

Diagnostic Challenge: Concurrent Amoebic, Tuberculous, and Pyogenic Liver Abscesses in a Single Patient Following Laparoscopic Cholecystectomy

Akansha Jain¹, Fahad Tauheed², Vijender Verma³, S.M. Arif Sheerazi⁴,
Sadaf Feroz⁵

^{1,2,3,4,5}Department of General Surgery,
HIMSR College, Jamia Hamdard University, New Delhi, India.

Corresponding Author: Dr. Akansha Jain

DOI: <https://doi.org/10.52403/ijhsr.20260915>

Received: 06/05/2026; Revised: 29/07/2026; Accepted: 10/09/2026

ABSTRACT

Background: Liver abscesses are uncommon but potentially life-threatening conditions that may arise from bacterial, parasitic, or mycobacterial infections. Concurrent infection with amebic, pyogenic, and tuberculous organisms within a single hepatic abscess is exceedingly rare and presents a major diagnostic and therapeutic challenge.

Case Presentation: A 42-year-old female presented with progressive right upper abdominal pain, pleuritic discomfort, fever, and weight loss six months after an uneventful laparoscopic cholecystectomy. Initial ultrasonography demonstrated minimal perihepatic fluid collection, and conservative management was initiated. Subsequently, worsening symptoms prompted contrast-enhanced computed tomography, which revealed a ruptured hepatic abscess in segment VI with subcapsular extension, peritoneal thickening, and ascites. Ultrasound-guided pigtail drainage was performed. Laboratory evaluation demonstrated positive amebic serology, pus culture growth of *Staphylococcus aureus*, and detection of *Mycobacterium tuberculosis* by GeneXpert from the abscess fluid. The patient was successfully managed with drainage, metronidazole therapy, and antitubercular treatment, resulting in complete clinical recovery.

Conclusion: This case highlights the importance of maintaining a broad differential diagnosis in patients presenting with delayed hepatic complications following abdominal surgery. Simultaneous amebic, pyogenic, and tuberculous liver abscesses are extremely rare and require multimodal diagnostic evaluation and individualized multidisciplinary management.

Keywords: Liver abscess; Tuberculous liver abscess; Amebic liver abscess; Pyogenic liver abscess; Laparoscopic cholecystectomy; GeneXpert; Mixed hepatic infection

INTRODUCTION

Liver abscesses are categorized into pyogenic, amebic, and fungal etiologies, with pyogenic liver abscesses being the most common in developed countries and amebic liver abscesses more prevalent in endemic regions. [1,2] Tuberculous involvement of the liver is uncommon and isolated hepatic tuberculosis is particularly rare due to the relatively low oxygen tension within hepatic tissue. [3,4] Concurrent occurrence of tuberculous, pyogenic, and amebic liver abscesses in a single patient is exceedingly uncommon and can lead to delayed diagnosis owing to overlapping clinical and radiological features.

Risk factors for liver abscess formation include biliary tract disease, diabetes mellitus, immunosuppression, abdominal infections, and previous hepatobiliary surgery. [1] Although laparoscopic cholecystectomy is generally considered safe, delayed infective complications involving the liver are rare but clinically significant.

We report a rare case of a ruptured hepatic abscess caused by concurrent amebic, pyogenic, and tuberculous infection presenting six months after laparoscopic cholecystectomy, successfully managed with image-guided drainage and targeted medical therapy.

CASE SUMMARY

A 42-year-old female with no known comorbidities presented with complaints of right upper abdominal pain for several days, which was aggravated during inspiration and associated with significant unintentional weight loss. She denied jaundice, vomiting, altered bowel habits, or previous tuberculosis exposure. Six months earlier, she had undergone laparoscopic cholecystectomy for symptomatic cholelithiasis with intra operative findings suggestive of distended gall bladder with multiple calculi with impacted calculus at neck and frozen calot with grossly normal liver. Although difficult anatomy was

encountered intraoperatively, the postoperative recovery had been uneventful. On initial evaluation, the patient was afebrile and hemodynamically stable. Physical examination revealed a soft, non-distended abdomen without guarding or rigidity. Mild discomfort was elicited in the right hypochondrium. Laboratory investigations were unremarkable except for mild inflammatory markers elevation (ESR – 20mm/hr, CRP – 2mg/l). Ultrasonography of the abdomen demonstrated minimal perihepatic fluid collection and she was initially managed conservatively with analgesics and follow-up.

Few days later, the patient developed fever and worsening abdominal pain, prompting hospital admission. ESR – 70 and CRP – 2.4. On examination, she remained hemodynamically stable but had mild abdominal distension and localized tenderness in the right hypochondrium.

