1. Which of the following statements is FALSE regarding subclavian artery injuries:

   a. Subclavian artery injuries are rare, occurring in less than 5% of all penetrating chest and neck injuries.
   b. The mortality rate associated with this injury is also low, with the vast majority surviving to hospital and eventually to hospital discharge.
   c. There is a concomitant venous injury in approximately 20% of cases.
   d. Subclavian artery injury is rare after blunt trauma.

Correct answer b. Although this is a rare injury, the associated mortality is high, with the overall mortality in some series approaching 2/3 of the cases.

2. Which of the following are acceptable operative management options for an actively bleeding Subclavian Artery injury?

   a. PTFE or Dacron interposition graft
   b. Reversed saphenous vein graft
   c. Ligation
   d. Damage control shunting
   e. All of the above

Correct answer e. All of the above are acceptable management options for a subclavian artery injury. Shunting would be acceptable in a damage control setting. Ligation is acceptable if the patient is in extremis, however, if at all possible, shunting would be preferred. For reconstruction, primary repair, RSVG, PTFE or Dacron repair are all acceptable depending on the patient status, architecture of the injured vessel and available saphenous vein.

3. Each of the following statements regarding evaluation of a peri-clavicular gunshot wound are true EXCEPT for the following:

   a. CT Angiography is an acceptable screening modality if stable.
   b. Hemodynamically unstable patients require no imaging prior to transfer to the OR.
   c. A normal Ankle-Brachial index definitively rules out arterial injury.
d. Duplex ultrasound is more sensitive than CT Angiography for the diagnosis of arterial injury.

Correct answer c. A normal ABI does not definitively rule out the presence of an arterial injury. Even with a normal ABI, presence of any soft signs or a worrisome trajectory in a stable patient mandates screening imaging, which is can be best accomplished with CT Angiography.

4. Regarding the use of shunts for acute traumatic vascular injury, which of the following statements is false:
   a. Damage control surgery is a valid indication for utilizing a shunt
   b. Systemic anticoagulation is not mandatory while an indwelling shunt is in place
   c. Local anticoagulation may be utilized under some conditions while placing the shunt however is not mandatory
   d. Temporary orthopedic fixation should always be performed prior to shunt insertion

   Answer: d. The correct sequence when utilizing a shunt in coordination with the orthopedic service is shunting of the limb then orthopedic fixation followed by definitive repair.

5. A 17 year old male presents to the ER after sustaining a single gunshot wound to the abdomen. He is maintaining his airway with an oxygen saturation of 94% with a GCS of 13. His HR is 160 with a SBP of 78mmHg. Which of the following statements regarding Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) in this situation is true?

   a. Access to the circulation is through the femoral vein.
   b. Ultrasound is of no value in access to the circulation.
   c. The process is best performed as a single stage insertion of the catheter into the systemic circulation
d. The location of aortic occlusion will depend on the goal of the procedure.

Answer: d. REBOA is an endovascular method of aortic occlusion using a percutaneously placed balloon catheter through the Femoral Artery. It is performed in a series of 5 steps (arterial access, balloon selection and positioning, balloon inflation, balloon deflation and sheath removal). It can be performed in patient care areas outside of the interventional radiology suite although access to ultrasound and fluoroscopy will facilitate the procedure. The commercially available balloon catheter is placed in one of three Aortic Zones, I-III. For this patient in a peri-arrest situation with an injury localized to the abdomen, placement of the balloon in Zone I, thoracic aorta between the left subclavian and celiac arteries will act like an internal aortic cross clamp, mitigating blood loss into the abdomen while promoting flow into the cerebral and coronary circulation.