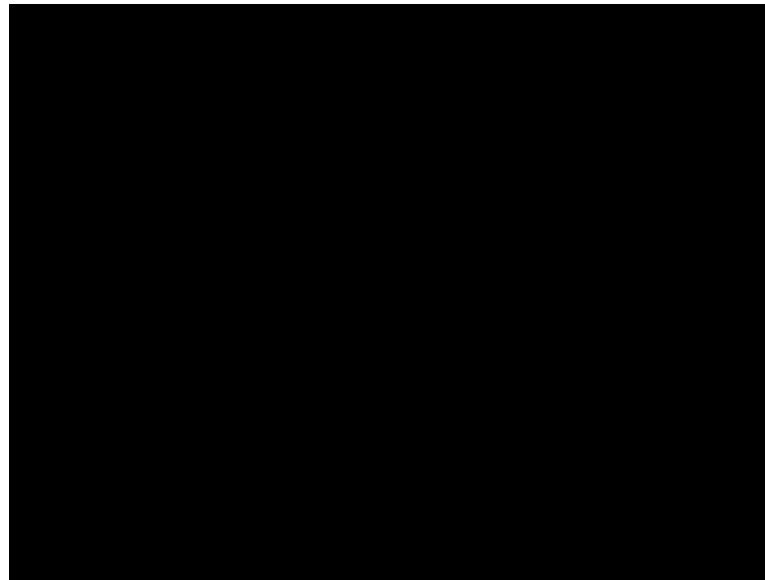


LARYNGOMALACIA AND TRACHEOMALACIA

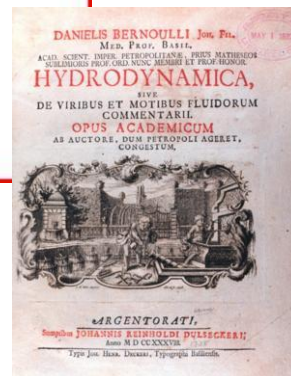


Laryngomalacia: Definition

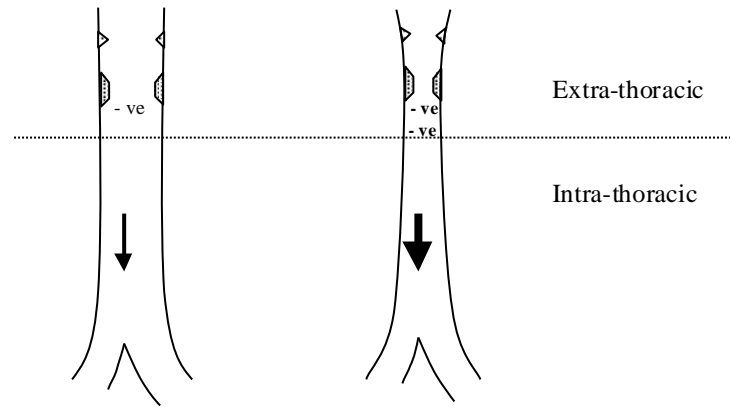
- ❑ Collapse of the (supraglottic) larynx
- ❑ Inspiratory because of Bernoulli effect

$$\frac{v^2}{2} + gy + \frac{P}{\rho} = \text{constant}$$

v = fluid velocity along the streamline
 g = gravitational constant
 y = elevation in q-field
 P = pressure along the streamline
 ρ = fluid density



Collapse and increasing obstruction on inspiration with extra thoracic obstruction



Laryngomalacia: History

- ❑ Not usually present at birth (first week)
- ❑ ↑ with feeding and crying
- ❑ musical quality
- ❑ cry normal
- ❑ (cyanotic episodes unusual)
- ❑ growth/weight

Laryngomalacia: Examination

- Inspiratory stridor ↑ with crying
- Recession
- Check for cutaneous haemangiomas

Laryngomalacia: Endoscopy

▣ Aims

- to confirm diagnosis of laryngomalacia
- to exclude co-existent airway pathology