Contrast-enhanced computed tomography (CECT) of the abdomen demonstrated a peripherally enhancing hypodense lesion measuring $3.7 \times 3.6 \times 3.4$ cm in segment VI of the liver with subcapsular extension (figure 1) and an inferior wall rent (figure 2), suggestive of rupture. Associated findings included extensive omental and peritoneal thickening with mild-to-moderate ascites, consistent with ruptured hepatic abscess and localized peritonitis.

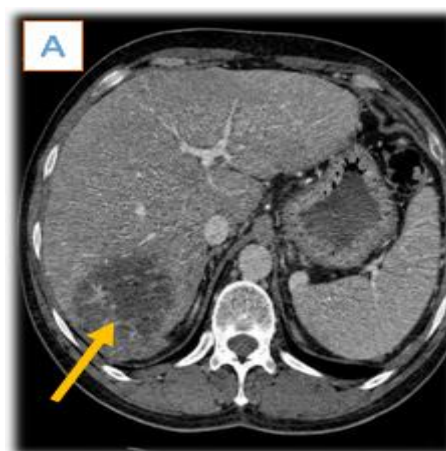


Figure 1: Hypodense lesion measuring $3.7 \times 3.6 \times 3.4$ cm in segment VI

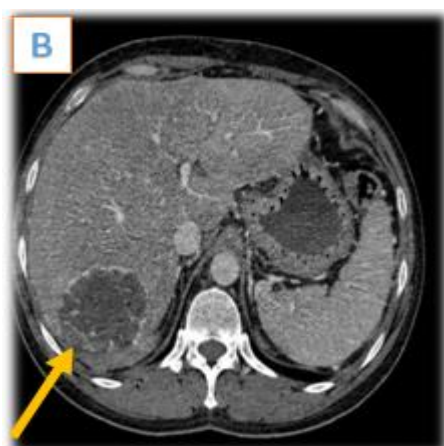


Figure 2: Inferior wall rent

Given the radiological findings, ultrasound-guided pigtail catheter drainage was performed under local anesthesia. Purulent material was aspirated and sent for microbiological evaluation.

Microbiological analysis revealed positive amoebic serology, growth of *staphylococcus aureus* on pus culture, sensitive to rifampicin and detection of *Mycobacterium tuberculosis* by GeneXpert assay from the abscess fluid.

Table 1. Antibiotic susceptibility profile of the pus culture isolate.

Antibiotics	MIC	Sensitivity
Benzylpenicillin	≥ 0.5	R
Ciprofloxacin	≥ 8	R
Daptomycin	0.25	S
Gentamicin	≤ 0.5	S
Levofloxacin	4	R
Oxacillin	≤ 0.25	S
Teicoplanin	≤ 0.5	S
Tigecycline	≤ 0.12	S
Vancomycin	—	S
Cefoxitin Screen	Neg	—
Clindamycin	0.25	R
Erythromycin	≥ 8	R
Inducible Clindamycin Resistance	Pos	+
Linezolid	2	S
Rifampicin	≤ 0.03	S
Tetracycline	≤ 1	S
Trimethoprim/Sulfamethoxazole	≤ 10	S

Abbreviations: MIC, minimum inhibitory concentration; R, resistant; S, susceptible; Neg, negative.

Based on these findings, the patient was diagnosed with concurrent amoebic, pyogenic, and tuberculous liver abscess.

The patient was managed conservatively with Metronidazole therapy (Tab. Metronidazole 800mg TDS) for 10 days followed by Tab. Diloxanide 500mg TDS, and standard antitubercular treatment (ATT) – as fixed dose combination with Isoniazid(H), Rifampicin (R), Pyrazinamide (Z), and Ethambutol (E): Intensive Phase (IP) – 2 months (HRZE - 75/150/400/275) – 3 tablets followed by Continuation Phase (CP) – 4 months (HRE - 75/150/275) – 3 tablets. Serial clinical assessments demonstrated gradual symptomatic improvement with resolution of fever and abdominal pain. The pigtail drain output

progressively decreased and was removed after 10 days.

The patient continued outpatient follow-up for six months while completing antitubercular therapy. During follow-up, she remained asymptomatic with no recurrence of abdominal pain or fever. Repeat abdominal ultrasonography revealed no residual collection or other significant abnormalities.

