Discriminative value of conservative management of blunt abdominal trauma

THESIS
SUBMITTED FOR THE PARTIAL FULFILLMENT
Of MD. Degree in GENERAL SURGERY

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AIN SHAMS UNIVERSITY
2015

بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgment

First of all, the great thanks to **Allah** the greatest ; who enable me to complete this work.

Many thanks to **prof.Dr. Ahmad alaa Edeen aAbdel Mageed,** professor of surgery, faculty of medicine, Ain Shams university , for his supervision and help in completing this work.

Special thanks to **Prof. Dr. Mohammad El Said El Shenawy,** assist. Professor of surgery, faculty of medicine, Ain Shams university , for his kindness, effort and generous advice.

I also express my appreciation and thanks to **Dr. Mohammad Ali Nada**, lecturer of surgery, faculty of medicine, Ain Shams university , for his unlimited support,his keen Supervision and his continuous guidance to develop this work.

My special thnks to my family, without their support this work would not have seen.

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AAST	American association for the surgery of Trauma
AIS	Abbreviated injury scale
BAT	Blunt Abdominal Trauma
CT	Computed Tomography
DPL	Diagnostic Peritoneal Lavage
ED	Emergency Department
FAST	Focused Abdominal Sonogram For Trauma
GCS	Glasgow Coma Scale
ICU	Intensive Care Unite
ISS	Injury Severity Scores
OIS	Organ Injury Scale
OPSI	Over Whelming Post Splenectomy Infection
SNOM	Selective Non Operative Management
SP	Survival Probability

Introduction

Trauma remains the most common cause of death for all age groups between the age 1-44 years and it is the third most common cause of death regardless of age**. (Walter. 2010).**

Ten percent of trauma deaths results from abdominal injuries which may be blunt in 84% of cases or penetrated in 16%. Early detection of these life threatening injuries is the most important factor in decreasing incidence of death due to intra-abdominal trauma**. (Soynucu, et al., 2007)**

The most commonly injured organs are liver, spleen, kidney, small bowel, diaphragm, urinary bladder and pancreas. **(Udeani., et al.,2008)**

Blunt abdominal injury is caused by one or combination of the following forces, direct impact, acceleration deceleration injuries, rotational and shear forces, all these mechanisms depend on the mode of energy transfer. **(Trunkey., 1992) .**

The abdomen is a diagnostic black box. Fortunately with few exceptions, it is not necessary to determine which intra-abdominal organs are injured, only whether an exploratory laparotomy is necessary. Physical examination of the abdomen is unreliable in making this determination, and drugs, alcohol, and head and spinal cord injuries complicate clinical evaluation. However the presence of abdominal rigidity or hemodynamic compromise is an indication for prompt surgical exploration. For the

remainder of patients, a variety of diagnostic approach are applied for blunt abdominal trauma**.(Walter L.,2010)**

Diagnostic peritoneal lavage (DPL), focused abdominal sonography for trauma (FAST) and computed tomography (CT) are typical tests used for abdominal evaluation in trauma;focused abdominal sonography for trauma (FAST) has been shown to be as accurate as diagnostic peritoneal lavage and CT in detection of haemo-peritoneum after abdominal trauma. **(Chang., et al.,2005)**

Blunt abdominal trauma initially is evaluated by focused abdominal sonography for trauma (FAST) examination and this has largely supplanted diagnostic peritoneal lavage (DPL). Focused abdominal sonography for trauma (FAST) examination is used to identify free intra-peritoneal fluid in Morrison s pouch, the left upper quadrant, and pelvis. Although this method is exquisitely sensitive for detecting intra-peritoneal free fluid of more than 250 ml it does not reliably neither determine the source of hemorrhage nor grade solid organ injuries. Patients with fluid in focused abdominal sonography for trauma (FAST) examination are considered appositive FAST and those who don't have immediate indication for laparotomy, undergo CT scanning to quantify their injuries**.(Walter.,2010)**

CT imaging is the diagnostic tool of choice for evaluation of abdominal injury due to blunt abdominal trauma in haemodynamically stable patients CT scan can provide a rapid and accurate appraisal of the abdominal viscera, retro-peritoneum and abdominal wall.**(Hassan and Aziz.,2010)**

Follow up CT is useful to help making clinical decisions when adopting a conservative approach, it allows adequate assessment of retroperitoneal structures and this is a major advantage over other modalities. Furthermore it allows the assessment of blood perfusion of different organs**.(Eiton.,2005)**

The presence of free intra-peritoneal fluid in blunt abdominal trauma in absence of detectable solid organ injury creates a clinical dilemma. There is a probability of 25% of missing bowel lesion. DPL is advised in that situation if a conservative approach is advocated. **(Rodriguez , et al.,2002).**

Nowadays, conservative treatment is preferred in cases of blunt abdominal trauma as 80% liver injury; more than 50% splenic and virtually all renal injury are managed non operatively**.(*Aech*er.,1996)**

AIM OF THE WORK

This work aims to evaluate the success of the conservative (non-operative) management as a line of management of stable or easily stabilized blunt abdominal trauma patients and to identify its complications.

Abdominal anatomic boundaries:

The diaphragm

The diaphragm is a musculo-membranous entity separating the thorax from the abdomen. The muscular part originates anteriorly from the xiphoid process, laterally from the inner surface of the six lower cartilages, and posteriorly from the medial and lateral lumbo-sacral arches, the median arcuate ligament, and the bodies of the three upper lumbar vertebrae. The muscular part inserts on the central tendon. ***(Moore et al, 2010)***

Surface landmarks of abdominal wall *(Keith and Anne, 2007)*:

- ***Xiphoid process***

This is the thin cartilaginous lower parts of the sternum.
The xiphoid junction is identified by feeling the lower edge of the body of the sternum and it lies opposite the body of 9^{th} thoracic vertebrae.

- ***Costal margin***

This is the curved lower margin of the thoracic wall and is formed in front by cartilages of the 7^{th}, 8^{th}, 9^{th}, 10^{th} ribs and behind by the cartilages of 11^{th} and 12^{th} ribs. It lies opposite the body of 3^{rd} lumbar vertebra.

- ***Iliac crest***

This can be felt along entire length and ends in front at the anterior superior iliac spine (ASIS) and behind at the posterior superior iliac spine (PSIS). It highest point lies opposite the body of 4^{th} lumbar vertebrae.

- ***Pubic tubercle***

It's important surface landmark, it may be identified as small protuberance along the superior surface of the pubis.

- ***Symphysis pubis***

It's the cartilaginous joint that lies in the midline between the bodies of the pubic bones. It's felt as solid structure beneath the skin in the midline at the lower extremity of anterior abdominal wall.

- ***Inguinal ligament***

This ligament lies beneath skin crease in the groin. It's the rolled inferior margin of the aponeurosis of external oblique muscle. It's attached laterally to the anterior superior iliac spine (ASIS) and it curves downward and medially to be attached to the pubic tubercle.

Abdominal regions (Standring, 2008):

There are two vertical and two horizontal planes divide the abdomen into nine regions.

The vertical plane:

They are right and left lateral planes each is drawn vertically from the mid-clavicular point to mid-inguinal point.

The horizontal plane

I. Sub-costal plane: It is drawn transversely at the lowest points of the costal margin, at the lower border of the 10^{th} costal cartilage (level with the body of L_3 vertebra).