

**Original article:**

## **Management of hepatopancreatobiliary surgical diseases by minimal access surgery**

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### **Abstract:**

Advances in imaging along with a better understanding of the molecular biology have bettered the diagnostic capability in case of hepatopancreatobiliary surgical diseases. Minimal access surgery (MAS) and Endotherapy has become more relevant and rewarding in the present scenario in terms of diagnosis and management. The present study was carried out to find the efficacy of minimal access surgeries in hepatopancreatobiliary surgical diseases and their suitability. In this study, total 75 cases were included which were those of hepatopancreatobiliary surgical diseases & managed by minimal access surgery. Patients from all age groups and of both sexes were studied. In this study we found that minimal access surgery is suitable, feasible in the field of hepatopancreatobiliary surgical diseases as the overall conversion rate to open was 6.67 %, the time consumption was less & the post operative hospital stay was reduced.

**Keywords:** Hepatopancreatobiliary surgical diseases, minimal access surgeries, advanced laparoscopy

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### **INTRODUCTION**

Since last two decades, advances in imaging along with a better understanding of the molecular biology have bettered the diagnostic capability in case of hepatopancreatobiliary surgical diseases. Correspondingly the management of various hepatopancreatobiliary surgical diseases has become a multidisciplinary approach involving the surgeon, endoscopist, interventional radiologist and pathologist. Both minimally access surgery (MAS) and endotherapy has become more relevant and rewarding in the present scenario in terms of diagnosis and management. New literature is pouring everyday to substantiate their role. Most of the Government medical institutes are now equipped with advances in the surgical endeavors; laparoscopic

skills of retraction, dissection and suturing and other devices e.g. the light source from halogen to xenon and more advanced instruments like ultrasonic shears, vessel sealing system i.e. harmonic scalpel and endostaplers for anastomosis are making advances in acceptance to advanced laparoscopy. Having said all this, there can be no doubt that laparoscopy is the most compelling and dynamic force driving surgical progress and endeavor in the current era.

### **AIMS & OBJECTIVES**

1. To study efficacy of minimal access surgeries in hepatopancreatobiliary surgical diseases and their suitability.
2. To study the disease profile of patients undergoing advanced laparoscopies.

3. To study the duration of surgery and duration of post operative hospital stay.
4. To study the conversion rate of laparoscopic surgeries to open surgeries.
5. To study the complications following surgical management.

#### **MATERIALS & METHODS**

This study was carried out in a two year period at Government Medical College. The study was carried out after the prior permission from the institution's local ethical committee. All the patients agreed to take part in the present study. Total 75 cases were included in this study which were those of hepatopancreatobiliary surgical diseases & managed by minimal access surgery. Patients from all age groups and of both sexes were studied. Patients unfit

for general anaesthesia, patients with grossly disseminated disease, terminal presentations & non-consenting patients were excluded from this study.

Blood investigations including hemogram, liver function tests, kidney function tests, blood sugar level, serum proteins and urine examination were done. Radiological investigations were done accordingly. ERCP (Endoscopic Retrograde Cholangio-Pancreatography) & MRCP (Magnetic resonance cholangiopancreatography) were done wherever necessary.

Patients were observed till discharge from the hospital. Operative area was cleaned with providone iodine scrub, providone iodine solution and spirit. Bowel preparation was done according to standard methods in elective bowel surgeries.

#### **RESULTS**

The results of this study are as follows:

Total 75 patients undergoing advanced laparoscopic procedures on elective basis were studied, (n) = 75.

**Table I :- AGE DISTRIBUTION**

<b>Age group (Years)</b>	<b>No. of patients</b>	<b>Percentage</b>
1 - 10	4	5.33
11 - 20	4	5.33
21 - 30	15	20
31 - 40	18	24
41 - 50	13	17.33
51 - 60	14	18.66
> 60	7	9.33
Total	75	100

The above table shows that the highest number of patients are in between 20 to 60 years of age consisting of nearly 80% of total patients & maximum i.e. 24% patients are in 31-40 years of age group.

**Table II :- SEX DISTRIBUTION**

Sex	No. of patients	Percentage
Male	21	28
Female	54	72
Total	75	100

The above table shows that the sex ratio of patients shows a female preponderance, with 72% of patients undergoing elective advanced procedures being females.

**Table III :- DIAGNOSIS**

Diagnosis	No. of patients	Percentage
Cholelithiasis	30	40
Choledocholithiasis	15	20
Hydatid cyst of liver	21	28
Choledochal cyst	4	5.33
Pseudopancreatic cyst	4	5.33
Chronic pancreatitis	1	1.33
<b>Total</b>	75	100

The above table shows that in majority of patients i.e. 40%, the diagnosis was Cholelithiasis.

