Penetrating Abdominal Injuries

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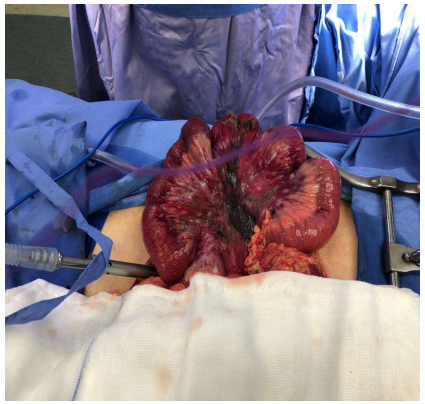
28 May 2019



- Stab wounds (SW) are encountered three times more often than gunshot wounds (GSW), but have a lower mortality .
- Almost 90% of the deaths related to PAI are caused by GSW.
- New understanding of trajectories, weapons and advanced radiographic imaging agrees.

❖Although a selective approach has been established for stab wounds, the management of abdominal gunshot wounds remains a matter of controversy.

- Solid viscera trauma
- LWE Local wound exploration
- Eviscerated bowel wash and drop it back
- Therapeutic Laparoscopy
- Antibiotic prophylaxis .

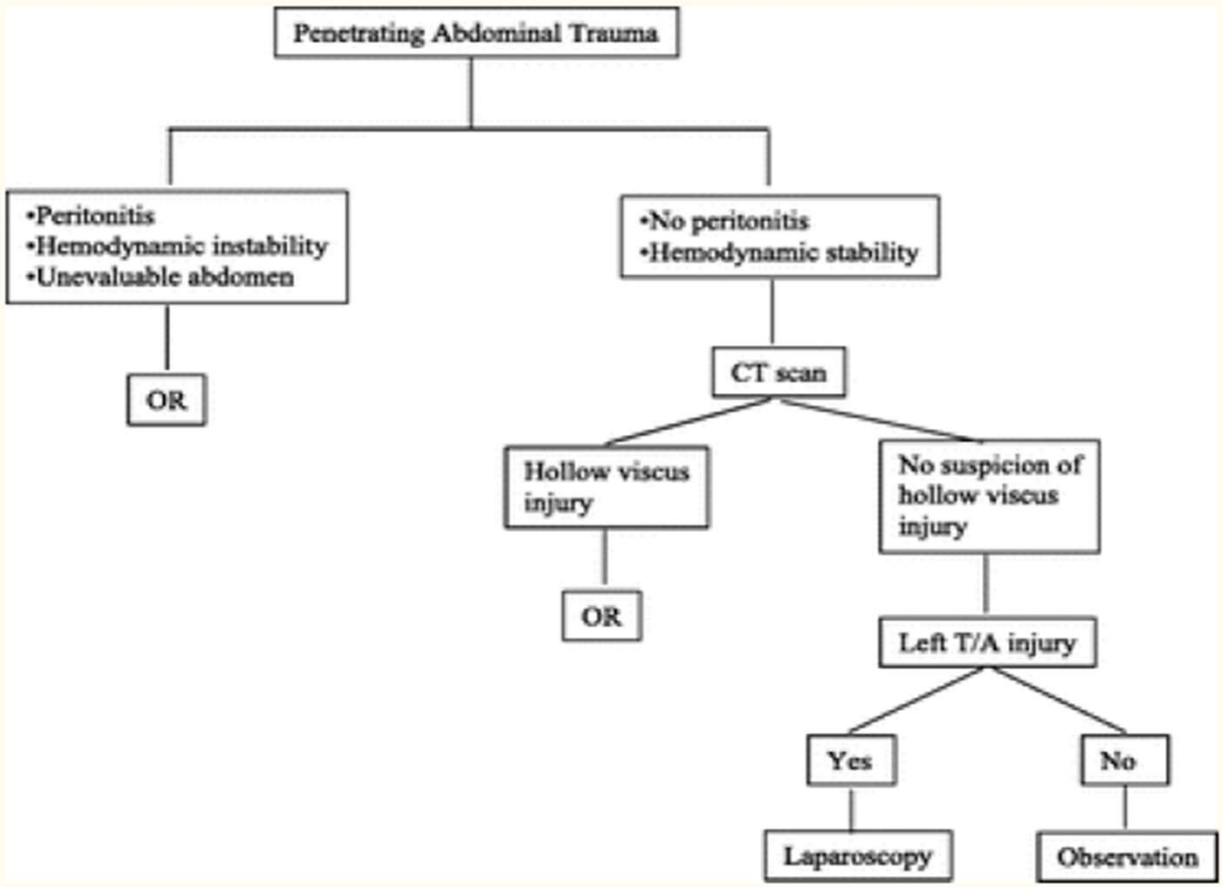


FIGURE 1. Algorithm for the management of penetrating abdominal trauma.

TABLE 1. CT Scan Findings Diagnostic or Highly Suspicious of Significant Injuries Requiring Laparotomy

Free intraperitoneal or retroperitoneal air