▣ Options

- Fibre-optic in office – screening for all
- MLB under GA for full assessment

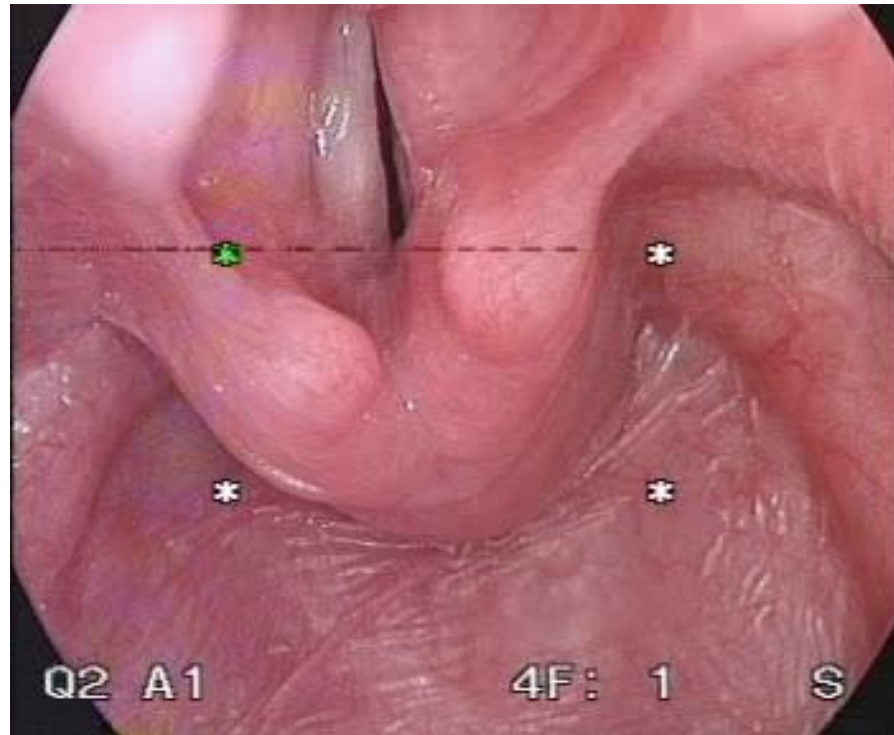
When to perform rigid endoscopy

- Intubation history
- Traumatic birth
- Stridor from day 1
- Cyanotic episodes
- **Failure to thrive**
- Biphasic stridor
- Severe recession
- Other congenital abnormalities
- Abnormal neurology

