

Nursing perspective of patient in post operative outcome of laparoscopic cholecystectomy versus open cholecystectomy: A prospective study from a tertiary care hospital in Guwahati, Assam

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Abstract- INTRODUCTION & BACKGROUND:

This series has focused on the care of patients undergoing cholecystectomy as Gallstones are the most common abdominal-associated reason for hospital admission in the surgical units in GMCH & MMCH . It has identified the key areas nurses need to understand when caring for these patients. Effective pre-operative assessment, good surgical technique and well managed post-operative care all contribute to a successful outcome for patients.

AIMS AND OBJECTIVES: The aim of the study is to access the Nursing perspective in the of outcome of Laparoscopic Cholecystectomy versus Open Cholecystectomy

METHOD: It is a Prospective, comparative, Observational survey design which was conducted in tertiary care Hospital in Assam. The Rational for selecting this institution for the study was that Both LC and OC are done on a regular basis and wide coverage of population in the surgical units. The sample size consists of 1000 patients. 500 patients from OC group and 500 from LC group.

RESULTS: The Mean VAS score is 4.97 in (LC) and 8.14 in (OC) The mean duration of analgesic requirement in LC was 2.2 days as compared to 3.6 days for OC The mean duration of antibiotic requirement in LC was 3.3 days as compared to 6.1 days for OC. The complication rate was 8.19% in LC group and 17.9% in OC group which is significantly higher in OC group (P value=.0001).Post-operative The % of Wound Infection in OC is 7.5% and 3.3% in LC. The mean duration of hospital stay in LC is 6.7 days OC is 10 days.

CONCLUSION: Despite being the superiority of LC in terms of overall morbidity, hospital stay and lesser pain and analgesic requirement, **patients admitting in Tertiary care hospital especially those belongs to rural areas, do not prefer the laparoscopic approach.** LC in local language is referred to as laser surgery and chances of reoccurrence in LC.

These patient's preference for OC has to do with local beliefs like recurrence of the same symptoms ,morbidity and numerous complications caused by LC .Greater fear and little knowledge of LC prior to surgery is associated with a slower or not opted for LC in tertiary care hospital .It is surmise that patient beliefs, which are not founded in scientific fact, needs strong communication and education by the Nurses to increase awareness amongst the patients coming about the advantages and benefits of laparoscopic surgery.

Index Terms- laparoscopic surgery. Open Cholecystectomy.

I. INTRODUCTION

Gallstone disease continues to be one of the most common digestive disorders worldwide. The prevalence of gallstone formation increases with age.¹ in the past few years

This series has focused on the care of patients undergoing cholecystectomy as Gallstones are the most common abdominal-associated reason for hospital admission in the surgical units in GMCH & MMCH . It has identified the key areas nurses need to understand when caring for these patients. Effective pre-operative assessment, good surgical technique and well managed post-operative care all contribute to a successful outcome for patients.

II. SIGNIFICANCE OF THE STUDY

In view of the wide coverage of population in the surgical wards with cholecystectomies, the evaluations on patient satisfaction with postoperative outcome would contribute the merits and demerits of LC and OC from nursing perception.

Results and conclusions will be different in different in settings with a thorough, complete and considering all details in depth with factors influencing patient's satisfaction in post-operative outcome in cholecystectomy either by LC or by OC

III. STATEMENT OF THE PROBLEM:

“NURSING PERSPECTIVE OF PATIENT IN POST OPERATIVE OUTCOME OF LAPAROSCOPIC CHOLECYSTECTOMY VERSUS OPEN CHOLECYSTECTOMY: A PROSPECTIVE STUDY FROM A TERTIARY CARE HOSPITAL IN GUWAHATI, ASSAM”.

AIM:The aim of the study is to access the Nursing perspective in the of outcome of Laparoscopic Cholecystectomy versus Open Cholecystectomy

OBJECTIVES: The Primary objective is to assess the post-operative outcomes of laparoscopic Cholecystectomy versus open cholecystectomy.

Theoretical Framework²

The theoretical framework used to guide this study is “The Donabedian Model”. The Donabedian model is a [conceptual model](#) that provides a framework for assessing and evaluating the post-operative outcome of LC and OC. According to the model, information about outcome of LC and OC can be drawn from three categories: “structure,” “process,” and “outcomes.” Structure describes the Variables in this series, including Patient demographic, physical and psychological factors. **Process** denotes the transactions between patients and health care providers through the process of cholecystectomy operation either by LC or by OC. Finally, outcomes refer to the effects of healthcare on the health status of patients after LC and OC in terms of Patient satisfaction and Post-operative outcome.

