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Case Study Of Liver Abscess With Acute Calculous Cholecystitis And Its Management

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Abstract:

Liver abscess is a serious hepatobiliary condition characterized by localized pus formation within the liver parenchyma, most commonly of pyogenic or amoebic origin. Cholelithiasis, a prevalent biliary tract disorder, can act as an important etiological factor for liver abscess through ascending biliary infection and obstruction. The coexistence of liver abscess with cholelithiasis represents a clinically significant entity due to its diagnostic complexity, potential for rapid deterioration, and need for timely intervention. In this case, we report a case of a male patient who presented with pain in abdomen at right hypochondriac region, fever and anorexia. The management strategies of liver abscess associated with cholelithiasis is discussed, emphasizing the importance of early recognition and integrated hepatobiliary care to reduce morbidity and mortality.

Index Terms: Liver abscess, acute calculous cholecystitis, hepatobiliary.

Introduction-

Liver abscess is one of the most important space-occupying lesions of the liver and remains a significant cause of morbidity, particularly in developing countries. It is defined as a localized collection of pus within the liver parenchyma resulting from bacterial, parasitic, or, rarely, fungal infections. Based on etiology, liver abscesses are broadly classified into pyogenic, amoebic, and fungal abscesses, with pyogenic liver abscess increasingly recognized in association with biliary tract diseases.

Cholelithiasis, the presence of gallstones within the gallbladder or biliary tree, is one of the most common hepatobiliary disorders worldwide. Although many cases remain asymptomatic, gallstones can lead to complications such as acute cholecystitis, choledocholithiasis, cholangitis, and pancreatitis. Among these, biliary obstruction and ascending cholangitis are well-established risk factors for the development of pyogenic liver abscess.

The anatomical and physiological continuity of the biliary system with the liver parenchyma provides a direct route for infection to spread from the gallbladder or bile ducts into the hepatic tissue. Obstruction caused by gallstones leads to bile stasis, increased intraductal pressure, and bacterial proliferation,

facilitating translocation of organisms into the liver via the biliary radicals. Common causative organisms include *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus*, and anaerobic bacteria.

Clinically, liver abscess associated with cholelithiasis often presents with nonspecific symptoms such as fever, right upper quadrant pain, anorexia, and malaise, which may overlap with symptoms of biliary disease. Jaundice may be present, particularly in cases with associated choledocholithiasis or cholangitis. This overlap frequently delays diagnosis, increasing the risk of complications such as abscess rupture, septicemia, pleural effusion, and peritonitis.

Advances in imaging modalities such as ultrasonography and contrast-enhanced computed tomography have significantly improved early detection and localization of liver abscesses, while laboratory investigations aid in identifying the infectious etiology and biliary involvement. Management typically involves a combination of broad-spectrum antibiotics, image-guided percutaneous drainage, and definitive treatment of the underlying biliary pathology, often requiring laparoscopic or open surgical intervention.

Case presentation:

Chief Complaints-

A 56 years old male patient visited OPD of our hospital for pain in abdomen at right hypochondriac region and right lumbar region, fever and anorexia since last 1 week.

History of present illness-

Approximately since 1 week the patient has pain in abdomen at right hypochondriac region and right lumbar region, fever and anorexia. For which he visited our OPD for immediate surgical intervention.

History of past illness-

Other than the present complaints, the patient had surgical history of open appendicectomy 35 years ago with a medical history of COVID-19.

Personal and family history-

The patient was a businessman.

Physical signs-

P- 68/min

BP- 110/80 mmHg

Sp02- 98% on RA

RR-18/Min

The results of physical examinations revealed tenderness at right hypochondriac region and right lumbar region. Murphy's sign positive. Boas sign negative. Overlying abdominal skin normal.

Laboratory examinations-

Hb- 11.1 gm/dl

WBC- 13560/cumm

Plat- 5.86 lakh/cmm

Sr Creat- 0.99 mg/dl

Imaging Examination-

USG Abdomen and Pelvis

Gall bladder is well distended and shows echogenic calculus of approximate size 7.9mm seen within lumen with increased wall thickness measuring 6.8mm

Cholelithiasis with cholecystitis.

MRCP

Multiple heterogeneous signal intensity lesions in both lobes of liver with peripheral enhancement and central non-enhancing areas of necrosis likely infective etiology-liver abscesses.

Cholelithiasis with changes of mild Acute Cholecystitis.

Mild prominence of CBD with smooth distal tapering. No intra-luminal/periductal lesion are seen.

After reviewing this report, ERCP was planned and performed.

