SYSTEM-SPECIFIC COMPLICATIONS Respiratory system

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Early detection of respiratory complications is facilitated by periodic assessment of airway patency , respiratory rate and routine oxygen saturation measurement, performed during emergence and recovery as described earlier. Postoperative respiratory complications can occur immediately on PACU or later when a patient is on the surgical ward or is discharged home. Immediate respiratory complications on PACU Airway Upper airway obstruction is one of the commonest immediate postoperative complications and can be due to laryngospasm, persisting relaxation of airway muscles, soft-tissue oedema, haematoma, vocal cord dysfunction or a foreign body . Vigi - lance and early intervention are necessary to prevent harm to the patient. Most interventions are simple and involve manual support of the jaw or insertion of an oral or nasal airway . The residual e ff ects of anaesthetic drugs (neuromuscular blockers, anaesthetic agents, opioids) can contribute to reduced or impaired adequacy of ventilation postoperatively . Continuous pulse oximetry and respiratory rate evaluation can identify respiratory compromise and consequent hypoxia early . Supplemental oxygen should be given to all patients on PACU until adequate respiration and oxygenation are restored. Hypoxaemia This may occur, in addition to the situations already described above, as a consequence of acute pulmonary oedema (fluid overload, cardiac failure, postobstructive), bronchospasm, De novo pneumonia is very nary embolism (PE) (Figure 24.5). unusual in the immediate postoperative period. Hypoxaemia develops most quickly in patients with obstructive sleep apnoea (OSA), lung disease and obesity; these patients should therefore be closely observed. Patients with hypoxaemia should be treated urgently . If the patient is breathing spontaneously , oxygen should be admin - istered at 15 /uni00A0 L/min using a non-rebreathing mask. A head tilt, chin lift or jaw thrust should relieve obstruction related to reduced muscle tone. Suctioning of any blood or secretions and insertion of an oropharyngeal airway may be needed. Early anaesthetic intervention may be required. V ocal cord palsy (as a consequence of recurrent laryngeal nerve injury), neck haematoma and post-tonsillectomy bleed - ing are recognised as life-threatening complications of head and neck surgery , which need immedia te medical attention for safe resolution. Although the above respiratory complications are more common on P ACU, they can occur after discharge from PACU as well. Respiratory complications after discharge from PACU Postoperative pulmonary complications are a significant cause of postoperative morbidity and mortality (figures vary between 5% and 70%). Complications include fever (due to micro - atelectasis), cough, dyspnoea, bronchospasm, hypercapnia, atelectasis (Figure 24.6), pneumonia

(Figure 24.7), pleural e ff usion, pneumothorax and respiratory failure. The risk of each varies with the patient and the type of sur gery being performed. Thoracic or abdominal surgery carries the highest risk. The majority of patients at risk (obese, smokers, chronic lung disease, OSA, poor nutritional status) can be identified

Figure 24.4 Radiograph showing a right tension pneumothorax with tracheal deviation to the left (courtesy of Professor Stephen Eustace, Dublin, Ireland). Figure 24.5 Computed tomography scan showing a pulmonary artery blood embolism (arrow) (courtesy of Professor Stephen Eustace, Dublin). Figure 24.6 Radiograph showing right upper lobe atelectasis (cour

tesy of Professor Stephen Eustace, Dublin, Ireland).

preoperatively , facilitating the development of strategies that will reduce the impact of surgery on the individual patient. Table 24.2 shows risk factors for developing a postopera tive pulmonary complication. /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF

/uni25CF Respiratory complications /uni25CF /uni25CF /uni25CF

Figure 24.7 Radiograph showing classical Staphylococcus aureus pneumonia (courtesy of Professor Stephen Eustace, Dublin, Ireland). TABLE 24.2 Risk factors for developing a postoperative pulmonary complication. Patient factors Procedure-related factors Non-modi /f_i able Non-modi /f_i able Type of surgery Age Upper abdominal or vascular surgery Male sex Emergency surgery ASA grade >II Long-duration surgery (>2 /uni00A0 hours) Frailty Reoperation or multiple surgery Acute respiratory infection within 1 month of surgery Impaired cognition/sensorium/stroke Malignancy Weight loss >10% (within 6 months Long-term steroid use Prolonged hospitalisation Modi /f_i able Modi /f_i able Smoking Use of general anaesthesia versus regional anaesthesia COPD/asthma OSA Use of neuromuscular blocking agents BMI <18.5 or >40 Mechanical ventilation strategy Hypertension Open versus laparoscopic surgery Chronic heart failure Intraoperative blood transfusion Chronic liver failure/ascites Renal failure Diabetes mellitus Alcohol GORD Preoperative sepsis and shock ASA, American Society of Anesthesiologists; BMI, body mass index; COPD, chronic obstructive pulmonary disease; FEV volume in 1 second; FVC, forced vital capacity; GORD, gastro-oesophageal re /f_l ux disease; OSA, obstructive sleep apnoea. Modi /f_i ed from Miskovic A, Lumb AB. Postoperative pulmonary complications. Respiratory complications can occur either immediately or a few days later on the ward Obesity, smoking, chronic lung disease, poor nutritional status and OSA predispose to a higher risk of respiratory complications Early intervention and multidisciplinary involvement can prevent life-threatening respiratory complications

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