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**Case History and Examination.**

A 23-year-old patient presented to the emergency department of trauma center Civil Hospital Karachi with complaints of fever for two days and pain at the epigastric region and at the post-surgical site for three days, following a laparoscopic cholecystectomy performed five days prior. The pain started at the epigastric region radiating to the tip of shoulder and at the surgical site. The pain was sudden and sharp, aggravated by eating , and relieved with analgesics for few hours. However, since the last day, the pain had become more severe and was unrelieved by oral analgesics. The pain was accompanied by vomiting, which was non-projectile, with two episodes per day containing food particles and no associated bleeding. Fever was sudden in onset, intermittent, and undocumented, associated with chills and rigor. patient had undergone a laparoscopic cholecystectomy for chronic cholecystitis secondary to cholelithiasis five days prior to presentation and had no significant past medical history. At the time of presentation, the patient reported normal bowel and bladder movements and appetite.

On examination, the abdomen was soft, with tenderness at the epigastric and infraumbilical surgical site, a tympanic sound on percussion and normal bowel sounds were noted. All other systemic examinations were unremarkable. Except the patient had mild yellowish discoloration of sclera. On admission vitals were: temperature of 101°F, blood pressure of 97/63 mmHg, heart rate 100 bpm, breathing rate of 20 bpm, and saturation (SpO2) 96% on room air. The patient weighted 56 kg and was alert and oriented to time, place, and person. Glasgow Coma Scale (GCS) revealed a score of 15/15.

**Discussion.**

Laparoscopic cholecystectomy (LC) is a widely utilized surgical procedure across the globe, experiencing a significant rise in prevalence over the past decade[11]. Research indicates that approximately 60% of these procedures are performed in women, with a mean age of 40 years and a standard deviation of plus or minus 10 years[12]. Notably, among patients diagnosed with cholelithiasis aged 18 to 49, about 90% undergo LC[13].

While this procedure is generally safe, it is important to acknowledge the potential for complications. The most frequently reported complications associated with LC include bile duct injury, bile leaks, bleeding, and bowel injury. Postoperative acute pancreatitis (AP) may occur due to retained stones or other surgical complications, with an estimated incidence between 0.1% and 0.34% [14.]Furthermore, a study conducted in

Spain indicated that 6% of all readmissions within 90 days following cholecystectomy were associated with acute pancreatitis[15].

Acute postoperative pancreatitis is a rare complication that can arise following laparoscopic cholecystectomy. In most cases, this condition is effectively managed with conservative treatment without any surgical intervention, except for an active obstruction at the lower common bile duct. During the early postoperative period, acute pancreatitis may be attributed to the passage of a missed gallstone or biliary sludge through the ampulla of Vater. Notably, even biliary microliths can precipitate severe pancreatitis. These microliths have the potential to pass through the common bile duct and traverse the Sphincter of Oddi, resulting in a transient obstruction that typically resolves spontaneously. This occurrence is often associated with hyperbilirubinemia, which is generally obstructive. Historical studies have highlighted that small gallstones, which may not be detected by conventional cholecystographic techniques, are implicated in up to 75% of idiopathic pancreatitis cases[16].

Acute pancreatitis (AP) can arise from various causes, including alcoholism, certain medications, cystic fibrosis, hypercalcemia, hypertriglyceridemia, and trauma. After excluding these, patients who have recently undergone cholecystectomy should be considered a relevant risk factor. Acute cholecystitis can lead to complications, including conversion to open surgery. Gallstone pancreatitis, although relatively rare, is a notable risk associated with laparoscopic cholecystectomy (LC), particularly as the likelihood of gallstones entering the biliary tract increases with the number of stones. The tortuous anatomy of the cystic duct can facilitate this passage. While laparoscopic procedures typically have lower complication rates, they may increase the risk of postoperative pancreatitis, especially due to potential bile duct injuries during surgery. Additionally, anatomical variations, such as a low-lying cystic duct or reduced bile duct diameter, and a history of pancreatitis or cholangitis can further heighten the risk. Post-cholecystectomy endoclip migration is also recognized as a contributing factor to post-LC acute pancreatitis[17].

