

Case	(292) Abdominal gunshot wound: what to look for.
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CASE PRESENTATION

A 33 year-old patient is submitted to the hospital after receiving a gunshot wound in the abdomen. During first aid assistance an Eco-FAST is performed, observing echogenic liquid in pelvis. Once stabilized, patient is transferred to the CT scan where enhanced CT of the thorax, abdomen and pelvis in arterial and venous phases are performed.

Moderate amount of hemoperitoneum is found in pelvis and in the mesentery next to a small bowel loop. Next to this loop, on the arterial phase in MIP reconstructions there is an adding image adjacent to one of the branches from the mesentery artery, with no change in form in the venous phase, described as a pseudoaneurysm.

Bullet is found in the right abdominal wall between transversus abdominalis and internal oblique muscles. Striation of the subcutaneous fat tissue and a small fracture in the left iliac crest indicate the bullet entrance.

Patient is transferred to the operating room where he undergoes an exploratory laparotomy. Hemoperitoneum, active bleeding in mesentery and two small bowel perforations are found. Bullet was not found during laparotomy.

DISCUSSION

Gunshot wounds cause a variety of clinical scenarios from hardly no trauma impact to death, depending on distance, size of the bullet, velocity and trajectory. When a bullet enters it creates:

- A permanent cavity: through the trajectory of the bullet, destroying the tissue.
- A temporary cavity: in medium and high velocity bullets, kinetic energy is transferred to the tissue during bullet deceleration, creating a pressure wave that forces tissue away and produces a much larger cavity.

Tissue interaction has been studied, observing that both dense tissues and loose tissues are more resistant to damage.

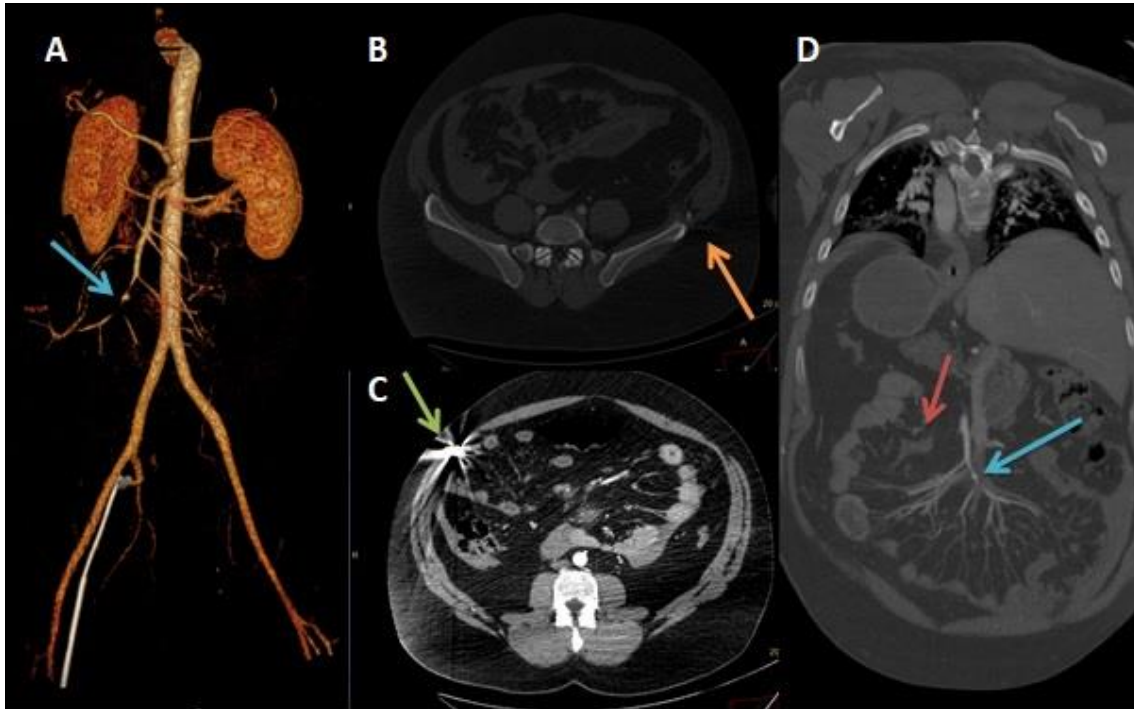
On the other hand, visceral tissues such as brain or the liver are more vulnerable because of the damage of the temporary cavity. Vessels are also vulnerable because of their fixated position, where the cavitation may affect the vessel wall even at a distance of the bullet's trajectory.

When assessing a patient with a bullet wound, one should assess the entrance, the path and if there is an exit wound or the bullet is still inside. Then one can assess the internal damage the bullet was able to produce. The trajectory might not be linear due to the density difference between tissues.

Treatment depends on the organ damage. Prevention of infection and bullet extraction are recommended.

CONCLUSION

Gunshot wounds are potentially life-threatening depending on the trajectory. CT helps depict the path of the bullet and the possible damage.



A and D) coronal images with multiplanar intensity projection (MIP) and volume rendering (VR) show a small aneurysm next to a branch of the superior mesenteric artery, in relation to pseudoaneurysm (blue arrow). Red arrow illustrates hemoperitoneum.

B) Axial CT image on bone window, depicting small linear tract in subcutaneous tissue and fracture of the left iliac crest (orange arrow).

C) Bullet (green arrow) is located in between the muscles of the abdominal wall.

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