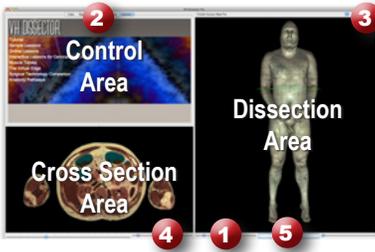


Introduction to the Upper Limb



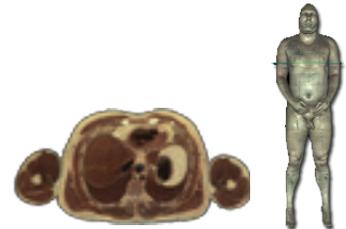
Learning Objective

After completing this lesson, you will be able to name some of the muscles of the arm, as well as the major vessels and nerves that supply them.

Use the reference on the left to locate controls and areas referred to in the text below.

1 Start by setting the cross section through the area we want to explore:

- Drag the reference plane in the dissection area by its green border to the middle of the arm (*the cross sections are numbered in the lower left corner, you should be close to 1485*)
- Explore the anatomy of the arm by moving your mouse over the cross section (*structures are identified in the upper right corner of the cross section area*)



2 Now skin the cadaver to reveal more anatomy:

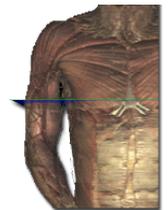
- Click on the skin in the dissection area to highlight it (*structures change colors when highlighted*)
- Click on the highlighted skin again to dissect it (*now you see the fat and other subcutaneous tissue*)
- Dissect the fat just like the skin

Click on a structure to highlight
Click again to dissect



3 Take a closer look by centering the arm in the dissection area:

- Zoom in using the magnification slider **1**
- Drag the dissection with your mouse to reposition it
- Dissect the superficial veins of the upper limb to cleanup the image



4 Identify the muscle of the biceps brachii by highlighting them:

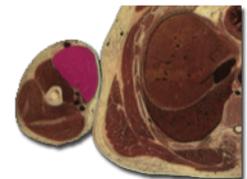
- Select the “Index” tab **2**
- Enter “biceps” into the search box
- Select the “Biceps brachii - Right” from the list
- Click the “Add & Highlight” button

Locate specific structures
with the index

(the cross sections are in standard radiologic orientation so the right biceps brachii is highlighted on the left side)

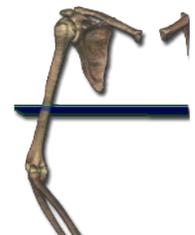
What four other muscles make up this part of the arm?

1. _____ 3. _____
2. _____ 4. _____



5 Isolate the arteries that feed the biceps by simplifying the dissection:

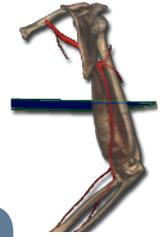
- Click the “Clear” button to clear the dissection area **3**
- Select the “Systems” tab **2**
- Expand the “Skeletal system” using the icon to the left of it
- Select the “Bones of the upper limb” and click “Add”
- In the “Regions” tab, **2** expand “Upper limb” using the icon to the left of it
- Select “Arteries” under “Upper limb” and click “Add & Highlight”
- Expand “Muscles” and add the “Biceps brachii”



Add, remove and highlight groups of structures with systems, regions and tissues

6 Find structures passing between the muscles of the arm:

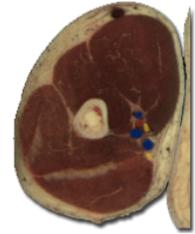
- Turn the dissection view to 200° using the rotation wheel **5** or by holding down the command (Mac) or ctrl (PC) key while pressing the left and right arrow keys to rotate 5° at a time
- Notice how the brachial artery is posterior and medial to the biceps. In the cross section, you can see that the brachial artery is sandwiched between the biceps, brachialis and triceps muscles
- Zoom in on the cross section of the right arm by using the magnification slider **4** and dragging



Rotate the dissection using the left or right arrow keys while holding the command (Mac) or ctrl (PC) key

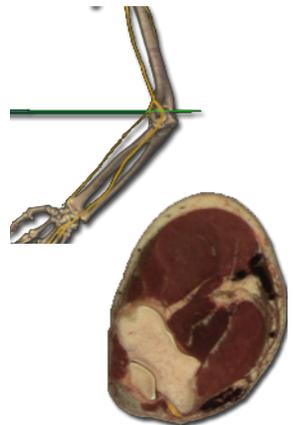
Besides the brachial artery, what other structures pass through this space between the muscles? (Ignore the superficial veins)

1. _____ 3. _____
2. _____ 4. _____



7 Visualize some nerves of the upper limb:

- Clear the dissection **3**
- Add the bones of the upper limb using the systems tab as before
- In the “Tissues” tab **2** expand the “Nervous (Peripheral Nervous System)” section
- Find the radial and ulnar nerves, add and highlight both nerves
- Rotate the view to 155° and center the view on the right elbow (Notice how the Radial nerve wraps around the back of the Humerus, and the Ulnar nerve wraps around the Medial epicondyle of the Humerus at the elbow)
- Right-click on the ulnar nerve as it passes the elbow. Select the “Cross Section” option (Now the cross section view has moved to the position where we clicked)
- Use command (Mac) or ctrl (PC) and up/down to follow the nerve as it courses around the elbow (Notice how close this nerve is to the skin, striking this exposed nerve causes the “funny bone” sensation)



Move the cross section 1mm at a time by holding the command (Mac) or ctrl (PC) key while pressing the up or down arrow keys

Follow the radial and ulnar nerves down to the hand. Which digit (thumb or pinky) would be affected by: 1) a serious fracture in the middle part of the humerus? 2) epicondylitis (tennis elbow)? (Hint: Nerves and arteries tend to supply structures that lie close to where they terminate.)

1. _____ 2. _____

8 Examine an advanced anatomical concept, the Quadrangular Space:

- Reset the dissection using the Reset button **3**
- Rotate the view to 245°, and center the view on the left shoulder
- Dissect the skin, subcutaneous tissue and superficial veins
- Remove the Deltoid muscle, and the Lateral and Medial heads of the triceps
- Holding the shift button, click and highlight the Humerus, Teres minor muscle and tendon, Long head of the triceps and the Teres major muscle. (Notice the small patch of un-highlighted structures in the middle of these muscles; this is the “Quadrangular Space”.)



Highlight multiple structures or un-highlight a structure by holding the shift key when clicking

Which two structures pass through this space?

1. _____ 2. _____

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