**Table IV :- LAPAROSCOPIC PROCEDURE PERFORMED & CONVERSION RATE**

Procedure performed	No. of patients	Percentage	Converted to open surgery	Percentage
Laparoscopic cholecystectomy	30	40	1	3.33
Laparoscopic cholecystectomy & ERCP sphincterotomy	10	13.33	Nil	0
Laparoscopic choledocholithotomy	5	6.67	Nil	0
Laparoscopic removal of hydatid cyst	21	28	1	4.76
Laparoscopic cyst excision and hepaticojejunostomy	4	5.33	1	25
Laparoscopic cystogastrostomy	4	5.33	1	25
Laparoscopic lateral Pancreato-jejunostomy	1	1.33	1	100
Total	75	100	5	6.67

The above table shows that the procedure performed most commonly was Laparoscopic cholecystectomy (40%), followed by Laparoscopic removal of hydatid cyst (28%) and Laparoscopic cholecystectomy & ERCP sphincterotomy (13.33%). 6.67 % of all the procedures were converted to open surgery. Conversion rate to open surgery was comparatively higher in cases of pancreatic surgery.

**Table V :- TIME TAKEN FOR COMPLETION OF PROCEDURE**

Time taken for completion of procedure (Minutes)	No. of patients	Percentage
Upto 60	11	14.66
61 – 120	47	62.66
121 – 180	9	12
181 – 240	7	9.33
>240	1	1.33
Total	75	100

The above table shows that in 62.66% of the patients the time taken for completion of procedures was between 1 and 2 hours. 14.66% of procedures were completed within 60 minutes, and most of these included Laparoscopic cholecystectomies. Only 1

surgery lasted more than 4 hours, which was Laparoscopic cyst excision and hepaticojejunostomy in case of choledochal cyst which got converted to open & lasted for 250 minutes.

**Table VI :- MEAN TIME REQUIRED FOR THE INDIVIDUAL PROCEDURE**

Procedure performed	Mean time required for the procedure (Minutes)
Laparoscopic cholecystectomy	73.16
Laparoscopic cholecystectomy & ERCP sphincterotomy	110.50
Laparoscopic choledocholithotomy	190
Laparoscopic cyst excision and hepaticojejunostomy	210
Laparoscopic removal of hydatid cyst	107.14
Laparoscopic cystogastrostomy	132.50
Laparoscopic longitudinal pancreatojejunostomy	240

**Table VII :- POST OPERATIVE HOSPITAL STAY**

Post operative hospital stay (Days)	No. of patients	Percentage
Upto 3	11	14.67
4	14	18.67
5	18	24
6 – 7	18	24
8 – 10	10	13.33
11 or more	4	5.33
Total	75	100

The above table shows that maximum patients i.e. 57.33% were discharged within 5 days of operation and only 5.33% of patients were discharged after 10 days.

**Table VIII :- MEAN HOSPITAL STAY FOR INDIVIDUAL PROCEDURE**

Procedure performed	Mean hospital stay (Days)
Laparoscopic cholecystectomy	4.10
Laparoscopic cholecystectomy & ERCP sphincterotomy	6.70
Laparoscopic choledocholithotomy	11.20
Laparoscopic cyst excision and hepaticojejunostomy	8.75
Laparoscopic hydatid cyst removal	4.61
Laparoscopic cystogastrostomy	8.25
Laparoscopic longitudinal pancreateojejunostomy	8

**Table IX :- DURATION OF POST-OPERATIVE ANTIBIOTICS**

Duration of post operative antibiotics (Days)	No. of patients	Percentage
Upto 5	53	70.67
6 – 7	9	12
8 – 14	12	16
15 or more	1	1.33
Total	75	100

The above table shows that in 82.67% of patients, antibiotics were stopped within 7 days.

**Table X :- POST-OPERATIVE COMPLICATIONS**

Complication	No. of patients	Percentage
Fever	8	30.76
Wound Infection	8	30.76
Hemorrhage	3	11.53
Surgical Emphysema	3	11.53
Bowel Perforation	1	3.85
Septicemia	1	3.85
Death	0	0
Others	2	7.69

The above table shows that fever and wound infection were the most frequently encountered post operative complications. Wound hemorrhage and surgical emphysema was seen in 3 patients each, one patient suffered from intraoperative bowel perforation, which was detected during operation. and was discharged on day 15. No mortality was observed in the present study.

**DISCUSSION**

In the present study, the highest number of patients are in between 20 to 60 years of age consisting of nearly 80% of total patients. The sex ratio of patients shows a female preponderance, with 72% of patients

The primary closure of perforation site was done and patient was discharged on day 10.

One Patient operated for pseudocyst of pancreas went into septicemia but by intensive management patient came out of septicemia

undergoing elective advanced procedures being females. The procedure performed most commonly was Laparoscopic cholecystectomy (40%), followed by Laparoscopic removal of hydatid cyst (28%).

