Airway Emergencies

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Acute Airway Management

The Problems Should Be Approached :

1. Simplest adequate form of control should be selected

2. Lowest level of airway obstruction should be ascertained

3. Acute airway problems often evolve in association with other medical problems
(spine trauma , vascular injury , infectious disease , foreign bodies , …)

Indications For Intervention :

Symptoms :

Voice change
Dyspnea
Dysphagia
Local pain
cough

Physical findings :

Hoarseness
Nerve paralysis
Mucosal tear or edema
Complete aphonia ⟹ severe injury suspected

➢ Stridor :

- Inspiratory stridor (swelling at or above the level of vocal cords)
- Expiratory stridor (below the vocal cords : croup)
- Obstracting lesions at glottis or trachea (stridor in inspiration and expiration)

- Restlessness : sign of hypoxia
- Drooling : pain , muscular dysfunction
- Bleeding : upper airway or lower airway
- Subcutaneous emphysema
- Palpable fracture : mandible , palate , thyroid cartilage , cricoid cartilage
- Suprasternal retraction : intervention should be considered to immediately stabilized the airway

Diagnostic assessment :

- Indirect or fiber optic examination (patient is moderately stable)
- Blood gases (not diagnostic)
- Radiology

  - Cervical spine (patient with upper airway trauma)
  - Soft tissue airway graphy (laryngeal and tracheal air column)
  - Chest X-Ray
  - Face

- **Endoscopy**

injury to the oropharynx , hypopharynx , laryngo tracheal complex , or esophagus : evaluation by direct insriration is indicated

Therapeutic options :

- observation and medical support

  - ✓ Oxygen (humidified oxygen through a close fitting face mask)
  - ✓ Glucocorticoids (in mild to moderate trauma hydrocortisone 100mg initially and 50 mg every 8hr for 24 to 48hr
  - ✓ antibiotics

- options for interventions

  - ✓ **Heimlich maneuver** (acute airway obstruction by a food bolus should first be managed by using the Heimlich maneuver in combination with back slap)
  - ✓ **Nasopharyngeal airway** (in mild to moderate head injury with obtundation but normal respiratory drive)
  - ✓ **Oral airway**

- ✓ **Trans oral intubation : Endotracheal intubation is the standard of comparison for airway control (progressive upper airway obstruction , deteriorating pulmonary mechanics , or loss of respiratory drive)**

Contraindication to endotracheal intubation :

- ❖ **Cervical spine fracture**
- ❖ **Laryngeal trauma**
- ❖ **Severe oral trauma**

- ✓ **Nasal intubation (in operation room) : in patient with combined cervical spine fracture and chest injury**
- ✓ **Transtracheal needle ventilation**
- ✓ **Cricothyroidectomy : when the patient has total upper airway obstruction is choice**
- ✓ **Tracheotomy : cricothyroidectomy is preferred .**

Tracheotomy in patient urgent need of an improved airway is often difficult (vertical incision , experienced surgeon)

Foreign Bodies of the Airway :

- F. B. A. tend to be twice as common as in boys
- Vegetative matter : 70 – 80% of F. B. A.
- Highest incidence between 1 and 4 years
- Bronchial foreign bodies are more common (in right bronchus in adult , but equal in children)

There are three clinical phases of foreign body aspiration :

1. **Initial phase :** choking , gaging and paroxysm of coughing or airway obstruction with occur at the moment of aspiration .
2. **Asymptomatic phase :** last for hours to weeks
3. **Complication :** obstruction , erosion , infection causes pneumonia , atelectasis , abscess or fever .

Laryngeal Foreign Bodies :

- Irregular foreign bodies or orientation in the sagittal plane may produce only partial obstruction .
- Resulting laryngeal edema ⟶ complete obstruction
- Patients present with symptoms of obstruction and hoarseness . Some symptoms can mimic croup .

Tracheal Foreign Bodies :

- Without hoarseness
- Asthmetoid wheeze
- Audible slap (foreign body contact with trachea)
- Palpable thud

Bronchial Foreign Bodies :

- 80 – 90% of F. B. A.
- Triad of cough , wheezing and decreased breath sounds : 65% in all cases
- B. F. B. up to 95% present with at least one finding
- Occasionally B. F. B. can cause respiratory compromise : swelling of foreign body, edema of bronchi , Movement of F. B.

Radiographic Evaluation :

- **Laryngotracheal foreign body**

  - Neck X-Ray : P. A. and lateral soft tissue graphy

  - Subglottic narrowing

  - 92% have abnormal neck radiographs

  - 50% normal chest

❖ Bronchial foreign body

- Chest X-Ray (P.A. & Lat.) :

Obstructive emphysema (early finding)

Atelectasis or consolidation (late finding)

- Diagnosis is strongly suspected by history and physical examinations

- Small objects may cause normal CXR

- Check valve effect : obstruct only on expiration ➡ hyper inflation of affected side and mediastinal shift to opposite site

- A ball valve effect : obstruct on inspiration and open on expiration ➡ producing atelectasis on affected side and mediastinal shift toward affected side

- When object completely obstructs the bronchus stop valve effect occur leading to consolidation of the lobe involved

- Inspiratory and expiratory chest film
- In younger children who cannot cooperate lateral decubitus film may help

Management :

Choice is rigid bronchoscopy