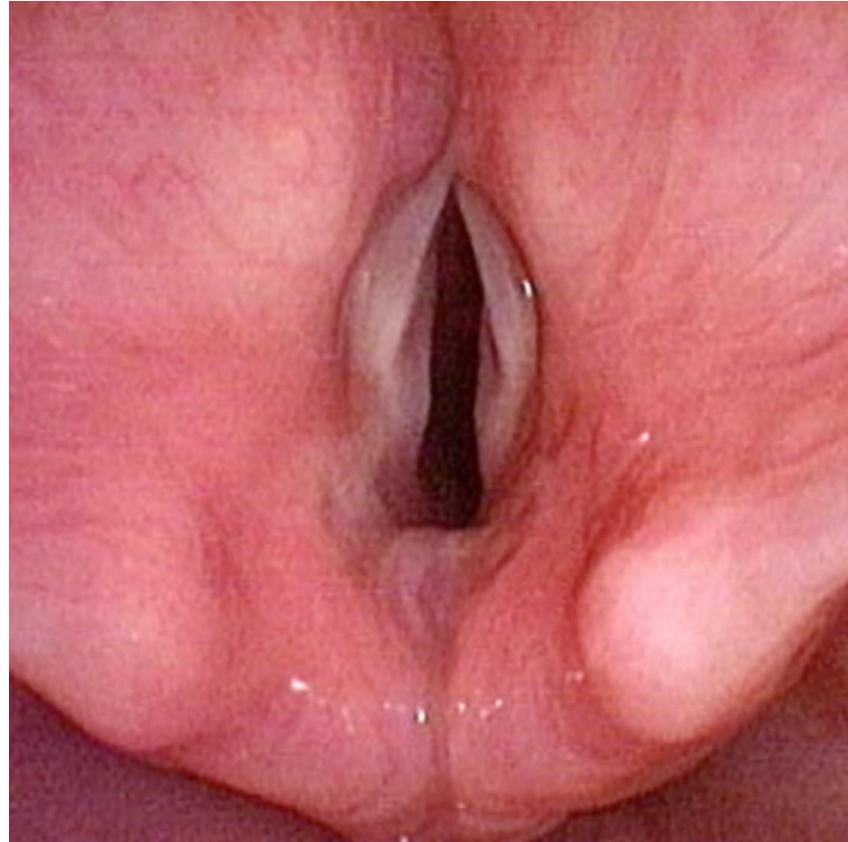
Rigid Endoscopy: Laryngomalacia



Differential diagnosis



Differential diagnosis



Laryngomalacia: Types

- Posterior combined
- Severe combined laryngomalacia
- Combined - less



Laryngomalacia: Management

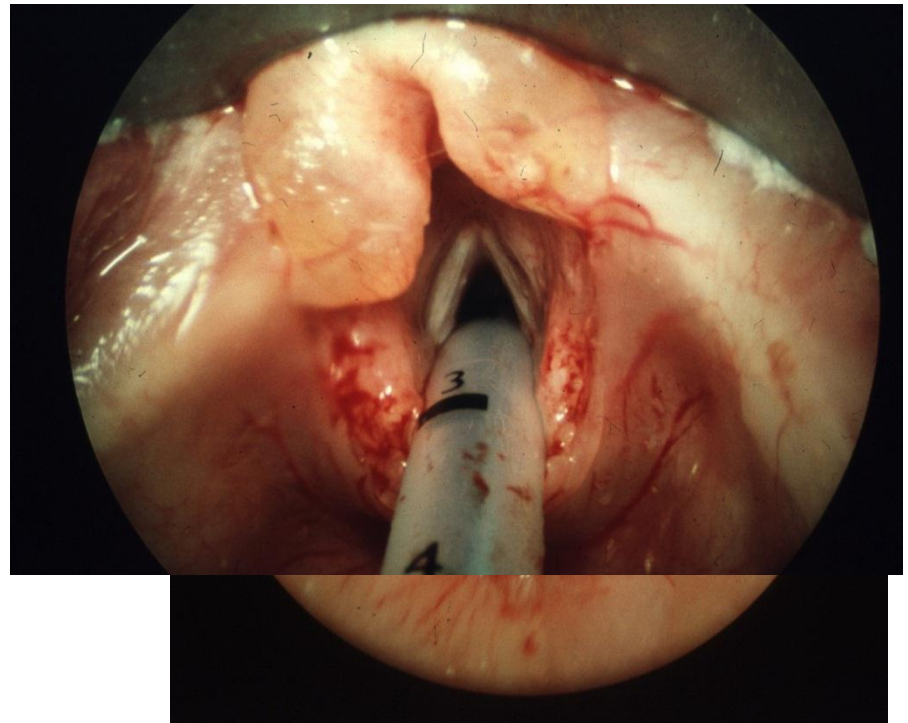
- Conservative
 - For majority
- Surgical
 - Severe airway obstruction
 - (would otherwise need tracheostomy)
 - Failure to thrive
 - Which procedure?
 - determined by site and severity
 - ? Antibiotics/steroids/antireflux

BEWARE

- ▣ Feeding difficulties
 - ▣ - primary or secondary to laryngomalacia?
- ▣ Floppy baby
- ▣ Syndromic child

