



## A STUDY OF RISK FACTORS RESPONSIBLE FOR CONVERSION OF LAPAROSCOPIC CHOLECYSTECTOMY TO OPEN CHOLECYSTECTOMY.

### Surgery

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### ABSTRACT

Laparoscopic cholecystectomy is gold standard for treatment of chronic cholecystitis. But there are many factors both preoperatively and per operatively which ultimately lead to the conversion of laparoscopic cholecystectomy to open cholecystectomy.

### KEYWORDS

#### INTRODUCTION

Chronic cholecystitis is the commonest ailment world wide which maybe both calculus and acalculus one. cholecystectomy is the surgical removal of gall bladder and it is the treatment of choice for all the symptomatic cases of gall stones. We have two methods to perform it- Laparoscopic and open ones.

Laparoscopic procedures are less invasive but requires a longer learning curve. There are many preoperative and intraoperative risk factors which ultimately lead to conversion of laparoscopic procedures to open ones.

#### AIMS AND OBJECTIVE

- I. To study the different preoperative factors under the shadow of history, laboratory findings and ultrasonography, which ultimately become the cause of the operative conversion.
- II. To compare the different intraoperative situations in which the conversion become absolutely necessary.

#### MATERIAL AND METHOD

Only those patients who has no acute episodes were included in this study.

A total of 150 cases of all age group of both sexes were included in this study.

The total duration of our study was two years, between January 2018 to December 2019 in the department of surgery, JLN MCH Bhagalpur Bihar.

Risk factors were studied both preoperatively and intraoperatively. The various tools for the operative assessment were detailed history, different laboratory investigations and ultrasonography.

Intra-operative assessment of the risk factors was done on the operation table itself.

#### RESULTS AND ANALYSIS

The findings were tabulated in the following charts.

**TABLE:- I Total incidence of conversion.**

| Total no of cases | No of conversion | Percentage |
|-------------------|------------------|------------|
| 150               | 20               | 13.3%      |

#### PEROPERATIVE CAUSES OF CONVERSION

In our study of 150 cases, 20 cases were converted to open cholecystectomy.

The per operative situations in which the open cholecystectomy were done are tabulated and analysed as below.

**Table II A Severe adhesion in calot's triangle obscuring anatomy**

| Sexes   | numbers | Percentage |
|---------|---------|------------|
| Males   | 1       | 0.6%       |
| Females | 2       | 1.3%       |
| total   | 3       | 2.0%       |

**Table IIB Gross anatomical anomaly in calot's triangle.**

| sexes   | number | Percentage |
|---------|--------|------------|
| Males   | 2      | 1.4%       |
| Females | 10     | 6.6%       |
| Total   | 12     | 8.0%       |

**Table IIC Slippage of clips from cystic artery leading to bleeding.**

| sexes  | total number | Percentage |
|--------|--------------|------------|
| female | 1            | 0.6%       |

**Table IID Bile duct injury.**

| sexes  | Total number | Percentage |
|--------|--------------|------------|
| female | 2            | 0.3%       |

**Table IIE Cholecysto-enteric fistula.**

| Sexes  | Total no | Percentage |
|--------|----------|------------|
| female | 1        | 0.6%       |

**Table IIF Wide and extra short cystic duct**

| sexes  | Total no | percentage |
|--------|----------|------------|
| female | 1        | 0.6%       |

#### PREOPERATIVE FACTORS

A study of different preoperative factors may be tabulated which may throw some Light regarding the on-table conversion. Patient's individual factors-Age incidence In all these 150 cases the age of the patients varied from 11 years to 80 years of age.

