Role of Laparoscopy in Management of Adhesive Intestinal Obstruction

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List of Abbreviation

ASA	**American Society of Anesthesiology**
ASBO	**Adhesive Small Bowel Obstruction**
BCl	**B-cell CLL/lymphoma**
CAM	**Cell adhesion molecules**
Clock	**Circadian locomotor output cycle kaput**
COX	**Cyclooxgenase**
Cry	**Cryptochrome gene**
CT	**Computed tomography**
HIF	**Hypoxia-induced factor**
ECM	**Extracellular matrix**
ICAM	**Intracellular adhesion molecule**
IFN	**Interferon**
IL	**Interleukin**
LAL	**Laparoscopie Adhesiolysis**
MMP-1	**Matrix metalloproteinase 1**
MRI	**Magnetic |Resonance Imaging**
NADP	**Nicotine adenine dinucleotide phosphate**
NK	**Natural killer**
NO	**Nitric oxide**
NOS	**Nitric oxide synthase**
NSAIDs	**Non steroidal anti-inflammatory drugs**
PAI- 1	**Plasminogen activator inhibitor-1**
Per	**Period gene**

PTFE	**Poly-tetra-fluoroethylene**
rtPA	**Recombinant tissue plasminogen activator**
SALS	**Single Port adhesiolysis surgery**
SBO	**Small Bowel Obstruction**
SCAR	**Surgical and Clinical Adhesions Research**
SCN	**suprachiasmaticm nucleus**
TAT	**Thrombin/antithrombin III complex**
SMA	**smooth muscle actin**
TIMP1	**Tissue inhibitor of metalloproteinase 1**
TF	**Tissue factor**
TGF-β	**Transforming growth factor-β**
tPA	**Tissue type plasminogen activator**
uPA	**Urokinase-like plasminogen activator**
VCAM	**Vascular cell adhesion molecule**
VEGF	**Vascular Endothelial Growth Factor**

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Introduction

Postoperative adhesions are almost invariable consequences of abdominal and pelvic surgery, no matter whether this performed open or laparoscopic technique. The most important morbidity is small bowel obstruction but other sequelae include female infertility, dyspareunia and increased risk of visceral injury at subsequent laparotomy or laparoscopy. ***(Ellis H et al, 2009)***

Peritoneal adhesions are pathological bands usually between omentum, loops of bowel and the abdominal wall. These bands may be a thin film of connective tissue, a thick fibrous bridge containing blood vessels and nerve tissue, or a direct contact between two organ surfaces. **(*Diamond MP et al, 2001)***

Peritoneal adhesions are mostly induced by surgical procedures in the peritoneal cavity and their prevalence after major abdominal procedures has been evaluated at 63% - 79%. Small bowel obstruction (SBO) is the most common complication of peritoneal adhesions. ***(Kössi J et al, 2003)***

Colorectal surgery has proved to be the most important type of surgery that may cause intra-abdominal adhesions. (***Lower AM et al, 2000***)

This surgery has the highest total number of inpatient episodes, inpatient days, operating time, theater time, and costs due to peritoneal adhesion-related intestinal obstruction. ***(Lower AM et al, 2000)***

A diagnosis of bowel obstruction is currently based on a patient's clinical history and physical condition in addition to radiographic analyses and routine blood tests. Common symptoms include constipation, abdominal distention, abdominal tenderness and persistent nausea and vomiting., Treatment options include medical management or surgical intervention ,but determination of the necessity and timing of surgery remains somewhat subjective. Patients whose diagnosis and/or treatment are delayed, risk the development of ischemic bowel with resultant increased morbidity and mortality. **(*Firoozma ND E et al, 2001)***

The initial evaluation of patients with clinical signs and symptoms of intestinal obstruction should include plain x-ray upright abdominal radiography. Radiography can quickly determine if intestinal perforation has occurred; free air can be seen above the liver in upright films or left lateral decubitus films. Radiography accurately diagnoses intestinal obstruction in approximately 60 percent of cases, and its positive predictive value approaches 80 percent in patients with high-grade intestinal obstruction. **(*Maglinte DD et al, 2003),***

However, plain abdominal films can appear normal in early obstruction and in high jejunal or duodenal obstruction. Therefore, when clinical suspicion for obstruction is high or persists despite negative initial radiography, non-contrast computed tomography (CT) should be ordered. **(*Stoker J. et al, 2009)***

It is important to accurately diagnose Small Bowel Obstruction due to adhesions because it may warrant a trial of conservative therapy unless signs of strangulation are present ***(Petrovic B. et al, 2006)***

Treatment options for adhesive small bowel obstruction include early surgery or conservative treatment. There is no consensus with regard to the best procedure to follow. **(*Williams et al, 2005)***

In the early days of laparoscopy, previous abdominal surgery was a relative contraindication to performing most laparoscopic procedures. Laparoscopic surgery to relieve bowel obstructions was not routinely performed. However, in 1991, Bastug et al reported the successful use of laparoscopic adhesiolysis for small bowel obstruction in one patient with a single adhesive band. Since then, many case series have documented this technique. **(*Nagle A.et al, 2004)***

The laparoscopic approach provides patients with the following benefits: less postoperative pain, decreased incidence of ventral hernia, fewer wound complications, reduced recovery time and return of bowel function, and shorter hospital stay. It also has been shown to decrease the incidence, extent, and severity of intra-abdominal adhesions as compared to open surgery, hence potentially reducing the rate to recurrent adhesive small bowel obstruction. ***(Tittel A et al, 2001)***

Several preventive agents against postoperative peritoneal adhesions have been investigated. Their roles are in activating fibrinolysis, hampering coagulation, diminishing the inflammatory response, inhibiting collagen synthesis, or creating a barrier between adjacent wound surfaces. **(*Schnüriger B.et al, 2011)***

Aim Of The Work

The aim of this work is to focus light on the magnitude of the adhesive intestinal obstruction in surgical practice, with emphasis on the pathogenesis of its formation, the diagnostic tools, and treatment options including recent methods and role of laparoscopy in adhesiolysis and the recent methods of its prevention .