Role of laparoscopy in abdominal Trauma Patients

Thesis

Submitted for partial fulfillment of Master Degree in General Surgery

Presented by

Mina Romany Zarif Tawfeek

(M.B.B.Ch)

Under Supervision of

Prof. Dr/ Ashraf Omar Mahmoud Ali

Professor of General Surgery
Faculty of Medicine
Ain Shams University

Prof. Dr/ Mohamed Abd El Monem Abd El Salam Rizk

Associate professor of Vascular and General Surgery
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
2019

Acknowledgements

First, thanks are all directed to ***ALLAH,*** *for blessing this work until it has reached its end, as a part of generous help throughout my life.*

It is with immense gratitude that I acknowledge the support and help of ***Prof. Dr./ Ashraf Omar Mahmoud Ali,*** *Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his meticulous supervision guidance, effort and great support during various phases of the study. I really have the honor to complete this work under his supervision.*

I am profoundly grateful to ***Prof. Dr./ Mohamed Abd El Monem Abd El Salam Rizk,*** *Associate professor of Vascular and General Surgery, Faculty of Medicine, Ain Shams University, for his faithful guidance and the efforts and time he has devoted to accomplish this work.*

Last but not the least, I would like to thank my dear ***Parents*** *and my beloved supportive* ***Wife*** *who encouraged me spiritually throughout writing this thesis and guided me throughout my life. Without their kind help and support this work could not have come to completion.*

Mina Romany Zarif Tawfeek

Contents

List of Abbreviations

Abbrev.	Full-term
ATLS	**:** Advanced trauma life support
BAT	**:** Blunt abdominal trauma
B-HCG	**:** B-human chorionic gonadotropin
CCR	**:** Cell count ratio
CT	**:** Computed tomograghy
DL	**:** Diagnostic laparoscopy
DPL	**:** Diagnostic peritoneal lavage
DTI	**:** Direct trocar insertion
EL	**:** Exploratory laparotomy
FAST	**:** Focus abdominal sonography for trauma
Fig.	**:** Figure
GCS	**:** Glasgow coma scale
GI	**:** Gastro-intestinal
GSW	**:** Gunshot wound
GUT	**:** Genitourinary tract
HVI	**:** Hollow viscus injury
IVC	**:** Inferior vena cava
LAA	**:** Laparoscopic assisted
LOS	**:** Length of stay
MVA	**:** Motor vehicle accident
NOM	**:** Non operative management

OIS **:** Organ injury scaling

PAT **:** Penetrating abdominal trauma

PE **:** Plain erect

RPH **:** Retro-peritoneal hematoma

SE **:** Subcutaneous emphysema

SSI **:** Surgical site infection

TL **:** Trauma laparoscopy

US **:** Ultrasonography

VGE **:** Venous gas embolism

VN **:** Veress needle

WBCs/RBCs Ratio : White blood cells / Red blood cells ratio

List of Tables

List of Figures

Introduction

Trauma is the leading cause of mortality in patients under 35 years old worldwide, and poses a major challenge to health care providers. Although geographical variations exist, blunt trauma accounts for 78.9 to 95.6 % of injuries around the globe. Between 9 and 14.9 % of all trauma cases involve the abdomen ***(Serg et al., 2005).***

Laparotomy is the standard approach for abdominal trauma but is associated with morbidity ranging from 20 to 22 % to 41.3 %, particularly when explorative laparotomy is negative ***(Sosa et al., 1995).***

Non-therapeutic operations or negative laparotomies for penetrating trauma carry a significant complication rate with mortality of up to 5 % and morbidity as great as 20 % ***(Shih et al., 1999).***

With technical developments in imaging, and advances in surgical techniques, the rate of negative and therefore unnecessary laparotomy has been reduced. Laparoscopy in trauma can potentially further decrease the negative laparotomy rate ***(Zantut et al., 1997).***

Although several diagnostic methods are available for evaluation of trauma patients, prompt recognition of

intraabdominal injury still poses a significant clinical challenge, particularly in patients with diaphragmatic, mesenteric and/or small bowel injury. The presence of free fluid in the abdomen without evidence of any organ injury must be clarified ***(Rodriguez et al., 2002).***

Although the noninvasive methods provide high-quality information, there is still a degree of diagnostic uncertainty with blunt abdominal trauma, especially when the gastrointestinal tract, pancreas, and diaphragm are involved. This uncertainty in the diagnostic process was, and is, an important justification for exploratory laparotomies undertaken to avoid missed injuries. A considerable number of these laparotomies are unnecessary or nontherapeutic and have corresponding morbidity ***(Leppäniemi et al., 1995).***

Now, diagnostic and therapeutic laparoscopy for blunt and penetrating abdominal injuries could reduce the rate of non-therapeutic laparotomy to 1.8 % ***(Johnson et al., 2013).***

Patients who will undergo therapeutic laparoscopy for resolution of their abdominal trauma injuries will have decreased hospital stay, less wound infection, less post-operative pain, better cosmetic result and earlier ambulation ***(Lin et al., 2015).***

Initially, the evaluation of peritoneal violation in hemodynamically stable patients was seen as the greatest benefit of laparoscopy for trauma. Improvements in laparoscopic training and technology have enabled an increase in the use of diagnostic and therapeutic procedures in trauma patients ***(Fabian et al., 1993).***

Despite these clear potentialities, laparoscopy has not yet gained wide acceptation and it is not consistently performed in trauma patients. There are several reasons for this:

1. In bleeding, or potentially bleeding patients, timing is of essence. The logistics for laparoscopy set up of theatre still takes longer than for open surgery. Once the operation has started it takes longer to gain access, identify the bleeder and, especially, control it when compared to a trauma laparotomy.

2. In haemodynamically normal patients with spleen injuries a diagnostic laparoscopy may increase the splenectomy rate.

3. The risk of missing injuries (hollow viscus mainly) is high. This is very much operator dependent, but it may carry disastrous outcomes.

4. Logistics wise most trauma happens at night when staff may be less motivated to embark in a time consuming procedure ***(Bendinelli et al., 2012).***

Aim of the study

The aim of the study is to evaluate the role of laparoscopy in minimizing the complications of exploratory laparotomy, especially when the results of laparotomy comes negative.