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Case Report

Laparoscopic Drainage of Subphrenic Abscess

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Abstract
Subphrenic collections are a common sequel to hepatobiliary surgery, upper GI surgery, after trauma surgery and lost gallstones after laparoscopic cholecystectomy. Also, subphrenic abscesses may arise from primary infections of the biliary tract, the appendix or the colon. Prompt diagnosis and treatment are necessary to reduce the morbidity and mortality to a bare minimum. Contrast enhanced CT scan is the best imaging modality to identify the location and approximate size of the collection. Laparoscopic drainage is a best option for treating subphrenic abscesses. A case of a sub phrenic abscess drained laparoscopically is presented to highlight the efficacy of this approach.

Keywords: *Subphrenic abscess, Hepatobiliary surgery, Laparoscopic drainage.*

INTRODUCTION
Whipple (Traverso) is the gold standard for the removal of head pancreas adenocarcinoma. However postoperative complications are commonly seen especially in those patients where in the dissection has been difficult due to severe adhesions, oozing from the gall bladder bed or retroperitoneum and occasionally a bile leak from choledochoduodenostomy. These sequelae eventually lead to collections most times hematomas in the peri-hepatic area which invariably get infected giving rise to septic complications such subphrenic abscesses. Only about two-thirds of the patients with subphrenic abscesses demonstrate a typical clinical picture of fever, localized pain or tenderness, leukocytosis, and ipsilateral pleural effusion on chest X ray. In the early stages, many patients manifest few of the signs. Majority of surgeons prefer an open approach or CT guided drainage with placement of a pigtail catheter to these complications.

However, a laparoscopic approach is extremely effective in treating such complications. A case of a subphrenic collection following a Whipple operation is presented to highlight the surgical efficacy of laparoscopy in a salvage role as well.

CASE REPORT
A 70 year old male presented with severe excruciating pain in the right hypochondrium extending to the right abdomen and to the right hemi thorax posteriorly. Patient had undergone Traverso (Whipple) procedure which was uneventful. He returns home after 7days in hospital in good performance, no symptoms good blood tests and two drainages one in right subdiaphragmatic space which removed 15th day after surgery and one in the pancreatoileus anastomosis which removed in 10th day after surgery. Patient one month after begun chemotherapy with clear CT scan and good blood tests. One and half month later started to lose weight, fever 37,5, pain in the abdomen and difficulty in breathing. He had one ECHO which reveiled a fluid collection in the right subdiaphragmatic space. Hematologic investigations revealed raised WBC counts of 15,000 with neutrophilic leucocytosis and increasing CRP. Liver function tests were normal. Renal parameters were normal. A CT was performed which revealed an extensive peri- hepatic collection extending from right subdiaphragmatic space to right sub-hepatic region. (Figure 1). The common bile duct, remnant of pancreas and the adjacent part of small intestine and colon were also normal. Patient was started on antibiotic combination comprising of chephalosporine, aminoglycosides and metronidazole. We decided to explore and drain the abscess laparoscopically.

Because of previous open excision we used verses at beginning and then an optical view trocar 10mm sub- umbilical port was used to introduce the scope and a 10mm epigastric port for the introduction of dissecting instruments and suction catheter. About 1L of Saline water was injected and then aspirated from the right sub-diaphragmatic space and cavity of abscess to ensure complete evacuation of the infected fluid and debris. Also, we take cultures for aerobic and anaerobic microorganisms. Two 18 F drains were introduced through separate openings made in right abdomen region under direct vision. One of the drains was placed in the right subdiaphragmatic space and the other in the subhepatic space. Post-operative recovery was uneventful. Patient exit Clinic the second day with no fever and normal blood tests. Drain of subdiaphragmatic were removed on the 7th post-operative day and subhepatic on the 14th day with complete resolution of the symptoms and normal WBC counts. CT scan 6months and a year after was clear with no collection.

