Case study

Post-operative complications of the Cholecystectomy in an underweight patient : case report, review of literature & a word of caution

Abstract

Introduction : This is a case report of an underweight patient in whom sub-total cholecystectomy was followed by persistent leakage of bile.

Aims : To review the cholecystectomy and correlate with BMI and post-operative risks.

Methods : USG (Ultrasonograph) abdomen revealed choledocholithiasis causing proximal dilatation of the CBD (common biliary duct) and the IHBR (Intra Hepatic Biliary Radicals). Choledocholithiasis with upstream biliary dilatation and Cholethiasis with few calculi in dilated cystic duct. Laparoscopic cholecystectomy was performed.

Results : Post-operative complications developed with biliary leakage, fever, edema, vomiting and diarrhea. Perforation with hypo-dense collection in peritoneal cavity was observed. She had generalized edema, tachycardia and bilious output from abdominal invasion site and drain. Patient was only managed conservatively and discharged.

Conclusion : This case demonstrates that underweight patients need to be evaluated thoroughly before surgery to treat the complications of cholecystectomy in order to steer clear of an operation which carries high-risk. The information and recommendations are being presented in the essence of research

and enhancing safety of the patient. Clinicians are reassured to deliberate this case with their surgical teams and exercise caution when planning a surgery for an underweight patient.

Keywords : Post-operative complications; Cholecystectomy; underweight patient, case report, word of caution

Introduction

Inflammation of gallbladder also termed as cholecystitis, occurs when bile cannot disseminate out of the gall bladder into the digestive system. Often bile builds up leads to formation of crystals, gallstones, which, in turn, leads to a stiff, tough, dilated and distressed gallbladder. Movement of gallstones to other parts of the body causes complications. Cholecystitis is characterized by acute and abrupt pain in the abdomen radiating to the right shoulder or back, discomfort after having a heavy meal, tender abdomen, nausea, vomiting, low-grade to severe fever, chills, lighter stools, dark urine and bloated belly. The symptoms of cholecystitis may be mistaken for some other uncomplicated issue, hence, it is imperative to obtain an appropriate diagnosis. If left untreated cholecystitis can lead to ailments, therefore, these symptoms should not be ignored as gas, indigestion or a stomach ailment [1, 2]. Upon diagnosis of cholecystitis, removal of the gallbladder, analgesics, medicines for dissolution of gallstones and preventing recurrence are the common therapeutic strategy. Mild cholecystitis may be treated by adjustment of diet, antibiotics, in case of infection and adequate hydration so that the inflammation subsides [3]. Laparoscopic surgery, a minimally invasive technique, is performed in most of the cases resulting in lesser pain and quicker recovery [4, 5]. Endoscopic retrograde cholangiopancreatography (ERCP) procedure is followed to remove the gallstones present in the biliary ducts even in the absence of symptoms [6]. Serious cases of cholecystitis are treated with antibiotics for infection, intravenous fluids, require admission in the hospital [7, 8, 9, 10, 11, 12] and

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the symptoms usually resolve over two to three days after treatment. Cholecystectomy is a fairly safe operation but there is possibility of several complexities such as like bleeding, biliary duct injury, bile leakage, bowel infection, deep vein thrombosis and dangers from general anaesthesia [13, 14, 15, 16, 17, 18]. Upon removal of gallbladder, specific clips are used to fasten and join the gallbladder with the major bile duct.

Complications

Cholecystectomy, a new approach for treatment of cholelithiasis has introduced a range of complexities. While minor complications cause discomfort and prolong the duration of hospital stay, major biliary and vascular complications are alarming [19, 20]. These could be partly attributed to inadequate surgical experience, technical constraints and selection of patients intrinsic to the minimal invasive technique [21]. Post-cholecystectomy syndrome (PCS) includes pain, indigestion, diarrhoea, weakness, jaundice, fever and swollen abdomen which are akin to those caused by gallstones post-surgery is caused by bile leakage into the stomach or by gallstones left in the biliary ducts [22]. Sometimes an operation is required to drain the bile but often this fluid can be removed by draining. Bile duct is damaged during removal of gallbladder and discharge manifests in about 1% of cases [23, 24]. It is possible to repair it if this happens during surgery and in few cases, a second surgery is needed after the original. In most cases, mild signs are for brief period but may continue for several months. Another common complication of cholecystectomy is Cystic duct leak, the frequency of which ranges from 0.07 to 0.63% in large series [25, 26]. The first line of treatment is endoscopy with sphincterectomy and stenting with more than 90% success rate. Acute cholecystitis is a serious infection and can disperse all over the body leading to inherently critical complexities in the absence of proper treatment like gangrenous cholecystitis where destruction of the gallbladder tissue ensues. Perforated gallbladder is yet another complication where the gallbladder splits open, causing

