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The Value of Laparoscopy in Patients with Blunt Abdominal Injuries: Observational Prospective Study

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Abstract

Background: Laparoscopy combines the advantages of diagnosis & treatment in single procedure with least morbidity. In addition, Laparoscopy can be beneficial in avoiding negative laparotomy. Patients are likely to have less postoperative pain and bedis charged from hospital and return to activities and routine work sooner than those who have under gonelaparotomy.

Aim of Study: To determine feasibility, safety & effectiveness of laparoscopy as a diagnostic & therapeutic modality in patients with blunt abdominal trauma.

Patients and Methods: This study is observational prospective study, was conducted on 30 patients with blunt abdominal trauma in Emergency room of in El-Mabaraa Health Insurance Hospital, Assuit General Hospital and El-Eman General Hospital. Patients were divided into two groups: (Group A): Included 16 patients underwent laparoscopy, (Group B): Included 14 patients underwent laparotomy.

Results: Pain score six hours after operation on visual analogue score in group A ranged from 1 to 6 and the mean ± SD was 2.63 ± 1.78, while in group B ranged from 2 to 7 and the mean ± SD was 4.21 ± 1.37. There was statistically significant decrease in operative time and post operative pain and complications in laparoscopy group compared to laparotomy group (p<0.001). There was statistically significant increase in patient satisfaction level with the scar and outcome in group A than group B.

Conclusion: Laparoscopy constitutes a safe and feasible procedure for the diagnosis and treatment of blunt abdominal trauma (BAT) and can be the first choice with no increase in postoperative complications.

Key Words: *Blunt abdominal trauma – Laparotomy – Laparoscopy.*

Introduction

TRAUMA is considered to be a leading cause of death in young adults. Blunt mechanisms account for more than 95% of injuries. Generally, laparotomy is considered to be the standard procedure used in the trauma cases. Recently, laparoscopic techniques have been increasingly introduced as an alternative to open surgery in trauma cases **[1]**.

The management of blunt abdominal trauma has evolved over time. While laparotomy is the standard of care in hemodynamically unstable patients, stable patients are usually treated by non-operative management (NOM), incorporating adjuncts such as interventional radiology **[2]**.

However, although NOM has shown good results in solid organ injuries, other lesions, namely those involving the hollow viscus, diaphragm, and mesentery, do not qualify for this approach and need surgical exploration. Laparoscopy can substantially reduce additional surgical aggression. It has both diagnostic and therapeutic potential and, when negative, may reduce the number of unnecessary laparotomies **[3-4]**.

Laparoscopy in blunt abdominal trauma is challenging because of multiple associated injuries, higher trauma score values and higher morbidity and mortality, as compared with patients with penetrating abdominal trauma **[5,6]**.

The appropriate treatment for patients with blunt abdominal trauma depends on a precise diagnosis of the presence and severity of intra-abdominal injuries **[7]**. Other than physical examination, various diagnostic methods, including abdominal ultrasound, diagnostic peritoneal lavage, and computed tomography (CT), are used for the evaluation of patients with blunt abdominal trauma **[8]**.

Urgent laparotomy can be life saving for hemodynamically unstable patients with signs of massive intra-abdominal haemorrhage. In contrast, selective nonoperative management (NOM) for hemodynamically stable patients has gained more support over the past 3 decades **[5]**.

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Laparotomy, however, has remained the management of choice in certain situations following blunt abdominal trauma such as in patients who have free intraperitoneal fluid of uncertain origin, signs indicating intestinal ischemia caused by mesenteric bleeding, and signs indicating hollow viscus perforation. Although laparotomy is an accurate and effective method for the diagnosis and treatment of abdominal trauma patients, the procedure is not without risks and is associated with a mortality rate of up to 5%, a 20% morbidity rate, and a 3% long-term risk of bowel obstruction [8].

The laparoscopic approach has become the method of choice for many abdominal surgeries and has begun to be used in the trauma setting. In spite of high rates of missed injuries in early reports, recent studies have shown laparoscopy to be effective for evaluating and treating injuries in penetrating and blunt abdominal trauma [3].

Laparoscopy has been reported to avoid non-therapeutic laparotomy and shorten hospital stay in patients with abdominal trauma [2].

