	H05 - TENSION PNEUMOTHORAX	
	Version date: 2025-04-23	REFERENCE

NOTES
<ol style="list-style-type: none"> 1. Tension pneumothorax is an immediate life-threatening condition. Decompression by thoracostomy can be lifesaving and must be performed as soon as the condition is suspected to prevent cardiorespiratory collapse. The literature suggests an incidence from one to five percent in major trauma victims. It is always a consideration in traumatic cardiac arrest from penetrating or blunt chest trauma. 2. The clinical diagnosis of tension pneumothorax can be difficult, and many of the classically described findings are actually insensitive for the diagnosis. Chest pain, respiratory distress, tachycardia, hypoxemia and a unilateral decrease in air entry on auscultation are common findings. However, the latter may be difficult to appreciate in a noisy environment. Tracheal deviation, neck vein distension, unilateral hyperresonance on chest percussion, and asymmetrical chest expansion are uncommon or difficult to recognize. Hemodynamic compromise is actually an inconsistent or late finding, occurring in less than 25 percent of cases and, of course, can be due to other causes such as hemorrhage.. 3. Needle decompression is commonly used in prehospital trauma management, and has been shown to be safe but not always effective. With an estimated 40 percent failure rate, it is not sensitive as a “rule-out” maneuver as is usually taught. Commonly cited reasons for failure rate using too short of a catheter, obstruction or kinking of the catheter, missing a localized pneumothorax, or the inability to “drain” a large air leak. The fifth intercostal space in the anterior axillary line is the favored site, while the second intercostal space in the midclavicular line may be preferred in obese individuals (figure 1). The former location has a greater success rate, but a higher rate of catheter kinking and lung injury. The latter is easier to access, but requires a long enough catheter to enter the pleural space. A catheter-over-needle (Angiocath®) that is at least 8 cm or 3.5 inches long (figure 2) is required. The catheter should be placed just over the upper border of the lower rib to avoid injury to the subcostal neurovascular bundle (figure 3). 4. Finger thoracostomy avoids some of the issues that impact the success of needle decompression, as it allows for direct tactile confirmation of entry into the pleural space. The success rate for relieving tension pneumothorax is significantly higher than needle decompression. The incision site is the fifth intercostal space in the anterior axillary line within “triangle of safety” again just over the upper border of the sixth rib (figure 4). Safety and efficacy can be enhanced by careful blunt dissection through the intercostal muscle, holding the Kelly clamp firmly near the tip when pushing through the pleura, and performing a 360-degree finger sweep. 5. Comparing studies is difficult but the complication rate may be similar for both procedures. However, the worst complication is failure to adequately decompress the tension pneumothorax.

FIGURE 1: THORACENTESIS SITES

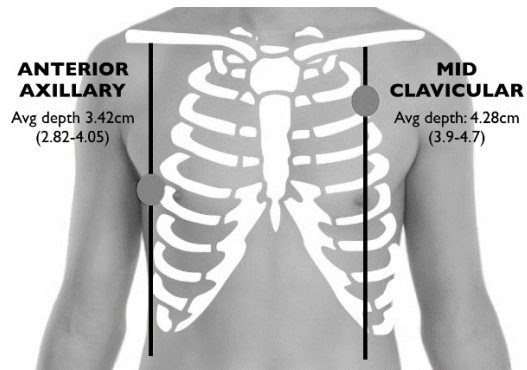


FIGURE 2: ANGIOCATH®



FIGURE 3: NEUROVASCULAR BUNDLE

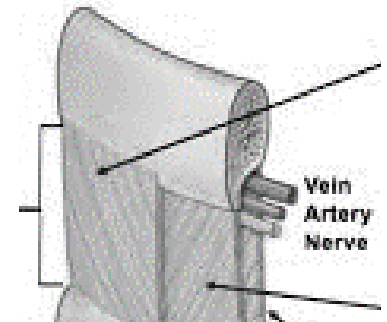


FIGURE 4: TRIANGLE OF SAFETY

