A COMPARATIVE STUDY BETWEEN CONSERVATIVE AND EARLY SURGICAL INTERVENTION OF SOLID ORGANS INJURY AFTER BLUNT ABDOMINAL TRAUMA IN PAEDIATRICS

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ABSTRACT:

Background: *Abdominal trauma in pediatrics is common. Abdomen is the most common site of initially unrecognized fatal injury in traumatized children.*

Aim of the Work: *To analyse the value of conservative treatment versus early operative intervention for solid organs injury in the pediatric age group with blunt abdominal trauma.*

Patients and Methods: *The study was carried out by collecting data from a random group of 140 children whose ages ranged from 6 to 16 years who suffered from abdominal trauma associated with solid organ injury, during the period between January 2017 to December 2020, at Ain Shams University hospital, Ahmed Maher teaching hospital and Nasser Institute. A clinical examination was signed for the patients, vital signs were evaluated, the necessary laboratory investigations were carried out, and FAST was performed on the abdomen in the emergency department. Also CT abdomen and pelvis was done on haemodynamic stable patients or after stabilization.*

Results: *The study showed that periods of hospital stay were significantly higher in the surgical treatment group compared to conservative treatment group. Also blood transfusion, need of ICU hospitalization, need of mechanical ventilation and mortality were significantly higher in the surgical treatment group compared to conservative treatment group. The research showed the success of conservative treatment in the treatment of traumatic abdominal injuries, which resulted in injury to the spleen and liver in children, especially low-grade injuries, and that conservative treatment is safe and less expensive compared to surgical intervention. We also support the expansion of the use of interventional radiology in children, as it greatly reduces the child's exposure to surgical intervention.*

Conclusion: *The present study confirmed the effectiveness of NOM in patients with liver and splenic injuries, suggesting a safe and effective therapeutic approach. According to these findings, the majority of patients can be treated with NOM in a less invasive manner, avoiding unnecessary laparotomies. Hemodynamic stability together with injury grading scale will provide a good plan for management.*

Key words: *surgical intervention, solid organs injury, blunt abdominal trauma, paediatrics*

INTRODUCTION:

Children are at increased risk of intra-abdominal injury, for several reasons. First, because of their small size, any force applied to the abdomen involves a relatively large surface area, increasing the risk of

multiorgan injury. Second, compared with an adult, the pediatric abdominal wall has decreased muscle mass and fat and the thoracic cage is more compliant, thus providing less protection for the liver and spleen [(1)].

Motor vehicle related accidents, followed by falling from heights are the most common causes of abdominal trauma. While sports related injuries and abuse are less common. Despite the frequency with which abdominal trauma occurs in children, there is still controversy over the optimal evaluation strategy to identify intra-abdominal injury [(2)].

Management of abdominal trauma has evolved considerably. There are two strategies for management. First one is conservative management and the other one is early operative management [(3)].

Investigation has a critical role in evaluation of traumatized children. However, there is controversy about the imaging technique needed. Focused assessment with sonography for trauma (FAST) is usually available in most hospitals and trauma centers, but it has low sensitivity, so computed tomography with contrast has become the gold standard in traumatized children [(4)].

Recently many cases of abdominal trauma can be managed conservatively with a high success rate; however there are some cases managed operatively from the first or after failure of conservative treatment. This depends on many factors; general condition of the patient; hemodynamic stability, mode of trauma, physical examination of child which may reveal abdominal bruises as seat belt sign, investigations (laboratory and imaging), medical history of child and related injuries (chest condition, bone fractures, brain or spinal cord injuries) [(5)].

AIM OF THE WORK:

To analyse the value of conservative treatment versus early operative intervention for solid organs injury in the pediatric age group with blunt abdominal trauma.

PATIENTS AND METHODS:

The current retrospective study was conducted in Ain Shams University Hospitals (El-Demerdash), Ahmed Maher Teaching Hospital and Nasser Institute. Data of one hundred and forty pediatric patients with blunt abdominal trauma who attended the emergency pediatric surgery unit were followed up, collected and analyzed from January 2017 to December 2020. Patients were divided into two groups conservative group (A) operative group (B).

