SCRUBS

STUDENT COLLABORATIVE RESOURCES FOR UNDERSTANDING AND BRODY SUCCESS

SCRUBS is a student driven initiative that aims to develop supplemental resources for current and future cohorts that will pass through Brody. Members of **SCRUBS** participate in a variety of sub-committees working to create resources for students, by students. These resources aim to offer unique perspectives from students who have walked in the same shoes and can develop resources that we wish we had been exposed to during our time in the course.

The hope is this organization will become a staple of the Brody student body, exemplifying the unique collaborative community that Brody offers. If this is a mission that aligns with your goals and you have the desire to help those that will come behind you, as well as a goal to leave your mark on Brody as a whole, we invite you to join the team!

Disclaimer:

The resources that are included in this document are made by students and not the faculty. As such, there is the possibility for errors in our development, although this is mitigated via a team approach to development with multiple stages of vetting. If there is a contradiction with the coursework presented within your course, please go by the course documents. Additionally, **SCRUBS** aims to supply ***supplemental resources***, however these are in no way replacements to the instruction of the Brody faculty. Use these resources as a supplement, but not as your primary source for course material.

Coursepack Practice Questions
Shoulder and Arm
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Quiz level

1. Which structures form the borders of the triangular space in the shoulder?

a) Teres major muscle, teres minor muscle, and long head of the triceps brachii

b) Subscapularis muscle, teres minor muscle, and long head of the biceps brachii

c) Teres major muscle, teres minor muscle, and lateral head of the triceps brachii

d) Subscapularis muscle, teres major muscle, and long head of the triceps brachii

e) Teres minor muscle, long head of the triceps brachii, and deltoid muscle

2. Which muscles originate from the coracoid process of the scapula?

a) Short head of the bicep and coracobrachialis

b) Subscapularis and supraspinatus

c) Deltoid and short head of the bicep

d) Infraspinatus and short head of the bicep

e) Latissimus dorsi and rhomboid major

3. Which nerve provides innervation to the rhomboid major muscle?

a) Dorsal scapular nerve

b) Long thoracic nerve

c) Axillary nerve

d) Thoracodorsal nerve

e) Subscapular nerve

4. The median cubital vein serves to connect what two veins in the antecubital fossa?

a) Cephalic vein and Brachial

b) Basilic vein and Cephalic

c) Subclavian and axillary

d) Radial vein and cephalic vein

e) Ulnar vein and radial vein

5. The inferior region of the deltoid muscle is innervated by which nerve?

a) Axillary nerve

b) Musculocutaneous nerve

c) Radial nerve

d) Median nerve

e) Ulnar nerve

Test Level

6. A 7-yr old female patient presents with a swollen and painful elbow after a fall on an outstretched hand. On exam, there is noted decreased sensation to the lateral aspect of the hand and opposition of the thumb. You suspect a fracture and order an X-ray for assessment. The X-ray will most likely reveal which of the following fractures?

A) Humeral neck fracture

B) Supracondylar fracture

C) Fracture of the humeral shaft

D) Lateral epicondyle fracture

E) Medial epicondyle fracture

7. A 45 year old female with breast cancer in the left pectoral region is undergoing an innovative procedure where the surgeon plans to decrease blood flow to the tumor via transcatheter vascular embolization in an attempt to slow its progression before definitive treatment can be provided. The surgeon places a tube into the anterior interosseous artery and forces it to retrograde up to the vessel supplying the tumor before embolizing the vessel and stopping blood flow. Which of the following best describes the pathway required to achieve this goal?

A) Anterior interosseous → Posterior interosseous → Ulnar → Brachial → Axillary → Subscapular → Pectoral

B) Anterior interosseous → Common interosseous → Radial → Brachial → Axillary → Thoracoacromial trunk → Pectoral branch

C) Anterior interosseous → Common interosseous → Ulnar → Brachial → Axillary → Lateral thoracic → Pectoral branch

D) Anterior interosseous → Ulnar → Brachial → Axillary → Pectoral branch

E) Anterior interosseous → Common interosseous → Ulnar → Brachial → Axillary → Thoracoacromial trunk → Pectoral branch

8. A 28-year-old ninja presents with a sudden onset of shoulder pain and weakness after performing repetitive overhead throwing motions. The patient reports a history of intense training and acrobatic movements. Physical examination reveals tenderness and limited range of motion in the shoulder joint. Which specific group of muscles is most commonly affected in this type of injury?

