UNIT 5. DISSECTION: ANTERIOR THORACIC WALL

STRUCTURES TO IDENTIFY:

Mammary Glands          Lateral thoracic artery
Suspensory Ligaments     Thoracodorsal artery and nerve
Lactiferous duct         Thoracoacromial trunk (pectoral br)
Lactiferous sinus        Cephalic vein
Pectoralis major         External intercostals
Pectoralis minor         Internal intercostals
Medial and lateral pectoral nerves    Internal thoracic artery and vein
Subclavius               Intercostal nerve
Serratus anterior        Intercostal artery

DISSECTION INSTRUCTIONS:

Before dissecting the anterior thoracic wall, identify the bony landmarks that may be felt through the skin. In the midline of the base of the neck is the jugular (suprasternal) notch, which marks the superior border of the manubrium. At each side of the jugular notch the prominent medial end of the clavicle may be felt; it takes part in the sternoclavicular articulation, which is the only bony articulation between the upper extremity and the axial skeleton. At its lateral end, the clavicle articulates with the acromion process of the scapula, which forms the bony prominence of the shoulder. The sternum may be felt through the skin in the midline along the entire length of the manubrium and the body of the sternum. At the lower end of the body is a depression in the anterior body wall, which corresponds to the xiphoid process of the sternum. The sternal angle is the junction of the manubrium, the sternal body, and the costal cartilage of the 2\textsuperscript{nd} rib.

1. The position of the nipple in men and young, underdeveloped women is generally over the 4\textsuperscript{th} intercostal space. It is a rounded, pigmented elevation of the areola, which is the thickened, pigmented skin over the center of the breast (N. plates 182 – 184; G. plates 1.2-1.4).

2. Abduct the arms and observe the axillary folds. These are folds of skin, fascia and muscle that bound the axilla or armpit. The anterior axillary fold is formed by the pectoralis major and minor muscles.

3. For the dissection of the pectoral region and the thoracic wall, abduct the arms until they resist further movement; be careful because full abduction will tear the muscles. Make the following skin incisions:
   - First incision: in the midline from the jugular notch to the middle of the xiphoid process
   - Second incision: from the upper end of the first incision, make one incision laterally on each side along the full length of the clavicle to the tip of the acromion.
• **Third incision:** from the lower end of the first incision, make one incision laterally and somewhat inferiorly across to the lateral thoracic wall.

• **Fourth incision:** from the lower end of the first incision, make one incision upward and laterally to the nipple; encircle the nipple and continue the incision upward and laterally onto the arm.

**Figure 1**

4. Sagitally section the female breast through the nipple and locate, by gently picking out the fat, a lactiferous duct, a lactiferous sinus, and suspensory ligaments (N. plate 182; G. 1.4).
5. The pectoralis major muscle should now be cleaned. On both sides, remove the superficial fascia (including the breast and nipple) and the deep fascia covering the muscle. You want to expose the muscle fibers of the pectoralis major. Move the blade of the scalpel in the direction in which the muscle fibers run (N. plate 182; G. plate 1.2). Attempt to find some of the small anterior cutaneous nerves and vessels that pierce the pectoralis major slightly lateral to the sternum. These are the terminal portions of the upper intercostal nerves and vessels; they supply the skin over the anterior part of the chest. There are also lateral branches to the lateral thoracic wall from these nerves and vessels. (N. plate 188; G. plate 1.2).

6. Clean the proximal part of the cephalic vein. It is a large, superficial vein of the upper extremity; it can sometimes be small or lacking. It is found in the groove between the pectoralis major and the deltoid muscles (N. plate 188; G. plate 1.2). It disappears from view in the deltopectoral triangle, which is a small, triangular depression bounded by the anterior border of the deltoid, the upper border of the pectoralis major, and the lower border of the middle portion of the clavicle. Remove any fat and find the deltoid branch of the thoracoacromial artery, which travels with
the cephalic vein and supplies the anterior border of the deltoid (N. plate 183, 424; G. plate 6.18).

7. On both sides cut the origin of pectoralis major and reflect the muscle laterally to its insertion. As this is done, the pectoralis minor muscle will be exposed, and the nerves and vessels that supply the pectoralis major are seen entering its deep surface (N. plate 188, 189, 428; G. 6.18, 6.24). Clean these nerves and arteries. The nerves are the medial and lateral pectoral nerves. The lateral pectoral nerve is derived from the lateral cord of the brachial plexus and it reaches the deep surface of the pectoralis major m. by winding around the medial border of the pectoralis minor m. The medial pectoral nerve is from the medial cord of the brachial plexus and usually pierces the pectoralis minor. However, it may appear at the lateral border of the muscle. The arteries deep to the pectoralis major supplying both muscles are the pectoral branches of the thoracoacromial trunk.

8. Clean the pectoralis minor m.

9. Clean the fascia between the pectoralis minor and the clavicle, preserving and nerves or vessels, and expose the small subclavius m. (N. plate 189; G plate 6.24).

10. Clean the fascia of the lateral thoracic wall and expose the serratus anterior muscle and its nerve supply. The serratus anterior is a large, flat muscle that arises by a series of pointed slips from the outer surfaces of the first eight ribs just lateral to the costochondral junctions. Its fibers run posteriorly around the thoracic wall to insert into the anterior aspect of the vertebral border along the entire length of the scapula. Its nerve and artery supply, the long thoracic nerve and the lateral thoracic artery, run on its external surface (N. plate 188, 189, 429; G. plates 6.15, 6.20, 6.24, 6.25). At this time you should be able to see the thoracodorsal nerve and artery supplying the latissimus dorsi.

11. Study the external intercostal muscles. These are 11 pairs of thin, muscular sheets whose fibers run downward and forward around the thoracic wall. Each takes its origin from the inferior border of a rib and is inserted on the superior border of the rib below. Posteriorly, the external intercostals begin at the tubercles of the ribs and extend anteriorly only as far as the junctions of the ribs with their costal cartilage. Between the cartilages, the muscle is replaced by a membranous layer, the **external intercostal membrane**, through which the fibers of the internal intercostal muscles are usually visible (N. plate 188, 189; G. plate 1.19, p.24).

12. The internal intercostal muscles, also 11 pairs, run downward and posteriorly. Each takes origin from the upper border of a rib and inserts into the lower border of the rib above (N. plate 188, 189; G. plate 1.19, p.24).