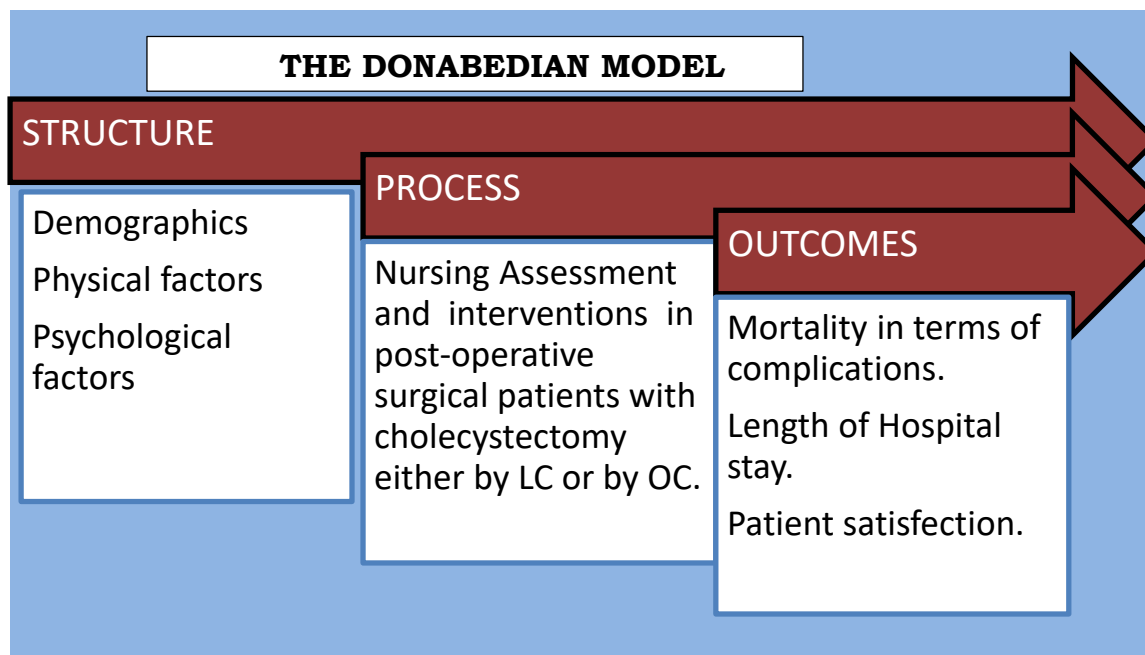
Dimensions of Care: -The model is representing by a chain of three boxes containing structure, process, and outcome of patient’s in surgical wards who had undergone cholecystectomy either by LC or by OC. These boxes represent three types of information that

may be collected in order to draw inferences about patient’s outcome of LC and OC perceived by the **Nurses**.

Structure: - It includes the selected Patient’s demographic, physical factors and psychological factors in this series. Structure includes all the variables which is the backbone of the study,

Process: - It is the cholecystectomy operation either by LC and OC. Process also includes the process of accessing post-operative surgical patients in post-operative pain assessment through VAS score, Nursing interventions in pain management, analgesic requirement, antibiotic requirement, nursing interventions in post-operative drainage, Ryle’s tube, catheter, Post-operative wound care, Post-operative Diet, Interventions in ambulation, and post-operative satisfaction.