DISCUSSION

Pyogenic liver abscesses are commonly caused by enteric gram-negative organisms, although *Staphylococcus aureus* has increasingly been reported, particularly in hematogenous spread and postoperative infections. [1,5] Amoebic liver abscesses,

caused by *Entamoeba histolytica*, remain highly prevalent in developing countries and often present with fever, right upper quadrant pain, and hepatomegaly. [2]

Hepatic tuberculosis is an uncommon manifestation of extrapulmonary tuberculosis. [3,4] Isolated tuberculous liver abscesses account for less than 1% of all tuberculosis cases and are often difficult to diagnose due to nonspecific symptoms and radiological overlap with pyogenic or malignant lesions. GeneXpert has emerged as a valuable diagnostic tool due to its rapid detection capability and high specificity for *Mycobacterium tuberculosis*. [6]

The coexistence of amoebic, pyogenic, and tuberculous infection within a single hepatic abscess is exceptionally rare. Such mixed infections can complicate diagnosis because symptoms are often nonspecific and imaging findings may not distinguish among etiologies. In this case, positive amoebic serology alone could have resulted in incomplete treatment if microbiological analysis of the drained pus had not been performed.

The relationship between the prior laparoscopic cholecystectomy and subsequent abscess formation remains uncertain. Difficult intraoperative anatomy may have predisposed to occult biliary contamination or localized inflammation, which could have served as a nidus for delayed infection. Nevertheless, the prolonged interval between surgery and presentation suggests a multifactorial pathogenesis rather than direct postoperative infection alone.

Management of liver abscess depends on abscess size, etiology, and patient stability. Image-guided percutaneous drainage combined with targeted antimicrobial therapy remains the standard approach for large or complicated abscesses. [7] In tuberculous liver abscesses, antitubercular therapy remains the cornerstone of treatment, while drainage may be required for diagnosis and symptom relief. [3]

This case underscores several important clinical lessons:

1. Persistent or delayed right upper quadrant symptoms after hepatobiliary surgery warrant thorough evaluation.
2. Liver abscesses in endemic regions may have multiple infectious etiologies simultaneously.
3. Microbiological analysis of drained material should routinely include bacterial culture, acid-fast bacilli testing, and molecular assays such as GeneXpert.
4. Early image-guided drainage combined with organism-specific therapy can lead to excellent outcomes even in complex mixed infections.

CONCLUSION

Concurrent amoebic, pyogenic, and tuberculous liver abscesses are exceedingly rare and pose substantial diagnostic challenges. This case demonstrates the importance of comprehensive microbiological evaluation in hepatic abscesses, especially in endemic settings and atypical postoperative presentations. Early diagnosis, image-guided drainage, and targeted multidrug therapy resulted in successful recovery in our patient.

Declaration

Patient's consent: Obtained for publication

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

Creative Commons Attribution License 4.0

This is an open-access article published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0).

<https://creativecommons.org/licenses/by/4.0>

REFERENCES

1. Kaplan GG, Gregson DB, Laupland KB. Population-based study of the epidemiology of and the risk factors for pyogenic liver abscess. Clin Gastroenterol Hepatol. 2004;2(11):1032-1038. doi:10.1016/S1542-3565(04)00459-8.
2. Sharma MP, Ahuja V. Management of amoebic liver abscess. Arch Med Res. 2000;

- 31(4 Suppl):S4-5. doi: 10.1016/s0188-4409(00)00151-x.
3. Essop AR, Segal I, Posen J, Noormohamed N. Tuberculous abscess of the liver: a case report. *S Afr Med J*. 1983;63(21):825-826.
 4. Alvarez SZ. Hepatobiliary tuberculosis. *J Gastroenterol Hepatol*. 1998;13(8):833-839. doi:10.1111/j.1440-1746.1998.tb00743.x.
 5. Chen SC, Huang CC, Tsai SJ, Yen CH, Lin DB, Wang PH, et al. Severity of disease as main predictor for mortality in patients with pyogenic liver abscess. *Am J Surg*. 2009;198(2):164-172. doi: 10.1016/j.amjsurg.2008.08.022.
 6. World Health Organization. Global tuberculosis report 2024. Geneva: World Health Organization; 2024. ISBN: 978-92-4-010153-1.
 7. Hope WW, Vrochides DV, Newcomb WL, Mayo-Smith WW, Iannitti DA. Optimal treatment of hepatic abscess. *Am Surg*. 2008;74(2):178-182. doi:10.1177/000313480807400219.

How to cite this article: Jain A, Tauheed F, Verma V, S.M. Arif Sheerazi, Feroz S. Diagnostic challenge: concurrent amoebic, tuberculous, and pyogenic liver abscesses in a single patient following laparoscopic cholecystectomy. *Int J Health Sci Res*. 2026; 16(9):135-139. DOI: [10.52403/ijhsr.20260915](https://doi.org/10.52403/ijhsr.20260915)
