



A COMPARISON BETWEEN STANDARD FOUR PORT AND THREE PORT LAPAROSCOPIC CHOLECYSTECTOMIES DONE AT A TERTIARY CARE CENTRE IN INDIA OVER ONE AND HALF YEAR: A CASE STUDY.

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Abstract:

A retrospective study was carried out in single unit of Department of general surgery. Here in this study we compared on 220 patients operated over one and half years(1 st june ,2017to 31stdecember, 2018) at our hospital. The male: Female ratio was 1: 2.33.data was collected from in patient and out patient records post discharge and patients were followed up till 6 months post surgery. These patients were of symptomatic cholelithiasis and were divided into two groups namely A(3 port) and B(4 port). Intraoperatively, the groups were compared on basis of duration of surgery, conversion rates, iatrogenic gall bladder perforations and intraoperative complications. Post operatively the groups were compared on basis of visual assesment scale(VAS) for pain(which is measured on routine basis in all patients of laparoscopic cholecystectomy in our ward). post operative wound infections, cosmesis and duration of stay in the hospital. Overall we came to the inference that group A had better cosmesis , less pain and the duration of stay in Group A is 1.25 days as compared to 1.80 days in group B. Hence, three port laparoscopic cholecystectomy can be considered as a safe alternative to standard 4 port procedure. Only the duration of performing surgery in group A was comparatively more than group B(1 hour 8min and 56 min respectively).

Key words: 3 port laparoscopic cholecystectomy, 4 port laparoscopic cholecystectomy,

INTRODUCTION

Cholelithiasis is one of the main biliary tract pathology and people living in indo gangetic region are more prone to it ^{1,2}.Cholecystectomy is the mainstay of the treatment. First laparoscopic cholecystectomy was done by Philip Mouret in 1987^{3,4,5}. In India, first laparoscopic cholecystectomy was done in 1991 by Dr.T. E. Udwardia in mumbai⁶. Since National Institute of Health consensus in 1992 , laparoscopic cholecystectomy is considered as Gold Standard for treating symptomatic cholelithiasis ^{7,8}.Traditional laparoscopic cholecystectomy is done using 4- ports where the fourth port is used to hold the fundus in order to take the gall bladder upward towards the right shoulder⁹.

With increasing surgeon experience, the need of fourth port is questioned and in most centres, the laparoscopic cholecystectomy is started with 3 port and in case it is required, it is converted to 4 port or open.

The aim of this retrospective study done over 220 patients in one and half year is to compare the intra operative and post operative complications along with the safety of the two procedures.

Objectives:

- To compare for the post operative stay of the patients in both groups.
- To compare the conversion rates and the reason of conversion.
- To compare post operative cosmesis.

Material and methods:

This is a retrospective study conducted at Safdarjung hospital, New Delhi over a period of one and half year(june 1, 2017 to december 31, 2018).All the patients who presented to us in the out patient department who had symptomatic cholelithiasis and had wall effacement complex suggestive of gall bladder stone disease were prepared and those who were given fitness for laparoscopic cholecystectomy.

No laparoacopic cholecystectomy was performed on acute cholecystitis. There were a total of 220 patients whose data was collected . The 4 port laparoscopic cholecystectomy was performed by standard American method where the surgeon and camera operator are on the left side and 4th port assistant on the right side. Both open and closed methods for pneumoperitoneum was used. Two 10 mm ports(umbilical and epigastric) and two 5 mm ports(mid clavicular and anterior axillary line) were used. In 3 port procedure, the assistant port(anterior axillary line port) was not used and the dissection was started at infundibulo- ductal junction after holding fundus/

infundibulum as per requirement. Intraoperative iatrogenic gall bladder perforation along with stone spillage, bleeding or iatrogenic injury to the biliary system and other complications were noted. Post operatively patients were followed up till discharge and local complications were noted. Then the patients were followed up till month of discharge and then were asked to come at 6 months as a standard care. The data collected was evaluated using SPSS software version16.0 and p values were calculate to look for significance.

Results:

Table 1: Male: Female ratio and mean age in each group

	Total (patients)	Total (mean age in years)	Group A (3 port)	Group A (mean age in years)	Group B (4 port)	Group B (mean age in years)
Female	154	35.71	88	36.7	66	34.4
Male	66	46.8	22	49.2	44	45.6
F: M	2.33:1		4:1		1.5:1	

Table 2: duration of surgery

	Group A	Group B	P value
Duration of surgery	1 hr 8 min +/- 15 min	56 min +/- 10 min	0.0001

Hence, duration of surgery is more in 3 port as compared to 4 port standard laparoscopic cholecystectomy and p value less than 0.0001 is highly significant.