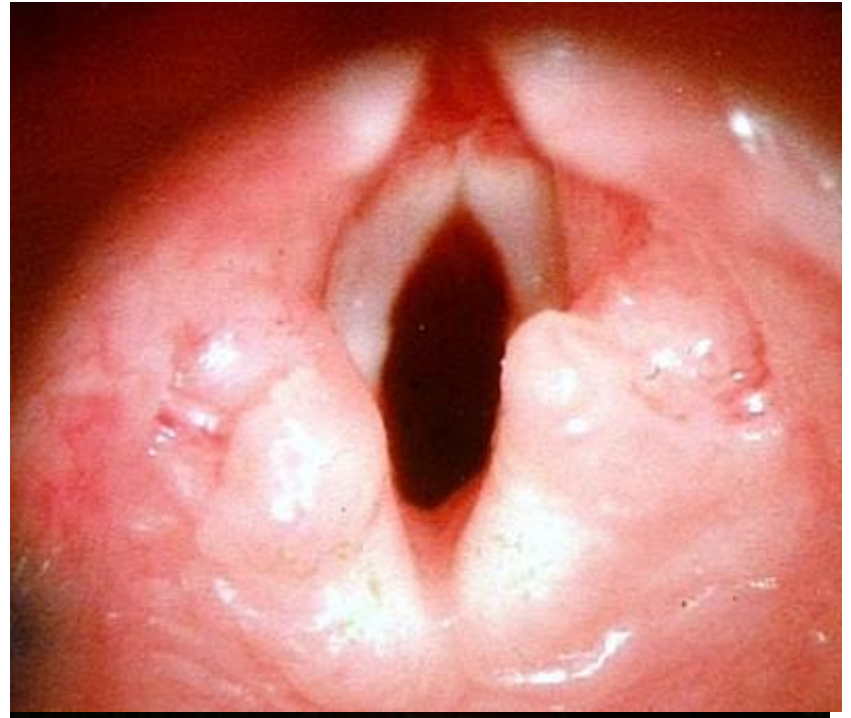
Aryepiglottoplasty

- Mucosal excision
- Tailored to suit



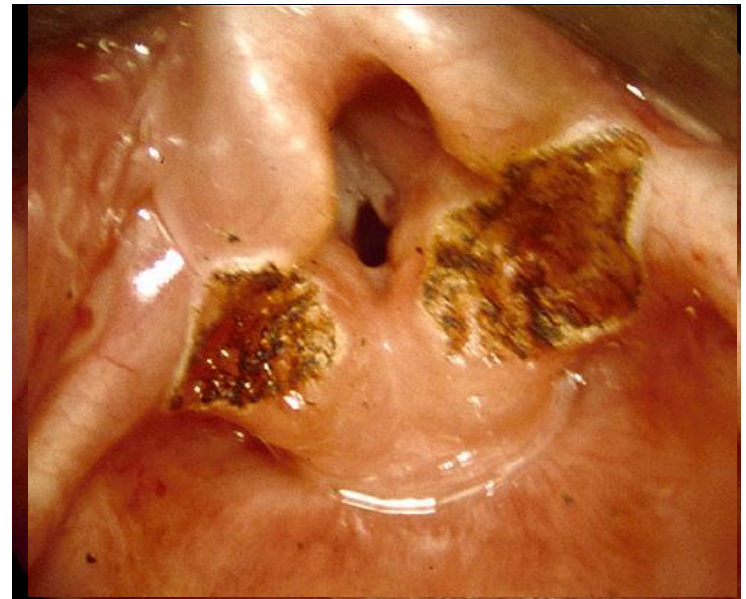
Aryepiglottoplasty

- Sheffield snip



Aryepiglottoplasty

- ▣ Laser
- ▣ Slow to feed



Summary- Laryngomalacia

- ▣ Mild
 - very common
 - self limiting
 - observe ? Scope
- ▣ Significant
 - trim excess mucosa
 - (avoid if syndromic, floppy or concerns that feeding may worsen)

