

Stable Patient with Penetrating Trauma

Penetrating injuries occur when an object pierces the skin and causes tissue damage. These injuries are usually related to stab or gunshot wounds.

Focused CT imaging of affected body region is recommended in stable patients with penetrating trauma. Depending on location of injury, intravenous, oral and/or rectal contrast may be recommended. We do not recommend WBCT in the stable patient with penetrating trauma.

In obese or extremely muscular patients with penetrating trauma or in cases of penetrating injuries to the back or flank, local wound exploration is important but can be unreliable. It is important to clearly mark entrance and exit wounds with a radiopaque marker prior to imaging to ensure accurate imaging of the wound. In the uncommon instance where a radiopaque marker overlying a wound may obscure important imaging detail by scatter (i.e. a neck laceration overlying the carotid artery or jugular vein), then the marker should be omitted.

Table 3. Focused CT Protocols in Penetrating Trauma

Modality	Recommendations
Neck (CTA Neck with Contrast)	<p>Clinical</p> <p><u>Location of injury:</u> By definition a significant penetrating neck injury violates the full thickness of the platysma.</p> <p>If platysma is intact the wound is considered superficial and does not require CT imaging.</p> <p>Neck is divided into three zones:</p> <ul style="list-style-type: none"> ▪ Zone 1: Clavicle to cricoid cartilage ▪ Zone 2: Cricoid cartilage to angle of mandible ▪ Zone 3: Angle of mandible to skull base <p><u>Recommended protocol/order:</u></p> <p>Patients who should be assessed with surgical exploration:</p> <ul style="list-style-type: none"> ▪ Hemodynamic instability ▪ Expanding hematoma ▪ Active bleeding ▪ Air leak <p>Otherwise patients can be assessed with contrast enhanced intravenous CT angiography to assess for:</p> <ul style="list-style-type: none"> ▪ Vascular injury ▪ Esophageal injury ▪ Tracheal injury ▪ Salivary gland injury ▪ Neurogenic injury ▪ Osseous injury
	<p>Technical</p> <p>See Appendix D</p>
	<p>Reporting</p> <p>See Appendix E</p>
Chest (CTA Chest with Contrast)	<p>Clinical</p> <p><u>Location of injury:</u> Clavicles to the sixth intercostal space anteriorly and between the superior and inferior angles of the scapula posteriorly.</p>

		<u>Recommended protocol/order</u> : Intravenous contrast enhanced CT angiography of the chest.
	Technical	See Appendix D
	Reporting	See Appendix E
Thoraco-abdominal Region (CTA chest then A/P with Contrast)	Clinical	<u>Location of injury</u> : Nipple line superiorly, anterior axillary lines laterally, costal margins inferiorly. <u>Recommended protocol/order</u> : Intravenous contrast enhanced CT angiography of the chest to the level of the aortic bifurcation and portal venous phase intravenous contrast enhanced CT abdomen and pelvis.
	Technical	See Appendix D
	Reporting	See Appendix E
Abdomen and Pelvis Region (A/P with Contrast)	Clinical	<u>Location of injury</u> : Costal margin superiorly, anterior axillary lines laterally, inguinal ligaments inferiorly. <u>Recommended protocol</u> : Oral contrast. Portal venous phase intravenous contrast enhanced CT of the abdomen and pelvis.
	Technical	See Appendix D
	Reporting	See Appendix E
Back (CTA chest then A/P with Contrast)	Clinical	<u>Location of injury</u> : Tips of the scapulae superiorly, posterior axillary lines laterally, iliac crests inferiorly. <u>Recommended protocol</u> : Intravenous contrast enhanced CT angiography of the chest to the level of the aortic bifurcation and portal venous phase intravenous contrast enhanced CT abdomen and pelvis.
	Technical	See Appendix D
	Reporting	See Appendix E
Flanks (A/P with Contrast)	Clinical	<u>Location of injury</u> : Between anterior and posterior axillary lines, sixth intercostal space superiorly, iliac crests inferiorly. <u>Recommended protocol</u> : Portal venous phase intravenous contrast enhanced CT of the abdomen and pelvis.
	Technical	See Appendix D
	Reporting	See Appendix E
Extremities (CTA with Contrast)	Clinical	<u>Location of injury</u> : Arms and/or legs. <u>Recommended protocol</u> : Intravenous contrast enhanced CT angiography.
	Technical	See Appendix D
	Reporting	See Appendix E