**Table XI: Results of laparoscopic cholecystectomy & its comparison with other studies**

Studies	Mean operative time in minutes	Mean post operative stay in days	Conversion rate
J.A.Lujan et al <sup>1</sup>	88	3.3	15 %
S.K. Bhasin et al <sup>2</sup>	61.3	4.34	4%
Khan M. et al <sup>3</sup>	57.43	3.25	9%
Present study	73.16	4.1	3.33%

The results in the present study are comparable with that of the other studies as shown in the above table.

**Table XII: Results of laparoscopic cyst excision & hepaticojejunostomy in case of choledochal cyst & its comparison with other studies**

Studies	Mean operative time in minutes	Mean post operative stay in days	Conversion rate
J.Y.Jang et al <sup>4</sup>	228	5.8	0%
K.R.Srimurthi et al <sup>5</sup>	260	5	20%
Present study	210	8.75	25%

According to the above table, though the conversion rate was higher in the present study, owing to the fact that we are in learning phase of mastering the art of intracorporeal knotting and suturing techniques.

**Table XIII: Results of laparoscopic choledocholithotomy for choledocholithiasis & its comparison with other studies**

Studies	Mean operative time in minutes	Mean Postoperative stay in days	Conversion rate
Haug S. M. et al <sup>6</sup>	191	10.4	12.5%
Chander J. et al <sup>7</sup>	139.9	9.3	4%
Present study	190	11.2	0%

The above table shows that the results in the present study are comparable to that of other studies.

**Table XIV: Results of Laparoscopic removal of hydatid cyst & its comparison with other studies**

Studies	Mean operative time in minutes	Mean Postoperative stay in days	Conversion rate
Metin Ertem et al <sup>8</sup>	82	4.2	4 %
P.K.Chowbey et al <sup>9</sup>	84	2.3	0%
Present study	107.14	4.61	4.76 %

The results of laparoscopic removal of hydatid cyst are comparable to other studies as shown in the above table.

**Table XV: Results of laparoscopic management of pseudocyst of pancreas & its comparison with other studies**

Studies	Mean operative time in minutes	Mean postoperative stay in days	Conversion rate
P.Hauters et al <sup>10</sup>	100	6	6.25 %
Palanivelu C. et al <sup>11</sup>	95	5.6	1.8 %
Present study	132.5	8.25	25%

The higher conversion rate seen in the above table in the present study can again be attributed to the fact Fayiz Sbeih et al<sup>12</sup> in their series had found that ERCP and endoscopic sphincterotomy are effective and safe in the diagnosis and management of choledocholithiasis and facilitate laparoscopic cholecystectomy for symptomatic cholelithiasis. They had found success rate of 88% for therapeutic procedure i.e. ERCP with spincterotomy after laparoscopic cholecystectomy while in present study success rate was 90 % as one patient had retained stones in common bile duct in MRCP picture after 6

that we are in learning phase of mastering the art of intracorporeal knotting and suturing techniques. weeks, but unfortunately patient was lost to follow up. C.

Palanivelu et al<sup>13</sup> in 2006 has shown in their series that Laparoscopic lateral pancreaticojejunostomy is safe, effective and feasible in experienced hands as mean operative time in their study was 172 minutes and average post operative stay was 5 days without any conversion to open procedure. In the present study the mean operative time for Laparoscopic longitudinal pancreaticojejunostomy was 240



minutes and mean hospital stay was 8 days but unfortunately the procedure was converted to open surgery because of bleeding from the pancreatic

### CONCLUSION

In this study, the procedure performed most commonly was Laparoscopic cholecystectomy (40%), followed by laparoscopic removal of hydatid cyst (28%) and laparoscopic cholecystectomy & ERCP sphincterotomy (13.33%). Nearly 77.33% of cases were completed within 2 hours. Time consumption was comparatively more in cases of pancreatic procedures and in cases of choledochal cyst where intracorporeal anastomosis was required. Post operative hospital stay was reduced in these patients, with 57.33% patients being discharged within 5 days of operation. The overall conversion rate to open was 6.67 % and it was comparatively higher in cases of pancreatic surgery. In majority (82.67%) of cases antibiotics were completely stopped within 7 days. Fever and wound infection were the most frequently observed post operative complications. No mortality was observed in the

surface. So it can be concluded that mastery of intracorporeal knotting and suturing techniques is mandatory before embarking this procedure.

present study and only 2 patients had major complications in the form of bowel perforation and septicemia which were treated intensively. Finally it can be concluded that minimal access surgery is suitable, feasible in the field of hepatopancreatobiliary surgical diseases as there was no mortality and only 2 major complications. With regards to pancreatic surgery, it is also evident that mastery of intracorporeal knotting and suturing techniques is mandatory before embarking these procedures.

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