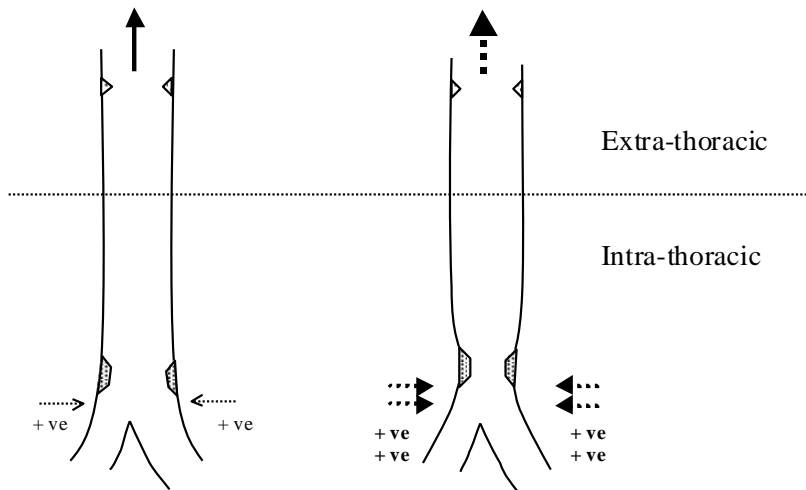
Tracheobronchomalacia

- Disease profile
 - Definition
 - Classification
 - Prognosis
 - Associations
- Diagnosis
- Treatment

Definition

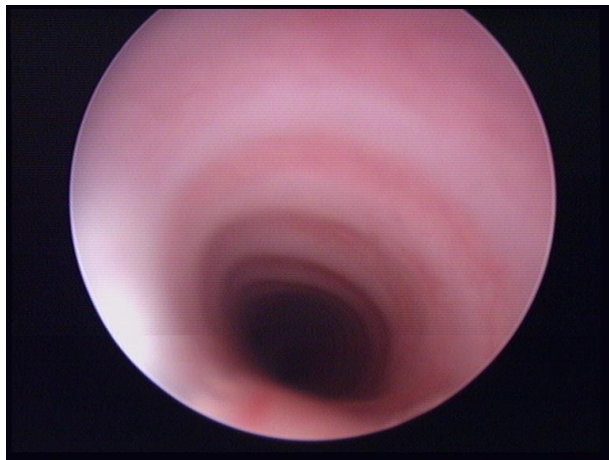
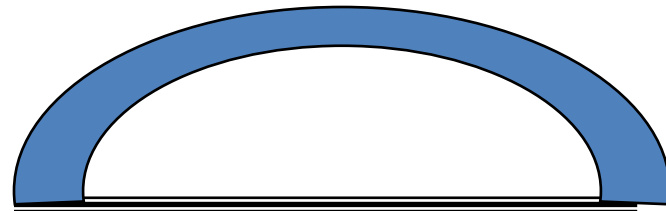
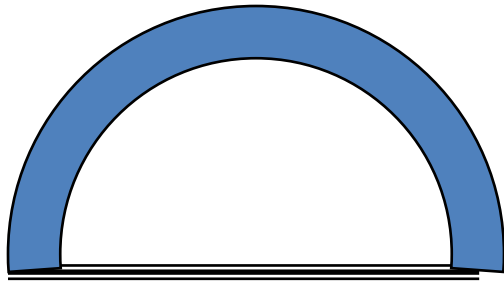
- *Abnormal* collapse of the trachea
- Expiratory because of increased intra-thoracic pressure

Collapse and increasing obstruction on expiration with intra thoracic obstruction



Classification: primary

- Cartilage to muscle Ratio should be 2:1

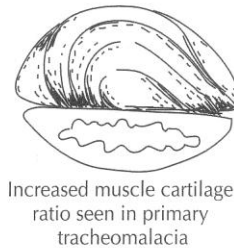
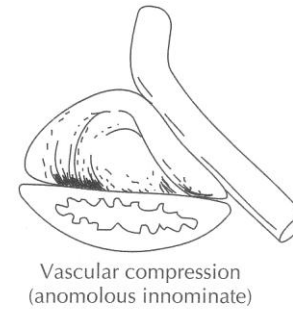
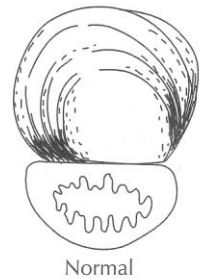


