

## An Innovative Technique of Laparoscopic Drainage of Liver Abscess

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**ABSTRACT:** Liver abscess is one of the most common infective conditions occurring in the liver, especially in India. There are two main causes of liver abscess – Amoebic and Pyogenic. Amoebic liver abscess is caused by *Entamoeba histolytica* sp, while pyogenic liver abscess is most commonly polymicrobial due to the ascending route of infection from the GIT.[1] Common organisms are E.coli, Klebsiella, Proteus etc. Liver abscess is a life threatening and a potentially serious condition if left untreated. Therefore, it is very important for prompt diagnosis and appropriate management at the earliest.[2] Spontaneous intraperitoneal rupture, extra and retroperitoneal rupture and intrathoracic rupture are frequently seen in liver abscess. Delay in diagnosis may lead to rupture of liver abscess which may increase the morbidity as well as mortality.[3] The current treatment modalities are 1) Drug therapy alone, 2) Image guided aspiration and drug therapy, 3) Image guided percutaneous drainage and drug therapy and 4) Surgery – Laparotomy/Laparoscopy and drainage. The study was undertaken to determine the efficacy and advantages of laparoscopic drainage of liver abscess in patients who are admitted in GRH Madurai.

**Keywords** – amoebic, abscess, drainage, laparoscopic, pyogenic

### I. INTRODUCTION

One of the commonest health conditions in a developing country like India, Liver abscess is a public health problem. Some of the patients may be asymptomatic, some may be symptomatic and others may present as an emergency due to rupture. Previous works on this topic studied the nature, clinical features and prognosis of the two main types of abscess, comparison between conservative management and USG guided aspiration, efficacy of percutaneous needle aspiration etc.[4,5,6,7,8,9,10]. This study was carried out to derive conclusions about the efficacy and safety of laparoscopic drainage of liver abscess in GRH Madurai and to derive conclusions about the prognosis of laparoscopic drainage of liver abscess in GRH Madurai.

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### III. STUDY

#### Materials and Methods:

##### Primary Objectives:

- To derive conclusions about efficacy and safety of laparoscopic drainage of liver abscess in GRH Madurai.
- To derive conclusions about the prognosis of laparoscopic drainage of liver abscess in GRH Madurai.

**Eligibility criteria:**

**A. Inclusion criteria:**

- Patients more than 18 years of age in both sexes presenting with liver abscess in GRH Madurai.
- Patients who consented for inclusion in the study according to designated proforma.
- Patients with liver abscess of size 5 to 20 cm who failed to respond to Usg guided percutaneous drainage of liver abscess.

**B. Exclusion criteria:**












- Patients less than 18 years of age
- Patient who did not consent for inclusion in the study

**Methodology:**

- From March 2017 to March 2018 patients presenting with liver abscess in GRH Madurai were recruited in this study.
- A total of 40 patients with liver abscess of size 5 to 20cm who failed to respond to Usg guided percutaneous drainage were included in the study.
- Following consent, a questionnaire was filled to record the patient's demographic data, duration of abdominal pain, history of fever, history of jaundice, alcoholic history, size of abscess, site of abscess and number of abscesses as assessed by ultrasonogram.
- Parameters such as abscess volume drained, intraoperative time, day of starting of oral fluids postoperatively, duration of hospital stay and complications of the procedure were studied after laparoscopic drainage.

Visual analog score used for postoperative pain assessment:

**COMPARATIVE PAIN SCALE CHART (Pain Assessment Tool)**

										
0 Pain Free	1 Very Mild	2 Discomforting	3 Tolerable	4 Distressing	5 Very Distressing	6 Intense	7 Very Intense	8 Utterly Horrible	9 Excruciating Unbearable	10 Unimaginable Unspeakable
No Pain	Minor Pain			Moderate Pain			Severe Pain			

