

Pediatric Chest Physical Therapy



Post - Natal development



Chest shape

- Ribs of newborn = horizontally placed
- Transverse diameter = AP diameter

As the infant grows and develops upright posture:

- Ribs = develop more oblique angle
- Transverse diameter increases

The adult chest shape is achieved by 3 years of age.



Airways

- No increase in no. of airways formed
- Only growth and development in their size
- In first few years of life: significant increase in diameter of large, more proximal airways
- Smaller, more distal airways, no increase in diameter until nearer 5 years of age.



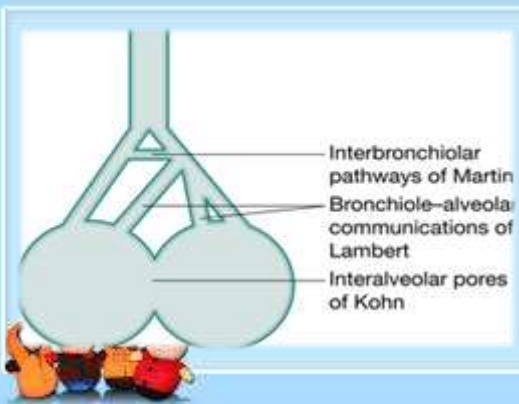
Alveoli

- Post - natively, there is both
- Increase in size
- Increase in no.
- At birth: 150 million alveoli
- Much growth of alveoli during first 12 months
- By age 4, 300-400 million may exist
- Their growth continues until 7 years of age



Collateral ventilation

- Is the means by which a distal lung unit can be ventilated despite blockage of the main airway.
- Network of interconnecting pathways:
 - Channels of Martin: connect respiratory bronchioles
 - Canals of Lambert: connect respiratory and terminal bronchioles with alveoli and their ducts
 - Pores of Kohn: connects adjacent alveoli by openings in the alveolar wall



Differences in respiratory anatomy and physiology



Anatomy

- Larynx
- Lymphatic tissue
- Airways
- Bronchial walls
- Cilia
- Alveoli
- Internal organs
- Ribcage
- Diaphragm



Physiology

- Compliance
- Closing volumes
- Collateral ventilation
- Ventilation and perfusion
- Oxygen consumption
- Response to hypoxia
- Muscle fatigue
- REM sleep
- Breathing pattern



Assessment

- History
- Investigations
- Inspection
- Palpation
- Auscultation



Physiotherapy techniques

- Positioning
- Postural drainage
- Percussions and vibrations
- Breathing exercises and coughing
- Airway suction



Postural drainage is a technique for loosening mucus in the airway so that it may be coughed out



ADAM



ICU management

- History
- Ventilation
- Drugs
- Vital signs
- Chest xrays
- ABGs



Indications for physiotherapy

- Retained secretions unable to be cleared from suction alone
- Acute lobar or lung collapse with mucous plugging



Physiotherapy techniques

- MPD
- Suction
- Manual hyperinflation
- Saline instillation
- Broncho-alveolar lavage
- Breathing exercises
- Pronged CPAP
- Treatment timing