ERCP

ERCP revealed periampullary diverticulum with sludge.

Wide papillotomy, CBD clearance, biliary drainage was done and 7 fr stent was placed.

USG was repeated after 3 days.

Liver is mildly enlarged. Echogenecity is increased & texture is normal. 4-5 small lesions are seen in both the lobed. Largest in the Segment IV measures 5.0 x 4.0cms & in segment VI measuring 4.8 x 3.0cms. Rests are smaller. All are ill defined & solid. No liquefaction is seen likely to represent early cholangitic abscesses-Not tappable at present

MILD HEPATOMEGALY MULTIPLE CHOLANGITIC ABSCESSES-SOLID & NOT TAPPABLE.

Gall bladder is well distended. sludge & wall edema is seen. 3-4 small calculi are seen measuring 4-6mm. No pericholecystic collection.

ACUTE CALCULOUS CHOLECYSTITIS. NO S/O PERFORATION.

Post ERCP, Patient was given intravenous medications for 15 days and then was discharged with Oral medications for cholangitic abscesses.

Tab Metronidazole 400mg 1 TDS

Tab Pan 40mg 1 OD

Patient revisited OPD of our hospital for pain in abdomen at right hypochondriac region and right lumbar region, fever and anorexia since last 5 days.

USG (Abdo + Pelvis)

Liver is mildly enlarged. Echogenecity is increased and texture is normal. 2 lesions (cholangitic abscesses) seen in both lobes. Largest in segment IV approx. 5.1x5.0 cms (liquified component = 10cc) and in segment VI approx. 5.0x3.7cms (liquified component = 8cc).

Gall bladder is well distended with sludge and wall edema. 3-4 small calculi seen measuring 4-6 mm. no pericholecystic collection.

CT ABDOMEN & PELVIS (PLAIN & CONTRAST)

Liver measures 19.8 cm, enlarged. There are multiple well encapsulated thick peripheral wall enhancing centrally cystic abscesses in liver. Largest involving segment IV, V measures approximately 6.4 x 5.9 x 5.5 cm in size. Loss of fat planes with adjacent pylorus and proximal duodenum. No e/o IHBR dilatation is seen. Portal vein is normal.

Gall bladder is suboptimally distended. Tiny radio-opaque calculi in gallbladder lumen. GB wall thickness measures 3.4 mm. CBD is normal.

Final Diagnosis-

Physical, laboratory and imaging findings indicated **Liver Abscess with Cholelithiasis**.

Treatment-

After diagnosing, intravenously administered antibiotics- Inj. Taxim 1 gm IV BD, Inj. Metronidazole 500mg IV TDS, Inj. Pantoprazole 40 mg IV BD

Liver abscess drainage with USG guided Pigtail catheterization was performed. Approx. 3-4 cc pus was drained in 3 days. So Laparoscopic liver Abscess drainage with Cholecystectomy was planned and performed.

PROCEDURE:

Position- Supine with head up and right up position.

Anaesthesia- General Anaesthesia

Procedure

Under all aseptic precautions painting and draping done.

Incision taken at umbilicus with blade no. 11 then with the allis forceps hold edge and 10mm optical port inserted.

Typical 4-port technique was applied:

Umbilical port (10 mm) – Camera
Epigastric port (10 mm) – Working / suction
Right mid-clavicular port (5 mm)
Right anterior axillary port (5 mm)

Then hold the liver with babcock forceps, identified pus cavity and broke all septae and inspected for more cavity. Normal saline wash given. Check for all pus pockets drainage.

After confirming all septae drained out Gall bladder dissection started.

Then all adhesions over the gall bladder removed.

Dissection of Calot's triangle started.

Identified cystic duct and artery i.e critical view of safety achieved and cystic duct ligated with ligaclip no. 400 and cystic artery was cauterised using monopolar hook.

Then cystic duct was cut with scissor.

Further dissection started using fundus first method.

Separation of Gall bladder from liver bed was done.

Gall Bladder fossa checked for hemostasis. Gall Bladder extracted out using GB extractor.

Normal Saline wash was given to check biliary leakage from CBD and hemostasis. No bile leakage seen, hemostasis achieved. Abscess drained cavity and GB fossa was filled with Abgel.

ADK drain no. 32 kept.

Removed specimen was sent for HPE.

All ports removed and closure done with vicryl 1-0 and ethilon 2-0

Dressing done.