**Procedure:**

Under strict aseptic precautions, under endotracheal tube general anaesthesia, patient in supine position, a small cut below the umbilicus was made, pneumoperitoneum created and camera was inserted via 10 mm umbilical port. Thorough diagnostic laparoscopy was done. Two 5 mm working ports were made depending on the position of the liver abscess. The adhesions of the liver with the abdominal wall and the diaphragm were separated. The surface of the liver with abscess cavity will be slightly elevated. The elevated surface of the liver was identified and aspiration of pus from abscess cavity was done via paracentesis. Pus was sent for culture and sensitivity. A small hole was made on the elevated surface of the liver abscess, the abscess cavity was then deroofed using diathermy and a Malecot's catheter was placed into the abscess cavity and brought on to the surface via port site for drainage of pus and connected to a urobag after fixing the malecot's catheter. The remaining port sites were closed. Sterile dressing applied. Postoperatively, when the drain collection was less than 20 ml/day, USG was done to confirm the collapse of abscess cavity and then Malecot's catheter removal was done.(Fig 1-5). Follow up ultrasonogram of abdomen was done 24 hours after intervention and is repeated every three days and the size of the abscess cavity is recorded. The criteria for successful treatment are clinical subsidence of infection and sonographic evidence of resolution of abscess such as disappearance and marked decrease in the size of abscess cavity. The mean time for disappearance of ultrasonographic abnormalities in resolution of liver abscess is about 6-9 months. Serial imaging studies are strictly not necessary for follow up if the patient responds satisfactorily to therapy.[11]

**Results:**

- In our study of 40 patients from the age group of above 18 years, 20 patients (50%) were between 41 to 50 years. (Fig 6, TABLE 1 ).
- In our study of 40 patients with liver abscess, 39 patients were Male. This shows that liver abscess is more common in Male patients. (Fig 7 , TABLE 2).

- Out of study of 40 patients with liver abscess volume ranging from 500 to 1000ml, 23 patients (57.5%) had abscess volume of 500 to 750 ml and 17 patients (42.5%) had abscess volume of 750 to 1000 ml. (Fig 8, TABLE 3 ).
- The operating time for laparoscopic drainage of liver abscess ranged from 40 to 85 minutes. The majority of the patients were operated within 40 to 55 minutes.(Fig 9, TABLE 4).
- Post operatively oral fluids were started on Day1 in 27 cases, on Day2 in 10 cases and on Day3 in 3 cases respectively.(Fig 10, TABLE 5).
- Out of 40 patients 4 patients had Surgical Site Infection (SSI) and no post operative complications occurred in the rest of the patients.(Fig 11, TABLE 6).
- The duration of post operative hospital stay ranged from 5 to 8 days. Majority of the patients (50%) were discharged on either Day6 or Day7.(Fig 12, TABLE 7).
- In visual analog score of post operative pain assessment the majority of the patients had a score of less than or equal to 4.(Fig 13, TABLE 8).
- Following laparoscopic drainage of liver abscess of 40 patients no patient had recurrence after 2 months with weekly followup by Ultrasonogram.(Fig 14, TABLE 9).

**Discussion:**

- In our study, laparoscopic drainage of liver abscess was done for 40 patients who failed to respond to USG guided percutaneous drainage.
- The incidence of liver abscess was more in the age group of 41 to 50 years (20 Cases) with majority of them being male patients.
- Abscess volume of these 40 patients ranged from 500 to 1000 ml. The mean operating time was 63 minutes.
- There was no conversion to open surgery in any of these patients.
- Post operatively 4 patients had surgical site infections and were managed conservatively.
- Oral intake was commenced on Day1 in 27 cases(67.5%).
- The average post hospital stay was 6.2 days.
- The average post operative visual analog pain assessment score was 3.5 (Tolerable to Distressing).
- No recurrence was found after 2 months of weekly followup using USG.

In a similar study of laparoscopic drainage of liver abscess Dr. Swapna Saha and Dr. Kundan Gedam, the age group ranged between 31 to 50 years. The volume of abscess ranged from 500 to 1500 ml. Mean operating time was 82.5 minutes. No post operative morbidity or mortality was recorded. The post hospital stay was 8.5 days.

Laparoscopic drainage of liver abscess gives effective drainage with less operative time, less hospital stay, minimal post operative pain and early commencement of oral fluids.

#### **IV. FIGURES AND TABLES**



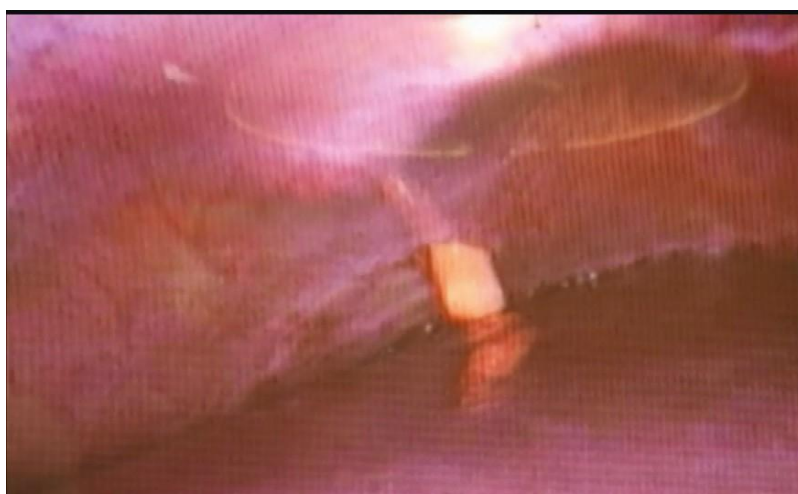
**Figure 1 – laparoscopic view of liver abscess cavity**