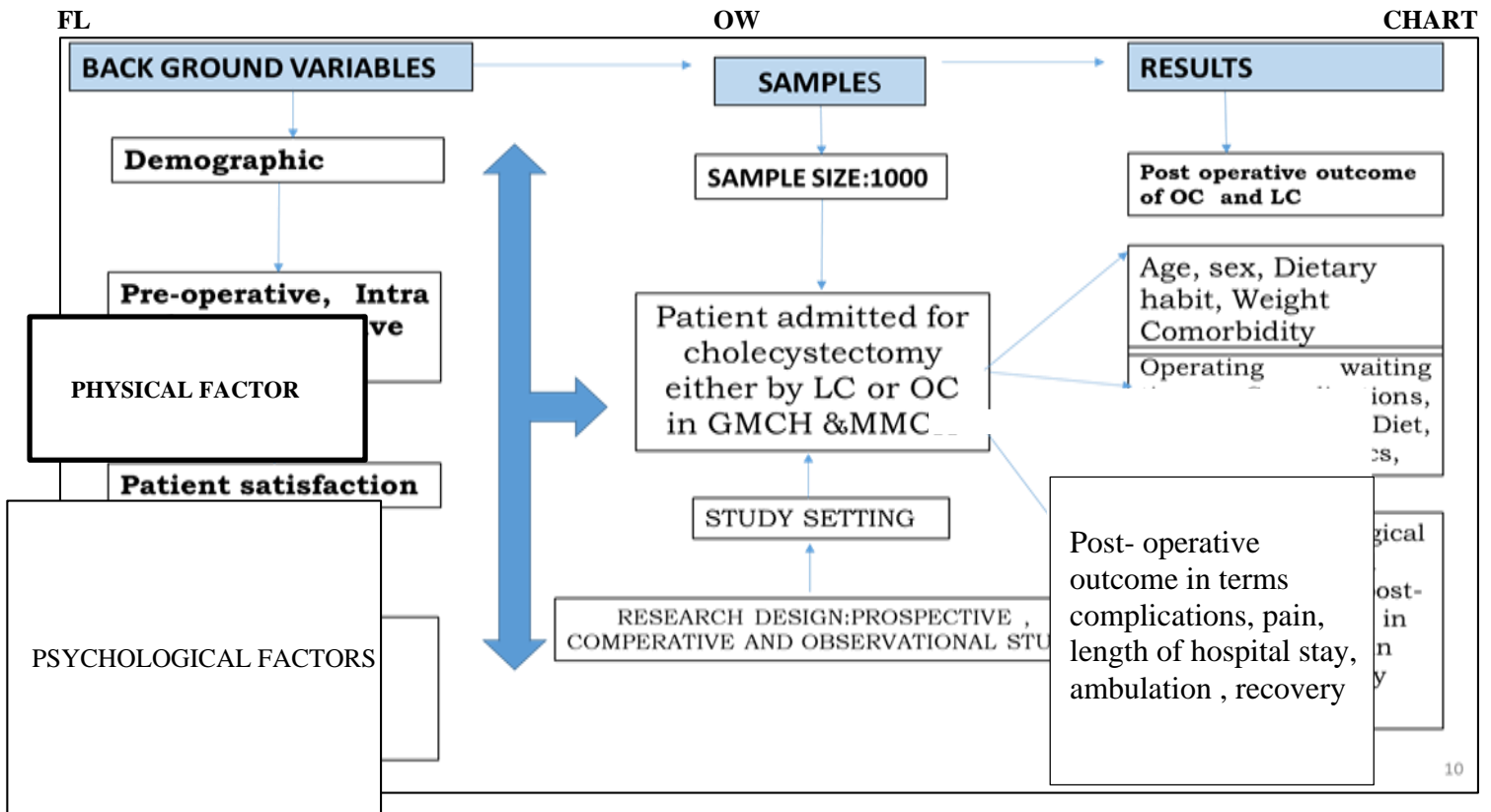
Outcome contains all the effects of nursing interventions on patients including changes in the post-operative health status, basically intervened as reduce post-operative complications, early recovery, resumption of post-operative diet. Post-operative ambulation and length of hospital stay. Outcomes are the most important indicators of patient satisfaction in both LC and OC groups.



The Donabedian model is a conceptual model that provides a framework for post-operative outcome in LC and OC

IV. METHODOLOGY

Research methodology is the systematic way to solve research problem. This chapter provides a brief description of method adopted to conduct the study. This chapter includes research approach, research design, study setting, sample size, and sampling technique. It further deals with development of tool, procedure for data collection, and for data analysis.



Data collection procedure:

This is a comparative, observational survey design study of one thousand (1000) patients from various parts of Upper and Lower Assam and adjoining areas, who were admitted in the Department of General Surgery, Gauhati Medical College & Hospital, since 2014 to 2017. Their medical records were analyzed, nursing interventions done and day to day recovery was assessed by applying the self-prepared close ended questionnaire and SAPS (short assessment and patient satisfaction) and outcomes evaluated.

PLAN FOR ANALYSIS OF DATA

The data of outcome were analyzed and compared according to standard statistical analysis. Post-operative data were all recorded and analyzed, using simple statistical tests (Z-test) to compare the result. Data were subjected to computerized analysis. Continuous variables are given as median (range) and were analyzed and Values for $p < 0.05$ were significant.

V. ANALYSIS AND INTERPRETATION

TABLE :1 :-GENDER

Gender	LC(F & %) N=500	OC(F& %) N=500	Total %	z- score	p- value
Male	241(48.2%)	199(39.8%)	440(44.0%)	2.675	.0073
Female	259(51.8%)	301(60.2%)	560(56%)		
Total	500(100.0%)	500(100.0%)	1000(100%)		

There is a female preponderance in both the groups with 51.8% of patients being female patients in LC group and 60.2% patients being female in OC group as shown in Table -1. Overall, 56% female and 44% male sample have collected for the study. The result is significant at $p < .05$. Male: female ratio in LC [0.9:1] and in OC [0.6:1]. Overall male: female ratio in LC and OC is 0.7:1.