There were a total of 4 conversions to 4 port and 2 conversions to open in Group A. On group B, there were a total of 7 conversions to open cholecystectomy.

Table 3: reason of conversions in group A(total 6)

Reason of conversion	Frequency	Converted to
Difficult calot’s anatomy	2	4 port
Intrahepatic gall bladder with wide cystic duct	1	4 port
Cholecystocolic fistula	2	Open
Thick inflammed gall bladder with dense adhesions and bleeding	1	Open

Table 4: conversions in group B(total 7)

Reason of conversion	Frequency
Dense adhesions in callot’s	3
Mirrizi syndrome type 1	1
On table Common bile duct calculi	3

Table 5: Post operatively patients were analysed for pain (visual analog scale or VAS). Following findings were noted and p value was calculated for significance of each variable using SPSS version 16.0 software.

Variable	Group A(mean)	Range (A)	Standard deviation(A)	Group B(mean)	Range (B)	Standard deviation (B)	P value
VAS at 6 hours	6.2	3-8	+/- 1.0	6.9	4-9	+/- 1.1	0.00
VAS at 24 hours	2.1	1-4	+/- 0.6	2.6	1-6	+/- 0.8	0.00
Duration of hospital stay	1.25 days	1-2.2 days	+/- 0.4 days	1.80 days	1.2- 2.6 days	+/- 0.5 days	0.001

Hence, from the results it came out that p values are significant and hence, pain is significantly reduced and duration of stay is equally reduced in Group A(3 port) as compared to group B(4 port).

Table 6: post operative complications were evaluated in the form of wound infection, wound haematoma and port site hernia evaluation at 1 and 6 months and p value was calculated using SPSS 16.0 software.

Complication	Group A(3 port) frequency	Group B(4 port) frequency
Wound infection	1	1
Wound haematoma	0	1
Port site hernia(at 1 month)	0	0
Port site hernia(at 6 month)	0	2

P value of all these results came out to be 0.19, hence is insignificant and hence, it can be said that both group A and group B have almost similar post operative complications.

Gall bladder perforation occurred in 21 patients in group A and 15 patients in group B which took it to a total of 36(16.36%). P value in comparing Group A vs Group B came out to be 0.07 which is insignificant.

Discussion:

4 port laparoscopic cholecystectomy is standard procedure in which 4th port is used to retract gall bladder fundus(american technique) or liver(french technique)¹¹.Reduction in post operative pain and cost effectiveness is most important goal in minimally invasive surgery. In recently published data, 3 port laparoscopic cholecystectomy has been significantly been able to achieve the same goal without compromising the patient safety.

In our study, conducted on 220 patients whose data was collected and compared for 3 port (Group A) and 4 port(Group B) cholecystectomy , the results were almost similar to previously conducted studies which were done on small patient groups.

Our study showed more time taken for surgery in 3 port as compared to 4 port standard laparoscopic cholecystectomy which is similar to studies conducted by H. S. Harsha et al¹², K Slim et al¹³ and S sun et al¹⁴. This increase in time is due to the manipulation required for the manipulation of the gall bladder with one less port. This time duration reduces as the surgeon experience increases. This is contradictory to the study conducted by P.K.Sharma et al³ in 2015 in which the reason for short duration is explained likely due to lesser time for port insertion and later lesser time for port closure.

Intra- operative gall bladder perforation was seen in 16. 36% of patients which was on lower side of the previously done studies which noted 16- 33% of same.¹²

Post operative pain was evaluated by using visual analog scale at 6 hours and 24 hours and it was found that 3 port procedure had significantly lower side of score as compared to 4 port. Similar results were shown in the studies conducted by D Hashimoto et al⁴, M Tuveri et al¹⁶, Al – Azwari et al ¹⁷ and Harsha et al¹².

Some surgeons previously have evaluated significant risk of bile duct injuries using 3 port laparoscopic cholecystectomy¹². But in our study, no such risk was found and keeping the patient’s safety as priority, it was converted to open/ 4 port as per requirement.

Conclusion:

From this study of ours, it is concluded that there is no contraindication to do 3 port laparoscopic cholecystectomy and in case there is difficulty in doing the same, the procedure can be converted to 4 port/ open as per requirement. It concludes that 3 port laparoscopic cholecystectomy is a safe procedure to perform for symptomatic gall stone.

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