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peritonitis [infection within the abdomen] and accumulation of abscess Re-operation with ligation or re-clipping of cystic duct may be performed upon failure of this option [27, 28, 29, 30, 31, 32, 33, 34]. However, high morbidity and mortality are associated with this.

BMI and surgery

Higher body mass index (BMI) is associated with increased risks of surgery and anesthesia like surgical site infection and challenging cannulation whereas patients with low BMI (<20.5) have less peri-operative risk. Some studies have reported that the risks of post-operative complications are high in overweight or obese patients in comparison to the patients having normal BMI [35, 36]. Underweight condition is related with low BMI, higher age, malnutrition, eating disorders, skeletal muscle mass loss and vulnerability, altogether increase surgical risk and adverse post-operative outcomes. Underweight patients are a challenging group to indicate for elective surgery due to the controversial post-operative complications profile. Pre-operative underweight status is significantly associated with unfavorable post-operative outcome [37, 38]. These patients need to work closely with medical personnel to address their BMI prior to being offered elective surgery. When managing underweight patients, surgical and intensive care teams need to have heighted awareness as these patients are at higher risk for post-operative complications. There is an increased 30-day mortality and malnutrition with those having low BMI. These co-morbidities are associated with additional anaesthetic considerations including hypoglycemia, hypoalbuminemia, intra-operative hypothermia and possible sensitivity to neuromuscular blocking drugs due to low muscle mass. Studies have reported that there is decreased post-operative risk in obese patients when compared to normal patients but higher risk for underweight patients with regard to operative outcomes for surgery. It is important recognizing IOC (intra-operative cholangiography) complications during the surgery so that they can be managed in a timely manner during the surgery [39, 40, 41]. Prior to the day of scheduled surgery,

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patients with low BMI need to be observed in anaesthetic consultation to ensure appropriate work-up and assessment for confirmation that surgery can be performed on the patient.

Case report

This is a case report of a female patient, 62 years, who was operated for gall bladder stones. She complained of abdominal discomfort, pain and nausea for about 1 month. Doctors advised taking medicines for gastritis. She was under-weight, 30.6 kg, at the time of surgery. She was a vegetarian and had anorexia as well. Few doctors advised against surgery owing to underweight condition of the patient. But one doctor agreed to perform the surgery. Chest X-ray (P/A) was normal. USG (Ultrasonograph) abdomen revealed choledocholithiasis causing proximal dilatation of the CBD (common biliary duct) and the IHBR (intra hepatic biliary radicals) as shown in Fig.1. Choledocholithiasis with upstream biliary dilatation and cholethiasis with few calculi in dilated cystic duct. CBD was dilated measuring 11.3 mm in max. dimension. Multiple calculi were noted in lumen, largest measuring 17 x 3 mm. Prior to surgery, her blood parameters were as follows : Fasting Blood sugar - 62, Serum Bilirubin (Total) - 0.4, Direct-0.1, Serum SGOT-22.4, Serum SGPT-23.7, Alkaline Phosphatase - 207.6, Serum Sodium-140.74, Serum Potassium -4.5, Blood Urea- 18.0, Serum Creatinine - 1.0, HIV, HBsAg, HCV - Negative, Neutrophils - 61, Lymphocytes - 31, Total RBC count-3.3, Total WBC count-3.200, Moncytes-00, Basophil-00, Hematocrit (PCV)-, Total Platelet count-1.4, Eosinophils-08, Total WBC count-,MCV-66, MCH-21.5, MCHC-32.3, Bleeding Time (BT)-1 Min 15 sec, Clotting time (CT)-3 Min 45 sec, Haemoglobin-7.3. She was given 4 units of blood prior to surgery. She was put under observation for 12 hours. Operative procedure was Open cholecystectomy and CBD exploration after adhesiolysis CBD clear of stones, CBD was repaired over feeding tube no.8 and Ano.32 ROMO adk drain was given in right sub-hepatic space. Operative

