

Treatment Strategies for Complications of Urological Laparoscopic Surgery

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Abstract: Since the mini-invasive era, the concept of minimally invasive surgery has been deeply implanted in the hearts of urologists and patients. The use of laparoscopic techniques as a major component of minimally invasive techniques has become increasingly widespread. Current urological laparoscopy has progressed from simple organ resection to highly reconstructive surgery. Although compared with traditional open surgery, laparoscopic surgery has the advantages of small incision, rapid postoperative recovery and good aesthetics, but it also has the disadvantages of complicated operation and long learning curve. Therefore, to avoid the complications of urological laparoscopic surgery, summarizing its related treatment strategy is very necessary. This paper combines the clinical practice of preoperative urologic surgery for laparoscopic surgery, and summarizes the treatment strategies for laparoscopic complications from preoperative preparation, treatment individuation, and related strategies during and after surgery.

1. Introduction

Laparoscopic surgery is characterized by less trauma, faster postoperative recovery, and good cosmetic results [1]. Since our department started the first laparoscopic surgery, its indications have expanded from simple surgical procedures such as decompression of renal cysts to highly complex and difficult reconstruction procedures such as full laparoscopic radical cystectomy and anteroposterior surgery. Neobladder and robotic laparoscopic removal of tumor embolus. However, throughout the country, the promotion and penetration of laparoscopic techniques remains unbalanced. While paying attention to many advantages of laparoscopic surgery, we found that with the increase in the application of laparoscopic techniques in urology, the related complications are still of concern. For this reason, how to reduce the occurrence of related complications while using the advantages of laparoscopic techniques has become a problem that needs to be solved. In combination with its own clinical practice, the research group summarized the treatment strategies for laparoscopic complications as follows: preoperative preparation, treatment strategies for intraoperative and postoperative complications, and individualization of treatment strategies.

2. Preoperative Preparation

Full and necessary preoperative preparation is undoubtedly the primary measure to avoid complications. For example, the differences in the signs of illness and patient individualization are different, and the classification of active and coagulation dysfunctions is controlled. Patients with obvious cardiopulmonary disease cannot tolerate regular pneumoperitoneum, need to inject nitrogen or open surgery [2]. For example, patients with previous history of abdominal surgery often have adhesions in the abdominal tissue, disorganized tissue planes, intestinal adhesions, etc., and timely adjustment of surgical procedures are required. Therefore, we advocate that patients must obtain prior informed consent from the patient's age, gender, sideline, body mass index, disease grading such as tumor stage or tumor size or degree of water, etc., such as through the abdominal or posterior abdominal cavity or Single laparoscope, laparoscopic surgery, operating room laparoscopic equipment conditions, surgical team, intraoperative necessary auxiliary equipment and instruments, etc., are all evaluated and formulated to suit the specific patient's own surgical plan. We advocate that if the patient has a history of abdominal surgery, the procedure can be performed via the retroperitoneal approach. If there is a history of posterior abdominal surgery, use an

intraoperative approach, for example, if the patient has undergone a secondary operation after retroperitoneal pyeloplasty, use the transperitoneal approach. way.

3. Intraoperative Complications

Inserting the puncture cannula is the first and key step in laparoscopic surgery. Studies have shown that 75% to 87.5% of large vessel lesions occur in the Veress Vertebral Needle or the first puncture cannula when passing through the abdominal cavity; Veress Pneumoperitoneum Needles and the first puncture cannula are laparoscopic. The most dangerous procedure during surgery, the complications in this process accounted for 40%, is also the most common cause of death of patients. The complications of puncture include vascular injury, intestinal damage and other injuries. Causes of laparoscopic puncture complications are: patient factors, surgical factors and puncture methods. Previous history of abdominal surgery, peritonitis, abdominal flatulence, and intestinal obstruction are important causes of complications associated with puncture in the abdominal surgical approach. At present, commonly used clinically placed first puncture cannula methods include Veress pneumoperitoneum needle technique, Hasson technique, safe trocar method, and conventional trocar puncture method. In the laparoscopic approach, the Veress pneumoperitoneum and safety puncture methods are the most commonly used. After laparoscopic surgery, conventional trocar puncture was used. The specific methods and points of puncture will not be described here. Only some of the anatomical problems of puncture will be introduced. We believe that when using Veress Vertebrate Abdomen, it is important to note that the umbilical skin to abdominal aortic bifurcation distance is an average of 5cm, puncture when the puncture sleeve tilted 45 degrees to the pelvic direction, do not deviate from the midline is to avoid damage to the abdominal aorta, under The key to vena cava and iliac vessels [3]. In order to avoid blood vessel and intestinal damage, if the patient can tolerate, the pneumoperitoneum pressure can be properly increased; pneumoperitoneum pressure can also be increased to 17mmHg (1mmHg=0.133kPa) when the puncture cannula is inserted. Hasson method is a small incision laparotomy to establish a pneumoperitoneum. It is currently the safest way to establish a pneumoperitoneum technique. The abdominal wall tissue must be incised and separated layer by layer until the peritoneum is opened and the abdominal cavity is opened. It is safer and more reliable than the Veress pneumoperitoneum needle technique. The incidence of related puncture complications is even lower, but the Hasson technique has the disadvantages of cumbersome operation and other shortcomings. We advocate the use of Hasson technology for patients with previous peritonitis, a history of peritoneal trauma, or a history of abdominal pelvic surgery. The common puncture complications of the retroperitoneal approach include bleeding through the puncture channel and peritoneal damage. Correct positioning of the puncture point is the most practical method to avoid related injuries: When the first puncture point is selected at the tip of the twelve ribs, the first puncture cannula insertion point must be clearly located at the lower edge of the 12 ribs, and it cannot be touched because of obesity. Patients with a definite 12 ribs can perform intraoperative ultrasound positioning. Our experience is that for obese patients who do not have easy access to the twelve ribs, a longitudinal incision parallel to the longitudinal axis of the body can be made along the posterior line of the costal margin rather than the conventional oblique incision along the costal margin, within the incision. Touching the tip of the twelve ribs extends the incision posteriorly. Of course, the first puncture hole can be established by the IUPU method, and the above damage can also be effectively avoided.