**Figure 2 – confirmed by needle aspiration**



**Figure 3 – malecot's catheter being inserted**



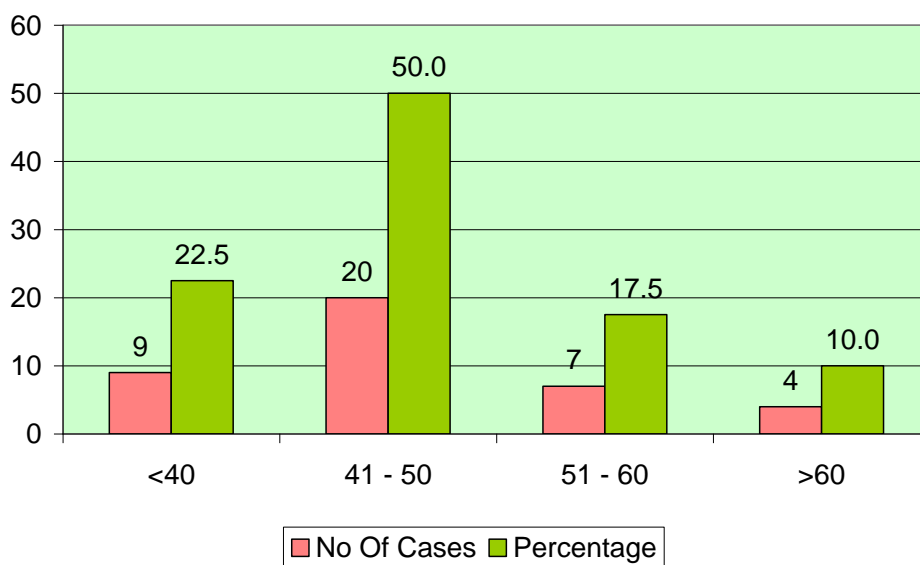
**Figure 4 – confirmed laparoscopically**



**Figure 5 – pus being drained**

**Table 1 – Age distribution**

AGE	No Of Cases	Percentage
≤40	9	22.5
41 – 50	20	50.0
51 – 60	7	17.5
>60	4	10.0
<b>Total</b>	<b>40</b>	<b>100.0</b>
<b>Mean</b>	47.70	
<b>SD</b>	9.30	



**Figure 6 – age distribution**



Table 2 – Sex Distribution

SEX	No Of Cases	Percentage
MALE	39	97.5
FEMALE	1	2.5
Total	40	100.0

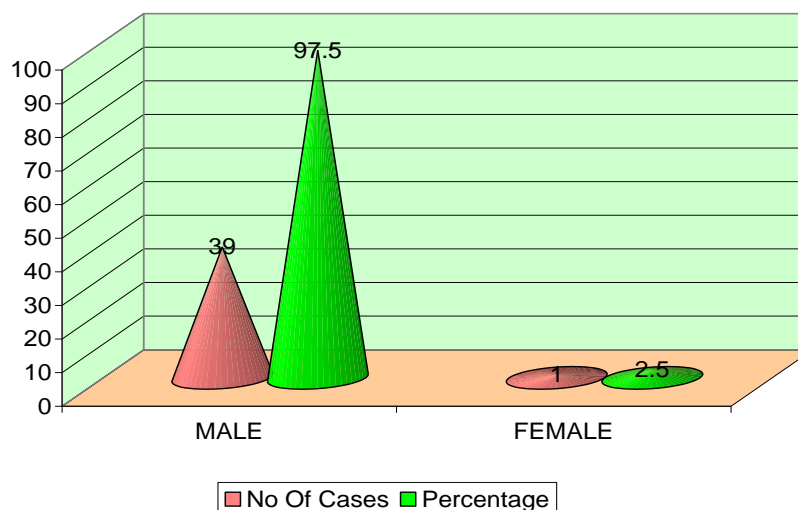


Figure 7 – sex distribution

Table 3 – Distribution of volume drained

ABSCCESS VOLUME (ml)	No Of Cases	Percentage
500 – 750	23	57.5
751 – 1000	17	42.5
Total	40	100.0
Mean	743.12	
St	122.73	

