

## SUCCESSFUL MANAGEMENT OF SHARP ABDOMINAL TRAUMA WITH DIAGNOSTIC LAPAROSCOPY AT DR. ZAINOEL ABIDIN ACEH HOSPITAL

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### ABSTRACT

**Background :** *Abdominal trauma is injury that occurs to organs in the abdomen, such as the stomach, intestines, liver, spleen, pancreas, bile and kidneys, damage to the structures located between the diaphragm and pelvis. stab abdominal trauma may Injuries to the intestines and liver.*

**Case report:** *a 35 year-old man came to the Emergency Room at the Dr. Zainoel Abidin Regional General Hospital in Banda Aceh with a wooden stab wound on the right side of the abdomen that penetrated to the back. The patient underwent diagnostic laparoscopy, we found a piece of wood (foreign body) was stuck in the liver segment V-VI which had penetrated to the right flank and a hematoma was found around the body and about 100 cc of hemorrhagic fluid originating from the liver due to contact with wood friction but the bleeding was not active. Based on the primary and secondary survey evaluations, the hemodynamic condition was stable. In the evaluation, there were no intra-abdominal organ injury. Extraction of the foreign body wood could be performed well after identification of being free from intra-abdominal organ injury.*

**Conclusion:** *Abdominal trauma is an injury that occurs to organs in the stomach. In this case, it was a penetrating stab wound with stable hemodynamics without small intestine and omental protruding from the stomach/ this patient underwent diagnostic laparoscopic surgery.*

**Keywords:** *abdominal trauma, penetrating abdominal injury, laparoscopic surgery*

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### INTRODUCTION

Penetrating abdominal trauma is common in many countries. The most common causes are stab or gunshot wounds. The most commonly injured organs are the small bowel (50%), colon (40%), liver (30%), and intra-abdominal vessels (25%). When the injury occurs at close range, there is more kinetic energy than when the injury occurs at a distance. Although most gunshot wounds usually have a linear projection, high-energy wounds are associated with unpredictable

injuries. There may also be secondary missile injuries from bone or shrapnel. Stab wounds that penetrate the abdominal wall are difficult to assess. Occult injuries may be missed, resulting in delayed complications that can add to morbidity (Smyth, L. *et al*, 2022 ; Larsen, J. W. *et al*,2022; Uranues, S., *et al* 2015).

Penetrating abdominal wounds are traditionally explored by laparotomy. In hemodynamically compensated patients with

penetrating trauma, screening laparoscopy is routinely used to confirm peritoneal breach prompting further exploration by either diagnostic laparoscopy or exploratory laparotomy. As mentioned diagnostic laparoscopy can be extremely safe with some specific injuries, such as those involving the diaphragm, more conveniently diagnosed and treated laparoscopically (Justin, V.,2017) Rates of missed injuries with diagnostic laparoscopy vary from 22 to 45%. More recently, one center's 10-year experience with laparoscopic management for blunt trauma involved 131 patients and missed only one injury. Additionally, in a large meta-analysis of 3,362 laparoscopies, clinically relevant injuries were missed only twice. As technology develops, image quality improves, and surgeons become more experienced with diagnostic laparoscopy in trauma scenarios, these rates can only further decrease. However, until these rates decrease, a negative laparoscopy cannot entirely exclude bowel injury and clinical suspicion should still follow. (Smyth, L. *et al*, 2022 ; Ahmed, N.,2005)

### CASE REPORT

We reported a 35-year-old man came to the Emergency Room at the Dr. Zainoel Abidin Regional General Hospital in Banda Aceh with the main complaint of a wooden stab wound (foreign body) on the right side of the abdomen which had penetrated to the back. On physical examination, a stab wound was found in the right lumbar region of the abdomen, five centimeters on the right side of the center, the shape of the wound was elliptical, the boundaries were firm, the edges were flat, and there were no active bleeding. In the patient who underwent diagnostic

laparoscopy, it was found that a piece of wood (foreign body) was stuck in the liver segment V-VI which had penetrated to the right flank, and a hematoma was found around the body, and about 100 cc of hemorrhagic fluid originating from the liver due to contact with wood friction but the bleeding was not active.

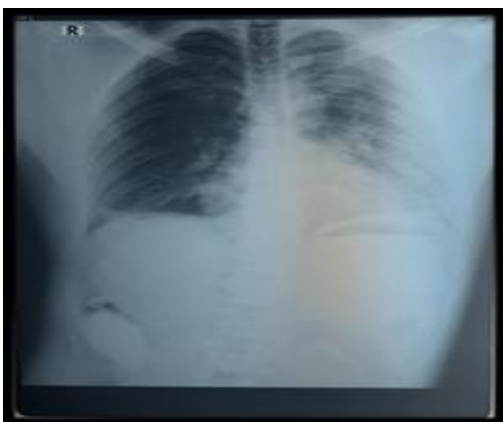
The initial assessment is based on the principles of Advanced Trauma Life Support (ATLS©). Further comprehensive assessment is performed then including appropriate history with history, physical examination, routine laboratory tests (complete blood count, urea and electrolytes), and urinalysis. Based on the results of the physical examination, the patient appeared to have severe pain, conscious compos mentis, temperature 36oC, blood pressure 110/70 mmHg, pulse 74x/minute, palpable strength, respiratory rate 22x/minute, and oxygen saturation 92% with the administration of 10 ppm oxygen with a non-rebreathing mask. In ATLS there are steps, as follows: Airway and cervical spine stabilization, breathing and ventilation, circulation and bleeding control, disability, and exposure. Physical examination to detect signs of peritonitis and vital signs is repeated every 1 hour. In this case, the patient was given a broad-spectrum antibiotic injection as prophylaxis. In this case, there was a stab wound in the right lumbar region of the abdomen, five centimeters on the right side of the center, the shape of the wound was elliptical, the boundaries were firm, the edges were flat, and there was no active bleeding.



