

# To Study the Treatment Outcome of Various Management Strategies of Liver Abscess: A Prospective Study From A Tertiary Hospital Centre.

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## Abstract

**Background:** Liver abscess was found more commonly in men between 18 and 60 years of age but can occur at any age. Approximately 80% were solitary and mainly located in right lobe of liver. The most common presenting clinical symptoms are upper abdominal pain, high-grade fever, nausea, and vomiting. The most common sign is right hypochondrial tenderness frequently with guarding and hepatomegaly. Some patients may present with jaundice and pleural effusion. Percutaneous catheter drainage was most widely used treatment method for liver abscess. Percutaneous needle aspiration also used for treatment of liver abscess, was a simpler, less costly and equally effective mode of treatment. In some patients of amoebic liver abscess associated with secondary bacterial infection and with ruptured liver abscess, surgical drainage had been the traditional mode of treatment. **Subjects and Methods:** Patients of unruptured liver abscess were randomly allocated into medical management, PCD and PNA groups for comparison. **Results:** Out of total 60 cases studied, Percutaneous catheter drainage (PCD) was most widely used treatment method in 27 (45%) cases of liver abscess. Percutaneous needle aspiration (PNA) also used for 21 (35%) cases, surgical treatment in 07 (11.67%) cases and only medical management was done in 05 (8.33%) cases of liver abscess. **Conclusion:** Percutaneous catheter drainage (PCD) was most widely used treatment method for liver abscess patients with 100% success rate and Percutaneous needle aspiration (PNA) was next to PCD with 81% success rate.

**Keywords:** PCD, PNA.

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## Introduction

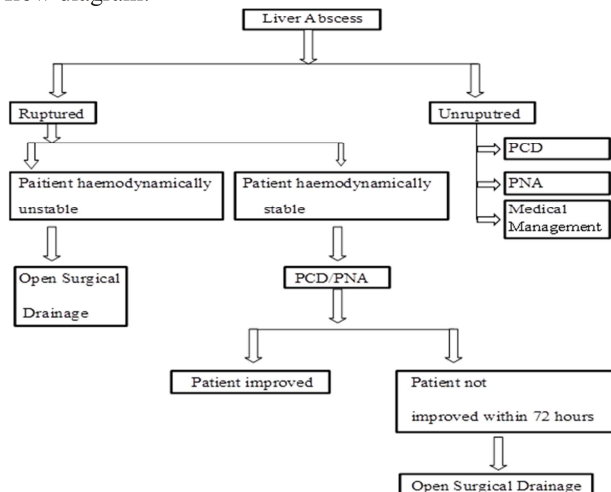
Liver abscess is defined as collection of purulent material in liver parenchyma which can be due to bacterial, parasitic, fungal, or mixed infection. It is a common condition across the globe. Liver abscess are categorized into various types based on etiology, of which Amoebic Liver Abscess and Pyogenic Liver Abscess are major types. Upper abdominal pain and fever are the most common symptoms and tender hepatomegaly is present in majority of the patients. Initially USG was done in all patients of liver abscess. Confirmation of pyogenic liver abscess involves aspiration of abscess as well as positive blood cultures. Amoebic serology (IgM ELISA) done in all cases to confirm the diagnosis of amoebic liver abscess. High quality CT scans can demonstrate very small abscesses and can more easily identify multiple small abscesses. In the setting of multiple abscesses <5 cm in size and no concurrent surgical disease, patients may be treated with IV antibiotics alone. In multiple, small (5–10 cm), superficial, and fully liquefied abscesses, percutaneous needle aspiration is preferred. Usually percutaneous pigtail catheter is preferred in single, large (>10 cm), deep seated, and partially liquefied abscess.

Indications for the surgical treatment of liver abscess are signs of peritonitis and failure of previous drainage attempts. Open surgery/Laparotomy can be performed by a transperitoneal approach which allows for abscess drainage and abdominal exploration to identify previously undetected abscesses and the location of an etiologic source.

## Subjects and Methods

A prospective study on 60 patients was carried out at Swaroop Rani Nehru Hospital associated with Moti Lal Nehru Medical College, Allahabad from August 2014 to July 2015 after approval from the ethical committee and obtaining written and informed consent from the patients. All the patients with history and clinical examination suggestive of liver abscess attending surgical OPD and those coming for follow up in outpatient department at regular intervals were included in the study. According to USG findings, patients of liver abscess were divided into ruptured and unruptured liver abscess. Patients of unruptured liver abscess were randomly allocated into medical management, PCD and PNA groups for comparison. Interventions were done after correction of

INR below 1.4 to those who presented with coagulopathy. Patients of ruptured Liver abscess were divided according to haemodynamic condition of the patient as with following flow diagram.