Free intraperitoneal fluid in the absence of solid organ injury
Localized bowel wall thickening
Bullet tract close to a hollow viscus with surrounding hematoma
Contrast "blush" in the presence of hemodynamic instability

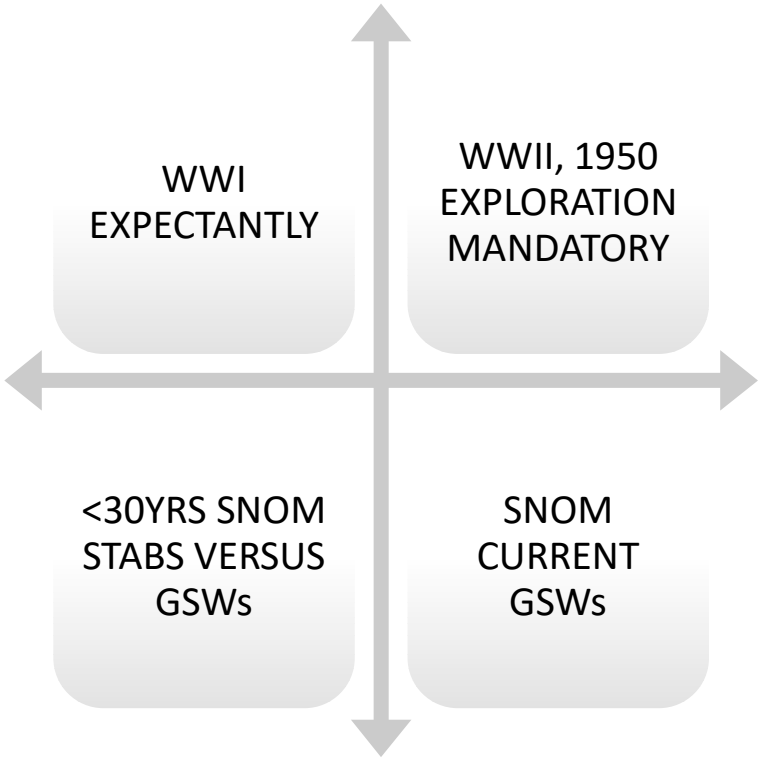
- The management of gunshot injuries to the abdomen has remained unchanged for many decades (mandatory laparotomy being the standard practice)
- However, this concept has been challenged and *some centers with extensive experience with penetrating injuries practice a selective nonoperative management*
- Approximately 30% GSW anterior abdomen and 67% GSWs to the back can safely be managed nonoperatively, *Demetriades et al*

Br J Surg. 1991 Feb;78(2):220-2.

Gunshot wound of the abdomen: role of selective conservative management.

Demetriades D[1], Charalambides D, Lakhoo M, Pantanowitz D.

Historical transition of care of PAI



Over the last 30 years the pendulum shifted towards selective management, initially involving only SW and later including GSW.