Comment [H6]: To spell out the abbreviation

findings suggested of thick walled fibrotic CBD with dense omental adhesions to CBD with gall stones. On the day of surgery and after till post-operative day (POD) 5, antibiotics were administered. Post-operative recovery was uneventful and oral feeding was started on POD-1. She had multiple episodes of non-bilious vomiting on POD-3. She was treated conservatively at the above hospital and discharged on POD-6. On discharge, condition of the patient was satisfactory on drain with minimal peridrain leakage. She developed complications like fever, edema, vomiting and diarrhea for which she was admitted to the department of surgery of another hospital on POD-7. At observation, she had generalized edema, tachycardia and bilious output from abdominal invasion site and drain. She was treated conservatively and started on fluids, antibiotics, vitamin K and analgesics. At the time of admission, her pulse rate = 95/min, Blood pressure = 112/71 mm Hg, T (29/4), TBIL = 1.9, DBIL = 1.1, AST/ALT/ALP=(N), Alb=1.8, T (29/4), urea = 33, creat = 0.7, Na^+ = 128, K^+ = 3.8. Dressing was bile soaked, drain output was 90 ml (bilious). NCCT (Non-contrast Computed Tomography) scan for the whole abdomen was done. It is a diagnostic imaging test that creates comprehensive pictures of soft tissue, internal organs, bones and blood vessels. NCCT abdomen scan helps in diagnosis of abdominal pain or gallbladder stone, infection or inflammation and assess in endoscopy procedures. It revealed s/o stent in site with one end in left hepatic duct and another in right parabolic gutter passing through CBD. Perforation with hypo-dense collection in peritoneal cavity was observed. The team of doctors then suggested ERCP (Endoscopic retrograde cholangiopancreatography) which merges endoscopy and X-ray to treat issues of the bile and pancreatic ducts and stenting for the patient on emergency. As ERCP facility was not available at the hospital, patient was referred to another tertiary center for the same. USG guided drainage was the only option. Patient could be admitted back to the hospital us once ERCP and stenting is done. Several specialists of different hospitals were consulted but no one agreed for this. The doctors reported next day that that the condition is critical

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and she will be only managed conservatively. They clearly indicated that the patient is deteriorating with minimum chances of recovery and advised for discharge. After discharge, she was brought home in an ambulance. Barely after 3 hours, she expired peacefully while sleeping. The cost of surgery and stay in the hospital is enormous but resulted in pain throughout the period and finally death. The question that arises from this case is that should the under-weight patients be advised for gall bladder surgery or not. The patient could have been treated for dissolution of gall bladder stones.

Conclusions

This is a case report of an underweight patient in whom sub-total cholecystectomy was followed by persistent leakage of bile. This case demonstrates that underweight patients need to be evaluated thoroughly before surgery to treat the complications of cholecystectomy in order to steer clear of an operation which carries high-risk. Aggressive post-operative pulmonary care should be enforced and a higher evidence of uncertainty is required for the management of chylothorax, empyema and anastomotic leak. Careful post-operative observation and quick intensification of concern are required to deal with complications in underweight patients appropriately [42]. The information and recommendations are being presented in the essence of research and enhancing safety of the patient. Clinicians are reassured to deliberate this case with their surgical teams and exercise caution while planning surgery for an underweight patient.

Comment [H8]: I suggest to add the pulmonary complications in the discussion of BMI and surgery.

Comment [H9]: I suggest to add about the nutrients in the recommendations.

Consent

For publication of the case report, written informed consent was obtained from the patient.

Ethical approval

Approval of the ethics committee is not required for a case report.

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Fig. 1 shows the USG scan of abdomen