* **Lecture 2: Clinical anatomy of thoracic cage and cavity II**
* Dr. Rehan Asad
* ***At the end of this session, the student should be able to:***
* Identify and discuss clinical anatomy of mediastinum such as its deflection, inflammation, cyst and mediastinoscopy.
* Identify clinical anatomy of trachea and bronchi.
* Discuss clinical anatomy of lung, heart and thoracic vessels such as trauma, surgical access to lungs, postural drainage, paracentesis, aortic trauma etc.
* Describe clinical anatomy of pericardium.
* Identify clinical anatomy of procedures like coronary angioplasty, bypass surgery, central venous access and indications of using superior vena cava to access inferior vena cava.
* Clinical anatomy of mediastinum
* Deflection of mediastinum
* Tension pneumothorax pleural pressure increases
* Leads to the collapse of lung
* Shifting of mediastinum
* Trachea and heart also shifted to other side.
* Hyperlucent hemithorax.
* Leads to breathlessness and shock
* Emergency needle thoracostomy should be performed on physical examination.
* followed by tube thoracostomy after radiological examination.
* Clinical anatomy of mediastinum
* **Mediastinitis**
* Deep infection of neck
* Penetrating wound of chest
* **Mediastinal tumor/cyst**
* Usually left lung tumor involve mediastinal lymph nodes
* Can compress left recurrent laryngeal nerve
* Compression of superior vena cava
* Phrenic nerve, trachea and Oesophagus may also compressed
* Clinical anatomy of mediastinum
* Mediastinoscopy
* Diagnostic procedure
* Used for collecting specimen of tracheobronchial nodes
* Small incision above suprasternal notch
* Can explore superior mediastinum
* Clinical anatomy of trachea and bronchi
* Compression of trachea
* Unilateral or bilateral enlargement of thyroid
* Aortic arch aneurysm
* Pulsating aneurysm tug at trachea on each cardiac systole.
* Can be felt by palpating trachea in suprasternal notch.
* Clinical anatomy of trachea and bronchi
* Inhaled foreign bodies more commonly enter right bronchus.
* Right bronchus is more wider, shorter and vertical.
* Pass to middle lobar bronchi.
* **Tracheostomy**
* Emergency
* Foreign body, severe edema, head and neck trauma
* Cricothyroid ligament palpated and needle is inserted
* Clinical anatomy of trachea and bronchi
* Routine
* Vertical midline incision is made
* Strap muscles are retracted laterally
* Thyroid isthmus is retracted inferiorly
* Second ring is preferred
* Tube is inserted
* **Complications**
* Damage to
* Cricothyroid muscle and Vocal cords
* Recurrent laryngeal nerve
* Inferior thyroid vein
* Hemorrhage and esophageal injury
* Clinical anatomy of trachea and bronchi
* Bronchogenic carcinoma:
* Spread to tracheobronchial and bronchomediastinal nodes.
* May involve recurrent laryngeal nerve.
* Presents with hoarseness of voice.
* **Postural drainage**: non invasive technique used by physiotherapist to drain excessive secretion from bronchial segments.
* Gravity facilitates the process of drainage.
* Clinical anatomy of lungs
* Apex of the lung can be damaged by stab wound or bullet injury above the clavicle.
* A fractured rib can penetrate the lung causing pneumothorax.
* **Sub cutaneous emphysema**: air can enter subcutaneous tissue by passing into mediastinum and then reaches up to neck.
* Clinical anatomy of lungs
* Pleurisy of central part of diaphragm present referred pain over shoulder.
* Root value of phrenic nerve is C3, 4, 5 while supraclavicular nerve is C3 and C4.
* Surgical access to lung is undertaken by intercostal spaces.
* Clinical anatomy of vessels
* Aortic trauma
* A sudden deceleration injury in RTA
* Mostly likely occurs at three fixed points
* Aortic valve
* Ligamentum arteriosum
* Point of entry behind the crura of diaphragm
* Aortic dissection
* Clinical anatomy of pericardium and heart
* **Cardiac tamponade**
* Compression of heart
* Filling of heart is altered in diastole
* Causes
* Pericarditis
* Stab or gun shot wounds
* **Paracentesis:**
* Aspiration of pericardial fluid from pericardial cavity
* Needle is passed to the left of xiphoid process in upward and backward direction at an angle of 45 degree.
* Clinical anatomy of heart
* **Commotio cordis**
* Sudden death due to ventricular fibrillation
* Blunt blow on anterior chest wall
* More common in young sports person
* Blow by base ball, elbow, fist
* If blow occurs during upstroke of T wave, ventricular fibrillation will most likely happens
* **Cardiac pain**
* Skin area is supplied by four intercostal nerve and intercostobrachial nerve (T2).
* Intercostobrachial nerve communicates with medial cutaneous nerve of arm
* Clinical anatomy of heart
* Short left coronary artery is termed as left main stem vessel
* Anterior interventricular artery is termed as left anterior descending
* Posterior interventricular artery is termed as posterior descending artery.
* Clinical anatomy of procedures
* **Coronary angioplasty**
* technique in which fine catheter is passed through femoral artery to access coronary arteries.
* A wire is passed to cross the stenosis
* A fine balloon is passed and inflated at the point of stenosis.
* **CABG**
* Great saphenous vein is used as graft
* Internal thoracic and radial arteries can also be used.
* Clinical anatomy of procedures
* **Central venous access**
* Axillary, subclavian and internal jugular veins are used.
* Tip of line lies in sup. Vena cava or right atrium.
* **Using superior vena cava to access inferior vena cava**
* Transjugular liver biopsy
* Transjugular intrahepatic portosystemic shunts
* Insertion of inferior vena cava filters to catch dislodged emboli from veins of lower limb and pelvis.
* Summary
* Clinical anatomy of mediastinum
* Clinical anatomy of trachea and bronchi
* Clinical anatomy of lungs
* Clinical anatomy of heart and pericardium
* Clinical anatomy of vessels
* Clinical anatomy of procedures
* References
* Snell RS. Clinical Anatomy by Regions. 9th edition, Lippincott Williams & Wilkins.
* Gray’s anatomy for students, 2nd edition