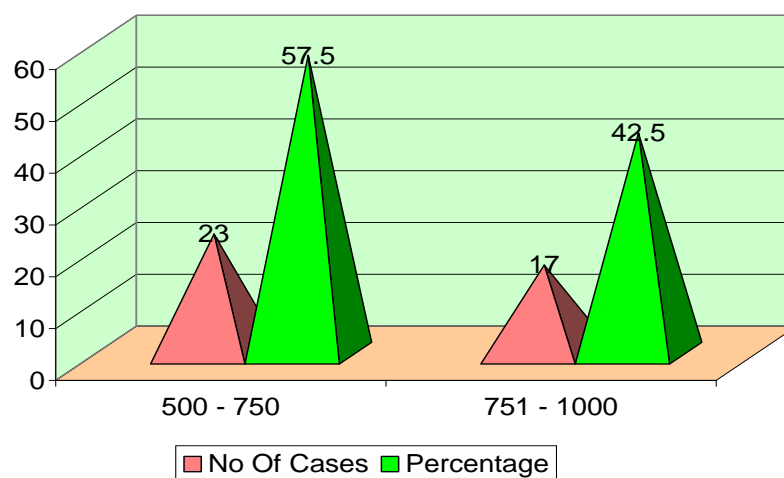
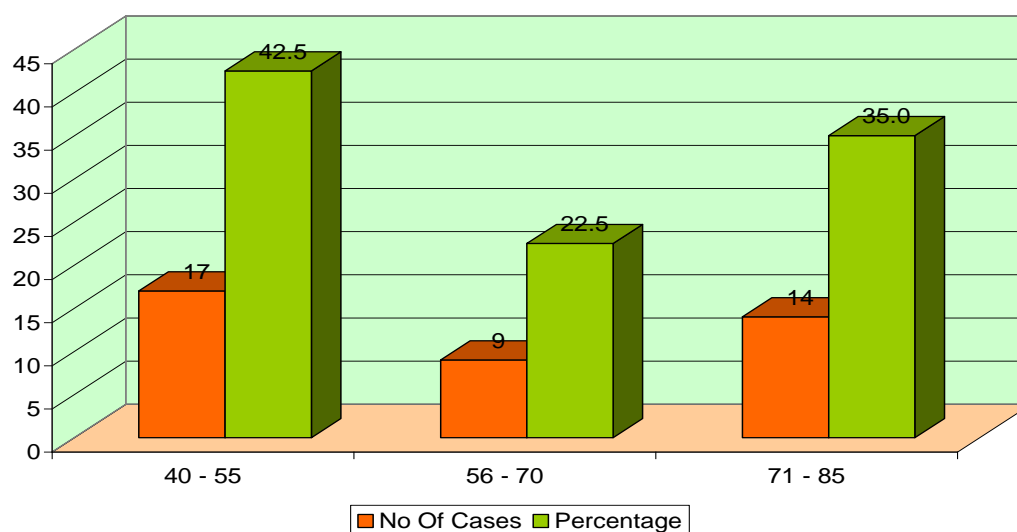


Figure 8 – distribution of volume drained

**Table 4- Distribution of operating time**

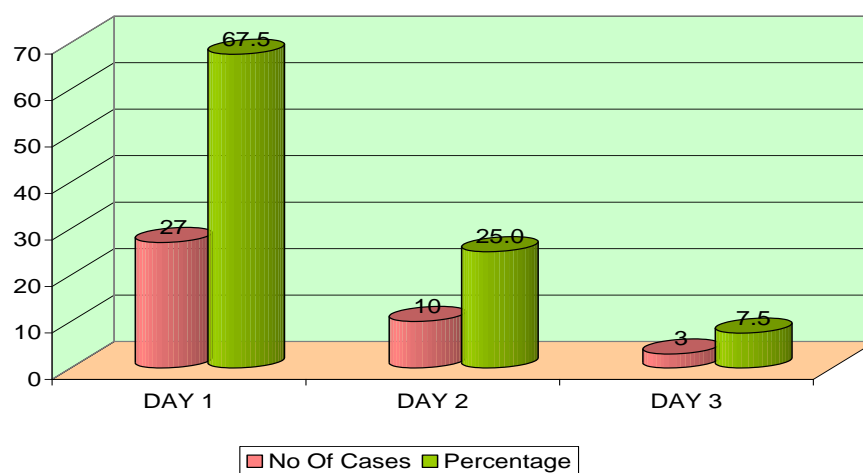
OPERATING TIME (min)	No Of Cases	Percentage
40 – 55	17	42.5
56 – 70	9	22.5
71 – 85	14	35.0
Total	40	100.0
Mean	63.00	
St	14.09	