FIGURE: 1:- GENDER

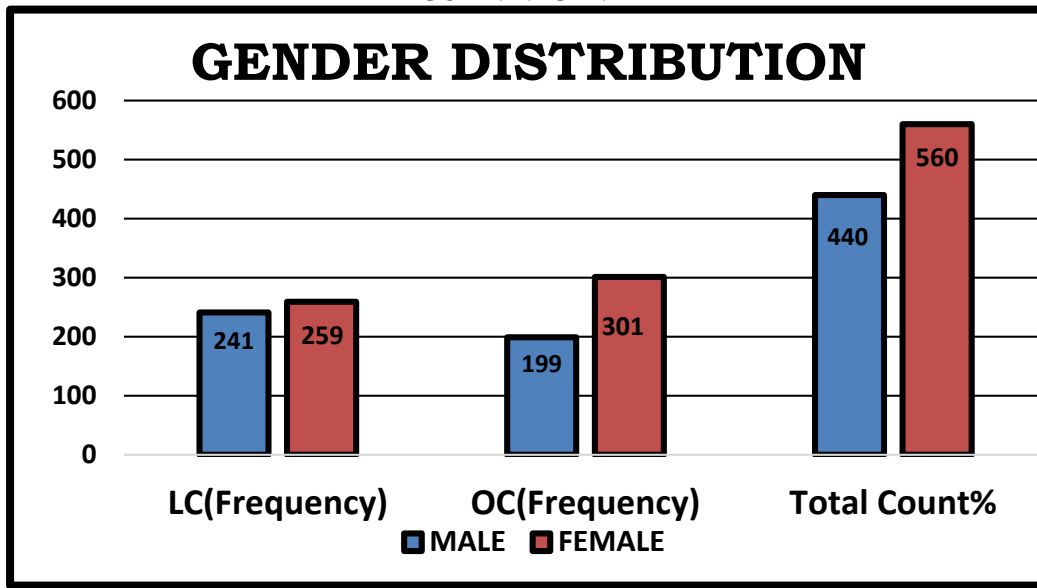


TABLE 2 :- AGE DISTRIBUTION

Range (Age group)	Laparoscopic Cholecystectomy Frequency & % N=500	Open Cholecystectomy Frequency & % N=500	TOTAL %
13-18 years	21(4.2%)	15(3%)	36 (3.6%)
19-25 years	42(8.4%)	49(9.8%)	91(9.1%)
26-35 years	115(23%)	126(25.2%)	241(24.1%)
36-45 years	146(29.2%)	132(26.4%)	278(27.8%)
46-55 years	111(22.2%)	102(20.4%)	213(21.3%)
56-65 years	53(10.3%)	67(13.4%)	120(12.0%)
>66 years	12(2.4%)	9(1.8%)	21(2.1%)
TOTAL	500(100%)	500(100%)	1000

FIGURE- 2: AGE DISTRIBUTION

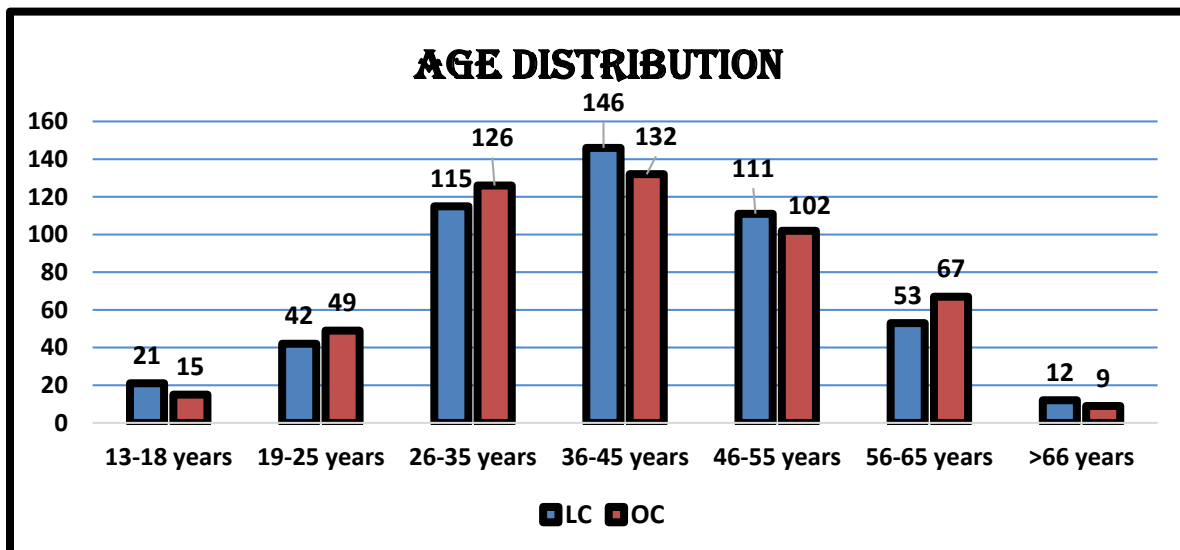


Table-2 depicted that maximum sufferer were between the age group of 26yrs to 55 yrs. 27.8% and 24.1% from the total samples fall under the age group of 36-45 years and 26 to 35yrs respectively. Sample distribution is decreasing in lower age between 13-18 years is 4.2% in LC an 3% in OC and higher age group i.e. in age group above 66 years is 2.4% in LC and 1.8% in OC. The Mean age group is 41.65years in OC and 41.25 years in LC.

TABLES -3: PATIENTS WITH COMORBID CONDITIONS IN LC AND OC.