The study included pediatric patients with blunt abdominal trauma between 6 to 16 years old while pediatric patients with combined other systems injury or penetrating abdominal trauma were excluded from the study.

Ethical Considerations:

Approval was obtained from the ethical committee of the Department of General Surgery, Faculty of Medicine, Ain Shams University.

Study Tools:

All patients have been subjected to:

Full Clinical Assessment:

All pediatrics patients underwent full clinical assessment which starts with ABCDE:

A. Airway maintenance with cervical spine (C-spine) protection.

B. Breathing and ventilation.

C. Circulation with hemorrhage control.

D. Disability (evaluation of neurologic status).

E. Exposure (complete visualization)/ environmental control (prevention of

hypothermia) to detect haemodynamic stability and consciousness level.

Lab investigations:

CBC, kidney function test, liver function test, serum electrolytes, and pancreatic enzymes were ordered for all patients.

Radiological investigations:

Erect X-ray, FAST, and double contrast CT were done to detect grades of organ injuries.

Details:

All pediatric patients with blunt abdominal trauma attending the emergency unit underwent full clinical assessment to detect haemodynamic stability and consciousness level.

- If the patient is haemodynamic stable, evaluation of the abdomen begins with inspection for external signs of injury such as open wounds, or significant bruising of the abdominal wall. Palpation of the abdomen is used to assess for tenderness and peritoneal signs. Although not all patients with an abdominal injury complain of tenderness, peritoneal signs may be present if there was bowel injury.
- Laboratory investigations were ordered including; CBC, liver function tests, pancreatic enzymes, kidney function tests, and ABG.
- After clinical examination, FAST was ordered for all cases.
- If there was clinical suspicion of intra-abdominal organ injury, or the US showed free fluid collection, CT with contrast is ordered.
- If CT was free, and the patient was stable, he can be discharged home(not included in the study), if hollow organ injury was confirmed, laparotomy is done.
- If solid organ injury was confirmed, we depended more on hemodynamic stability of the patient more than the grade of organ injury. Grades I to III are managed by non-operative management more successfully than Grades IV and V.

Non-operative management includes:

1. Fluid resuscitation with normal saline according to age with main target to keep within normal blood pressure values.
2. Blood transfusion which can be started when Hb below 7mg/dl or when patient is symptomatic up to 40ml/kg of PRBCs.
3. Analgesia is important and multimodal analgesic model of pain control using acetaminophen(10–15 mg/kg orally four to six hourly) and NSAIDs can help reduce opioids required to treat pain.
4. Bed rest.
5. Serial labs: Hb at 6hrs then at 12/24 hrs others labs as liver function test, kidney function test and pancreatic enzymes according to injured organ.
6. US examination follow-up every 12 hrs.

I. If a patient is vitally stable with no decrease in hemoglobin nor increase of intra-abdominal collection this means successful management .But when there is deterioration of the general condition, marked decrease of haemoglobin or increase of intraperitoneal collection, so this means failure of nonoperative management.

II. If patient is haemodynamic unstable first of all do resuscitation with 20ml/kg normal saline twice and reassess patient after each time, if stable then patient complete investigations with good observation, but if there is no improvement on hemodynamic stability then resuscitate with blood transfusion 20ml /kg of packed red blood cell twice and reassess after each time, if no improvement then laparotomy but when there is improvement complete investigations with close observation.

Statistical analysis

The collected data was, tabulated, and statistically analyzed using SPSS program (Statistical Package for Social Sciences)

software version 26.0, Microsoft Excel 2016 and MedCalC program software version 19.1

Descriptive statistics were done for numerical parametric data as mean±SD (standard deviation) and minimum & maximum of the range and for numerical non parametric data as median and 1st& 3rd interquartile range, while they were done for categorical data as number and percentage.

Inferential analyses were done for quantitative variables using independent t-test in cases of two independent groups with parametric data and Mann Whitney U in cases of two independent groups with non-parametric data.

Receiver operating characteristic (ROC curve) analysis was used to find out the overall predictivity of parameter in and to find out the best cut-off value with detection of sensitivity and specificity at this cut-off value.

