

NONOPERATIVE MANAGEMENT OF PENETRATING ABDOMINAL TRAUMA

Non-operative management is the standard of care for blunt abdominal trauma and stab wounds

- avoid unnecessary laparotomies
- shortens hospital stays
- cost effective

GSW were routinely managed with operation because:

- suspected high incidence of significant intra-abdominal injuries (>90%)
- unnecessary laparotomy considered harmless
- clinical examination considered unreliable

Velmahos and others, Ann Surg 2001

- 1856 patients with GSW to abdomen
- 792 patients (42%) initially not operated, out of them 80 patients (10.5%) required delayed laparotomy
- 38% of all patients were eventually discharged without an exploration.
- The negative laparotomy rate among the immediately operated patients was 13%, compared with 29% among those with delayed exploration.
- Median hospital stay of 4 days for those managed non-operatively, compared to 14 (but patients less sick)
- Patients who failed non-operative management had shorter hospital stays (10 vs. 14) compared to those initially operated, and lower charges (\$27,000 vs. \$50,000).
- Compared to a routine laparotomy policy over 8 years 3560 hospital days and \$9.5M were saved.
- Only 0.3% of patients initially managed non-operatively had injuries requiring operative repair.
- Higher failure rates (13% vs. 5%) for anterior GSW.
- The average delay interval was 6±4 hours, 23 hours was the longest.

Significant intra-abdominal injuries from civilian GSW is 30%-74%

Unnecessary laparotomies for trauma have a 22% - 41% complication rate.

Renz and others, J Trauma 1995

- 254 unnecessary laparotomies (out of 938 patients who underwent laparotomy)
- The incidence of an unnecessary laparotomy was 23.4% for GSW, 41.9% for stab wounds and 4% for blunt trauma.
- Overall complication rate was 41.3%; specific complication rates were as follows:

| Complication | Incidence (%) | Complication | Incidence (%) |
|-----------------|---------------|------------------------|---------------|
| Atelectasis | 15.7 | Intestinal obstruction | 2.4 |
| Pneumothorax | 5.1 | Wound dehiscence | 1.2 |
| Pneumonia | 3.9 | Myocardial infarction | 1.2 |
| Aspiration | 0.4 | Seizures | 0.8 |
| Prolonged ileus | 4.3 | Medication allergy | 0.4 |
| Wound infection | 3.2 | GI hemorrhage | 0.8 |

- DVT: 3.2%; PE: 0.4 - 2%

Chiu and others, J Trauma 2001

- CT scan can accurately predict trajectory, the need for laparotomy, and assist in angiographic management of hepatic injuries and retroperitoneal bleeding.
- CT missed most commonly diaphragmatic injuries, stomach and small bowel injuries.
- Determining the need for laparotomy based on triple contrast CT has:
 - Sensitivity: 94% positive predictive value: 83%
 - Specificity: 95% negative predictive value: 98%
- Local wound exploration has a 14%-45% false positive rate
- Diagnostic laparoscopy
 - Controversial tool
 - Prevents laparotomy in 5-10% in large series
 - One series reports 19% rate of missed significant intraabdominal injuries
 - Might reduce negative laparotomy rate

References:

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3. Renz B, Feliciano DV. Unnecessary laparotomies for trauma: a prospective study of morbidity. *J Trauma* 1995; 38(3): 350-356.
4. Simon RJ et al. Impact of Increased Use of Laparoscopy on Negative Laparotomy Rates after Penetrating Trauma. *J Trauma* 2002; 53(2): 297-302.

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