

AIRWAYS IN OESOPHAGEAL ATRESIA (OA) & TRACHEO-OESOPHAGEAL FISTULA (TOF) - WORTH A REVISIT?

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Aim: Several hypotheses link tracheomalacia (TM) to oesophageal atresia (OA) (with/without a fistula). The prevalence of associated TM is 11-33%. Significant early airway symptoms include failed extubation(s), recurrent chest infections and acute life-threatening events. We sought to assess the prevalence of such symptoms, contributory factors and need for intervention.

Methods: We have established a pathway for patients with OA to undergo an airway assessment (AA) at the time of surgery. Direct flexible bronchoscopy (DFB) was performed documenting the site of the fistula, degree of TM and vascular compression of the trachea. TM was graded according to the narrowing of the trachea as mild (50-75%), moderate (75-90%) and severe (>90%). Guided by the DFB a contrast enhanced CT was performed to define the extent of vascular compression. Prospective data was collected on the development of symptoms and need for intervention. Chi-Square test was used for statistical analysis with a P-value of ≤ 0.05 considered significant. The study was given ethical approval by our institution.

Main Results: Overall, 58%(20/41) developed airway symptoms following their repair at a median age of 2 months (1 week-6months), with 29%(12/41) undergoing surgery for airway symptoms. Median follow-up was 7 months (3 weeks-27 months). 23/41(56%) had an AA at the time of initial surgery. The initial DFB findings and subsequent outcomes are summarised in Table 1. The presence of tracheomalacia at initial surgery was associated with the development of airway symptoms ($p=0.02$) and the subsequent need for airway intervention ($p=0.05$). Severity of tracheomalacia, anterior pulsatility, site of fistula and congenital cardiac disease were not related to the development of airway symptoms or need for intervention.

Conclusions: Patients with a diagnosis of OA/TOF are at risk of airway symptoms. The presence of TM at initial DFB is a useful marker for identifying at risk patients that need closer monitoring.

Table 1 - Initial DFB findings at time of initial OA/TOF repair, symptom occurrence and need for intervention ($n=23$)

Findings at initial DFB	No airway related symptoms (n=10)	Airway related symptoms (n=13)	Airway intervention (n=9)
Degree of TM			
Normal (n=8, 35%)	6 (60%)	2 (15%)	1 (11%)
Mild (n=7, 30%)	2 (20%)	5 (38%)	3 (33%)
Moderate (n=4, 17%)	1 (10%)	3 (23%)	3 (33%)
Severe (n=4, 17%)	1 (10%)	3 (23%)	2 (22%)
P-value	-	*0.02	*0.05
Anterior Pulsatility			
Yes (n=11, 48%)	4 (40%)	7 (54%)	4 (44%)
No (n=12, 52%)	6 (60%)	6 (46%)	5 (55%)
P-value	-	0.50	0.79
Site of fistula			
Middle (n=7, 30%)	4 (40%)	3 (23%)	2 (22%)
Distal (n=16, 70%)	6 (60%)	10 (77%)	7 (78%)
P-value	-	0.38	0.91