The aim of this study was to determine feasibility, safety & effectiveness of laparoscopy as a diagnostic & therapeutic modality in patients with blunt abdominal trauma.

Patients and Methods

This study is observational prospective study, was conducted on 30 patients with blunt abdominal trauma in Emergency room of in El-Mabaraa Health Insurance Hospital, Assuit General Hospital and El-Eman General Hospital from October 2021-March 2022.

Patients were divided into two groups: Group A: Included (16) patients who were eligible to have diagnostic and therapeutic laparoscopy, and Group B: Included (14) patients who were converted to laparotomy.

Inclusion criteria: Stable patients with blunt abdominal trauma with definite occurrence of intra abdominal injury after stabilization of the patient. Stable patient after active resuscitation, and patients with equivocal result by clinical and radiological evaluation.

Exclusion criteria: Stable patients whose condition diagnosed radiologically and responding for conservative management. Patients with penetrating abdominal trauma. Patients with increased intracranial tension. Poly traumatized patients with multi-organs affection, and patients with general and local contraindications for laparoscopy.

Sampling method:

A total of thirty hemodynamically stable patients who came to emergency department at El-Mabarra Health Insurance Hospital, Assuit General Hospital and El-Eman General Hospital, presented with blunt abdominal trauma will be investigated by laparoscopy, after considering inclusion & exclusion criteria, to detect the abdominal injury and see if it can be managed also by laparoscopy.

All patients were subjected to:

- Full clinical History, personal history, present history, history of surgical operations and full clinical examination:
  - Pulse, Bp, temperature, abdominal examination.
  - Abbreviated injury scale (AIS) abdominal scores, injury severity scores (ISSs), hemoglobin levels in the ED, associated injuries, associated traumatic brain injuries (TBIs), the use of TAE prior to surgery, indications for surgery, operative findings, therapeutic procedures performed, spleen salvage rates, rates of conversion to laparotomy, rates of non-therapeutic laparotomy, operation times, blood loss, length of hospital stay, length of intensive care unit (ICU) stay, hospital mortality, and postoperative complications.
  - Complications of interest included missed injuries requiring reoperations, wound infections, intra-abdominal abscesses, and long-term complications.
- Routine preoperative investigation.
- Preoperative FAST u/s.
- Diagnostic and therapeutic laparoscopy.
- Post-procedural: Patients were instructed to walk after full recovery from anesthesia after the procedure and to continue their normal daily activities. All patients received routinely PO analgesia.

Ethical consent:

An approval of the study was obtained from Ain Shams University and Assuit General Hospital Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of the operation. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Fig. (1A): CT of a grade II pancreatic injury (blue arrow showing the injury site).

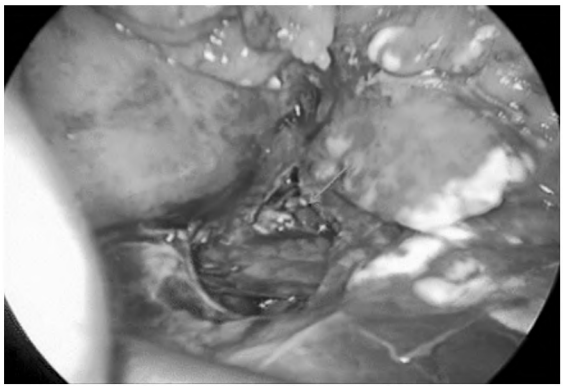

Fig. (1B): Laparoscopic debridement of grade II pancreatic injury (arrow showing the laceration).

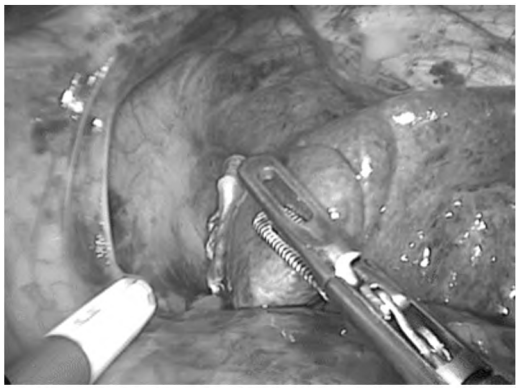

Fig. (2A): Laparoscopic exploration of the diaphragm and sealing of a superficial splenic injury.

