

Massive left hemothorax following laparoscopic pyeloplasty

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ABSTRACT

Laparoscopic pyeloplasty is viable standard minimally invasive alternative to open pyeloplasty for the treatment of ureteropelvic junction obstruction. Intrathoracic bleeding is an extremely rare complication after laparoscopic urological surgery, but it should be suspected and promptly diagnosed in case of worsening hemodynamic status and respiratory parameters during the intra or post-operative course. We report a case of hemothorax complicating an otherwise uneventful LP in an 18-year-old girl.

Key words: Complications, hemothorax, laparoscopic pyeloplasty

INTRODUCTION

Laparoscopic pyeloplasty (LP) is a minimally invasive alternative to open pyeloplasty for the treatment of ureteropelvic junction obstruction. It has been shown to provide lower patient morbidity, shorter hospitalization and faster convalescence. However, there is an inherent risk of surgical (blind trocar insertion, colonic injury, hemorrhage, ileus, urinoma formation) and anesthetic complications (gas embolism, extraperitoneal insufflation and surgical emphysema, pneumothorax and pneumomediastinum).^[1] We report an isolated case of hemothorax, complicating an otherwise uneventful LP.

CASE REPORT

An 18-year-old girl was diagnosed to have left pelviureteral junction obstruction during evaluation

of left flank pain. A transperitoneal LP was planned. The Veress® needle insertion and insufflation was uneventful. High resolution camera and monitor systems were used. Surgical cautery was used for dissection. Three trocars, including a 10 mm umbilical trocar, a 10 mm trocar midway between the umbilicus and the symphysis, and a 5 mm trocar midway between the umbilicus and xiphoid were used. Pneumo-peritoneum was kept constant at 12 cm H₂O. No impairment of respiratory parameters was observed by the anesthesiologist during the procedure. The entire procedure was completed in 90 minutes, and a drain was placed after confirming hemostasis.

However, at the end of the procedure, before evacuation of pneumoperitoneum, the patient developed hypotension. This was initially responsive to fluid administration, but quickly deteriorated after weaning, resulting in severe hypovolemic shock with worsening of respiratory parameters (tidal volumes, peak pressures and blood gases).

An on-table clinical examination suggested decreased air entry in the left hemithorax. A pneumothorax was suspected, and a needle was inserted into the left fifth intercostal space. However, it drained blood and a chest X-ray revealed a hazy left hemithorax. Screening ultrasound and contrast enhanced chest computed tomography (CT) scan showed a massive hemothorax with no hemoperitoneum (ultrasound and CT installations are within the operation theatre complex).

A 28 French intercostal tube was inserted in the left fifth intercostal space, and 2 L of blood was drained. The patient continued to remain hypotensive despite resuscitation and blood transfusion and more than 500 ml blood drained through the intercostal tube during the subsequent 2 h.

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An emergency surgical exploration was planned. In any case of hemothorax following an abdominal procedure, the first suspicion is towards an abdominal cause and a laparotomy was performed but it did not reveal any blood in the peritoneal cavity.

A subsequent left mini-thoracotomy revealed fresh and clotted blood in the pleural cavity, which was evacuated. An active bleeding vessel became evident in the thoracic aspect of the left diaphragm near the anterior costophrenic angle secondary to a small diaphragmatic cautery burn. Hemostasis was achieved by under-running the bleeding vessel, and an intercostal drain was placed. Careful inspection of the pleural cavity did not reveal any other injuries. The post-operative course was uneventful, and complete lung re-expansion was achieved. The chest drainage tube was subsequently removed, and the patient discharged.

DISCUSSION

Thoracic bleeding is a rare complication of elective abdominal surgery, mainly resulting from unrecognized, iatrogenic diaphragmatic tears. This has been described during gastrointestinal surgical procedures. Cristian *et al.*^[1], have reported a case of massive right hemothorax causing hemorrhagic shock after laparoscopic cholecystectomy. The bleed was from a laceration of the parieto-diaphragmatic adherence, which was attributed to change in diaphragmatic position during pneumoperitoneum, as it has been demonstrated in animal models.^[2]

Kyo *et al.*^[3] have reported severe hemothorax after laparoscopic surgery for endometriosis, which was attributed to pulsatile active bleeding from scattered small endometriotic lesions present on the pleural surface of the right diaphragm.

Documentation of thoracic complications during urological laparoscopic surgery is rare. Abreu *et al.* have reported that thoracic surgical complications occurred in only 0.5% of the

patients. Of the 1,129 patients operated laparoscopically, only one patient demonstrated a hemothorax (0.08%), which was attributed to accidental supracostal placement of the posterior port.^[4] Most complications occur during creation of pneumoperitoneum and blind insertion of the first trocar, not because of the laparoscopic surgery.

In this case, the hemothorax was probably caused due to injury to the diaphragm by an unrecognized cautery burn, following which the bleeding vessel retracted into the thorax. The colon is routinely mobilized during LP. The cautery burn probably occurred during the mobilization of the splenic flexure with the monopolar cautery. This was not evident during the entire procedure due to the intact pneumoperitoneum. Hypotension due to blood loss was evident only after evacuation of the intra-abdominal gas and the natural suspicion was of an intra-abdominal source of bleeding. There needs to be a high index of suspicion of possible thoracic complications during laparoscopic urological procedures.

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