Inferential analyses were done for qualitative data using Chi square test for independent groups. The level of significance was taken at P value <0.05 is significant, otherwise is non-significant. The p-value is a statistical measure for the probability that the results observed in a study could have occurred by chance.

RESULTS:

I- Demographic criteria

1. Age:

The age of the studied cases ranged from 6 to 16 years with mean age 9.96± 2.41 years as shown in **table (1).**

Table (1): Range of age among the studied cases.

Parameters		Studied cases (n=140)
Age (years)	Mean± SD	9.96± 2.41
	Median (IQR)	10.0
	Range	6.0- 15.0

SD: Standard deviation.

2. Gender:

Males outnumbered females as out of 140 cases, 105 were males (75%) and 35 were females (25%). The male to female ratio was 4:1.

3. Residence:

The majority of cases (65%) were living in rural areas, while 49 (35%) were living in rural areas.

II- Cause of injury:

Our results show that the cause of injury in 30.7% of cases were due to road traffic accidents (RTA), 21.4% of cases were due to falling from height, Polytrauma represented 22.1% of cases and crush injuries represented 10.7% of cases. The causes were unknown in 15% of cases as shown in **table (2).**

Table (2): Distribution of the studied cases as regard cause of injury.

Parameters		Studied cases (n= 140)	
		No.	%
Cause of injury	Traffic accident	43	30.7%
	Fall	30	21.4%
	Polytrauma	31	22.1%
	Crush injuries	15	10.7%
	unknown	21	15.0%

III- Clinical examination:

Clinical examination elements included in the study are consciousness level, Glasgow Coma Score, pulse, systolic blood pressure, diastolic blood pressure, temperature and respiratory rate as shown in **table (3).**

The study reveals that (mean systolic BP,HB and HCt%) in group (A) is higher than group (B). Which indicates more hemodynamic stability as shown in **table (5).**

Table (3): Examination done to study cases.

Parameters		Studied cases (n= 140)	
		No.	%
Conscious level	Unconscious	20	14.3 %
	Partially conscious	45	32.1 %
	Fully conscious	75	53.6 %
Glasgow Coma Score	Mean± SD	12.5± 3.41	
	Median (IQR)	15 (10- 15)	
	Range	4-15	
Pulse	Mean± SD	101.33± 23.4	
	Median (IQR)	102.5 (80.25- 121.75)	
	Range	60- 140	
Systolic BP	Mean± SD	120.6± 13.9	
	Median (IQR)	120 (110- 130)	
	Range	100 -140	
Diastolic BP	Mean± SD	65.07± 11.02	
	Median (IQR)	60 (60 - 77.5)	
	Range	50- 80	
Temperature	Mean± SD	37.27± 0.48	
	Median (IQR)	37.3 (36.8- 37.7)	
	Range	36.5- 38.1	
Respiratory rate	Mean± SD	21.08± 5.53	
	Median (IQR)	21 (16- 26)	
	Range	12- 30	

IV- Laboratory Investigation:

Table (4) shows the mean, standard deviation, median and range of laboratory tests done for studied cases

Table (4): Laboratory data of studied cases

	Mean	SD	Median	Minimum	Maximum
PH	7.40	.03	7.40	7.35	7.45
PCO2	40.04	3.08	40.00	35.00	45.00
PO2	92.54	4.70	93.00	85.00	100.00
HCO3	23.93	1.43	24.00	22.00	26.00
BE	-.12	1.39	.00	-2.00	2.00
O2%	95.01	3.13	95.00	90.00	100.00
Hg (g/dL)	10.89	1.24	10.80	9.00	13.00
Hct%	37.00	4.39	37.00	30.00	44.00
RBC (*10^12/L)	4.04	.81	4.00	3.00	5.00
Platelets (*10^9/L)	317.21	88.53	320.00	150.00	450.00
Neutrophils (*10^9/L)	7.62	2.02	7.70	4.10	11.00
Lymphocytes (*10^9/L)	3.15	1.04	3.00	1.50	5.00
Eosinophils (*10^9/L)	.78	.22	.80	.40	1.10
Urea (mg/dL)	32.60	4.89	32.60	24.50	46.50
Creatinine	1.23	.09	1.22	1.06	1.47
ALT	31.82	28.21	24.00	15.00	148.00
AST	35.90	28.60	26.00	15.00	160.00
Random blood glucose	114.53	14.77	113.00	90.00	140.00

Table (5): Comparison between the two studied groups regarding clinical examination and laboratory data.

