CASE REPORT

Conservative management of an abdominal gunshot injury with a peritoneal breach: wisdom or absurdity?

Salma Khan,¹ Amyr Pardhan,¹ Tufail Bawa,¹ Naveed Haroon²

¹Department of Surgery, Memon Medical Institute, Karachi, Pakistan

²Department of Surgery, Aga Khan University Hospital, Karachi, Aguascalientes, Pakistan

Correspondence to

Dr Naveed Haroon,
naveed.haroon@aku.edu

SUMMARY

Surgical exploration has been the standard of care for abdominal gunshot injuries. The authors report a case of a 28-year-old man who sustained a transabdominal gunshot injury, which entered the anterior abdominal wall and exited adjacent to the T12 vertebra posteriorly with a tangential trajectory. On presentation, the patient was haemodynamically stable with no peritoneal signs. Based on trajectory of the bullet, intra-abdominal injury was suspected. Therefore a CT scan abdomen with intravenous and rectal contrast was performed. The CT scan revealed no extravasation of the rectal contrast but showed free air specks behind the descending colon. Delayed renal images of the left ureter were also normal. Based on the clinical findings, the patient was managed non-operatively with nothing per oral, intravenous antibiotics and frequent abdominal assessments. He made an uneventful recovery without necessitating laparotomy.

BACKGROUND

Gunshot injuries to the abdomen have been traditionally managed by exploratory laparotomy. The dictum of mandatory surgery of all torso gunshots is based on an assumption that only exploration can correctly diagnose all injuries and lower morbidity and that a clinical examination is usually unreliable. This results in a negative laparotomy rate of 15–25%.^{1 2} There is recent literature pointing towards selective non-operative management of isolated anterior or posterior abdominal gunshot injury, but to the best of our knowledge no report is available about conservative treatment of transabdominal gunshot injury with a peritoneal breach. A clinical examination and helical CT scan are good tools aiding surgeons in the execution of non-operative management of a select group of patients.

CASE PRESENTATION

A 28-year-old man was brought to the emergency room within 30 min of a gunshot wound to the abdomen. On presentation, he was vitally stable with no peritoneal signs. On examination, he had sustained a transabdominal gunshot injury, with the entry wound 2 cm above the left anterior superior iliac spine and exit wound just left lateral to the transverse process of T12 vertebra with a tangential trajectory. His systemic examination was normal

with no abnormality found on digital rectal examination. The initial management consisted of keeping the patient nothing per oral, catheterisation, intravenous hydration and analgesia. Keeping the bullet trajectory in mind, left colonic and ureteric injury was highly suspected, despite a normal abdominal examination and stable haemodynamics.

INVESTIGATIONS

His complete blood count and serum creatinine remained normal and his haemoglobin and haematocrit did not drop at any point in time.

A CT scan of the abdomen and pelvis was performed with intravenous and rectal contrast including delayed renal films. Images showed specks of free air behind the descending colon with no extravasation of contrast from the rectum and ureter (figure 1).

TREATMENT

A decision was made to manage this patient conservatively based on his haemodynamic stability, absence of peritoneal signs and no contrast extravasation from the colon, ureter or blood vessels on CT scan images. Exploration was kept in mind if the patient showed haemodynamic instability or developed peritoneal signs. He was kept under observation in a high dependency unit where his vitals were monitored hourly along with strict input/output charting and frequent abdominal examinations. He was kept there for 48 h and then shifted to the general ward where he was monitored as per ward protocol. He was fully ambulated on the second day of admission and remained stable throughout the hospital course. A repeat CT scan abdomen with intravenous and rectal contrast on the fifth postadmission day did not reveal any abnormality (figure 2), and therefore he was started on oral liquids followed by a progression to soft diet. He remained stable and was later discharged.

OUTCOME AND FOLLOW-UP

On the 10th day postdischarge, he was followed up in the clinic; he had returned to his normal daily activities and regular diet.

DISCUSSION

Although conservative management of blunt abdominal and stab wound injuries is well

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Figure 1 CT scan of the abdomen showing a peritoneal breach and free air speck adjacent to the descending colon.

established, controversies exist regarding the non-operative approach to abdominal gunshot wounds (GSW).³ Surgical exploration is still considered as the standard of care for abdominal GSW.⁴⁻⁵ However, in a select group of patients, a mandatory laparotomy approach has been changed to a non-operative strategy over the last few years.² This approach is favoured because significant morbidity (22–41%), prolonged hospital stay and increased cost are associated with unnecessary laparotomies.¹⁻⁵ A clinical examination along with a CT scan is instrumental in selecting patients for non-operative treatment.² Both a triphasic CT scan and a clinical examination in this setting have a sensitivity and specificity approaching 95%.² Laparoscopy has been used for diagnosing a peritoneal breach in the anterior abdominal stab and GSW, but its utility in transabdominal GSW is yet to be determined.⁶⁻⁷

Demetriades *et al*⁸ reported conservative management of anterior GSW in stable patients without peritonitis. In his series, 29.8% of patients were successfully managed non-operatively. Velmahos *et al*⁹ managed 69% of back GSW non-operatively

with only 3% of patients requiring delayed laparotomy. Conservative management of GSW has its own share of complications in the face of delayed laparotomy. Velmahos *et al*¹⁰ encountered 0.6% morbidity in patients who required delayed laparotomy after being managed conservatively. The existing literature includes several prospective studies reporting conservative management of GSW to the abdomen,⁸ back,⁹ buttock,¹¹ pelvis,¹² liver¹³ and kidney,⁵ but until now no report has yet been published regarding conservative management of transabdominal GSW with peritoneal breach particularly with the presence of free specks of air behind the colon. The presence of free air in the peritoneal cavity/peritoneal penetration is considered an indication for laparotomy.³ Owing to the paucity of literature regarding the conservative treatment of haemodynamically stable transabdominal GSW, we therefore report a similar case treated with this modality.

We advocate that a clinical examination is a valuable tool along with a CT scan in selecting patients for conservative management of transabdominal GSW.

Figure 2 CT scan of the abdomen showing resolution of free air.

Learning points

- ▶ Non-operative management of a transabdominal gunshot wound (GSW) is a safe alternative to mandatory laparotomy in a select group of patients.
- ▶ Non-operative management has a role in a resource stricken environment, where geo-political situations result in significant patients having GSW.
- ▶ A clinical abdominal examination and CT scan are useful tools in management.
- ▶ Laparotomy is still the standard of care and non-operative management should be discontinued if the patients develop peritoneal signs and haemodynamic instability.

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