Comorbid Condition	LC (F) & % N=500	OC (F & %) N=500	z-score	p-value
	142(28.4%)	218(43.6%)	-5.005	0

In this series from the table-3 it is stated that 43.6% of OC patients had comorbid conditions while in LC 28.4% of the patients had Comorbidity which is significant at $p < 0.05$. The co- morbid conditions are HPT, DM, Asthma, Renal Calculus, Hypo or hyper- thyroidism, cardiac diseases and COPD.

FIGURE -3: COMORBID CONDITIONS IN LC AND OC

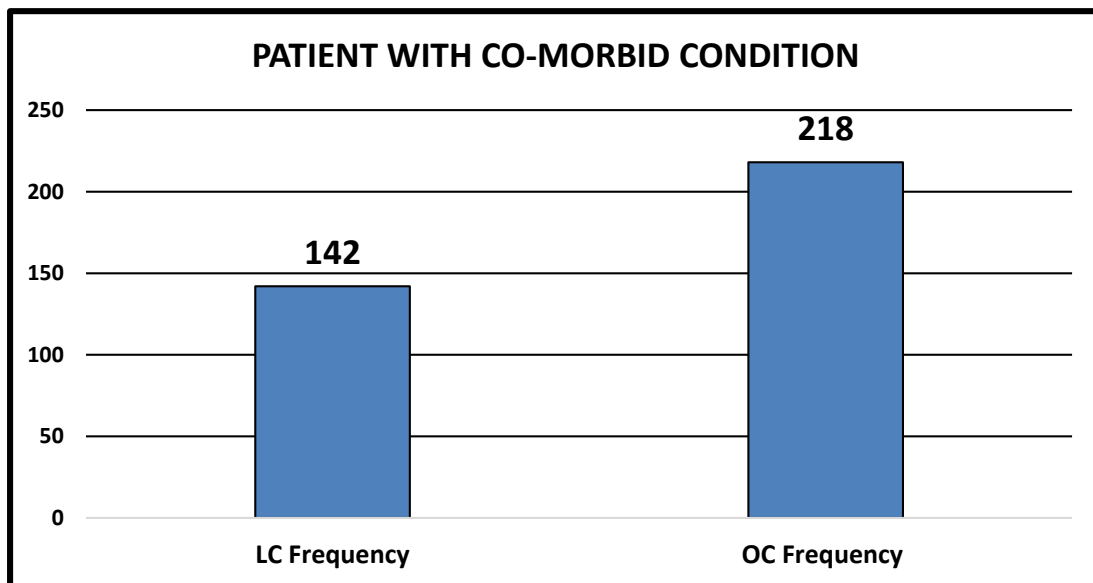


TABLE 4: PATIENT DISTRIBUTION IN HOSPITAL

Hospitals	LC(F & %) N=500	OC (F & %) N=500	TOTAL
GMCH	396(73.8%)	215(43.0%)	611(61.1%)
MMCH	131(26.2%)	285(57.0%)	416(41.6%)
Total	500(100.0%)	500(100%)	1000

In this series 73.8% of LC and 43.0% of OC patients were from GMCH and 26.2% of LC and 57% of OC patients were from MMCH. A total of 61.1% patients were from GMCH and 41.6% patients were from MMCH as shown in table 4.

