

## A Study of Outcome of Ultrasound Guided Pigtail Catheter Drainage of Liver Abscess.

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### **Back ground:**

Liver abscess is a serious condition leading to complication if left untreated. Percutaneous catheter drainage is emerged as less invasive modality for abscess management.

### **Aim:**

To study the outcome of ultrasound guided pigtail catheter drainage of liver abscess

### **Objectives:**

To study the age and sex distribution of liver abscess To study the clinical manifestations of liver abscess To study Various changes in liver parameters

To study size, location of liver abscess To study the microorganisms involved To study the complications after drainage

**Methods:**  
Most common age group involved is 25 to 45 years. Data was collected from 40 patients with liver abscess attending to SVRRGG hospital Tirupati. Patient was clinically examined and followed radiologically for number, location, size and liquification of liver abscess. The pigtail catheterization is done under the guidance of ultrasound and followed for complications and decrease in size of cavity etc.

### **Results:**

Out of 40 patients 32 were males and 8 were females. Most common Presentation fever with abdominal pain. Right lobe is involved in 80% of people. All patients had pigtail catheterization and average amount of pus drained is 800cc. All patients were followed clinically and radiologically. 80% of the culture and sensitivity report were negative. One patient developed complication of pyothorax.

### **Conclusion:**

Ultrasound guided percutaneous pigtail catheterization is considered as one of the minimally invasive method to drain solitary moderate to large size liver abscess. As it is safe, easier, cost effective with minimum complications and improved outcome of the patient.

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### **I. Back ground:**

Liver abscess is a serious condition leading to complication if left untreated. Percutaneous catheter drainage is emerged as less invasive modality for abscess management.

Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. Although the primary mode of treatment of amoebic liver abscesses is medical, 15% of amoebic abscesses may be refractory to medicaltherapy.

Also, secondary bacterial infection may complicate up to 20% of amoebic liver abscesses and hence drainage may be required in many patients with amoebic liverabscesses.

Percutaneous drainage is now considered the treatment of choice for most intra-abdominal abscesses and fluidcollections.

The percutaneous catheter drainage technique is widely practiced by surgeons and radiologistsalike.

The present study evaluates ultrasonography (USG) guided percutaneous pigtail catheter drainage, assesses its response and evaluatethe morbidity, mortality and complication rates of the procedure.

### **Aim:**

- Tostudy the outcome of ultrasound guided pigtail catheter drainage of liverabscess

### **Objectives**

- Tostudy the age and sex distribution of liverabscess
- Tostudy the clinical manifestations of liverabscess
- Tostudy Various changes in liverparameters
- Tostudy size, location of liverabscess

- To study the microorganisms involved
- To study the complications after drainage

**Inclusion criteria:**

Indications of catheter drainage included large sized liquefied or partially liquefied liver abscesses (>5 cm diameter) refractory to medical line of management.

**EXCLUSION CRITERIA:**

- Multiple liver abscess
- Ruptured liver abscess
- Multiloculated liver abscess
- Uncorrectable coagulopathy

**II. Methods**

- Data was collected from 40 patients with liver abscess attending to SVRRGG hospital Tirupati.
- Patient was clinically examined and followed radiologically for number, location, size and liquification of liver abscess.
- The pigtail catheterization is done under the guidance of ultrasound and followed for complications and decrease in size of cavity etc.
- Diagnosis of liver abscess was made on the basis of clinical history and examination followed by an USG. CT scan was not routinely performed.
- Hematological investigations which included bleeding time, clotting time and prothrombin time, haemoglobin, white blood cell count were performed in all the patients.
- A chest x-ray was performed in all the patients.
- The procedure was performed in the USG suite. Under strict antiseptic conditions using USG guidance & local anaesthesia (2% lignocaine) 16 Fr pigtail catheter was placed in the abscess cavity.
- After confirming free drainage of pus and confirming the position of the catheter's tip in the cavity, the catheter was fixed and connected to urosac bag.
- 10 ml of pus was sent for culture and sensitivity. Patients were given Inj. Tramadol 50 mg in 100 ml NS IV twice & TO, PR, BP were monitored hourly.
- A review USG of abdomen was done on the same evening and after confirming no free fluid in the peritoneal cavity and no signs of peritonitis / respiratory distress.
- 1st review was done after a week of catheter placement and USG abdomen was done to check for the decrease in the size of abscess cavity along with CBP.
- Serial USG of the abdomen and CBP were repeated every week. Drains were removed after confirming the collapse of the abscess cavity on USG.
- The pigtail catheter was removed when drainage become serous and it either ceased or was minimal (<10ml in 24hrs) and USG was suggestive of reduced size / collapsed cavity without any residual pus.
- On removal of the catheter, sterile dressings were applied. All patients were called for monthly follow up and were assessed clinically and ultrasonographically.