Classification: secondary

- Compression

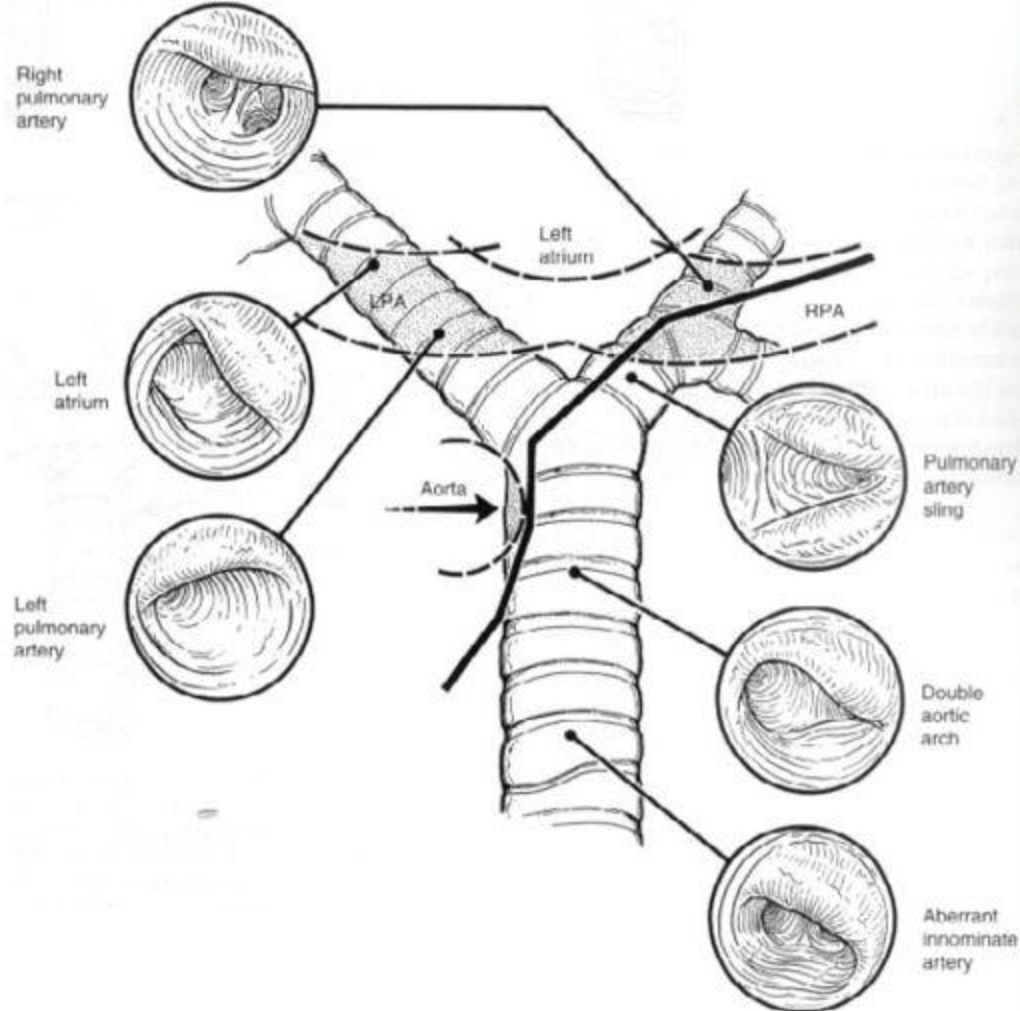
- Vascular

- Mediastinal Mass



- Long term ventilation

Cardiac Anomalies:
Left trachea LMB, RBI



Vascular Anomalies:
Right trachea and RMB

Vascular malformations leading to tracheobronchial obstruction (from Holinger L.D. et al.:
Pediatric Laryngology & Bronchoesophagology. Lippincott - Raven 1997)