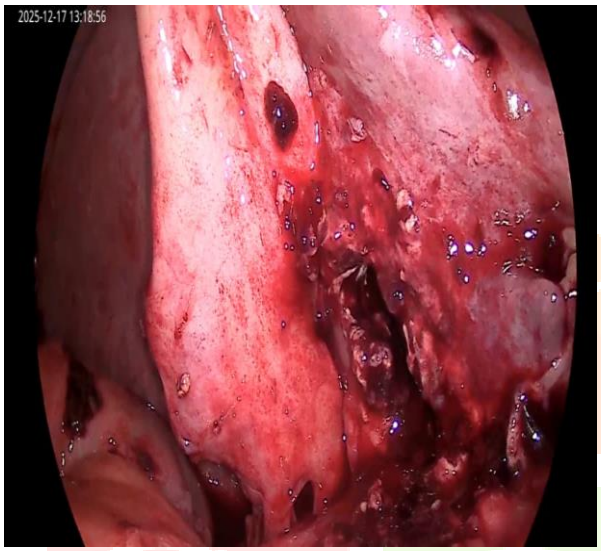

Fig 1. Liver Abscess Drainage from Segment VI

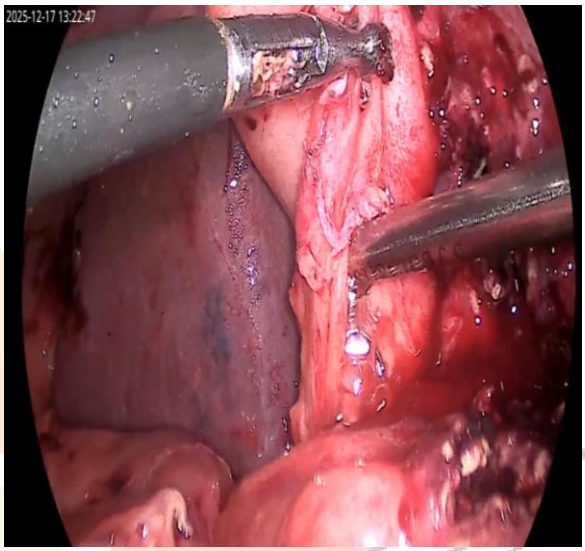

Fig 2. Hydrodissection done to achive critical view of safety

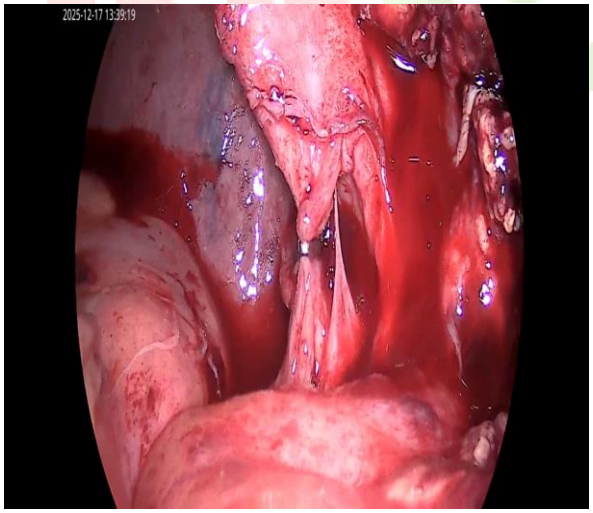

Fig 3. Cystic duct was identified and clamped

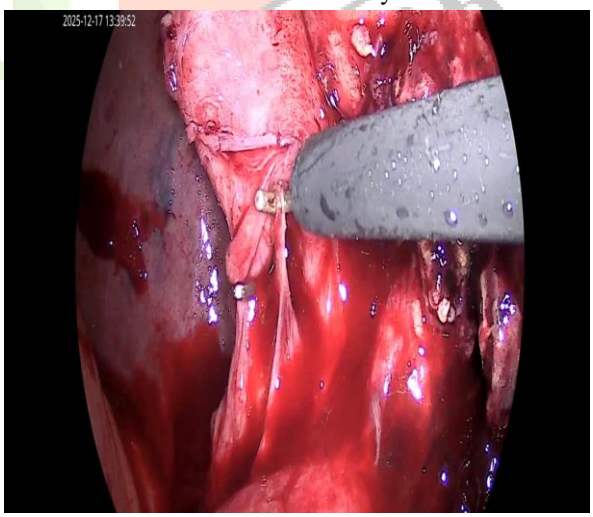

Fig 4. Cystic artery was identified and cauterised

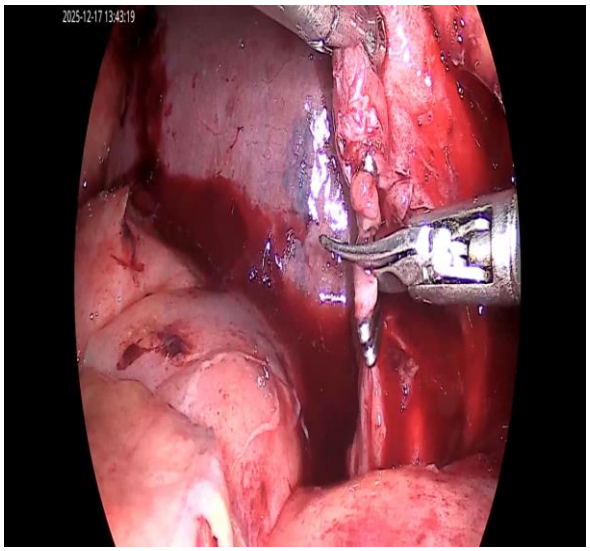

Fig 5. Cystic duct was cut using scissor

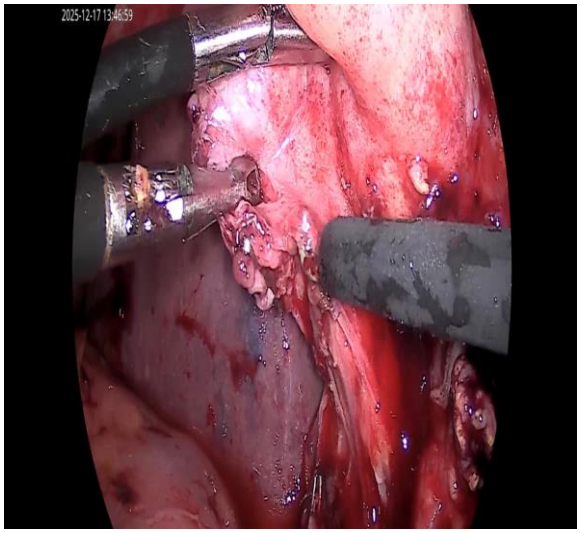

Fig 6. Anterior dissection was started

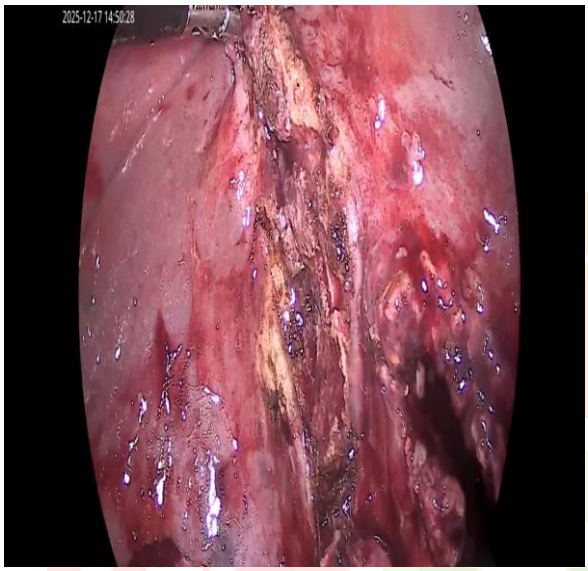

Fig 7. Gall bladder was completely dissected And GB Fossa was inspected

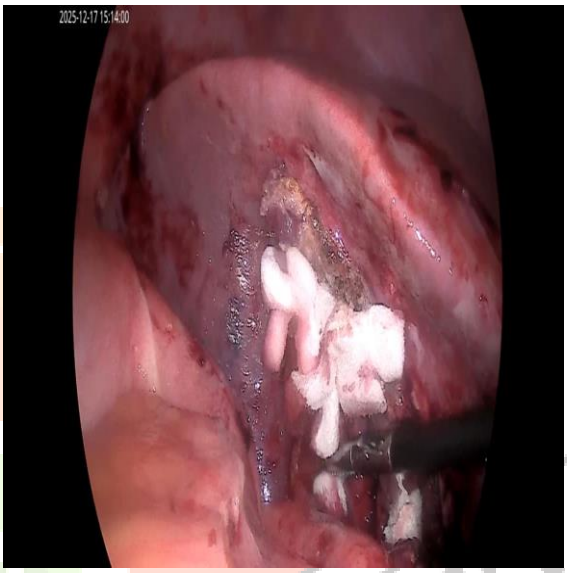

Fig 8. Abgel was placed in the GB fossa

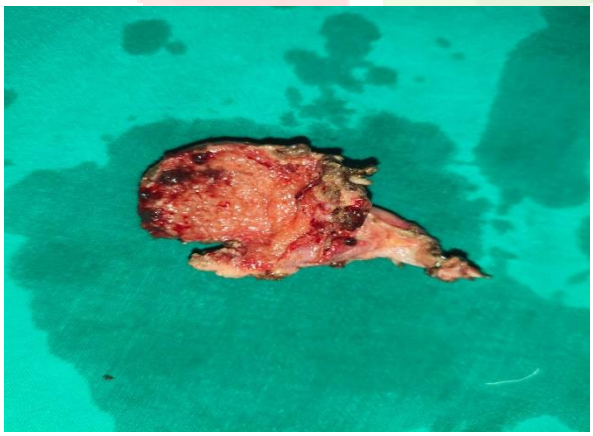

Fig 9. Excised Gall Bladder Anterior View

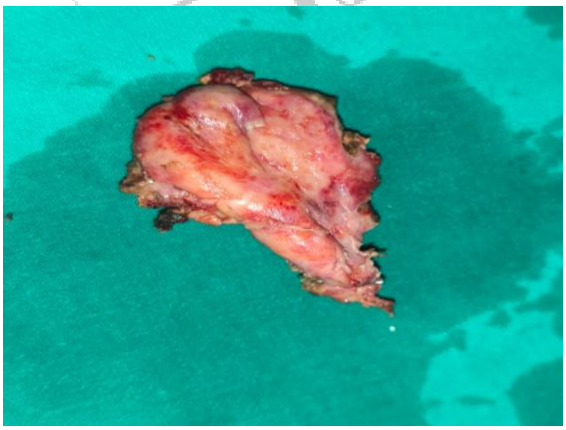

Fig 10. Excised Gall Bladder Posterior View

The Specimen Was sent for Histopathological Examination

Result:

Acute on Chronic Cholecystitis.

Pus was sent for Culture and Sensitivity.
Organism 1. E. Coli
Sensitive antimicrobial- Meropenem and Gentamicin
Organism 2. Klebsiella pneumoniae

Sensitive antimicrobial- Meropenem and Gentamicin

On POD - 1 Ryles Tube was removed under all aseptic precautions.
On POD - 2 Foleys catheter was removed under all aseptic precautions.
After intravenous medications based on culture sensitivity report, Patient was discharged from hospital with ADK Drain and was advised follow up on the OPD basis after 3 days.