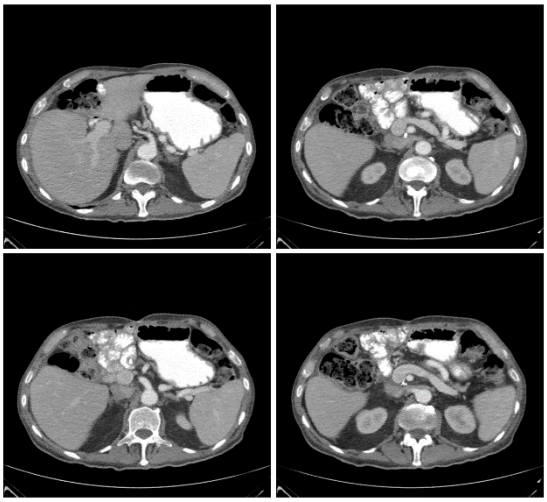

Figure 1: CT showing a subphrenic as well as subhepatic collection

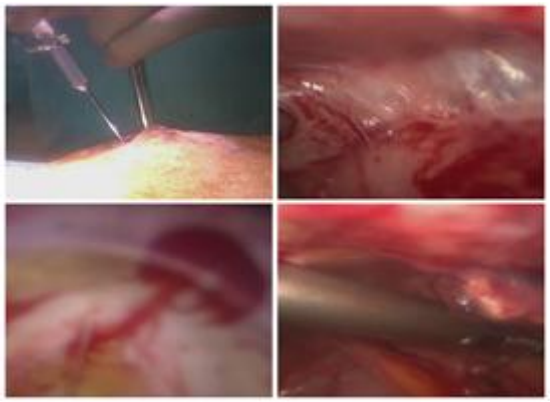

Figure 2: First steps of laparoscopic approach

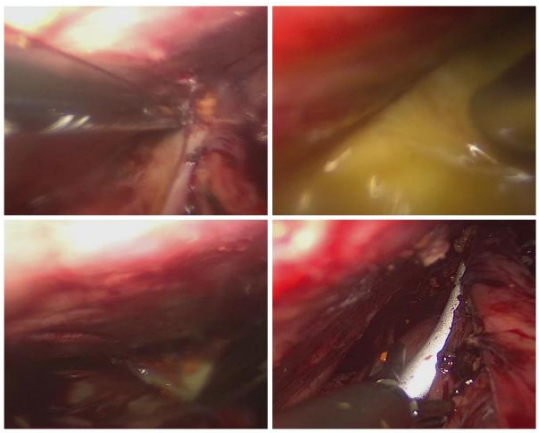

Figure 3: Drainage of abscess and drains placed in the subphrenic and subhepatic spaces.

DISCUSSION

Development of respiratory and abdominal symptoms after surgery should raise the suspicion of a peri-hepatic collection in patients who have undergone biliary tract surgery. Right sub-hepatic region is the commonest site for accumulation of postoperative collections.[1] If the volume of accumulated fluid is extensive, it eventually extends into the subdiaphragmatic space. Extensive adhesions develop between the liver and the under surface of the diaphragm. The cavity eventually gets walled off from the rest of the peritoneal cavity.[8] Sepsis can make the situation worst as the patient can develop frank septicaemia. CT scan of the abdomen is the best investigation to identify the exact location and the size. Surgical intervention is the mainstay of treatment.

Broad-spectrum parenteral antibiotics should be initiated empirically at diagnosis, covering both aerobes and anaerobes. A pigtail catheter can be placed in the abscess cavity under radiologic guidance. However, the failure rate of this method of drainage is extremely high as the contents of the abscess cavity are usually thick and contain particulate debris and the size of pigtail is small. Open surgical intervention is an excellent approach to solve this situation but have high morbidity. There are different approaches for open surgery[5]. Posterior (l2th-Rib Excision) approach. At one time, removing the 12th rib and entering the "subphrenic" space from the posterior approach was popular, on other is lateral and subcostal extraperitoneal approach and finally laparotomy draining subphrenic abscesses by a transperitoneal route. Laparoscopic approach is undoubtedly the best approach for dealing with such a situation.[4,7,8] The port sites, sub umbilical and epigastric or right abdomen can be used for intervention under direct vision. Loculated abscess cavities can be broken and accessed. This can be followed by irrigation of abscess cavity. Placement of large tube drains can be done under direct vision. The advantage of large tubes is that they do not get blocked by particulate debris. In rare cases we can use a sump drain which ensures complete clearance of all the infected material[8]. The Surgical Infection Society guidelines suggest 96 hours for well-controlled intrabdominal sepsis and 5-7 days for those without a definitive source control procedure. Cultures should be obtained, and antibiotics should be tailored based on the speciation and sensitivity of those cultures[6].The drains are removed usually after a period depending upon the response to the treatment and the amount of the fluid.

CONCLUSION

Subphrenic and subhepatic collections are commonly encountered after biliary pancreatic and upper GI operations especially in difficult cases. CT scan of the abdomen is the investigation of choice to diagnose and quantify the collection. The choice of surgery drainage depends on Surgeon experience. A walled off subphrenic abscess can be best be treated with laparoscopic approach.

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