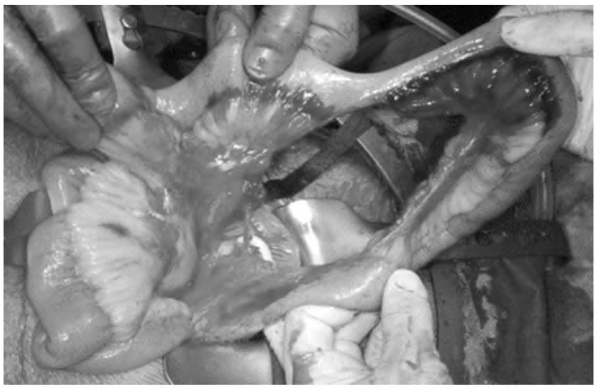

Fig. (2B): Intestinal injury first diagnosed laparoscopically.

Statistical analysis:

Data was collected throughout history, basic clinical examination, laboratory investigations and outcome measures were coded, entered and analyzed using Microsoft Excel software. The data collected was tabulated and analyzed by SPSS (statistical package for social science) version 25 (Armonk, NY: IBM Corp) on IBM compatible computer.The data was tested for normality using Kolmogorov-Smirnov test, Shapiro-Wilk tests. According to the type of data, qualitative data was represented as number and percentage, quantitative data was represented by mean ± SD. Student *t*-test: was used for comparison between two groups having quantitative variables with normal distribution (for parametric data). Mann-Whitney U Test: is a test of significance used for comparison between two groups having quantitative variables without normal distribution (for non-parametric data). Chi-square test (χ^2): Was used to study comparison and association between two qualitative variables. *p*-value <0.05 was considered significant.

Results

This table shows that the age in group A ranged from 30 to 55 years and the mean ± SD was 38.63 ±6.63 years, while in group B the age ranged from 21 to 59 years and the mean ± SD was 41.71 ± 11.83 years. There was no statistically significant difference between the two groups as regards age ($p>0.05$).

The gender was distributed in group A 11 (68.8%) males, 5 (31.3%) females and in group B 12 (85.7%) males, 2 (14.3%) females with no statistically significant difference ($p>0.05$). There was no statistically significant difference between the two groups as regards Cause of injury ($p>0.05$) (Table 1).

There was statistically significant decrease in operative time in group A than group B ($p<0.001$). There was statistically significant increase in hospital stay in group B than group A ($p<0.001$). There was statistically significant increase in ICU length of stay (Day) needed in group B than group A ($p<0.001$) (Table 2).

There was statistically significant increase in time to start oral fluids in group B than group A ($p<0.05$). There was statistically significant increase in time to return to normal life in group B than group A ($p<0.05$) (Table 3).

There was statistically significant increase in time interval before analgesic needed in group A than group B (p<0.001). There was statistically significant increase in pain score in group B than group A (p<0.001) (Table 4).

Complications where 13 (81.3%) cases had no complications in group A in comparison to 5 (35.7%) cases in group B, 1 (6.3%) case had wound infection in group A in comparison 4 (28.6%) cases in group B, 1 (6.3%) case had Intra-abdominal abscess in group A in comparison 3 (21.4%) cases in group B, 1 (6.3%) case had Postoperative ileus in group A in comparison to 2 (14.3%) cases in group B with Respiratory tract infections.

There was statistically significant difference between the two groups as regards complications (p<0.05) (Table 5).

As regards patient satisfaction level with the scar and outcome, 13 (81.3%) cases were satisfied in group A in comparison to 4 (28.6%) cases in group B, 1 (6.3%) case was partially satisfied in group A in comparison to 1 (7.1%) case in group B, and 2 (12.5%) case was unsatisfied in group A in comparison to 9 (64.3%) cases in group B. There was statistically significant increase in patient satisfaction level with the scar and outcome in group A than group B (p<0.05) (Table 6).

Table (1): Comparison between group (A) and group (B) as regards demographic data and cause of injury.