Discussion-

Liver abscess associated with cholelithiasis is an important clinical entity in which biliary obstruction and ascending infection play a key etiological role. Gallstones cause bile stasis and increased intrabiliary pressure, facilitating bacterial proliferation and spread of infection into the hepatic parenchyma through intrahepatic bile ducts. Consequently, biliary tract disease has emerged as a leading cause of pyogenic liver abscess.

The clinical presentation often overlaps with biliary pathology, including fever, right upper quadrant pain, and jaundice, leading to diagnostic delay. Imaging modalities such as ultrasonography and contrast-enhanced computed tomography are crucial for confirming the diagnosis and identifying associated biliary obstruction. Management requires a combined approach involving broad-spectrum antibiotics, image-guided percutaneous drainage when indicated, and definitive treatment of the underlying biliary pathology. Failure to address gallstone disease may result in persistent infection or recurrence.

In the present case, firstly USG guided Pigtail catheterization was done but the drain output was approximately 5cc in 3 days. Hence Laparoscopic Liver abscess drainage with Cholecystectomy was performed. This surgical approach is often considered when catheter drain fail to drain out the purulent thick collection.

Delayed or incomplete treatment of the biliary source has been associated with persistent infection and higher recurrence rates. Therefore, timely identification and management of cholelithiasis in patients presenting with liver abscess significantly improves clinical outcomes and reduces mortality.

Conclusion-

Liver abscess associated with cholelithiasis is a potentially life-threatening condition that requires early recognition and comprehensive management. Gallstone-related biliary obstruction and ascending infection play a crucial role in the pathogenesis of pyogenic liver abscess. Due to overlapping clinical features, a high index of suspicion is essential, especially in patients presenting with fever and right upper quadrant pain in the presence of gallstone disease.

Accurate diagnosis through appropriate imaging, prompt initiation of antibiotic therapy, and timely abscess drainage are critical components of successful treatment. Equally important is definitive management of the underlying biliary pathology to prevent recurrence and long-term complications. An integrated hepatobiliary approach involving medical, endoscopic, and surgical interventions ensures optimal patient outcomes. Early intervention and addressing the primary biliary cause not only reduce morbidity and mortality but also highlight the importance of considering biliary tract disease in all cases of pyogenic liver abscess.

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