Selective Non-Operative Mx of SW  ***Selective Non-Operative Mx of GSW***

Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine

BioMed Central

Review

Penetrating abdominal injuries: management controversies

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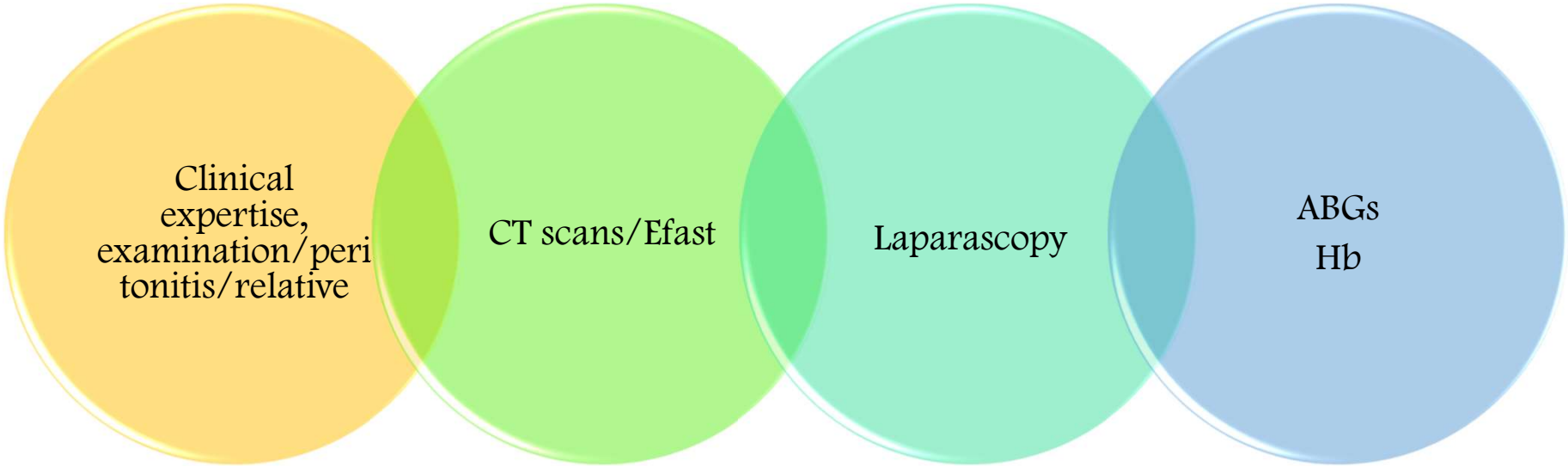
Published: 17 April 2009

Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine 2009, **17**:19 doi:10.1186/1757-7241-17-19

Received: 12 February 2009
Accepted: 17 April 2009

Refined Diagnostics for Selective NOM



Ann Surg. 2015 Apr;261(4):760-4. doi: 10.1097/SLA.0000000000000879.

Selective nonoperative management in 1106 patients with abdominal gunshot wounds: conclusions on safety, efficacy, and the role of selective CT imaging in a prospective single-center study.

Navsaria PH[1], Nicol AJ, Edu S, Gandhi R, Ball CG.

RESULTS: A total of 1106 patients with abdominal gunshot injuries were admitted. Of these, 834 (75.4%) underwent immediate laparotomy, whereas 272 (24.6%) were selected for NOM. In the former group, there were 56 (6.7%) deaths and 29 (3.5%) unnecessary laparotomies, whereas in the latter NOM group, 82 (30.1%) patients were managed by serial clinical examination alone, whereas 190 (69.9%) patients underwent abdominal CT scanning, in addition to serial clinical examination. The overall NOM success rate was 95.2%. Of the 13 patients undergoing delayed laparotomy, there were 10 therapeutic, 2 nontherapeutic, and 1 negative laparotomy.

CONCLUSIONS: The NOM of appropriately selected patients with AGSW with selective use of CT scanning is feasible, safe, and effective, but largely based on findings from serial clinical examinations.

