

## CASE REPORT

## ABDOMINAL AORTA INJURY-A FATAL COMPLICATION OF LAPAROSCOPIC CHOLECYSTECTOMY

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Laparoscopic cholecystectomy (LC) has many advantages over open cholecystectomy, but sometimes, it can cause life threatening complications. Abdominal aortic injuries are rare but if occur, usually prove fatal if not diagnosed and treated promptly. We report a case of abdominal aortic injury which occurred during laparoscopic cholecystectomy. To the best of our knowledge this would be the first ever case reported in Pakistan.

**Keywords:** Laparoscopy, cholecystectomy, injury, abdominal aorta, complication

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## INTRODUCTION

Vascular injuries make one third of major complications of laparoscopic surgery. The reported incidence of injury to major retroperitoneal vessels is 0.05%.<sup>1</sup> The retroperitoneal vessels commonly injured are iliac arteries, abdominal aorta and inferior vena cava. The injury occurs while inserting the first trocar or Veress needle as this is blind procedure.<sup>2-4</sup> The diagnosis is difficult at the time of injury as this is based on presence of blood in the peritoneal cavity. But pneumo-peritoneum decreases venous return and hence decreases torrential bleeding from the injured vessel thus making diagnosis difficult.<sup>5</sup> Early detection of the injury and immediate surgical repair is gold standard to save the life of the patient. We had similar experience of abdominal aortic injury during LC.

## CASE REPORT

A 43-year-old well build male with a history of high blood pressure underwent elective LC under general anaesthesia in a peripheral military hospital. After initiation of pneumo-peritoneum, anaesthetist noticed sudden hemodynamic instability (blood pressure 75/40 mm Hg and heart rate 117 beats/min) which resolved after volume replacement. The rest of the procedure was completed uneventfully. In recovery room, patient developed sudden hypotension which was unresponsive to volume replacement. Patient was brought back to operation theatre and emergency midline explorative laparotomy was performed. It revealed frank blood in the peritoneal cavity and a large retroperitoneal hematoma. On exploration of hematoma, an infra-renal tear of approximately 1 cm on anterolateral wall of the aorta was found. Finger pressure was applied by an assistant surgeon. Operating surgeon applied vascular clamps after mobilizing the aorta, packed the abdominal cavity and called for vascular surgeon. Aortic tear was repaired with 3/0 prolene by the vascular surgeon. Permissive hypotension of systolic blood pressure below 70 mm of Hg was maintained during the

repair. The patient had multiple blood transfusions during and after the operation to maintain hemodynamic stability. The patient was put on ventilator support electively and was air lifted to a tertiary care military hospital for critical care. As a result of multiple blood transfusions during the operation, the patient developed coagulopathies. This resulted in renal shut down and culminated in multiple organ failure. The condition of the patient did not improve despite of all the support in intensive care settings and he expired on 25<sup>th</sup> postoperative day.

## DISCUSSION

Laparoscopy has become a gold standard for cholecystectomy. Although LC has many advantages over open cholecystectomy but sometimes fatal complications occur. One third of all the major complications during laparoscopic surgery are vascular injuries with a reported incidence of 0.05–2%.<sup>2</sup> Major retroperitoneal vessels injury has a reported incidence of 0.05%.<sup>1</sup> Champault *et al.* reported that 83% of all vascular injuries occurred during insertion of first trocar.<sup>2</sup> Important factors that can contribute to vascular injuries are; surgeon's inexperience, inadequate pneumoperitoneum, thin and lean patient, skeletal deformities and previous abdominal surgery.<sup>2,6,7</sup> Nordestgard *et al.* noted that major vascular injury is more or less surgeon's fault and if diagnosis is delayed it can prove fatal.<sup>6</sup>

A sudden fall of blood pressure and tachycardia after insertion of Veress needle or first trocar is the initial presentation. This fall of blood pressure usually respond to fluid replacement. The hypotension at this stage can be easily confused with other less disastrous causes like faulty monitoring equipment, decreased venous return, increased vagal tone and acute myocardial infarction. Vascular injury is suspected with the presence of blood in the peritoneal cavity but pneumo-peritoneum decreases venous return and the retroperitoneal haematoma exerts tamponade effect which prevents sudden torrential bleeding. As

frank blood is not seen with laparoscope, diagnosis may be easily missed or delayed.<sup>8</sup> In our case the patient developed hypotension, tachycardia and small amount of blood in the cavity; however it was overlooked hence the diagnosis was missed. We can decrease the vascular complication rate during LC by improving our expertise and performing the technique correctly. The surgeon should have high index of suspicion for major vascular injuries when there is hypotension and tachycardia on initiation of pneumo-peritoneum.

## CONCLUSION

Abdominal aortic injury during laparoscopic surgery can occur on insertion of first trocar. Development of sudden hemodynamic instability and presence of blood in the peritoneal cavity are ominous signs and in such cases high index of suspicion should be maintained for a major vascular injury. Prompt exploration and emergency repair is the only available option to save the life of the patient.

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