	Conservative treatment (No. = 130)	Surgical treatment (No. = 10)	P-value	Significance
	Mean± SD	Mean± SD		
Age (years)	8.53± 4.85	9.12± 1.41	0.702	N.S
Glasgow Coma Score	12.85± 3.41	12.03± 0.84	0.451	N.S
Pulse	101.33± 23.4	101.33± 23.4	0.573	N.S
Systolic BP	100.66± 3.60	86.2 ± 2.90	0.044	Significant
Diastolic BP	64.07± 9.42	62.07± 2.15	0.505	N.S
Temperature	37.36± 0.48	37.01± 0.01	0.023	Significant
Respiratory rate	21.45± 2.75	20.54± 6.45	0.377	N.S
O2%	95.21± 3.25	94.95± 4.26	0.812	N.S
Hb (g/dL)	10.24± 1.25	8.23± 4.57	0.0004	Significant
Hct%	37.41± 3.58	28.54± 5.54	<0.001	Significan

*p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant, SD= standard deviation, N.S=not significant * Student T test and Mann-Whitney U test.*

V- Radiological investigations (CT scan):

CT scan of abdomen showed that 54.3% of cases had spleen injury, 45.7% cases had liver injury as shown in **table (6).**

Table (6): Distribution of the studied cases as regard type of injury detected by CT.

Parameters		Studied cases (n= 140)	
		No.	%
Type of injury	Liver injury 1-One case of Liver injury combined with urinary bladder rupture	64	45.7%
	Spleen injury 1- Two cases combined with renal injury. 2-One case combined with stomach rupture 3-Three cases combined with lower grades of liver injury.	76	54.3%

CT scan of the abdomen showed that out of 76 cases with spleen injury, the majority of cases (42.1%) of cases had grade II, while out of 64cases with liver injury, the majority of cases (40.6%) of cases had grade II as shown in **table (7).**

Also Comparison between the two studied groups regarding type of organ injury is shown in **table (8).**

Table (7): Distribution of the studied cases as regards CT injury grades.

Parameters		Studied cases (n= 140)	
		No.	%
Spleen injury (n=76)	Grade I	22	28.9%
	Grade II	32	42.1%
	Grade III	11	14.5%
	Grade IV	9	11.8%
	Grade V	2	2.6%
Liver injury (n=63)	Grade I	15	25%
	Grade II	26	40.6%
	Grade III	13	20.3%
	Grade IV	8	12.5%
	Grade V	1	1.5%

Table (8): Comparison between the two studied groups regarding type organ injury (CT).

Site		Treatment				P value
		Conservative treatment (No. = 130)		Surgical treatment (No. = 10)		
		№	%	№	%	0.123
	Liver injury	60	46.1%	4	40.0%	
	Spleen injury	71	54.6%	5	50.0%	
	Renal injury (two cases combined splenic injury)	1	0.7%	1	10.0%	

p≤0.05 is considered statistically significant, p≤0.01 is considered high statistically significant.

VI- Radiological investigations (FAST):

Abdominal US was performed and showed that there was free fluid identified within the US in 77.9% of cases, 45% of cases had spleen injury, 35% cases had liver injury, kidney injury represented 0.7 of cases.

VII- Management:

92.9% of patients (130 cases) were provided conservative treatment and 7.1% of patients were treated surgically (110 cases) as shown in diagram (1).