A) Infraspinatus and supraspinatus muscles

B) Subscapularis and teres major muscles

C) Deltoid and teres minor muscles

D) Subscapularis and infraspinatus muscles

E) Supraspinatus and lat dorsi

9. A 32-year-old scuba diver sustains a penetrating injury while underwater and is shot with a spear gun in a region which is described as inferior to the teres minor, superior to the teres major, and medial to the long head of the biceps brachii muscle. The patient presents with significant bleeding in the area. Which artery is most likely damaged in this scenario?

A) Thoracodorsal artery

B) Suprascapular artery

C) Subscapular artery

D) Dorsal scapular artery

E) Circumflex scapular artery

10. A 30-year-old weightlifter complains of difficulty performing pull-ups and exercises that involve retracting the scapula and pulling the upper body toward the bar. The patient reports a recent intense training session focused on strengthening the back muscles. Physical examination reveals weakness in retracting the scapulae and extending the arm against resistance. Which nerve is most likely affected in this scenario?

A) Long thoracic nerve

B) Suprascapular nerve

C) Dorsal scapular nerve

D) Axillary nerve

E) Thoracodorsal nerve

Answer Key

1. The correct answer is a) Teres major muscle, teres minor muscle, and long head of the triceps brachii.

The triangular space, located in the shoulder region, is bordered by the teres major muscle medially, teres minor muscle laterally, and the long head of the triceps brachii superiorly. This space serves as a passageway for the circumflex scapular artery and vein.

2. **The correct answer is a) short head of the bicep and coracobrachialis.**

The coracoid process of the scapula serves as the origin for the short head of the bicep and the coracobrachialis muscle. These muscles play important roles in shoulder movement and stabilization.

3. **The correct answer is a) Dorsal scapular nerve**.

The dorsal scapular nerve is responsible for innervating the rhomboid major muscle. This nerve arises from the roots of the brachial plexus (C5) and travels to supply motor innervation to the rhomboid major and rhomboid minor muscles along with the levator scapula.

4. **The correct answer is B) basilic and cephalic**

The median cubital vein is a superficial vein located in the antecubital fossa, which serves as a connecting link between the basilic vein and cephalic vein. It forms an important anatomical connection between these two major veins in the forearm.

5. **The correct answer is a) Axillary nerve (via superior lateral brachial cutaneous).**

The inferior region of the deltoid muscle is innervated by the axillary nerve. This nerve arises from the posterior cord of the brachial plexus (C5-C6) and provides motor innervation to the deltoid muscle as well as sensory innervation to the skin over the lower part of the deltoid muscle.

6. **Answer: B**

The patient is experiencing loss of sensation to the lateral aspect of the hand and thumb opposition, indicating median nerve damage. The median nerve is most vulnerable to damage from fracture as it enters the cubital fossa on the anterior aspect of the arm. Supracondylar fractures are most likely to damage this nerve leading to deficits noted. Humeral neck fracture - Leads to damage of the axillary nerve, Humeral shaft fracture – damage to the radial nerve, Lateral epicondyle – damage to recurrent radial artery, but no associated nerve damage, Medial epicondyle – damage to the ulnar nerve

