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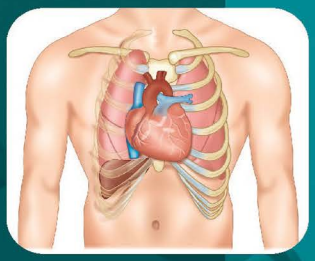
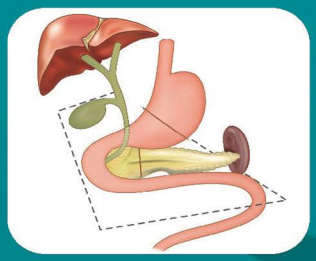
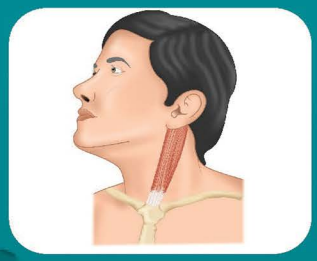
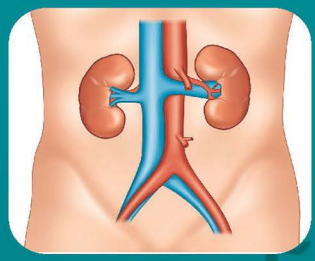

DECISION MAKING IN CLINICAL SURGERY

Venkit S Iyer

2nd Edition

JAYPEE

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CHAPTER 4

Respiratory Distress

JAYPEE BROTHERS

INTRODUCTION

Airway and breathing management is the basic step in saving lives. Management of any ill patient will need assessment of ventilation equilibrium, with reference to oxygen saturation as well as carbon dioxide exchange. Sometimes, quick decisions have to be made to remove objects blocking the upper airway and to establish a clear air passage. Moreover, it may require a slow and careful assessment of the acid–base metabolic balance and adjustments on the ventilator. A patient may be having labored breathing from a tension pneumothorax or from congestive heart failure. How does one make quick decisions? What test to order? What interventions would be best?

MANAGEMENT (TABLES 4.1 AND 4.2)

The patient cannot breathe. You are called to the bedside STAT. What can you do?

Do not panic and cause more commotion. There are probably some caregivers already at the bedside, ready to give some information. Get the history while making observations at the same time.

Does this patient need an immediate airway access? Is this a time for emergency cricothyroid needle puncture or an emergency on the spot tracheostomy? Is this a case for Heimlich maneuver due to food bolus in the throat? Is the patient awake and breathing? Does this patient need emergency endotracheal intubation? Can you just give oxygen with a facemask or do you need an Ambu bag? All these questions keep swirling your mind in a second.

Open the patient's mouth and inspect the nasal and oral airways. Check to inspect if anything is blocking the passages, such as blood, foreign bodies, food bolus, vomitus, or an edematous tongue.

Does the patient need urgent endotracheal intubation? Can you give adequate ventilation with the facemask and oxygen? What does the pulse oximetry show about the oxygen saturation level? What is the rhythm on cardiac monitoring?

Auscultate the lungs. Are breath sounds equal and audible, or are there crepitus and rhonchi? Is there a tension pneumothorax, collapse of the lung, or massive pleural fluid collection? Is the patient blue and cyanotic or is this a pink puffer? Are there obvious moist rales and rhonchi with crepitus sounds? Is there severe bronchospasm? Is there evidence of surgical emphysema with a crackling soap bubble-type feel under the skin?

TABLE 4.1: Causes of respiratory distress

Upper airway	*Lower airway*	*Chest wall*	*Central nervous*
Facial trauma	Bronchial asthma	Fracture of ribs	Drug overdose
Neck injury	Congestive heart failure	Pneumothorax	Toxemia
Food bolus	Pneumonia	Hemothorax	Head injury
Blood and vomitus	Pulmonary embolism	Empyema	Spinal cord injury
Laryngeal pathology	Collapse of lung	Consolidation	Brain tumors
Carcinoma	Pulmonary congestion	Trapped lung	Encephalopathy
Aspiration	ARDS		Medications
Drowning			

(ARDS: acute respiratory distress syndrome)

Ask for an emergency portable chest X-ray and look for pneumothorax, hemothorax, consolidation or collapse of one lung, pneumonia, or congestive heart failure.

If evidence of tension pneumothorax is noted, one can immediately insert a large-bore needle along the midclavicular line at the second or third intercostal space, followed by insertion of a small-sized cannula loaded on a needle 6–12F (pigtail catheter kit), or if time permits insertion of a chest tube 20–30F. These tubes are then connected to an underwater seal or to a one-way valve application (Heimlich flutter valve). This will allow the lung to expand immediately. Spontaneous pneumothorax is often due to ruptured emphysematous bullae on the lung surface. If the air leak persists beyond a 1-week time following pneumothorax from any etiology, the patient may need surgical intervention.

If there is evidence of a massive pleural effusion or a hemothorax, one should tap the sixth intercostal space with a large-bore needle to confirm the same, and then replace it with a chest tube connected to an underwater seal.

If there is evidence of total collapse of the lung due to a blocking agent in the bronchial stem, such as a foreign body or mucous plug, immediate arrangements are made for bronchoscopic aspiration or retrieval.

An immediate decision is made at the bedside as to how to establish the airway, how to provide adequate oxygenation, and how to then treat the underlying medical problem that led to this state **(Fig. 4.1)**.

Start with a tight facemask and oxygen. Insert an airway, either orally or nasally, at the same time. If there is any question about satisfactory progress, immediately perform endotracheal intubation and place the patient on mechanical ventilation **(Fig. 4.2)**.