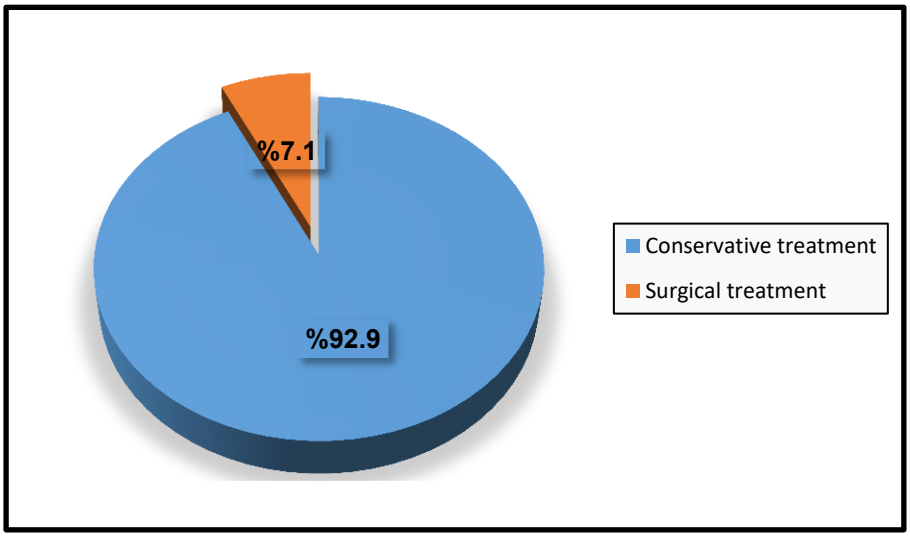

Diagram (1): Distribution of management among the studied cases.

VIII- Period of hospital stay:

The period of hospital stay of the studied cases ranged from 1 to 15 days with a mean period of 11.65 ± 2.32 days as shown in **table (9).**

As shown in **table (10)** period of hospital stay in group (A) is less than group (B).

Table (9): Period of hospital stay among the studied cases.

Parameters		Studied cases (n=140)
Period of hospital stay	Mean± SD	11.65 ± 2.32
	Median	12.0
	Range	1.0 - 15.0

Table (10): Comparison between the two studied groups regarding period of hospital stay.

	Conservative treatment (No. = 130)	Surgical treatment (No. = 10)	P-value	significance
	Mean± SD	Mean± SD		
Period of hospital stay	9.35 ± 3.32	11.65 ± 1.84	0.033	Significant

IX- Final outcome:

As shown in **table (11&12),** 21.4% of cases needed blood transfusion, 37.9% of cases needed ICU admission and 27.9% of cases needed mechanical ventilation. Regarding mortality, 5.7% of cases died.

There were ten cases (7.1%) underwent surgical intervention.

- Three underwent splenorrhaphy after 24 hours of admission.
- Three underwent splenectomy just after admission.
- One case underwent laparoscopic surgery due to a combined ruptured bladder combined with liver injury grade II.
- One underwent angioembolization of the renal artery combined with splenic injury grade I.
- One underwent laparotomy for uncontrolled bleeding of the liver.
- One underwent laparotomy due to a stomach rupture combined with splenic injury garde II.

Table (11): Distribution of the studied cases as regard outcome.

Parameters		Studied cases (n= 140)	
		No.	%
Final outcome	Surgical intervention	10	7.1%
	Conservative management	130	92.8%
	Blood transfusion	30	21.4%
	Need of ICU hospitalization	53	37.9%
	Need of mechanical ventilation	39	27.9%
	Mortality(two cases within group B)	2	1.4%

Table (12): Distribution of the studied cases as regards surgery done.

Parameters		Studied cases (n= 140)	
		No.	%
Surgery done	Splenorrhaphy	3	2.1%
	Splenectomy	3	2.1%
	Laparoscopic repair of ruptured bladder	1	0.7%
	Angioembolization of renal artery	1	0.7%
	Laparotomy: 1-Exploration and packing for uncontrolled liver bleeding. 2-Exploration and repair of rupture stomach combined with splenic injury.	2	1.4%

X- Comparative analysis between conservative treatment and surgical treatment:

Compared with 130 patients who underwent conservative treatment, patients in the surgical treatment group had a significantly lower systolic blood pressure and temperature compared to conservative treatment group ($p<0.05$).