FIGURE -4: PATIENT DISTRIBUTION IN HOSPITAL

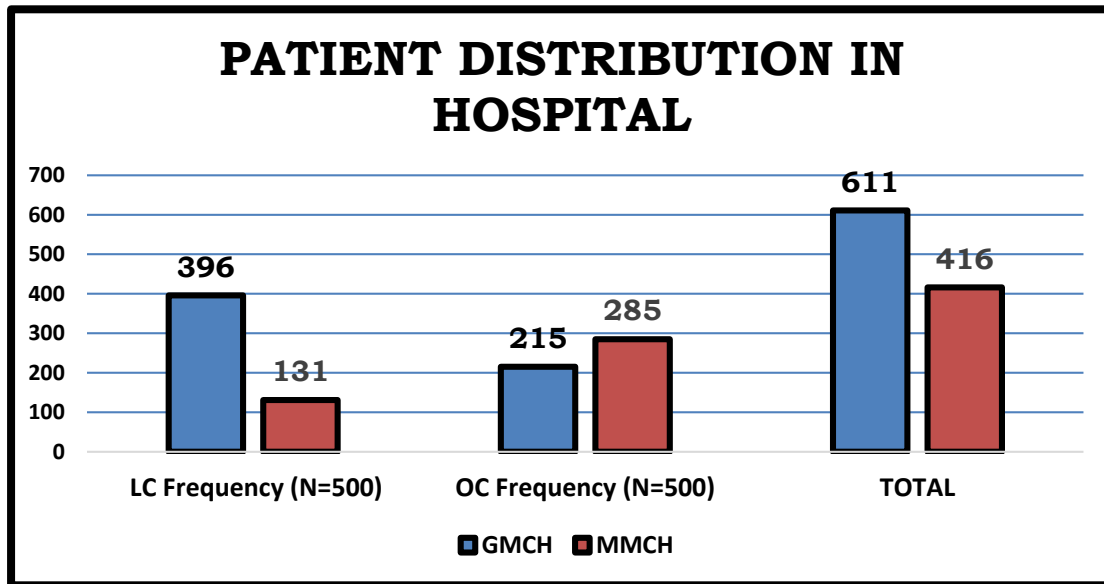
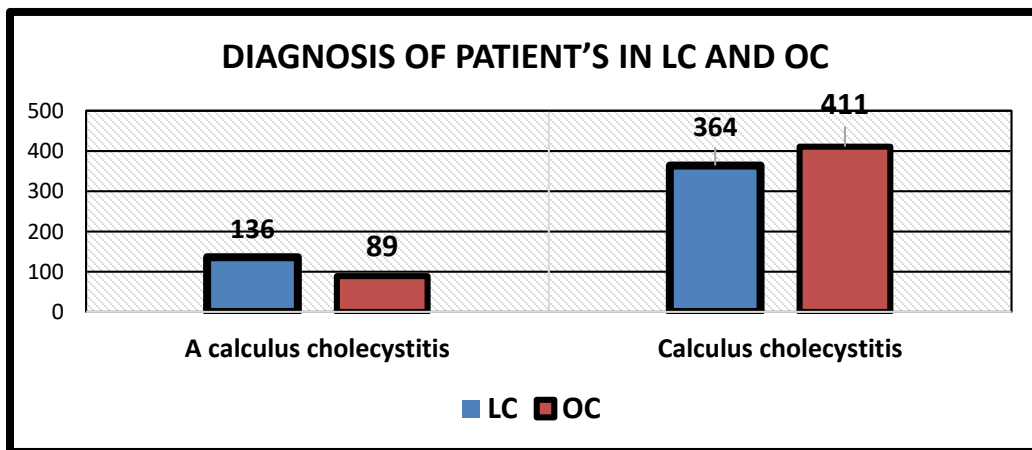


TABLE 5:- DIAGNOSIS OF PATIENT'S IN LC AND OC

DIAGNOSIS	LC(F & %) N=500	OC (F& %) N=500	Total (%)
Acalculus cholecystitis	136(27.2%)	89(17.8%)	225(22.5%)
Calculus cholecystitis	364(72.8%)	411(82.2%)	775(77.5%)

FIGURE 5: DIAGNOSIS OF PATIENT'S IN LC AND OC



The above data as shown in table-5, depicted that 27.2% of LC patients were diagnosed with acalculus cholecystitis and 72.8% were diagnosed with calculus cholecystitis. In OC 17.8% had acalculus cholecystitis and 82.2% had calculus cholecystitis.

TABLE-6: NURSING ASSESSMENT OF POST OPERATIVE PAIN (VAS SCORE)

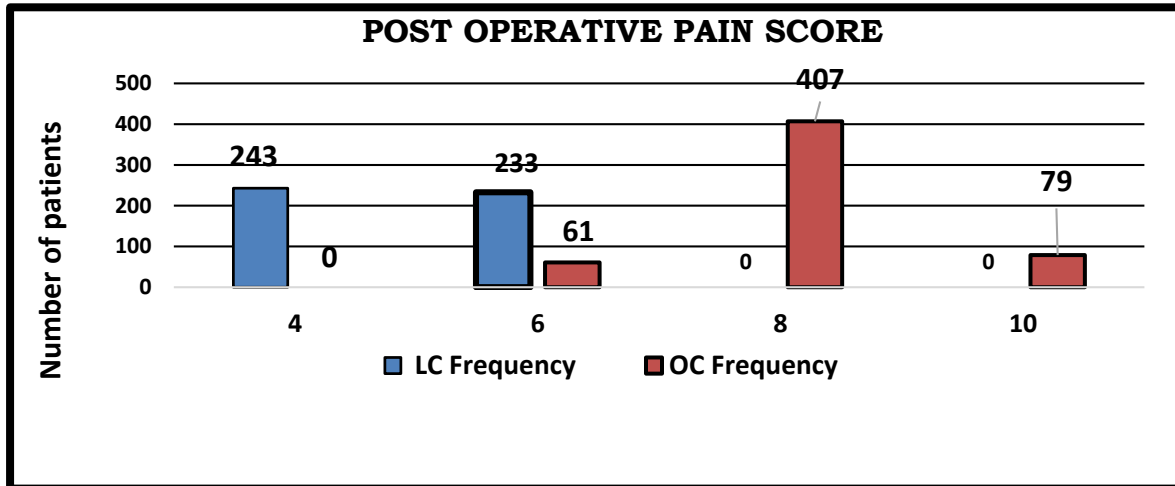
VAS Score	LC F & % N=476	OC F & % N=524	Total %	z-score	p-value
4	243(51.04%)	0(0%)	243(24.3%)	-18.79	.00001
6	233(48.94%)	61(11.64%)	294(29.4%)	-12.93	.00001
8	0(0%)	407(77.67%)	407(40.7%)	24.969	.00001