Very few cases have been documented in the literature in this contention. In this case report, a 23-year-old female patient with no significant medical history was admitted to the emergency department with complaints raising the suspicion of Iatrogenic AP secondary to a recent laparoscopic cholecystectomy, which had been performed due to chronic cholecystitis associated with cholelithiasis.

Although AP under such conditions is treated conservatively, yet its diagnosis and early management is crucial for better outcome and prevention of its relapse. In a clinical picture of epigastric pain migrating to the back with nausea and vomiting of no explained cause,

It is imperative to perform an abdominal ultrasound showing the inflamed pancreatic parenchyma within the first 48 hours of suspecting the condition. Increased levels of serum Lipase (Normal <90mg/dl) and Amylase (Normal <90mg/dl) should be considered to increase diagnostic accuracy by up to 20%[18]. Another more specific indicator for pancreatic inflammation is raised Serum Trypsinogen level used in assessing the severity of the condition[19]. In cases where biliary aetiology is still suspected, more advanced diagnostic procedures such as MRCP or EUS should be employed.

To assess the severity of pancreatitis, we utilize Ranson scoring, a system that predicts the severity and mortality of acute pancreatitis through 11 parameters evaluated at admission and 48 hours later[20]. In this case Subsequent laboratory investigations revealed a notable elevation in serum amylase and lipase levels, with the total leukocyte count (TLC) recorded at 16400/microliter. The patient received a Ranson score of 2 at admission, putting her in a low-risk category. Significantly, the patient's condition stabilized within 48 hours with a Ranson score of 0.

Another diagnostic criterion widely used nationally and internationally is two out of three criteria comprising Epigastric pain radiating towards the back, Elevated levels of serum Lipase and amylase (three times above normal ), and Pancreatic And radiographic evidence showing pancreatic parenchymal inflammatory signs[23].

Following diagnosis, the management protocol includes fluid resuscitation (FR), pain control, and nutritional support. The patients should initially remain NPO[21] with a nasogastric tube, and receive antispasmodics,

painkillers, and anti-emetics like diphenhydramine HCL or ondansetron, with opioids being particularly effective. Epidural analgesia is also a good option for pain management and also associated with reduced mortality[22]. Studies suggest Ringer lactate's effectiveness over normal saline in acute pancreatitis, but the fluid rate is more crucial than the type used. For hypovolemic patients, fluid boluses yield better outcomes. Nutritional support within 24 to 48 hours, is important in reducing bacterial translocation, decreasing infection risk, and supporting gut microbiota. IV fluids should be stopped once the patient can tolerate oral intake. Current guidelines advise against prophylactic antibiotics in predicted severe AP or sterile necrosis due to the risk of multidrug-resistant bacteria and fungal super infection[24].. However, in severe cases of AP with no progression towards betterment, antibiotic regimens are also started[25.]

In this case, Following a Ranson score of 2, the patient was placed NPO and started on Toradol and Provas for pain management. Fluid resuscitation was provided with 5% Dextrose saline. Intravenous Meropenem 1g was administered three times daily for antibiotic coverage, as studies suggest Carbapenems can reduce the risk of infection in acute pancreatitis and related conditions[26].

**Conclusion.**

Iatrogenic pancreatitis is a rare but potentially life-threatening complication of laparoscopic cholecystectomy. This case report highlights the importance of prompt recognition and aggressive management of this complication, even in young and otherwise healthy individuals. A high index of suspicion, timely imaging, and multidisciplinary management are crucial in preventing severe consequences. Surgeons and healthcare providers must be aware of this rare complication and take measures to prevent it, such as meticulous surgical technique and careful patient selection. Early intervention and management can significantly improve patient outcomes and reduce morbidity associated with iatrogenic pancreatitis.

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**Figure legends:**

[Figure-1 Abdominal ultrasound suggested no dilatation of duct with normal diameter of common bile duct (CBD) of 0.3 cm]

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`Figure-1 Abdominal Ultrasound.docx` available at https://authorea.com/users/892359/articles/1275855-not-yet-known-not-yet-known-not-yet-known-unknown-a-surgical-paradox-when-cholecystectomy-leads-to-pancreatitis-a-case-report