Likewise, there was a significant drop in hemoglobin and hematocrit in the surgical treatment group compared to conservative treatment group ($p<0.05$).

Periods of hospital stay were significantly higher in the surgical treatment group compared to conservative treatment group ($p<0.05$).

There was a statistically significant difference between the two studied groups regarding conscious level.

Blood transfusion, need of ICU hospitalization, need of mechanical ventilation and mortality were significantly higher in the surgical treatment group compared to conservative treatment group ($p<0.05$) as shown in diagram (4).

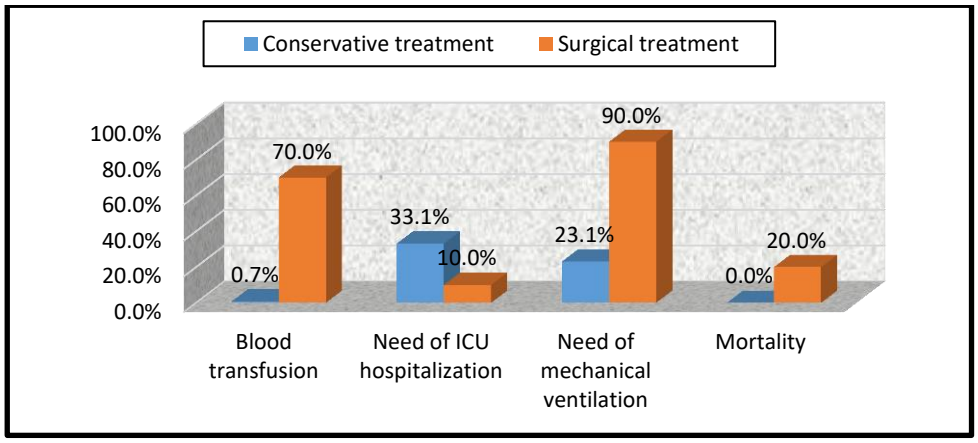

Diagram (2): Comparison between the study groups regarding outcome.

DISCUSSION:

The leading cause of morbidity and mortality in children older than 1 year is trauma. In approximately 25% of pediatric patients with major trauma, abdominal injury is present. More than 90% of injuries in children older than 1 year are the result of a blunt traumatic mechanism, with the spleen being the most commonly injured organ **(6).**

Management of pediatric trauma has unique challenges. The developmental stage of the patient, a lack of verbal skills in younger patients, and a lack of prehospital information create limitations in managing the injured child. Similar to their adult counterparts, children can have an unreliable abdominal examination from an associated head injury and a decreased Glasgow Coma Scale (GCS) score. Additionally, children are more likely to have an unreliable abdominal examination secondary to crying and abdominal distension**(2).**

The age of patients range from 6 years to 16 years with mean age 9.96 ± 2.41 years. Males outnumbered females, as out of 140 cases, 105 were males (75%), and 35 females (25%). The male to female ratio was 4:1.

Our study was similar to **Ameh et al. (7)** study that was conducted on 57 patients with mean age of 9 years old, 45 males and 12 females. The male to female ratio was 3.75:1.

Our results show that the cause of injury in 30.7% of cases were due to road traffic accidents (RTA), 21.4% of cases were due to falling from height, polytrauma represented 22.1% of cases, and crush injuries represented 10.7% of cases.

The causes were unknown in 15% of cases in comparison with **Ameh et al. (7),** which noted that the commonest causes of injury were RTA (57%), 88% in pedestrians and 59% in children aged 5–9 years. Falls were the cause of trauma in 36%, 60% of them aged 10–15 years. Other causes of injury were due to sports in 5% and animals in 2%.

In our study, a CT scan of the abdomen showed that 54.3% of cases had spleen injury, 45.7% of cases had liver injury, kidney represented injury in 1.4% of cases. Also CT scan of the abdomen showed that out of 76 cases with spleen injury, the majority of cases (42.1%) grade II injury, while out of 64 cases with liver injury, the majority of cases (41.3%) of cases had grade II.