**III. Results:**

- Out of 40 patients 32 were males and 8 were females.

**Sex wise distribution of patients**

Males	Females	TOTAL
32 (80%)	8 (20%)	40

**Age wise distribution of patients**

Age group	Number of patients	Percentage %
30 -35	3	7
36-40	7	17
41-45	9	22
46-50	11	27
51-55	6	15
56-60	4	10

- Most common age group involved was 40- 50 years agegroup.
- Most common Presentation fever with abdominalpain.

Clinical features	Number of patients	Percentage %
Right upper quadrant pain	40	100
fever	35	87
Generalised weakness	30	75
Chills and rigors	28	70
hepatomegaly	35	87
jaundice	21	52
vomiting	10	25

**Changes in various laboratory parameters**

Laboratory criteria	Number of people	Percentage %
Elevated Total bilirubin	25	62
Elevated wbc	38	95
Anaemia	30	75
Raised INR	10	25

Includes Laboratory Investigations such as leucocytosis (95%), raise in total bilirubin(62%), anaemia (75%).

Right lobe is involved in 80% of people.

Lobe involved	Number of patients	percentage
Right lobe	32	80
Left lobe	8	20

- Size of the liver abscess ranges from 300cc to1200cc.
- Out of 45 patients 35 patients had single liverabscess
- 10 patients had number of abscess varies from 2 to4.
- All patients had pigtail catheterization and average amount of pus drained is800cc.
- All patients were followed clinically and radiologically. 80% of the culture and sensitivityreport werenegative.

Culture report	Number of patients	Percentage %
No growth	32	80
E coli	3	7
Staph aureus	2	5

Klebsiella	3	7
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- One patient developed complication of pyothorax.

Complications	Number of patients	Percentage
Pain at catheter site	10	25
Blockade of catheter	3	7
Displacement of catheter	2	5
Pyothorax	1	2

#### IV. Conclusion

- Ultrasound guided percutaneous pigtail catheterization is considered as one of the minimally invasive method to drain solitary moderate to large size liver abscess.
- As it is safe, easier, cost effective with minimum complications and improved outcome of the patient.
- The problem of failure of this procedure as reported by earlier studies has been due to the thick and viscous pus, which cannot be easily drained by percutaneous drainage or early premature withdrawal of the catheter.
- These problems can be avoided by using adequate sized pigtail catheters depending on the viscosity of pus and following a strict protocol for catheter flushing and removal.
- One of the major problems is a prolonged duration of the catheter. This led to some authors considering this procedure as slow.
- Sonographic resolution of an abscess cavity following this procedure may occur at any time between 2 weeks to 4 months.
- Residual cavities may persist indefinitely.
- 40 % of our patients had small residual cavities (< 2 cms) at 3 months of followup.
- Percutaneous catheter drainage is a safe procedure with very few reported complications which includes hemorrhage, perforation of hollow viscera, peritoneal spillage, catheter displacement or blockage and septicemia.
- The chief limitation of our study is that patients with amoebic and pyogenic liver abscesses could not be segregated due to the nonavailability of serological tests.
- However, without a firm and specific diagnosis, the abscesses were drained in the belief that percutaneous drainage would cure a pyogenic abscess in a shorter duration and in case of an amoebic abscess would hasten the patient's recovery.
- To summarize, percutaneous pigtail catheter drainage is a safe and effective mode of treatment of liver abscesses, both amoebic and pyogenic. It results in an early relief of symptoms and faster resolution of abscess cavity.
- The low morbidity and high success rate in treating liver abscesses, which otherwise would have a fatal outcome if untreated, by this minimally invasive method suggests that this therapy should be the first line of management in liquefied moderate to large sized liver abscesses

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