10 0(%) 79(15.07%) 79(7.9%) 8.8272 .00001

The result is significant at $p < .05$

Nurses classify the pain as Mild (score 0-4), Moderate (score 5-7) severe (score 8-10). VAS score is 4 in 51% of LC and 0 % in OC patients. VAS score is 6 in 48.9% in LC and 11.6% in OC. VAS score 8 is 0% in LC and 77.6% in OC and VAS score 10 is 15% in OC as shown in table -6.

FIGURE: -6 :-POST OPERATIVE PAIN SCORE



In this series nurses managed and successfully deal with pain with VAS score as it is a key element in post-operative care for cholecystectomy patient to make the patient carry out coughing, breathing exercises, and could have the ability to submit bed, crunches, and, gradually, walk effectively.

TABLE-6A) AVERAGE POST OPERATIVE PAIN SCORE IN LC & OC

VAS	Minimum	Maximum	Mean	SD	Gr mean	Gr SD
LC	4	6	4.97	1.000	6.6583	1.854
OC	6	10	8.14	0.88		

In Table 6(A) data stated that the maximum intensity of pain score in LC is 6 and minimum is 4 whereas in OC maximum intensity is 10 and minimum is 6. There is significant difference in the intensity of post-operative pain score in LC and OC from the nursing perception. The average pain score in LC is 4.97 and in OC it is 8.14. The group mean in both LC and OC for pain is 6.65 as shown in table-6(A).

TABLE-7: POST- OPERATIVE DURATION OF ANALGESIC

Days	LC Frequency & % N=476	OC Frequency & % N=524	Total %	z-score	p-value
1-3 Days	476(100%)	205(39.12%)	681(68.1%)	-20.62	<.000
4-5 Days	00(0%)	319(60.87%)	319(31.9%)		
Total	476(100%)	524(100%)	1000(100%)		

The value of p is $< .00001$. The result is significant at $p < .05$.

Table-7 showed that LC patients requires analgesic till postoperative day-03 and in OC it may be needed till Post-operative day-5 (60.8%). This can be explainable because of larger incision and more tissue destruction in open cholecystectomy

FIGURE-7:- IN POST OPERATIVE ANALGESICS REQUIREMENT

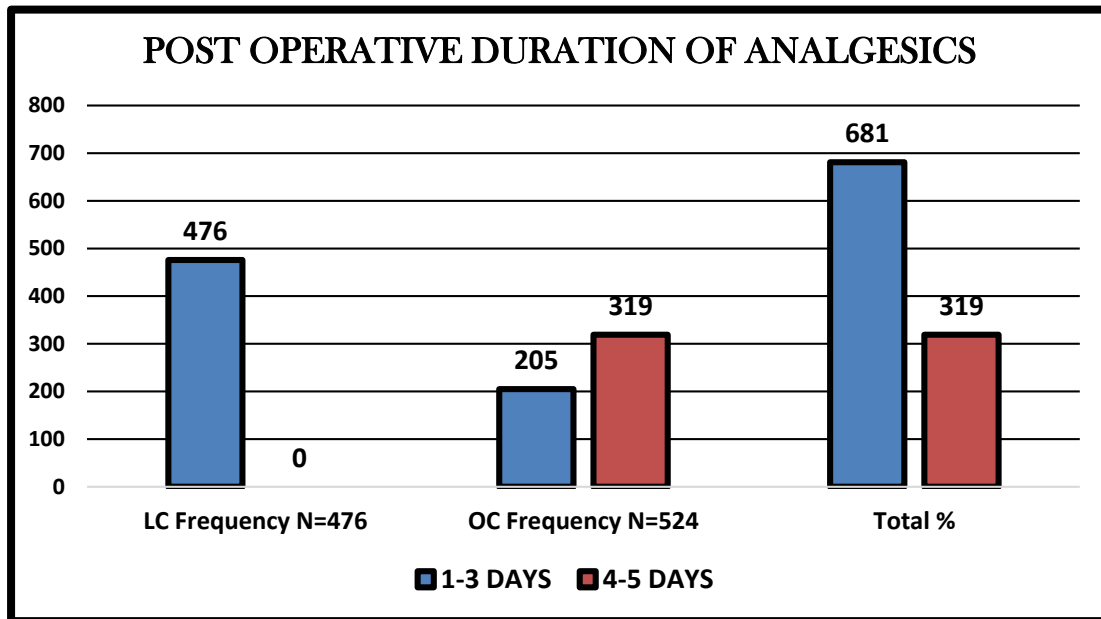


TABLE-7: AVERAGE DURATION OF POST OPERATIVE ANALGESICS REQUIREMENT

Antibiotics	Minimum	Maximum	Mean	SD	Gr Mean	Gr SD
LC	2	3	2.21	0.36	2.94	0.84
OC	3	5	3.60	0.48		

The above table-7 shows that the minimum duration of injectable analgesics is 2 days for LC and 3 days for OC and Maximum duration is 3 days for LC and 5 days for OC in this series.