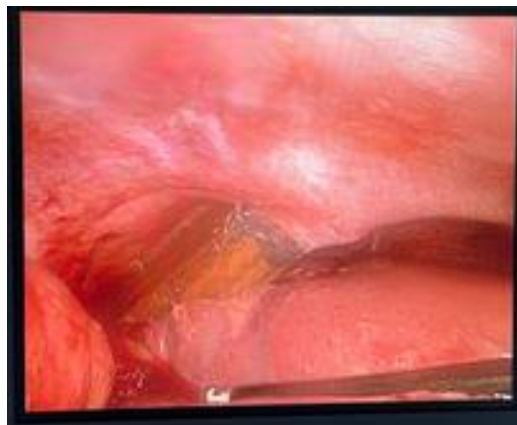
**Figure 1.** Clinical photo of a patient with a penetrating abdominal wound affecting the right upper quadrant penetrating the flank region (anterior view)



**Figure 2.** Clinical photo of a patient with a penetrating abdominal wound affecting the right upper quadrant penetrating the flank region. (lateral view)



**Figure 3.** X-ray shows penetration through the right upper quadrant. No subair diaphragm is seen.



**Figure 3** laparoscopic in penetrating abdominal trauma, there is a right upper quadrant penetrating wound with a foreign object just above the liver. Exploration did not find any hollow organ perforation or liver organ injury.



**Figure 4** Post Operative

### OPERATING REPORT

The patient was prepared for laparoscopic penetrating abdominal trauma because he was in stable hemodynamics. We also prepared for laparoscopic conversion to laparotomy. Conversion should be possible without delay or additional preparation. The patient was securely fixed on all sides so that the operating table could be rotated to shift the abdominal organs in any direction needed. The first trocar was 10/11 mm and was usually inserted with an open technique at the umbilical. After an initial examination of the abdominal cavity, two more trocars were inserted on both sides, and exploration was performed starting with the right upper quadrant and continuing clockwise. In our evaluation, we found a penetrating foreign body trauma entry wound in the right upper quadrant penetrating the abdominal cavity.

Further evaluation showed no liver and hollow organ injuries. The wooden foreign body was slowly removed with the identification of the source of the bleeding. The wound was washed clean with normal saline and povidone-iodine. After that, the

wound was sutured layer by layer with Non-absorbable suture. Postoperatively we evaluated hemodynamics and acute abdominal signs.

### DISCUSSION

In this case, from the results of the anamnesis it was found that the patient was a 35-year-old male with complaints of a wooden stab wound on the right side of the abdomen which penetrated to the back. The wood was a fragment of a large wooden block that was being cut using a machine and then the pieces of wood bounced off and stabbed into the patient's body. Any patient suffering from an abdominal stab wound should be assessed immediately upon arrival at the Trauma Center. The patient was in a stable hemodynamic condition during the initial assessment until he was in the operating theater. This is proof of our desire to choose laparoscopic treatment for the patient. (Sander, A.,2022; Sermonesi, G. *et al*,2023). Diagnostic laparoscopy can be used in hemodynamically compensated patients with highly sensitive findings of bowel injury on CT. In penetrating trauma, local wound exploration is used to confirm peritoneal breaching. When positive, serial clinical examinations should follow, where there is clinical suspicion of bowel injury a diagnostic/therapeutic laparoscopy or laparotomy is warranted. Conversion to laparotomy is always possible and highly recommended if any doubts or difficulties arise. (Smyth, L. *et al*, 2022 ; Bouzat, P. *et al*, 2020)

Therapeutic laparoscopy is useful in several conditions including hemodynamic stability, reduced incidence of infection, and peritonitis may also require less operative time and length of hospital stay in both

penetrating and blunt trauma. Reported average operating times of 52 versus 80 min for laparoscopy versus laparotomy in penetrating bowel injury. Length of hospital stay reported 3 days each after therapeutic laparoscopy and compared favorably to laparotomy with 17. Patients decompensated or having septic peritonitis benefit from laparotomy. Some clinicians in more recent years have begun pushing this boundary, expanding the criteria of patients suitable for laparoscopic intervention in complex trauma scenarios. (Smyth, L. *et al*, 2022 ; Addeo, P. & Calabrese, D. P., 2011). These considerations must be taken with caution, and due to their controversial nature, must only be considered by experienced laparoscopic surgeons. Nevertheless, laparotomy remains a safe and always available default surgical option.

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Laparoscopy for penetrating abdominal injuries in a defined set of conditions was safe and accurate, effectively eliminating nontherapeutic laparotomy and shortening hospitalization. (Bouzat, P. *et al*, 2020; Durso, A. M. *et al*.2020)

## CONCLUSION:

Abdominal trauma is an injury that occurs to organs in the stomach, such as the stomach, intestines, liver, spleen, pancreas, gallbladder, and kidneys. In this case, it was a penetrating stab wound with stable hemodynamics and no small intestine and omental protruding from the stomach. Decision for laparoscopic surgery performed in hemodynamic stable. The operation with diagnostic laparoscopic in this case was successful and minimally invasive.

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