Double aortic arch



Tracheomalacia: Prognosis

- ❑ May initially deteriorate over first 6 months then usually improves by 18 months as cartilage strengthens
- ❑ Can be severe
- ❑ (if combined with bronchomalacia can be fatal due to inability to ventilate/empty chest)

Associations

- ▣ Larsen's Syndrome
 - hypermobile joints
 - cartilage
- ▣ Tracheo-oesophageal fistula

- ▣ Cardiac lesions

Provisional Diagnosis - History

Cyanotic episodes

Tracheomalacia, TOF, cardiac

Cough

Tracheomalacia, TOF

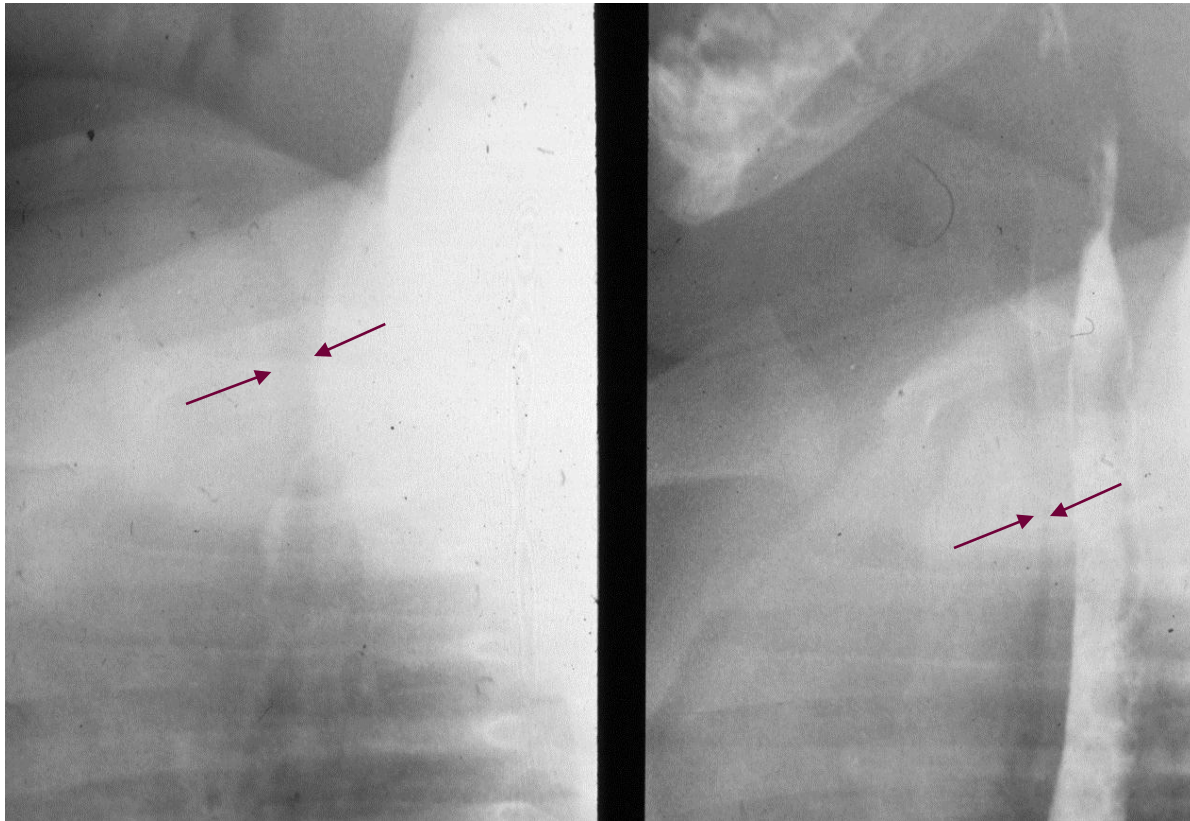
Aspiration

TOF, VCP, Cleft

Provisional Diagnosis - Examination

- Timing of stridor (inspy/expy)
 - ? prolonged expiratory phase

Tracheomalacia seen on a barium swallow



Diagnosis

- ▣ MLB
 - Avoid physical or airway splinting (underdiagnosis)
 - Coughing (overdiagnosis)
- ▣ Bronchography
- ▣ CT/MRI (2D or 3D)
- ▣ Echocardiogram

