

Dangers of a single pellet

Jeong Ha, Olga Korduke, Megan Rodney, Peter Stiven

A 21-year-old man was brought in with a shotgun wound centred at the right upper thigh. He was agitated with cool peripheries. His clothing and a sheet were soaked with blood. Although his heart rate was elevated at 110bpm, he was normotensive with systolic blood pressure of 115mmHg. There was an open wound over the right medial thigh with ongoing exsanguination. A tight compression bandage was applied to the right thigh for haemostasis. The right dorsalis pedis pulse was palpable, though there appeared to be no movement and only patchy sensation below the knee. The abdomen was soft and seemingly non-tender. FAST scan of the abdomen was negative.

X-ray of the hip and pelvis showed multiple gunshot pellets in the right thigh, four pellets in the left thigh and a single pellet in the pelvis.

CT angiogram showed no major vascular injury of lower limbs. No comment was made regarding the intra-abdominal shotgun pellet, though this is visible in retrospect. The patient was taken to the operating theatre for exploratory and damage control surgery in co-operation with orthopaedic colleagues. The right thigh was debrided of all non-viable tissue. The path of damage extended to subcutaneous tissues on the contralateral side. Extensive injury to the adductor muscles was noted. The sciatic nerve was observed and intact, though this was difficult to verify.

We then performed a diagnostic laparoscopy in light of the single pellet evident on imaging. This demonstrated gas bubbles under the omentum, fibrin deposits and turbid fluids in the pelvis. A small amount of blood was evident in the left iliac fossa, suggesting the site of penetration. We converted to laparotomy to further examine the intra-abdominal contents. Five perforation sites were found in the small bowel; two loops of bowel had through-and-through perforations and the fifth perforation had a shotgun pellet still lodged within. There was

a partial left bladder wall injury, near the entry site. The small bowel perforation sites and the bladder were suture repaired.

Discussion

Selective non-operative management for penetrating abdominal gunshot wounds is becoming an accepted alternative to the more traditional mandatory laparotomy.¹

Figure 1: X-ray of pelvis and hip.



Figure 2: A coronal view CT angiogram of lower abdomen and thigh.



Patients with hemodynamic stability and benign abdominal findings may be kept for serial observation and have similar overall mortality outcome.² However, these studies were mostly conducted in level 1–2 trauma centres in North America with high volumes of penetrating injuries related to firearms. In the rural New Zealand hospital setting, the infrequency of these cases and lack of resources after hours may lead to worse outcomes with a conservative approach. Furthermore, in our case a significant distracting injury was present, with a degree of hypovolaemic shock, making a conservative approach inappropriate. Australasian recommendations continue to lean towards laparotomy. The rate of significant intra-abdominal injury can be as high as 98% when peritoneal penetration is present and gunshot wound with a transperitoneal

trajectory alone is a recommended indication for laparotomy.³ Although the trauma guideline from Victoria, Australia recognises that serial physical examination may be a reliable approach to detect a significant injury, this is only in an alert and orientated patient without distracting injuries.⁴

Conclusion

While it remains an uncommon presentation, recent figures suggest gun violence in New Zealand may be on the rise.⁵ The challenge specific to managing shotgun injury is the wide field of damage caused by multiple pellets. It is easy to overlook a single pellet when assessing a patient with distracting injuries. However, a single pellet is capable of causing significant injuries. A clinician should be vigilant and wary of a stray innocuous appearing single pellet.

Competing interests:

Nil.

Acknowledgements:

Gisborne Hospital Surgical Department.

Author information:

Jeong Ha: MBChB; Surgical Registrar, Gisborne Hospital.

Olga Korduke: MBChB; Surgical Registrar, Gisborne Hospital.

Megan Rodney: MBChB; House Officer, Gisborne Hospital.

Peter Stiven: MBChB, FRACS; Consultant General Surgeon, Gisborne Hospital.

Corresponding author:

Corresponding author: Jeong Ha, Department of Surgery, Gisborne Hospital, Gisborne Hospital, 421 Ormond Road, Riverdale, Gisborne 4010, New Zealand, 0211836016
Jeong.Ha@tdh.org.nz

URL:

www.nzma.org.nz/journal-articles/dangers-of-a-single-pellet

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