7. **Correct answer E**

In this scenario, the surgeon is performing transcatheter vascular embolization to decrease blood flow to the tumor in the left pectoral region. To achieve this, the surgeon places a tube into the anterior interosseous artery and advances it retrograde up to the vessel supplying the tumor before embolizing the vessel and stopping blood flow. Let's break down the pathway described in the correct answer: Anterior interosseous artery: The procedure starts by accessing the anterior interosseous artery. This artery is a branch of the common interosseous artery, which arises from the ulnar artery in the forearm. Common interosseous artery: The tube is advanced through the common interosseous artery, which gives rise to several branches, including the posterior interosseous artery and the anterior interosseous artery. Ulnar artery: The tube continues its retrograde advancement through the ulnar artery. The ulnar artery is a major artery of the forearm that originates from the brachial artery in the arm. Brachial artery: The tube progresses further through the brachial artery, which is a large artery in the upper arm that is a continuation of the axillary artery. Axillary artery: The tube reaches the axillary artery, which is a continuation of the subclavian artery in the armpit region. The axillary artery gives rise to various branches that supply the shoulder, chest, and upper limb. Thoracoacromial trunk: The tube enters the thoracoacromial trunk, which is a branch of the axillary artery. The thoracoacromial trunk further divides into several branches, including the pectoral branch. Pectoral branch: The tube reaches the pectoral branch, which supplies the pectoral region, including the area where the tumor is located. Embolization of the vessel supplying the tumor is then performed.

8. **The correct answer is A) Infraspinatus and supraspinatus muscles.**

In this scenario, the patient's history of repetitive overhead throwing motions and intense training, combined with shoulder pain and weakness, suggests damage to the rotator cuff muscles. The most commonly affected muscles in rotator cuff injuries are the infraspinatus and supraspinatus muscles. These muscles are responsible for shoulder stability and are frequently strained or torn in activities that involve repetitive overhead motions. Options B, C, D, and E represent other muscles involved in shoulder movements but are not the primary muscles affected in rotator cuff injuries. The rotator cuff muscles, including the supraspinatus, infraspinatus, teres minor, and subscapularis, play a crucial role in maintaining stability and facilitating various movements of the shoulder joint. Rotator cuff injuries commonly occur in individuals engaged in activities that involve repetitive overhead motions, such as throwing, swinging, or lifting heavy objects. Among the rotator cuff muscles, the supraspinatus and infraspinatus muscles are particularly prone to strain or tears due to their location and involvement in overhead movements. Recognizing the association between the specific muscles affected in rotator cuff injuries and the patient's symptoms is important for accurate diagnosis and appropriate management of this type of shoulder injury.

9. **The correct answer is E) Circumflex scapular artery.**

The triangular space described in the scenario corresponds to the location where the circumflex scapular artery courses. A penetrating injury in this region could result in damage to the circumflex scapular artery, leading to significant bleeding. The scapular region receives its arterial blood supply from various vessels. The circumflex scapular artery is a branch of the subscapular artery and courses through the triangular space, which is defined by its anatomical relations to the teres minor, teres major, and long head of the biceps brachii muscles. The circumflex scapular artery provides an important blood supply to the scapular region, including the muscles and surrounding tissues. In the context of the described scenario, a speargun injury in the triangular space could result in direct damage to the circumflex scapular artery, leading to significant bleeding. Understanding the anatomical relationships and vascular supply of the scapular region helps in diagnosing and managing injuries to this area.

10. **The correct answer is E) Thoracodorsal nerve**.

In this scenario, the patient's complaint of difficulty in performing pull-ups, weakness in retracting the scapula, and atrophy of the latissimus dorsi muscle suggests damage to the thoracodorsal nerve. The thoracodorsal nerve innervates the latissimus dorsi muscle, which is responsible for scapular retraction and arm adduction. Options A (long thoracic nerve), B (suprascapular nerve), C (dorsal scapular nerve), and D (axillary nerve) innervate different muscles and are not specifically associated with the described symptoms.The thoracodorsal nerve originates from the posterior cord of the brachial plexus (C6-C8) and primarily innervates the latissimus dorsi muscle. The latissimus dorsi muscle plays a crucial role in scapular retraction, arm adduction, and various movements involving the upper body. Injuries or damage to the thoracodorsal nerve can result in weakness and atrophy of the latissimus dorsi muscle, leading to difficulties in activities that require scapular retraction and arm adduction, such as pull-ups. Recognizing the association between the specific nerve affected and the patient's symptoms is essential for accurate diagnosis and appropriate management of thoracodorsal nerve injuries.