	Group A (n=16)		Group B (n=14)		Test of sig.	p-value
	No.	%	No.	%		
Gender:						
Male	11	68.8	12	85.7	$\chi 2$ =	0.273
Female	5	31.3	2	14.3	1.20	
(Min. - Max.)	(30-55)		(21-59)		t =	0.277
Mean ± SD.	38.63±6.63		41.71±11.83		–1.104	
Cause of injury:						
Assault	2	12.5	1	7.1	3 10.0	0.839
Fall from height	2	12.5	3	21.4	5 16.7	
Fight	2	12.5	1	7.1	3 10.0	
Motor vehicle collision	3	18.8	5	35.7	8 26.7	
Strike something hard	2	12.5	1	7.1	3 10.0	
Traffic accident	5	31.3	3	21.4	8 26.7	
Total	16	100.0	14	100.0	30 100.0	

(χ^2): Chi-square Test.
p: p-value for comparing between the studied groups.
*: p-value <0.05 is significant.

Table (2): Comparison between group (A) and group (B) as regards operative time (min), hospital stay (days) and ICU length of stay (day).

	Group A (n=16)	Group B (n=14)	U	p-value
Operative time (min):				
Min - Max	55-97	40-86	33.0	0.001*
Mean ± SD	56.56±12.93	76.86±13.63		
Hospital stay (days):				
Min - Max	2-7	6-12	8.50	0.00**
Mean ± SD	3.75±1.65	8.07±1.98		
ICU length of stay (day):				
Min - Max	1-3	3-7	4.50	0.000**
Mean ± SD	1.81±0.75	4.36±1.22		

U: Mann-Whitney U Test.
p: p-value for comparing between the studied groups.
*: p-value <0.05 is significant.
**: p-value <0.001 is highly significant.

Table (3): Comparison between group (A) and group (B) as regards time to start oral fluids (Hrs.) and time to return to normal life (days).

	Group A (n=16)	Group B (n=14)	U	p-value
Time to start oral fluids (Hrs):				
Min - Max	4-12	4-12	59.0	0.013*
Mean ± SD	5.50±3.22	8.43±3.52		
Time to return to normal life (days):				
Min - Max	1-5	2-5	47.5	0.006*
Mean ± SD	1.81±1.11	2.93±1.14		

U: Mann-Whitney U Test.
p: p-value for comparing between the studied groups.
*: p-value <0.05 is significant.
**: p-value <0.001 is highly significant.

Table (4): Comparison between group (A) and group (B) as regards time interval before analgesic needed (hrs.), and pain score after operation (VAS) (6hr).

	Group A (n=16)	Group B (n=14)	U	p-value
Time interval before analgesic needed (hrs.):				
Min - Max	6-24	6-12	20.0	0.000**
Mean ± SD	17.25±5.53	8.50±1.99		
Pain score after operation (VAS) (6hr):				
Min - Max	1-6	2-7	48.5	0.007*
Mean ± SD	2.63±1.78	4.21±1.37		

U: Mann-Whitney U Test.
p: p-value for comparing between the studied groups.
*: p-value <0.05 is significant.
**: p-value <0.001 is highly significant.

Table (5): Comparison between group (A) and group (B) as regards the complications.

Complications	Groups				Total		X^2	*p*-value
	Group A (n=16)		Group B (n=14)					
	N	%	N	%	N	%		
None	13	81.3	5	35.7	18	60.0	7.273	0.026*
Wound infection	1	6.3	4	28.6	5	16.7		
Intra-abdominal abscess	1	6.3	3	21.4	4	13.3		
Postoperative ileus	1	6.3	0	0.0	1	3.3		
Respiratory tract infections	0	0.0	2	14.3	2	6.7		
Total	16	100.0	14	100.0	30	100.0		

(χ^2): Chi-square Test. *p*: *p*-value for comparing between the studied groups. *: *p*-value <0.05 is significant.

Table (6): Comparison between group (A) and group (B) as regards Patient satisfaction level with the scar and outcome.