**Table III**

| Age (Range) | No of patients | No of conversion | Relative probability of conversion | Adjusted probability of conversion |
|-------------|----------------|------------------|------------------------------------|------------------------------------|
| 0-10        | -              | -                | -                                  | -                                  |
| 11-20       | 5              | 1                | -                                  | -                                  |
| 21-30       | 18             | 1                | 0.0556                             | 0.623                              |
| 31-40       | 36             | 3                | 0.0833                             | -                                  |
| 41-50       | 48             | 8                | 0.1702                             | 0.1908                             |
| 51-60       | 29             | 4                | 0.1379                             | 0.1546                             |
| 61-70       | 11             | 3                | 0.2727                             | 0.3058                             |
| 70-80       | 3              | 0                | -                                  | -                                  |

**Table IV**

| Sex ratio | No of patients | No of conversion | Percentage |
|-----------|----------------|------------------|------------|
| Males     | 40             | 3                | 7.5%       |
| Females   | 110            | 17               | 15.45%     |
| Total     | 150            | 20               | 13.33%     |

**Table V History of flatulent dyspepsia.**

| Sexes   | No of patients | No of conversion | Percentage |
|---------|----------------|------------------|------------|
| Males   | 33             | 2                | 6%         |
| Females | 82             | 12               | 14.6%      |
| total   | 115            | 14               | 12.17%     |

**Table VI H/O Multiple Episode Of Pain Abdomen**

|       | No of patients | No of conversion | percentage |
|-------|----------------|------------------|------------|
| Males | 15             | 2                | 13.3%      |

|         |    |    |        |
|---------|----|----|--------|
| Females | 77 | 14 | 18.1%  |
| Total   | 92 | 16 | 17.39% |

**Table VII Past h/o diabetes mellitus**

|         | No of patients | No of conversion | percentage |
|---------|----------------|------------------|------------|
| males   | 1              | 0                | 0          |
| Females | 16             | 2                | 12.5%      |
| Total   | 17             | 2                | 11.7%      |

All these conversion among diabetics had very dense adhesion in the calot's triangle area, which lead to the open cholecystectomy.

## INVESTIGATIONS.

### ULTRASONOGRAPHY-

**Table VIII A thick walled distended GB.**

|         | No of patients | No of conversion | percentage |
|---------|----------------|------------------|------------|
| Males   | 12             | 2                | 16.6%      |
| Females | 58             | 14               | 24.1%      |
| Total   | 70             | 16               | 22.8%      |

**Table IX Contracted GB.**

|         | No of patients | No of conversion | percentage |
|---------|----------------|------------------|------------|
| Males   | 28             | 1                | 3.5%       |
| Females | 52             | 3                | 5.7%       |
| Total   | 80             | 4                | 5.0%       |

**Table X Solitary stone.**

|         | No of patients | No of conversions | percentage |
|---------|----------------|-------------------|------------|
| Males   | 10             | 0                 | 0          |
| Females | 30             | 3                 | 10%        |
| Total   | 40             | 3                 | 7.5%       |

**Table XI Multiple stones.**

|         | No of patients | No of conversions | percentage |
|---------|----------------|-------------------|------------|
| Males   | 30             | 3                 | 16%        |
| Females | 80             | 14                | 17.5%      |
| Total   | 110            | 17                | 15.45%     |

**Table XII Stone impacted in Hartmann's pouch.**

|         | No of patients | No of conversions | percentage |
|---------|----------------|-------------------|------------|
| Males   | 3              | 0                 | 0          |
| females | 16             | 6                 | 37.5%      |
| total   | 19             | 6                 | 31.5%      |