**Figure 9 – distribution of operating time**

**Table 5 – Distribution of day of commencement of oral intake**

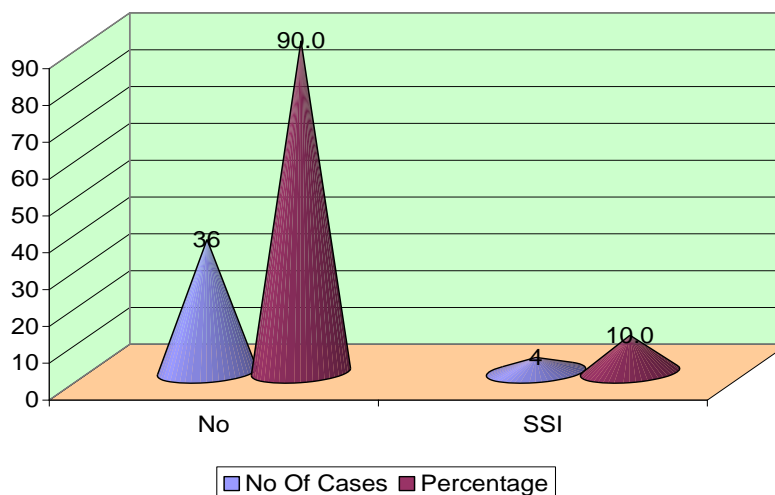
COMMENCEMENT OF ORAL INTAKE	No Of Cases	Percentage
DAY 1	27	67.5
DAY 2	10	25.0
DAY 3	3	7.5
Total	40	100.0



**Figure 10 - distribution of day of commencement of oral intake**

**Table 6 – Distribution of postoperative complications**

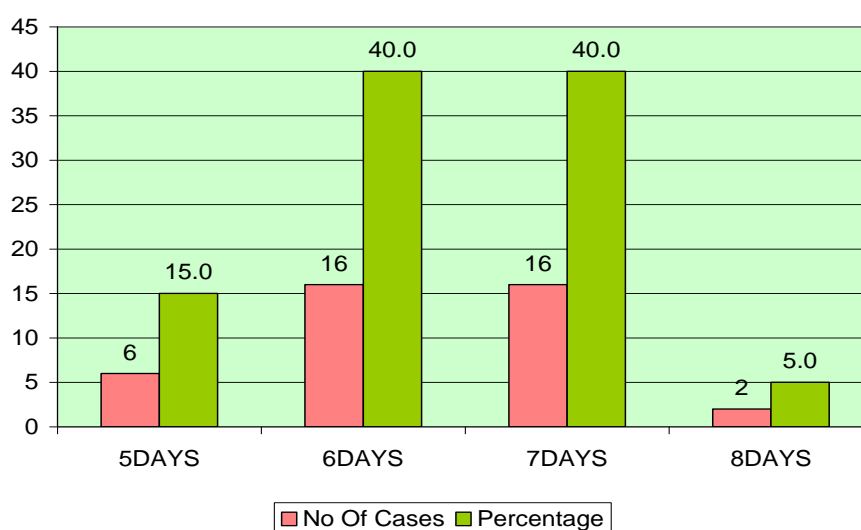
POSTOP COMPLICATIONS	No Of Cases	Percentage
No	36	90.0
SSI	4	10.0
Total	40	100.0



**Figure 11- distribution of post operative complications**

**Table 7 – Distribution of duration of postoperative hospital study**

POSTOP HOSPITAL STAY	No Of Cases	Percentage
5DAYS	6	15.0
6DAYS	16	40.0
7DAYS	16	40.0
8DAYS	2	5.0
Total	40	100.0