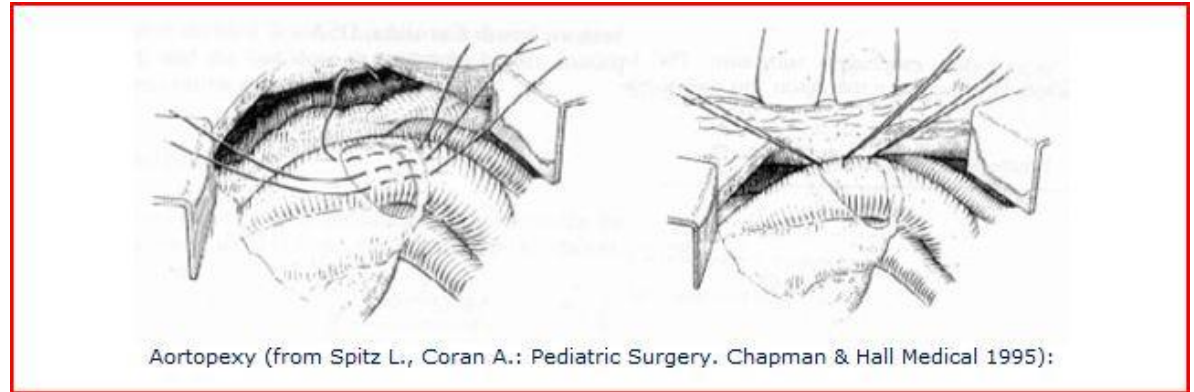
Treatment

- Long tracheostomy tube
- ± CPAP

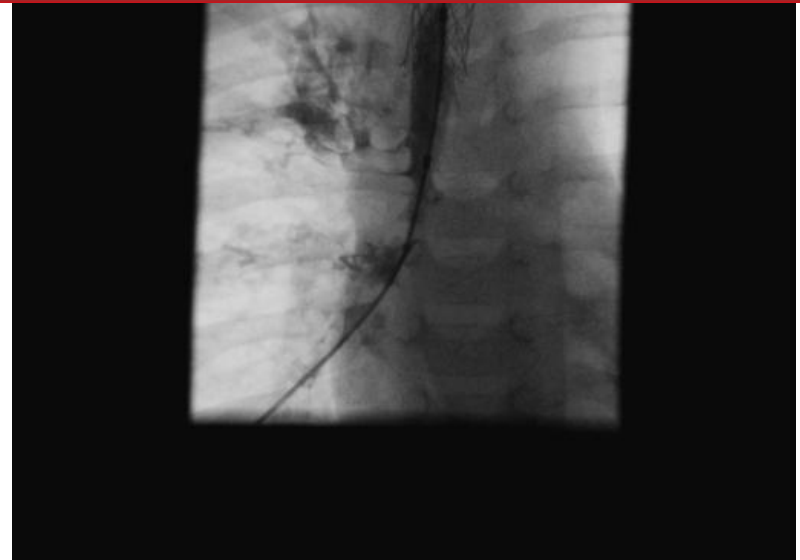


Treatment

- Aortopexy
- ? thorascopic



- Bronchopexy
- Stents



Summary: tracheomalacia

- ▣ Mild -
 - common, self limiting
 - ? Relationship to breath-holding attacks
- ▣ Severe
 - tracheostomy
 - aortopexy/stent
 - can be a real challenge or even fatal