## SUMMARY

- Total number of patients included in this study was 150  
Males – 40 of 150 i.e 26.67%  
Females- 110 of 150 i.e 73.33%
- Conversions from laparoscopic to open- Males – 3 of 40 – 0.8%  
Females – 17 of 110 – 12.46%  
13.3% of all patients posted for lap cholecystectomy were converted to open surgery.
- Sex ratio – male : female 1:2.75
- Highest incident of chronic cholecystitis was seen in the age group of 41- 50 years.
- Conversion ratio – female : male – 5.6:1
- Presenting features – Flatulent dyspepsia in 76% , Multiple episodes of pain in RHC 62% cases.
- Prime preoperative factors responsible for conversion – multiple episode of pain abdomen 17.39%, long standing flatulent dyspepsia 12.1%, known diabetes mellitus 50%.
- USG factors for conversion were - Gross GB wall thickness and distended GB (22.8%), stone impaction in Hartman's pouch (31.57%), multiple calculi (15.15%).
- Intraoperative conversions were done when there was very gross adhesion in the calot's triangle (8%), gross anatomical anomaly in calot's triangle (2%), slippage of clip over cystic artery (0.6%) , bile duct injury (0.3%), cholecysto-enteric fistula (0.6%) and wide and extra short cystic duct (0.6%) were other factors responsible for on the table conversion.

## DISCUSSION

Chronic calculus cholecystitis is a very common disease world wide , surpassed by the only surgical condition in U K and i.e appendicitis (Maingot- 1774).

As opposed to past years lap cholecystectomy has become the treatment modality.

The conversion rate was the highest one in 61-70 yrs age group. The incidence of conversion was 13.3% in our study, which is very much comparable to Sanabaria SR es as (1994). Therefore the higher age group may be one of the important risk factor for conversion. In our study incidentally, the disease was far more common among the females(73.3%) than in the males.

That is why in our study, we found 85% of the total conversion in the females. This is quite contrary to the findings of Alan Shiun Yew Hu (2017), Lipman et. al, Sanabaria et. Al & Serdar Yol, et. al (2006)

The high rate of incidence of chronic cholecystitis among female is akin to the finding of Jaffy (1933).

The main presenting features were flatulent dyspepsia(76%) table IV, and multiple episodes of pain abdomen 6% table VI, the rate of conversion in the above two conditions were 12.17% and 17.395 respectively. In this present study we have included altogether 150 cases that ranged from 11 years to 75 years of age. Maximum prevalence was seen in between 41-50 years of age (Table III). Vijay pal et al (1980) also found the highest prevalence in this age group.

Thus , the rate of conversion among the patient with multiple episodes of pain abdomen was higher, this was also seen by SM Strasberry (1994) and Alpernet A Kumck(world journal Surgery 1997).

In our study 11.7% of all the diabetics suffered an open conversion. This is probably due to study with very small number of such comorbidities.

As on USG examination the distended GBs with thick wall were very notorious for a later conversion to open type surgery 22.8%. The important per operative factors were impacted stones in the Hartmann's pouch 31.57% and GB impacted with large numbers of stones 15.43%. Incidentally contracted GB were less notorious for conversion with just 5%.

Fried GM et al (1994) and Kana h et al (2001) had also found thick walled GB as a cause of higher rate of conversion. Overall conversion rate if altogether is taken into account , it is 13.3% in our study while the same is 4.5% for Larson et al (1993), 4.7% for southern surgeons, 3.6% for cuscheieri et al (1991), 2.9% for soper et al (1992), 1.8% for Lillemoe et al (1992), 3% for Wolfe et al and 7.4% for Alponat.

Any back change from laparoscopy to open one must not be taken as failure but should be taken as judicious on-table surgical decision.

## CONCLUSION

Laparoscopic cholecystectomy though being a gold standard treatment for chronic cholecystitis, depends largely upon a number of factors for successful culmination. They are the level of diseases which is assessed primarily by history like multiple episodes of abdominal pain and long standing flatulent dyspepsia, and USG findings like thick walled distended GB and GB studded with multiple stones and on-table findings like dense adhesions in the calot's triangle, GB filled with multiple stones, impacted stone in Hartmann's pouch, bleeding cystic artery, bile duct injury, last but not the least a gross anatomical anomaly.

Our study is depicting the higher rate of conversion as compared to other similar studies. It is largely dependent upon a number of factors like stage of disease, definition quality of Camera, quality of monitor, level of anesthesia and operating skill of the surgeon.

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