Patient satisfaction level with the scar and outcome	Groups				Total		X^2	*p*-value
	Group A (n=16)		Group B (n=14)					
	N	%	N	%	N	%		
Satisfied	13	81.3	4	28.6	17	56.7	9.126	0.010*
Partially satisfied	1	6.3	1	7.1	2	6.7		
Unsatisfied	2	12.5	9	64.3	11	36.7		
Total	16	100.0	14	100.0	30	100.0		

(χ^2): Chi-square Test. *p*: *p*-value for comparing between the studied groups. *: *p*-value <0.05 is significant.

Discussion

In our study we found that the age in group A ranged from 30 to 55 years and the mean ± SD was 38.63±6.63 years, while in group B the age ranged from 21 to 59 years and the mean ± SD was 41.71±11.83 years and there was no statistically significant difference between the two groups as regards age (p>0.05).

Also, the gender was distributed in group A 11 (68.8%) males, 5 (31.3%) females and in group B 12 (85.7%) males, 2 (14.3%) females with no statistically significant difference (p>0.05).

In our study the sex distribution has male predominance, Increased incidence of trauma in male is attributed to their work outside house, frequent traveling, more social activities, and influence of drugs addiction sometimes.

This goes in accordance with the study of Abdeshafy et al., [1] about the role of laparoscopy in blunt abdominal trauma where the two groups showed no significant statistical differences in their demographic data, age and sex, the age mean ± SD was 36.68±9.57 and 38.16±11.19 years in laparotomy and laparoscopy groups respectively and the sex distribution had male predominance also as male: female ratio was 2: 1.

In a study by Abbas et al., [9] to determine the frequency of conversion to therapeutic laparotomy after diagnostic laparoscopic in blunt abdominal trauma, the mean age of patients was 36.33 ±13.93 years, and there were 79 (83.2%) males and 16 (16.8%) females in the study, where male: female ratio was approximately 5: 1.

Our study shows that the most prevalent causes of injury were traffic accident and motor vehicle collision, each occurred in 8 (26.7%) of total cases as 5 (31.3%) cases had traffic accident in group A in comparison to 5 (35.7%) cases in group B had Motor vehicle collision, in group A then comes 2 (12.5%) cases had Assault, another 2 (12.5%) were injured by fall from height, another 2 (12.5%) in a fight, and the last 2 (12.5%) were injured by a strike by something hard, injury in group B 1 (7.1%) case had Assault, another 3 (21.3%) were injured by fall from height, another 1 (7.1%) in a fight, and the last 1 (7.1%) was injured by a strike by something hard, with no statistically significant difference between the two groups as regards Cause of injury (p>0.05).

Another study by Memon et al., [10], investigating the role of laparoscopy in blunt abdominal trauma, the mechanism of patients with blunt abdominal trauma injury included motor vehicle collision in 15 (46.8%) patients, fall from height

in 5 (15.6%), assault in 3 (9.37%) and automobile pedestrian accident in 9 (28.12%) patients.

Also, Amutha et al., [7] said in their study that the most commonmechanism of injury was motor vehicle collision which occurred in about 13 individuals (43%). It was followed by automobile pedestrian injury in 7 individuals (23%). Fall from height occurred in about 5 patients (16.6%) and the least was assault which occurred in about 3 individuals (10%). Road traffic accidents were the most common cause of blunt trauma abdomen.

In this study, laparoscopy was diagnostic in half patients of group A where findings were normal and no interventions needed, and therapeutic in the other half, and in group B, laparoscopy was 100% therapeutic, which was concomitant with the CT scans results that were performed to all patients, in group A, there was positive findings in only 6 (37.5%) patients, while laparoscopy found positive findings in 8 (50%), and as for group B, CT scan was positive in all patients, which means that laparoscopy added value to the diagnosis of two patients.

In concomitant with our study a study of Koto et al., [5] about laparoscopy for blunt abdominal trauma, a total of 10 (37%) patients in the laparoscopy group had negative findings on abdominal CT scan; however, three (30%) of them had therapeutic laparoscopy for grade 2 mesenteric injuries requiring repair.

Causes of conversion were mainly because of Intraoperative bleeding in 6 (42.9%) patients, then complex injuries in 4 (28.6%), and 2 (14.3%) because of equipment failure, and poor visualization in the other 2 (14.3%).