TABLE 4.2: Diagnosis and treatment of respiratory distress

Diagnosis	***Treatment***
Inspect upper airway	Remove obstructing materials in oral cavity
Inspect oral cavity	Mask ventilation (Ambu® bag)
Listen for breath sounds	Endotracheal intubation
Evaluate neurological status	Cricothyroidotomy
Chest X-ray	Tracheostomy
CT scan	Treat the underlying cause
	Ventilator support

(CT: computed tomography)

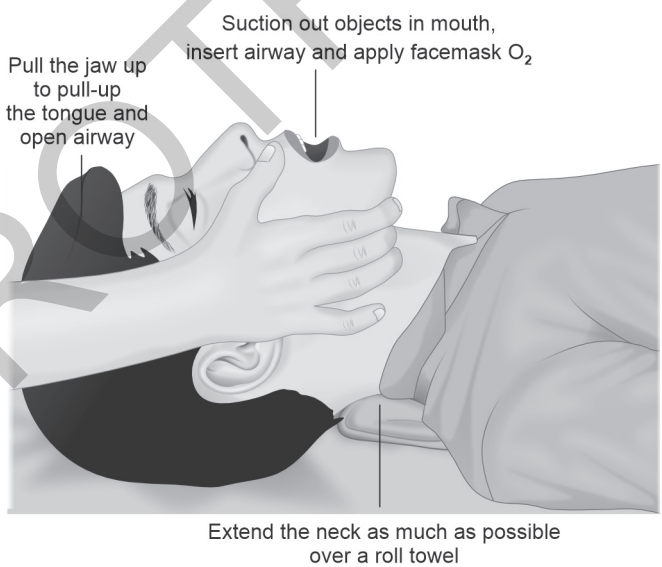

Fig. 4.1: Emergency airway management.

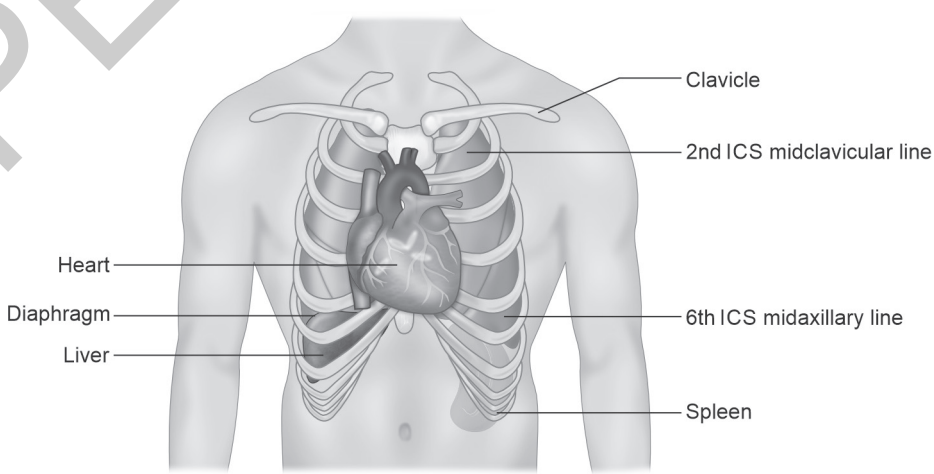

Fig. 4.2: Safe places to insert chest tube or needle aspiration—2nd intercostal space (ICS) midclavicular line or 6th ICS midaxillary line.

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If this is a patient who is to be taken to an operating room soon for an underlying problem such as trauma or a gunshot wound, one might as well intubate the patient in the emergency room (ER) and be ready.

If this is a patient with congestive heart failure, one may give a facemask and oxygen and follow the patient in the coronary care unit (CCU) while being medically managed with diuretics and cardiac medications.

The issue of central nervous system depressants inducing respiratory suppression needs to be evaluated and addressed. Very often, we see this in the recovery room after surgery and anesthesia. The patient has not fully recovered and awakened from anesthesia or is oversedated. Sometimes, the patient has taken an overdose of addictive drugs such as heroin, cocaine, morphine, or fentanyl. Sometimes, it is an after effect of brain injury, spinal cord injury, or advanced toxemia related to hepatic failure, renal failure, or poisoning. These patients have very shallow breathing at a slow rate. Pulse oximetry may show low oxygen saturation along with blood gases showing severe respiratory acidosis. The patients are not responsive to questioning or to awakening methods. The patients just look too sleepy.

Medications of use are respiratory stimulants such as doxapram or antidotes to morphine such as Narcan® (naloxone), and thiamine for encephalopathy.

KEY POINTS

First, make sure that the airway is good and is secured. Then correct the disease process while providing ventilator assistance.

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DECISION MAKING IN CLINICAL SURGERY

Salient Features

- Describes orderly decision-making in clinical practice of surgery in the outpatient clinic, hospital ward, or operating room
- Explains most cost-effective and expeditious way to manage a given clinical scenario
- Provides the pathway for making decisions, be it ordering a test or procedure, urgent or elective
- Easy to read, direct simple language, navigating the complex field of medical and surgical challenges
- Latest information on diagnostic tests, treatment protocols, and surgical options included in this second edition, while emphasizing the fundamentals of surgical practice
- Valuable ready-reference guide for medical students, house physicians, postgraduate students, junior surgeons, and other medical practitioners.

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Printed in India

Available at all medical bookstores or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road,
Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

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ISBN 978-93-5696-268-2