	4.1%	100%	<b>63.3%**</b>
	Medium/Large	34.8%	96.5%	12.8%

\* p<0.05, \*\* p< 0.001.