Duration of drainage (days)	27	6-23 13.3±5.1	NA	NA	NA
Success	27	100%	17	81%	0.031*

\* = Showing 5% Significance Level

**Type of Management of Liver Abscess**

Management	Number of Patients (N=60)	Percentage (%)
Percutaneous Catheter Drainage (PCD)	27	45.0
Percutaneous Needle Aspiration (PNA)	21	35.0
Only Medical Management	05	08.33
Surgical Management	07	11.67

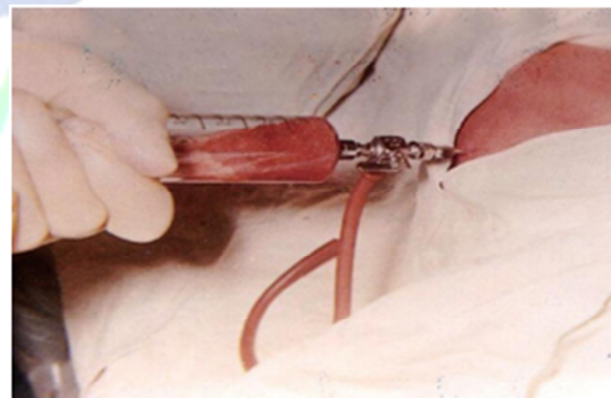
**Results**

Out of total 60 cases studied, effectiveness of treatment was measured in terms of: duration of hospital stay; days to achieve clinical improvement; days to achieve 50% reduction in abscess cavity size; and days to achieve total/near total resolution of abscess cavity. Independent t-test was used to analyze these parameters. The level of significance was set at P<0.05. Volume of abscess cavity and duration of drainage (applicable to PCD group only) were also analyzed and range and mean values were calculated for PNA and PCD.

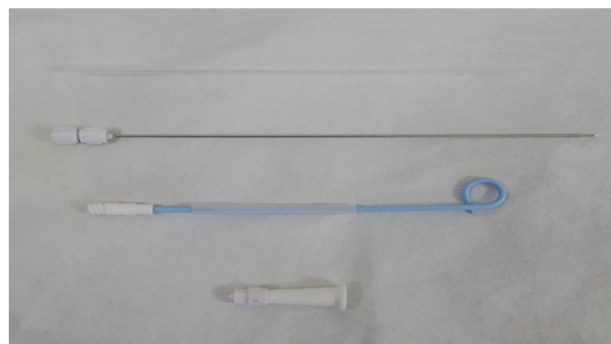
Treatment Group					
Parameter	Pigtail Catheter Drainage (n=27)		Percutaneous Needle Aspiration (n=21)		P-Value
	No. of Patients	Value Min-Max Mean±SD	No. of Patients	Value Min-Max Mean±SD	
Volume of largest cavity (c.c.)	27	17-1108 527±332	21	77-756 313±208	0.013*
Hospital Stay (days)	27	6-24 10.3±4.6	21	5-21 10.9±5.0	0.668
Clinical Improvement (days)	27	3-9 4.2±1.6	17	2-9 6.7±2.2	0.0001*
Time for 50% reduction in cavity size (days)	27	3-9 4.4±1.5	21	4-10 6.8±2.0	0.0001*
Time for total or near total resolution of cavity (weeks)	27	8-24 13.0±4.1	21	8-24 12.0±3.7	0.386



Showing Pigtail catheter in-situ in a patient



Percutaneous Needle Aspiration of Liver Abscess



Pigtail Catheter with Stylet and Connector

Percutaneous catheter drainage (PCD) was most widely used treatment method in 27 (45%) cases of liver abscess. Percutaneous needle aspiration (PNA) also used for 21 (35%) cases, surgical treatment in 07 (11.67%) cases and only medical management was done in 05 (8.33%) cases of liver abscess. Placement of an indwelling drainage catheter provided continuous drainage, drains thick pus because of wider caliber catheter, and prevents re-accumulation. This explains the higher success rates (100%) of PCD observed in this study and several previous studies. The success rate of PNA in our study after single aspiration was 23.81%, after second aspiration was 61.90% and after third aspiration it was 81%.

## Discussion

Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. However, recent advances in interventional radiology, intensive care, progress in antibiotic therapy, and liberal use of sonography and computerized tomography scanning of the abdomen had led to early diagnosis and treatment of patients with liver abscess, thus improving the patient outcome. Image-guided percutaneous catheter drainage had been increasingly used to treat liver abscesses with reported success rates ranging from 70-100%. Although percutaneous needle aspiration also used for treatment of liver abscess, was a simpler, less costly, and equally effective mode of treatment. Surgical drainage is more likely to be required in patients who have abscess rupture, incomplete percutaneous drainage or who have uncorrected primary pathology. The effectiveness of treatment was measured in terms of duration of hospital stay, days to achieve clinical improvement, 50% reduction in abscess cavity size and total/near total resolution of abscess cavity. The mean hospital stay of patients treated with needle aspiration was more than those treated with catheter drainage. The mean time in days taken for 50% decrease in the size of abscess cavity was significantly greater in group treated with needle aspiration than in those treated with catheter drainage. The patients in pigtail catheter drainage group showed earlier clinical improvement and 50% decrease in abscess cavity volume as compared to those who underwent percutaneous needle aspiration.

## Conclusion

Among various different treatment modalities of liver

abscess like conservative (medical management only), USG guided percutaneous needle aspiration (PNA), Percutaneous catheter drainage (PCD) and open surgical drainage, Percutaneous catheter drainage (PCD) is still most effective treatment modality of liver abscess especially in larger abscesses which are partially liquefied or with thick pus, with 100% success rate.

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