Selective GSW patients:

- No peritonitis awake patients without other distracting injuries
- Agrees to admission, serial examination, bloods tests
- RUQ injuries through-through tangentially
- CT abdomen confirms solid viscera injuries away from the Hepatic flexure

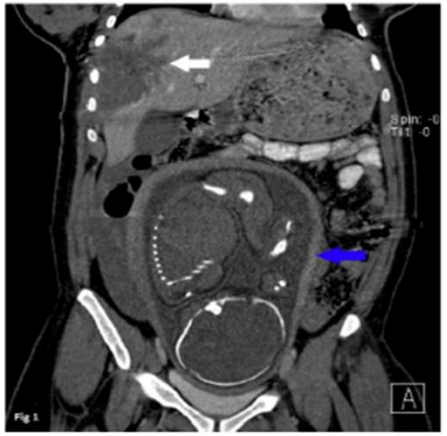


Fig. 1. Coronal CT image.

J Trauma. 1998 Dec;45(6):1005-9.

The role of computed tomography in selective management of gunshot wounds to the abdomen and flank.

Ginzburg E[1], Carrillo EH, Kopelman T, McKenney MG, Kirton OC, Shatz DV, Sleeman D, Martin LC.

CONCLUSION: In selected centers and in hemodynamically stable patients with abdominal and flank gunshot wounds, abdominal CT can be an effective and safe initial screening modality to document the presence or absence of peritoneal penetration and to manage nonoperatively stable patients with liver injuries. If there is any question of peritoneal penetration, cavitary endoscopy should be part of the protocol of nonoperative management.

Management of Asymptomatic Left Thoraco-abdominal Penetrating Injuries

- Laparoscopy mandatory but not as an urgency in stable patients

DISCUSSION: The new 256-slice multidetector CT scanner fails to sufficiently improve diagnostic accuracy over the previous technology. Patients with suspicion of diaphragm injury should undergo operative intervention.

LEVEL OF EVIDENCE: I, diagnostic test or criteria.

Trauma Surg Acute Care Open. 2018 Nov 26;3(1):e000251. doi: 10.1136/tsaco-2018-000251. eCollection 2018.

Diagnosis of diaphragm injuries using modern 256-slice CT scanners: too early to abandon operative exploration.

Uhlich R[1], Kerby JD[2], Bosarge P[2], Hu P[2].

Antibiotic stewardship *evidence based prescribing!*

- Prophylactic Antibiotics for Penetrating Abdominal Injuries

Prophylaxis Antibiotic : 24 hour antibiotic cover is satisfactory for all PAI patients

- *Fabian et al* conducted a prospective double blind study of 515 PAI patients that received either 2 g cefoxitin or cefotetan for 24 hours or 5 days.
- *There were no statistically significant differences in MAI between the two groups with colonic injuries 24 hour, 14%; 5 days, 15%*.
- concluded that regardless of contamination and degree of injury, 24 hour antibiotic therapy is satisfactory for all PAI patients.

Duration of antibiotic therapy for penetrating abdominal trauma: a prospective trial.

Fabian TC, Croce MA, Payne LW, Minard G, Pritchard FE, Kudsk KA

Surgery. 1992 Oct; 112(4):788-94; discussion 794-5.

[PubMed] [Ref list]

- Similar study *Bozorgzadeh et al* randomized 300 PAI patients.
- The duration of antibiotic treatment had no influence on the development of any major abdominal infections.
- Only colon injury was an independent predictor of the development of an intra-abdominal infection ($p = 0.0031$).
- He concluded that 24 hours of intravenous cefoxitin vs. 5 days of therapy *made no difference in the prevention of postoperative infection or length of hospitalization*.

- Single dose broad spectrum 30min – 1hr before skin incision
- 2 doses/24hrs post surgery of broad spectrum antibiotic only if contamination

Much has evolved that we now can even think of a ***Selective Non Operative Management of GSW to the abdomen*** but this has to be done in a well resourced unit with experienced Trauma team

Thank you