Laparoskopie beim stumpfen Abdominaltrauma


Ergebnisse: Bei routinemäßiger Verwendung der Laparoskopie auch beim Abdominaltrauma kann eine Sensitivität von 90 bis 100 % erzielt werden. Dadurch besteht die Möglichkeit, die Zahl der unnötigen Laparotomien und die damit zusammenhängende erhöhte Morbidität zu senken.


Schlüsselwörter: Laparoskopie, Trauma, Bauchverletzungen, Diagnostik beim Abdominaltrauma.
Key words: laparoscopy, trauma, abdominal trauma, diagnosis of abdominal trauma.

Introduction

Minimally invasive techniques have assumed an important position in many areas of surgery but it has only been the developments of the last 15 years that have allowed laparoscopy and thoracoscopy to come into use as diagnostic and therapeutic methods in visceral trauma. A further important factor in this development is that laparoscopy has become a routine procedure in elective surgery and thus is used more frequently, even in the presence of difficult circumstances posed by visceral trauma.

In most industrialized countries, trauma is the most common cause of death in the younger population below the age of 50. About one-half of the deaths take place within minutes at the site of the accident; these are usually severe head and cardiovascular injuries. Thirty percent of the deaths occur within a few hours of the injury and the remaining 20% after days to weeks due to infections and multiorgan failure. In the second group, in which victims die within a few hours, conservative estimates indicate that some 20–30% of them could be saved with timely diagnosis and proper treatment. Laparoscopy has come to play an increasing role in this concept. It is primarily a diagnostic measure, but when feasible, it can also be applied therapeutically.

Although several diagnostic methods are available for evaluation of trauma patients, prompt recognition of intra-abdominal injury still poses a significant clinical challenge, particularly in patients who have no obvious indications for emergency surgery. The management of trauma patients should avoid delay, provide prompt diagnosis and appropriate treatment, and avoid complications.

Diagnosis with blunt abdominal trauma

Information on the nature and course of the accident can suggest the nature of the injuries. The clinical examination is an important part of the diagnostic work-up of trauma patients. Bruises and other marks on the body can point to organ injuries that may be present and should accordingly be carefully noted and examined. Laboratory tests provide essential information on the extent of organ injuries and bleeding.

After the clinical examination, there are two radiological examinations that owing to technological developments in the last two decades, have come to provide high-quality information. These are sonography and computer tomography (CT), both of which can be applied quickly and efficiently to trauma patients, whereby hemodynamic stability is a prerequisite for a CT.

Ultrasonography can be performed in the emergency room with handy scanners, usually by general or trauma surgeons. The Focused Assessment for the Sonographic Examination of the Trauma Patient (FAST) protocol is intended to determine the presence of free fluid in the abdominal cavity and assess its quantity and location [1]. It is noninvasive and nonstressful and can be repeated as necessary. With portable equipment, ultrasonography can be performed in emergency cases simultaneously with ongoing resuscitation without sedation, and it can also be done at the bedside without moving the patient. Rozyczki et al. [2] achieved a sensitivity of 83.3% and specificity of 99.7% in 1540 patients with blunt and penetrating injuries.

CT scan is noninvasive and can provide valuable supplemental information on the size, number, and extent of pathological changes. The findings can be determined very precisely and reproducibly. This method competes against ultrasound, which requires interpretation by an experienced operator at the time of scanning. With CT, the quality of scanning does not much depend on the experience of the person administrating it. CT has 97% sensitivity, 98% specificity, and 98% accuracy for peritoneal violation [3]. In detecting bowel injury, CT has an overall sensitivity of 94% and 96% in detecting mesenteric injury [4].

Both sonography and CT show a weakness in diagnosing injuries to the diaphragm: Mihos et al. [5] achieved a correct preoperative diagnosis in only 26% of 65 patients with a diaphragmatic injury, and in 74%, the diagnosis was made during the operation.

Why laparoscopy?

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 and pancreas are involved. This uncertainty in the diagnostic process was and is an important justification for exploratory laparotomies undertaken to avoid overlooked injuries. A considerable number of these laparotomies are unnecessary or non-therapeutic and have corresponding morbidity.

The literature shows that a variety of laparoscopic techniques are applicable to patients with abdominal trauma with good results. In a review by Villavicencio and Aucar, in two prospective studies screening laparoscopy for blunt trauma reported sensitivity of 90% to 100%, specificity of 86% to 100%, and accuracy of 88% to 100% [6]. In nine prospective series, screening laparoscopy for penetrating trauma reported sensitivity of 85% to 100%, specificity of 73% to 100% and accuracy of 80% to 100% with 2 procedure-related complications among 543 patients [6]. Diagnostic laparoscopy for blunt trauma reported sensitivity of 100%, specificity of 91%, and accuracy of 96%; for penetrating trauma, sensitivity of 80% to 100%, specificity of 38% to 86%, and accuracy of 54% to 89% [6]. Missed injuries with screening laparoscopy were 0.4% (6 of 1708 patients) and laparoscopy-related complications were 1.3% (22 of 1672 patients) [6]. Laparoscopy can prevent laparotomy in 63% of patients with a variety of injuries [6]. The laparoscopic approach avoids a negative laparotomy in 23–54% of stab wound and blunt abdominal trauma patients [7]. Laparoscopy is cost-effective when compared with negative laparotomy [8].

How to perform laparoscopy in trauma?

The positioning and preparation of the patient for trauma laparoscopy is essentially the same as for a trauma laparotomy. Conversion to conventional open approach to the thorax and abdomen should be possible.