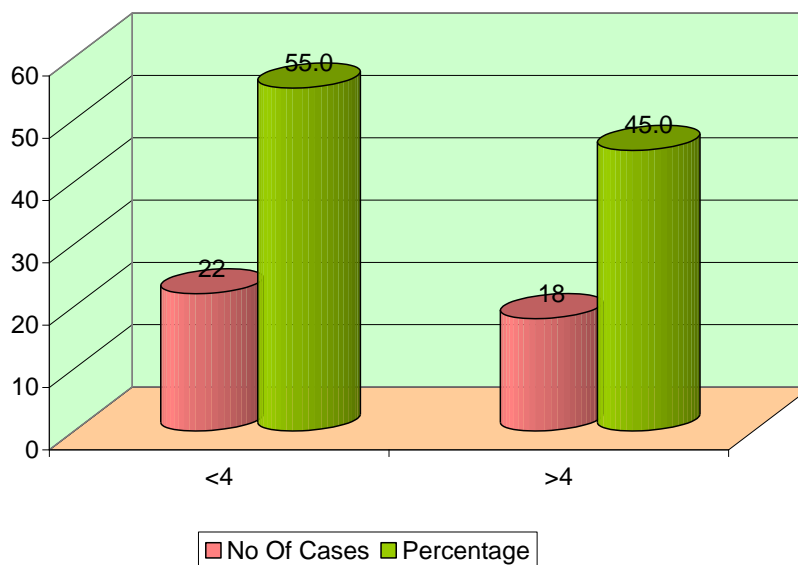


**Figure 12 – distribution of duration of postoperative hospital stay**



**Table 8 – Distribution of post-operative pain**

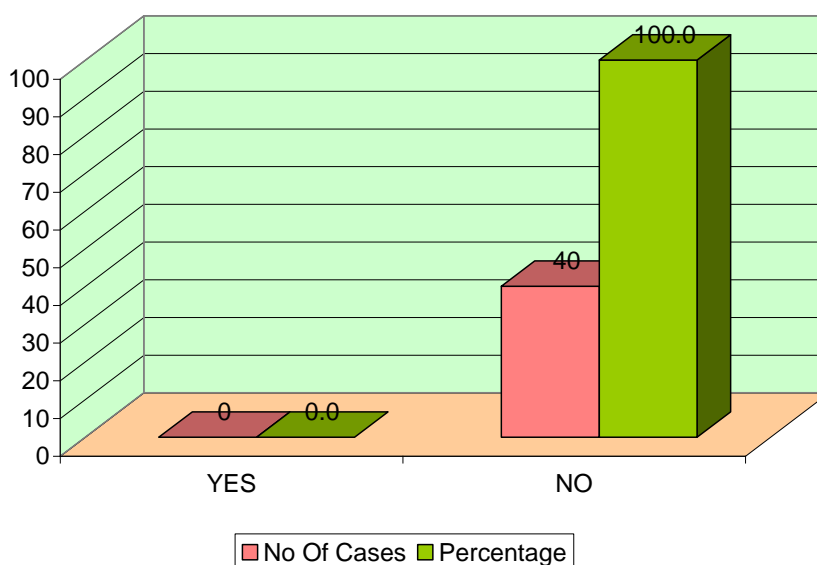
POSTOP PAIN	No Of Cases	Percentage
<4	22	55.0
≥4	18	45.0
Total	40	100.0
Mean	3.50	
SD	1.19	



**Figure 13 – distribution of post operative pain**

**Table 9 – Distribution of Recurrence**

RECURRENCE	No Of Cases	Percentage
YES	0	0.0
NO	40	100.0
Total	40	100.0



**Figure 14 – distribution of recurrence**

**PROFORMA**

Name:-	I. P. No
Age :-	Unit
Sex :-	D.O.A
Occupation :-	D.O.D

Address :-

Phone no :

**DIAGNOSIS:**

**PRESENTING COMPLAINTS**

- 1) Duration of abdominal pain
- 2) History of fever
- 3) History of jaundice
- 4) coexisting comorbidities

**GENERAL PHYSICAL EXAMINATION**

1. General survey
2. Body build and nourishment
3. Appearance
4. Attitude: Restless/ Quiet
5. Dehydration: Mild/ Moderate/ Severe/ Nil
6. Anaemia/ Jaundice/ Clubbing/ Cyanosis/ Lymphadenopathy/ Pedal oedema
7. Pulse
8. Temperature
9. Respiratory rate
10. Blood pressure

**SYSTEMIC EXAMINATION**

- Cardiovascular system
- Respiratory system
- Central nervous system

**LOCAL EXAMINATION- P/A**

**INSPECTION**

**PALPATION**

**PERCUSSION**

**AUSCULTATION**

**V. CONCLUSION**

Laparoscopic drainage of liver abscess should be considered for patients who fail to respond to USG guided percutaneous drainage. It assures effective results and is ultimately beneficial to the patient in terms of operating time, duration of stay, return to normal activities, post operative pain, complications and recurrence.

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