In a study conducted by **Fodor et al. (8),** data of 359 patients were collected. CT scan showed that 48.9% of cases had splenic injury; the majority of cases (27.1%) had grade II injury, while liver injury ratio was 43.9%, and the majority of cases (27.1%) had grade III injury.

As reported by another study conducted by (Coley et al., 2000)based on 107 patients with abdominal trauma only 32 patients had CT documented injuries, FAST detected free fluid in 12 patients. Ten patients had solid organ injury but no free fluid and, thus, were not detected by FAST.

In our study FAST was performed and detected free fluid collection in 77.9% of cases, and it was able to detect 49 cases of liver injuries, 63 cases of splenic injuries and one cases of renal injury.

In our study, 92.9% of patients (130) underwent conservative treatment, 7.1% of patients (10) underwent surgical interferences

- Three underwent splenorrhaphy after 24 hours of admission.
- Three underwent splenectomy just after admission.
- Three underwent splenectomy just after admission.
- One case underwent laparoscopic surgery due to a combined ruptured bladder combined with liver injury grade II.

- One underwent angioembolization of the renal artery combined with splenic injury grade I.
- One underwent laparotomy for uncontrolled bleeding of the liver.
- One underwent laparotomy due to a stomach rupture combined with splenic injury garde II.

In this study 21.4 % of cases needed blood transfusion, 37.9% of cases needed ICU admission, 27.9% of cases needed mechanical ventilation, and sadly 5.7% of cases were deaths.

Our study is similar to another study conducted by **Medina et al.** [(9)] who included 70 patients in the study. Three cases were derived from immediate surgery; 2 patients due to hemodynamic instability at admission and 1 due to clear signs of peritoneal irritation.

Thus, of the remaining 67 patients (95.7%), non-operative management was supported by serial diagnostic imaging and clinical follow-up. Some other patients required blood transfusion, and 4 hepatic trauma patients required arteriography and embolization.

Of the 67 patients who received non-operative management, 9 patients (12.9%) failed to be managed conservatively; 8 of them were due to hemodynamic instability and 1 due to peritoneal irritation secondary to associated hollow viscus lesions.

The period of hospital stay of the studied cases ranged from 1 to 15 days with mean period of 11.65 ± 2.32 days similar to a study conducted by **Fodor et al.** [(8)] that has a median duration of hospital stay of 14 days (SD 20.2) with a range of 0–382 .

Conclusion:

The present study confirmed the effectiveness of NOM in patients with liver and splenic injuries, suggesting a safe and effective therapeutic approach. According to these findings, the majority of patients can be treated with NOM in a less invasive manner, avoiding unnecessary laparotomies. Hemo-dynamic stability together with injury grading scale will provide a good plan for management.

FAST can adequately detect hemoperitoneum; however, up to one-third of intra-abdominal injuries in children do not cause hemoperitoneum and are undetectable by ultrasound. A negative FAST in children is not sufficient to rule out intra-abdominal injury. In any child with a concerning mechanism of injury or examination findings, other diagnostic tests and serial examinations should be obtained to evaluate for intra-abdominal injury further.

Abdominal CT scanning is considered the reference standard diagnostic test for evaluating hemodynamically stable patients for possible injury However, there is always concern regarding radiation exposure and risk for subsequent lethal malignancies.

Overall, national and regional safety measures resulted in a significantly decreased severity of observed injury patterns and deaths due to blunt.

REFERENCES:

1. Baren, J.M. (2008). Pediatric emergency medicine. Elsevier Health Sciences.
2. Schonfeld, D., & Lee, L. K. (2012). Blunt abdominal trauma in children. Current opinion in pediatrics, 24(3), 314-318.
3. Stawicki, S.P. (2017). Trends in nonoperative management of traumatic injuries-A synopsis. International journal of critical illness and injury science, 7(1), 38.
4. Scaife, E. R., Rollins, M. D., Barnhart, D. C., Downey, E. C., Black, R. E., Meyers, R. L., & Fenton, S. J. (2013). The role of focused abdominal sonography for trauma (FAST) in pediatric trauma evaluation. Journal of pediatric surgery, 48(6), 1377-1383.
5. Okuş, A., Sevin9, B., Ay, S., Arslan, K., Karahan, O., & Eryilmaz, M. A. (2013).