As regards the distribution of injuries in our study in the two groups, in group A, injuries were mainly in the small bowel, spleen, urinary bladder and colon, while in group B, injuries were mainly in liver, kidney, urinary bladder and stomach, and to a lesser extent small bowel, colon, and spleen.

The most common finding in laparoscopy was injury to solid organs like liver and spleen. Grade 1 and grade II injuries of the spleen being the most common occurred in about 5 patients. Liver injuries occurred in about 5 patients. Our findings correlate with the laparoscopic findings in the study done by Memon et al., [10].

Group A showed better results as operative time ranged from 55 to 97 minutes and the mean ± SD was 56.56±12.93 minutes, while in group B ranged from 40 to 86 minutes and the mean ± SD was 76.86±13.63 minutes, hospital stay in group A ranged from 2 to 7 days and the mean ± SD was 3.75±1.65 days, while in group B ranged from 6 to 12 days and the mean ± SD was 8.07±1.98 days, ICU length of stay (Day) needed in group A ranged from 1 to 3 days and the mean ± SD was 1.81 ± 0.75 days, while in group B ranged from 3 to 7 days and the mean ± SD was 4.36 ± 1.22 days.

There was statistically significant decrease in operative time, hospital stay, and ICU length of stay (Day) needed in group A than group B.

Time to start oral fluids in group A ranged from 1 to 3 hours and the mean ± SD was 1.40±0.754 hours, while in group B ranged from 1 to 3 hours and the mean ± SD was 2.05±0.88 hours, time to return to normal life in group A ranged from 1 to 5 days and the mean ± SD was 1.81±1.11 days, while in group B ranged from 2 to 5 days and the mean ± SD was 2.93±1.14 days.

There was statistically significant decrease in time to start oral fluids and time to return to normal life in group A than group B (p<0.05).

Time interval before analgesic needed in group A ranged from 6 to 24 hours and the mean ± SD was 17.25±5.53 hours, while in group B ranged from 6 to 12 hours and the mean ± SD was 8.50± 1.99 hours.

As regards pain after surgery there was statistically significant difference in time interval before analgesic needed, the pain score six hours after operation on visual analogue scale, in group A than group B where group A showed better results than group B.

As regards complications, 13 (81.3%) cases had no complications in group A in comparison to 5 (35.7%) cases in group B, 1 (6.3%) case had wound infection in group A in comparison 4 (28.6%) cases in group B, 1 (6.3%) case had Intra-abdominal abscess in group A in comparison 3 (21.4%) cases in group B, 1 (6.3%) case had Post-operative ileus in group A in comparison to 2 (14.3%) cases in group B with Respiratory tract infections. There was statistically significant difference between the two groups as regards complications. As regards patient satisfaction level with the scar and outcome, 13 (81.3%) cases were satisfied in group A in comparison to 4 (28.6%) cases in group B, 1 (6.3%) case was partially satisfied in group A in comparison to 1 (7.1 %) case in group B, and 2 (12.5%) case was unsatisfied in group A in comparison to 9 (64.3%) cases in group B. There

was statistically significant increase in patient satisfaction level with the scar and outcome in group A than group B.

In concomitant with our results, Abdeshafy et al., [1] found no significant differences between the two groups regarding the mode of trauma, injured organ, and the procedure made, where highly significant differences were found between the two groups regarding the operative time, time to pass gas postoperatively, ICU stay, and total hospital stay.

Koto et al., [5] conducted a study on 35 stable patients who underwent laparoscopy. Therapeutic laparoscopy was performed in 15 (56%) and diagnostic in 12 (44%) patients. Eight (23%) patients were converted to therapeutic laparotomy.

Intraoperative bleeding, complex injuries, visualization problem, and equipment failure necessitated conversion. Three (30%) patients with negative computed tomography scan had therapeutic laparoscopy for mesenteric injuries. There were no missed injuries.

In contrast to our findings Omori et al., [11] compared 12 consecutive cases of therapeutic laparoscopy in isolated ruptured small bowel with 13 patients managed by laparotomy in a previous study. While operative time did not differ significantly (132±58.7min in laparotomy vs. 143.6±27.3 min in laparoscopy, p=0.296), blood loss was statistically significantly reduced (266.8 ±277.8mL in laparotomy vs. 57.6±57.1mL in laparoscopy, p<0.05). Conversion to laparotomy was necessary in one patient, while morbidity, mortality, and duration of hospital stay were not found to be statistically significantly different.

