

Optimizing Neonatal Congenital Diaphragmatic Hernia Outcomes

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BACKGROUND

Congenital diaphragmatic hernia (CDH) causes herniation of abdominal organs into the chest, resulting in pulmonary hypoplasia and pulmonary hypertension.

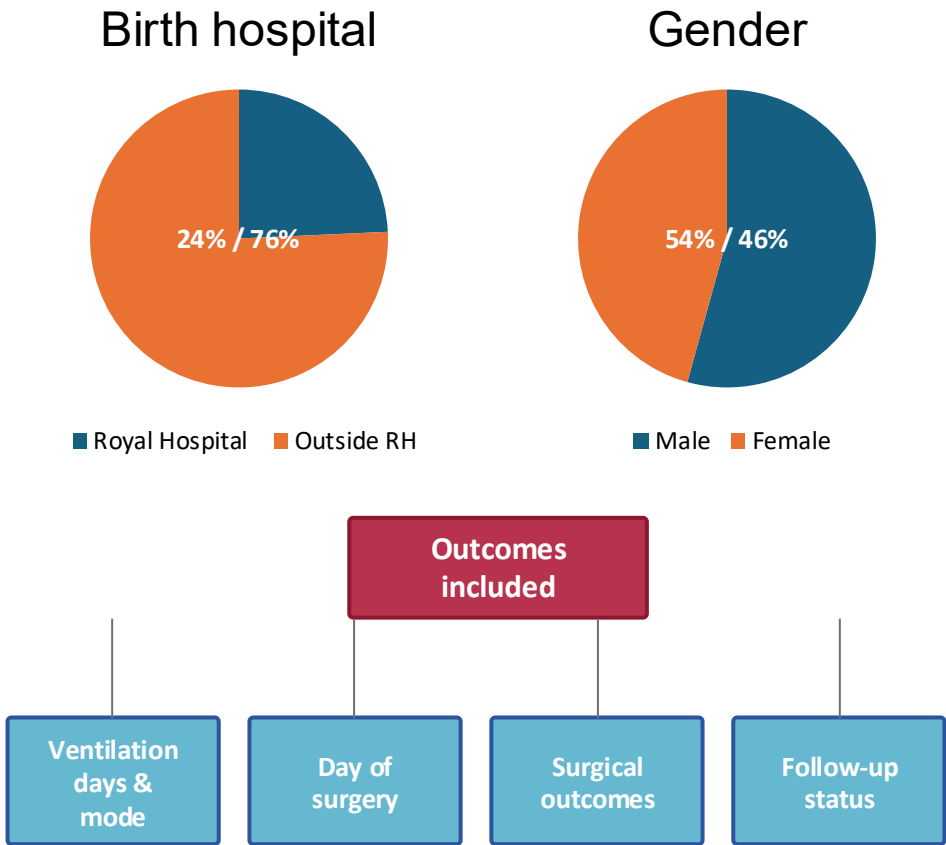
Antenatal ultrasound, lung-volume assessment and liver position support risk stratification. High-risk neonates require planned delivery with immediate respiratory and hemodynamic stabilization.

OBJECTIVES

- To describe CDH characteristics and surgical outcomes in Oman.
- To assess whether birth outside a tertiary center increases morbidity compared with planned birth at Royal Hospital.

METHODOLOGY

Retrospective single-center study, January 2012–December 2022. Included live-born CDH at gestational age ≥34 weeks. Excluded delayed presentation (>30 days), eventration, hiatal hernia and Morgagni hernia. Seventy neonates were included in the outcome comparison.



Primary outcomes compared neonatal stabilization, timing of repair and discharge status. Secondary outcomes included recurrence and intestinal obstruction.

COHORT SNAPSHOT

Left-sided defect	81.4%	Birth weight >2.5 kg	84%
Cardiac defects	38.6%	Chromosomal anomaly	5.7%
Large defect	56.5%	Liver up	42%

RESULTS

Antenatal diagnosis	38.5% (27/70)
LHR documentation	None
Fetal MRI	None
Recurrence	7.1%
Adhesive obstruction	5.8%
Mortality	5.7%

	Born at RH	Outside RH
Uneventful discharge	88.2%	60.4%
Transferred ventilated	0%	26.4%
Pre-op ventilation	1 day	2.5 days
Age at surgery	Earlier	Later

Significant differences: uncomplicated discharge p=0.04 · pre-operative ventilation p=0.021 · ventilated transfer p=0.016

STRENGTHS / LIMITATIONS

Strengths

- First national neonatal CDH cohort in Oman
- Ten-year clinical experience
- Direct comparison by place of birth

Limitations

- Retrospective, single-center design
- Incomplete pulmonary hypertension data
- No documented LHR or fetal MRI
- Variable duration of follow-up

CONCLUSION

CDH characteristics and surgical outcomes were broadly comparable with international literature. However, low antenatal detection and absent severity documentation remain important gaps.

A national pathway should prioritize standardized antenatal risk assessment, planned tertiary-center delivery, multidisciplinary neonatal care and a prospective CDH registry.