Conservative management of abdominal injuries. Turkish Journal of Surgery/Ulusal cerrahi dergisi, 29(4), 153.

6. Borse, N. and Sleet, A.D. (2009). "CDC Childhood Injury Report: Patterns of Unintentional Injuries Among 0-to 19-Year Olds in the United States, 2000-2006." Family & Community Health: The Journal of Health Promotion & Maintenance.
7. Ameh, E. A., Chirdan, L. B., & Nmadu, P. T. (2000). Blunt abdominal trauma in children: epidemiology, management, and management problems in a developing country. *Pediatric surgery international*, *16*(7), 505-509.
8. Fodor, M., Primavesi, F., Morell-Hofert, D., Haselbacher, M., Braunwarth, E., Cardini, B., & Stättner, S. (2018). Non-operative management of blunt hepatic and splenic injuries–practical aspects and value of radiological scoring systems. *European Surgery*, *50*(6), 285-298.
9. Medina, A. E., Uribe, C. H. M., Marín, V. M. V., Montoya, J. A. M., & Aguillón, D. F. (2017). Associated factors to non-operative management failure of hepatic and splenic lesions secondary to blunt abdominal trauma in children. *Rev Chil Pediatr*, *88*(4), 470-477.

دراسة مقارنة بين العلاج التحفظي والتدخل الجراحي المبكر إصابة الأعضاء المصمتة بعد إصابات البطن الرضية في الأطفال

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المقدمة: إن إصابات البطن الرضية من الأمور الشائعة عند الأطفال. حيث أن البطن هى المكان الأكثر شيوعاً للإصابات المميتة التى لم يتم التعرف عليها باكراً لدى الأطفال المصابين.

الهدف من الدراسة: رصد وتحليل فاعلية العلاج التحفظى بالمقارنة مع التدخل الجراحى المبكر للأطفال المصابين بكدمات رضية بالبطن.

المرضى وطرق البحث: أجريت الدراسة من خلال جمع بيانات من مجموعة عشوائية لـ ١٤٠ طفلاً تتراوح أعمارهم بين ٦ إلى ١٦ عامًا ممن تعرضوا للإصابات الرضية بالبطن وذلك خلال الفترة من يناير ٢٠١٧ إلى ديسمبر ٢٠٢٠ بمستشفى جامعة عين شمس ومستشفى أحمد ماهر التعليمي ومعهد ناصر. وقد خضع جميع المرضى للفحص الإكلينيكى وتقييم العلامات الحيوية وإجراء الفحوصات المخبرية اللازمة وإجراء فحص بالموجات فوق الصوتية على البطن بقسم الطوارئ. كما تم إجراء التصوير المقطعية للبطن والحوض على المرضى ذوى الحالات المستقرة أو بعد استقرار حالتهم.

النتائج: أظهرت الدراسة أن فترات الإقامة في المستشفى والحاجة لنقل الدم والاستشفاء في وحدة العناية المركزة ، وأجهزة التنفس الصناعى؛ وبالإضافة إلى ذلك، فقد كانت الوفيات أعلى بشكل ملحوظ في المجموعة التى خضعت للعلاج الجراحي مقارنة بالمجموعة التى خضعت للعلاج التحفظى. وأظهر البحث نجاح العلاج التحفظى في علاج إصابات البطن الرضية وخاصة الإصابات ذات الدرجة المنخفضة فى الطحال والكبد، وأن العلاج التحفظى كان آمناً وأقل تكلفة مقارنة بالتدخل الجراحي. كما ندعم التوسع في استخدام الأشعة التداخلية عند الأطفال.

الخلاصة: أكدت الدراسة الحالية فعالية العلاج التحفظى في المرضى الذين يعانون من إصابات الكبد والطحال. وفقًا لهذه النتائج ، يمكن علاج غالبية المرضى باستخدام العلاج التحفظى، وتجنب العمليات الجراحية غير الضرورية، حيث أن قياس العلامات الحيوية بجانب درجة الإصابة سيوفر خطة علاج جيدة للمريض.