



Fetal chest pathologies managed with intrauterine interventions: Experience at a single Australian centre

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INTRODUCTION

Congenital lung lesions and pleural effusions are rare but carry the risk of intrathoracic compression and progression to hydrops or pulmonary hypoplasia.

Hydrops is the key prognostic determinant, with survival ~58% with hydrops vs 98% without, and improved survival when hydrops resolves following shunting.²

Evidence guiding escalation from thoracocentesis to thoracoamniotic shunting remains limited, particularly in Australian cohorts.

Aim: To describe outcomes of fetal chest pathology interventions at an Australian tertiary centre and compare thoracocentesis alone with cases requiring thoracoamniotic shunting.

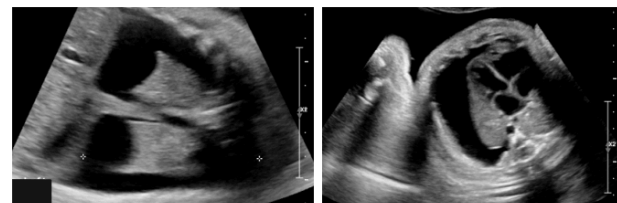


Figure 1. Clinical prenatal ultrasound images of appearances of fetal pleural effusions: (a) Bilateral pleural effusion; (b) Unilateral pleural effusion

METHODS

Study

Retrospective cohort
2008–2023
Royal Women's Hospital (Tertiary Ultrasound & MFM centre)
Melbourne

Ethics

Royal Women's Hospital
AQA 25.32

Population

Fetal chest pathologies managed with intrauterine interventions
Identified via Viewpoint reporting & ICD procedure codes

Intervention

Thoracocentesis + Rapid reaccumulation + Thoracoamniotic shunt (Harrison fetal bladder shunt)

Statistics

Descriptive statistics
Mann Whitney U
Fishers Exact
p < 0.05

Definitions

Hydrops = fluid in ≥2 compartments + subcutaneous oedema
Procedural success = no reaccumulation at 1 week and/or resolution of hydrops

RESULTS

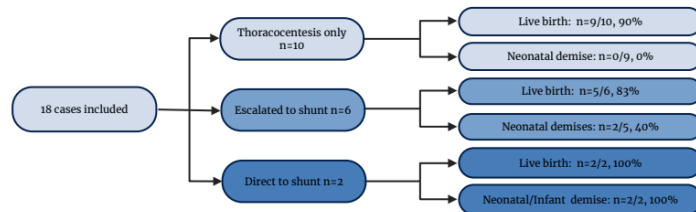


Figure 2. Cohort flow and intervention pathways (n=18). Live birth rate 89% (16/18), 39% Hydropic at diagnosis, all neonatal (n=3) and infant deaths (n=1) occurred in shunt groups.



Figure 3. Clinical prenatal ultrasound image of thoracocentesis in bronchogenic cyst.



Figure 4. Clinical prenatal ultrasound image of shunt in unilateral pleural effusion.

Thoracocentesis provided only transient decompression.

- Shunting resolved hydrops in 50% similar to literature 47–65%^{5,6}.
- Migration rates higher than literature 15–40%^{7,8}, likely reflecting this cohort's hydrops/polyhydramnios burden

	Thoracocentesis only (n=10)	Escalated to shunt (n=6)
Baseline characteristics		
GA at diagnosis, weeks (median, IQR)	27.4 (9.4)	23.0 (2.7)
Hydrops at diagnosis, n (%)	3 (30)	2 (33)
Hydrops developed, n (%)	5 (50)	6 (100)
GA at hydrops, weeks (median, IQR)	32.3 (1.6)	24.8 (3.4)
Mediastinal shift, n (%)	4 (40)	5 (83)
Thoracocentesis details		
GA at first procedure, weeks (median, IQR)	33.2 (6.9)	25.6 (2.8)
Hydrops resolution, n (%)	1/3 (33)*	0 (0)
Neonatal outcomes		
Live birth rate, n (%)	9 (90)	5 (86)
GA at delivery, weeks (median, IQR)	36.7 (1.3)	32.0 (0.9)
Birth weight, g (mean ± SD)	3163±791	2373±604
Time to established respiration, min (mean ± SD)	14.9±36.7	49.8±56.3
Neonatal mortality, n (%)	0 (0)	2 (40)

GA, gestational age; IQR, interquartile range; SD, standard deviation.
Bold and italicised variables have a statistical significant difference
*Denominator reflects only hydropic fetuses at time of procedure

Table 1. Baseline characteristics, intervention details and neonatal outcomes among the thoracocentesis only and escalated to shunt groups (n=16). The direct to shunt group (n=2) was excluded from comparative analysis due to its small sample size.

CONCLUSION

Clinical implications:

- Consider earlier primary thoracoamniotic shunting in hydropic fetuses, as thoracocentesis rarely provides durable decompression and may delay effective intervention.
- Close post-procedural surveillance is essential given high migration rates.

Limitations

- Small, retrospective single-centre cohort
- No expectant management comparison group

Future directions

- Prospective multicentre studies
- Australian fetal chest pathology registry



Figure 5. Clinical prenatal ultrasound image of thoracoamniotic shunt in fetal hand.

KEY FINDINGS

Shunt cohort = more severe + poorer outcomes

- Earlier diagnosis & delivery
- ↑ Hydrops & ↑ Mediastinal shift
- ↑ Time to establish respiration

Thoracocentesis → Effective decompression but frequent rapid reaccumulation

Thoracoamniotic shunting

- Hydrops resolved in 50%
- Migration occurred in 63% (median 9 days)

Outcomes

- IUFD occurred only in hydropic fetuses
- Neonatal demises associated with prematurity + pulmonary hypoplasia

REFERENCES