Vascular injury is the most common complication of urologic surgery for laparoscopic surgery. The overall incidence is between 0.5% and 3.0% [4]. The major vascular complications of vascular injury are the most serious complications of laparoscopic surgery. They mainly occur at the distal end of the main abdominal artery, the inferior vena cava, and its branches. Opitz et al [19] studied the complications of laparoscopic surgery and demonstrated that the major vascular injury is the most common complication leading to death; in the event of major vascular injury, the mortality rate is as high as 2.4%; in addition, the abdominal cavity. The rate of conversion of major vascular lesions to open surgery was 45%, which is the most common reason for laparoscopic conversion to open surgery. However, studies have shown that the probability of large-vessel injury associated with

laparoscopic surgery is low, ranging from 0.01% to 0.64% [5]; however, many scholars believe that the probability of macrovascular injury may be underestimated, for 25 laparoscopic surgery. According to expert surveys, 12 laparoscopic specialists experienced a total of 19 large vascular lesions during celiac surgery, 8 of which involved injury to the abdominal aorta. Laparoscopic treatment of vascular injuries tests surgeons for bravery and laparoscopic suturing techniques. Treatment of vascular injury can be generally used ligation clamp clip method, no damage suture suture method. For bleeding at the stump, whether in veins or arteries, Hem-o-lok ligation clips, absorbable clips, or titanium clip ligation are commonly used. Our consultation uses basic hospital procedures to stop bleeding with titanium clips. In the case of arterial or venous wall damage, if the bleeding is within a controllable range, such as by compressing or clamping a temporary hemostasis, allowing the surgeon the necessary time to prepare the suture, the suture can be used to stop the bleeding. Suture suture should be fixed at the end of the line 2 ~ 3cm a ligation clip such as Hem-o-lok clip, absorbable clip or titanium clip can be sutured after the first needle suture, do not sew directly stitched second needle, Continuous suturing until the entire vessel is sutured, can be retrograde sutured to the first needle, and finally knotted. If the external iliac artery is damaged by large blood vessels, hemostasis is required immediately. If the bleeding cannot be effectively controlled depending on the situation, consult a higher-level physician and ask a peer-reviewed vascular surgeon. The risk of vascular injury is high and care must be taken. Others, such as bleeding is not serious, we must first determine the type of bleeding in a timely manner, clearly arterial bleeding or venous bleeding, while identifying the possible vascular categories based on the anatomical location. Arterial bleeding is mostly jet and red blood is bright. For arterial hemorrhage, gauze is used to compress the damaged part. The aspirator clears the blood in a timely manner. The operative field is clearly exposed. After the bleeding point is found, the clamp is lifted by a separate forceps to stop the bleeding. If necessary, the bleeding is increased. Piercing channel assists related operations. Venous hemorrhage In addition to larger venous pressure in the lumen, the blood may emerge from the wound, but rarely spray-like, such as lumbar and other bleeding, can be increased by pneumoperitoneum pressure, hemostasis, clear bleeding site, clamp Stop the bleeding. The surgeon should keep in mind that the above operations should be communicated with the anesthesiologist to maintain hemodynamic stability or blood transfusion.

4. Postoperative Complications

Incision hernia can be expressed as the abdominal area of the operation area is convex or omentum omentum, intestine and abdominal cavity tissue spasm, such complications occur in patients with poor nutritional status, abdominal wall is weak; but the exact suture incision full layer, It is also important to completely preserve the nerves associated with muscle tissue.

Delayed bowel spasm refers to the fracture that occurs after 24 hours of injury. It is rare in clinical practice and has considerable concealment. It is easy to delay treatment and increase the incidence of complications and mortality. Delayed bowel spasm often presents as a sudden peritoneal irritation, accompanied by increased blood count and free gas under the infrapatellar, and drainage tubes may be associated with odor-smelling yellow liquids. In general, once the diagnosis of delayed intestinal fistula, it should not hesitate to choose timely surgery, surgery should pay attention to the degree of intestinal wall contusion, especially in the mesenteric edge of the intestinal wall hematoma should be carefully examined, with or without gas and intestinal fluid Overflow to prevent leak diagnosis, causing serious consequences.

5. Conclusion

Regarding the prevention and treatment of complications of urinary laparoscopic surgery, we advocate that after obtaining informed consent from patients before surgery, we must fully evaluate and formulate a specific surgical plan suitable for the patient, and actively grasp the principles and methods of handling related complications. When you develop a situation, you know what to do.

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