Lin and colleagues [12] reported similar results in their case series of 135 patients, comparing two historical cohorts. Group A (62 patients, 1999-2006) was explored by laparotomy and group B (59 patients, 2007-2016) underwent exploratory laparoscopy. Conversion rate was 8.5% as opposed to a 100% laparotomy rate in the first group. While the difference in blood loss was not statistically significant, the authors observed statistically significant differences in duration of hospital stay (17.6 vs. 11.0 days, p<0.001) and wound infections [16.1% (10/62) vs. 5.1% (3/59), p<0.049].

Conclusion:

- Laparoscopy is a feasible and safe tool for the diagnosis and treatment of hemodynamically stable BAT patients.
- Laparoscopy can be used to avoid a non-therapeutic laparotomy and to perform therapeutic interventions for these patients.
- Laparoscopy can play an important role in diagnosis and treatment of blunt trauma in hemodynamically stable patients.
- Low missed injury rates, reduced duration of hospital stay, faster recovery and reduced cost make it an attractive and safe alternative to classical trauma laparotomy.

Recommendations:

- A larger further study to evaluate the cost, benefit of laparoscopy is recommended.
- We must convert laparoscopic procedure to laparotomy when indicated for the safety of the patient.
- It is very useful in reaching an exact diagnosis in equivocal cases in females during their childbearing period.
- Laparoscopy should be the initial choice for all patients with blunt abdominal trauma.

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Conflict of interest: Nil.

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دور منظار البطن الجراحى فى المرضى الذين يعانون من إصابات كليلة فى البطن : دراسة رصدية مستقبلية

خلفية البحث: يجمع تنظير البطن بين مزايا التشخيص والعلاج فى إجراء واحد مع أقل معدلات اعتلال. بالإضافة إلى ذلك، يمكن أن يكون تنظير البطن مفيداً فى تجنب فتح البطن السلبى. من المرجح أن يعانى المرضى من آلام أقل بعد الجراحة ويخرجون من المستشفى ويعودون إلى الأنشطة والعمل الروتينى فى وقت أقرب من أولئك الذين خضعوا لبضع البطن.

الهدف من البحث: هو تحديد جدوى وسلامة وفعالية تنظير البطن كطريقة تشخيصية وعلاجية فى المرضى الذين يعانون من إصابات حادة فى البطن.

المرضى وطرق البحث: هذه الدراسة عبارة عن دراسة استطلاعية تم إجراؤها على ٣٠ مريضاً يعانون من إصابات حادة بالبطن فى غرفة الطوارئ بمستشفى المبرة للتأمين الصحى ومستشفى أسيوط العام ومستشفى الإيمان العام. تم تقسيم المرضى إلى مجموعتين (المجموعة أ): شملت ١٦ مريضاً خضعوا لتنظير البطن، (المجموعة ب): خضع ١٤ مريضاً لبضع البطن.

نتائج البحث: درجة الألم بعد ست ساعات من العملية على الدرجة التناظرية المرئية فى المجموعة (أ) تراوحت من ١ إلى ٦ وكان المتوسط ٢.٦٣±١.٧٨، بينما فى المجموعة (ب) تراوحت من ٢ إلى ٧ وكان المتوسط ٤.٢١±١.٣٧. كانت هناك زيادة ذات دلالة إحصائية فى درجة الألم فى المجموعة (ب) من المجموعة (أ). كان هناك فرق ذو دلالة إحصائية بين المجموعتين من حيث المضاعفات. كانت هناك زيادة ذات دلالة إحصائية فى مستوى رضا المريض عن الندية والنتيجة فى المجموعة (أ) عن المجموعة (ب).

الاستنتاج: يعتبر تنظير البطن إجراء آمناً ومجدياً لتشخيص وعلاج إصابات البطن الحادة ويمكن أن يكون الخيار الأول بدون زيادة فى مضاعفات ما بعد الجراحة.