Statistics show that almost 10%, 20-40% and 40-60% of the patients undergoing surgery suffer from low pain, moderate pain and severe pain, respectively (Zakeri Moghaddam et al., 2011). Pain diagnosis is one of the most important duties of nurses and pain relief is a basis for nursing care (Ghamari Zare, Anousheh, Vanaki, & Hajizadeh, 2008). Effective pain management after surgery facilitates the patient’s recovery and decreases the length of hospitalization (Ghamari Zare et al., 2008).

TABLE-8: NURSING ASSESSMENT IN POST OPERATIVE INJECTABLE ANTIBIOTICS

DAYS	Laparoscopic Cholecystectomy Frequency & % N=476	Open Cholecystectomy Frequency & % N=524	Total	z-score	p-value
Up to 5 days	476(100%)	187(35.68%)	663(63.3%)	21.48	<.000
> 5 days	00(0%)	337(64.31%)	337(33.7%)		
TOTAL	500(100%)	524(100%)	1000(100%)		

The result is significant at $p < .05$. Post-operative injectable antibiotic requirement is 100% in LC and 35.6% in OC up to 5 days and 64.3% OC patients required injectable antibiotics more than 5 days as shown in table -8.

FIGURE-8: POST OPERATIVE DURATION OF INJECTABLE ANTIBIOTICS.

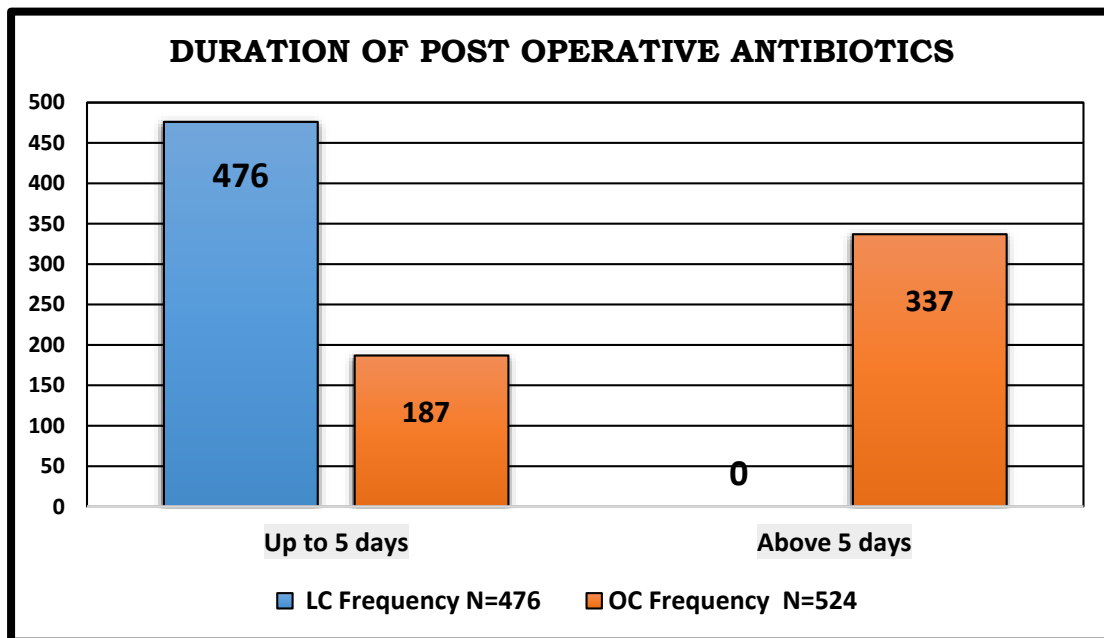


TABLE-8: AVERAGE DURATION OF POST OPERATIVE INJECTABLE ANTIBIOTIC REQUIREMENT.

	Minimum	Maximum	Mean	SD	Gr Mean	Gr SD
LC	3 days	5 days	3.37	0.498	6.19	0.977
OC	5 days	9 days	6.192	0.977		

Duration of administration of antibiotics is greater in all aspects as minimum, maximum and average days in open cholecystectomy as compared to laparoscopic cholecystectomy shown in table 10 (B). In LC the minimum duration of antibiotic is for 3 days and maximum is 5 days and in OC minimum duration is for 5 days and maximum is for 9 days with an average duration of post-operative injectable antibiotics is for 3.37days in LC and 6.19 days in OC. The group average duration of post-operative injectable antibiotic requirement in Cholecystectomy is 6.19 days.

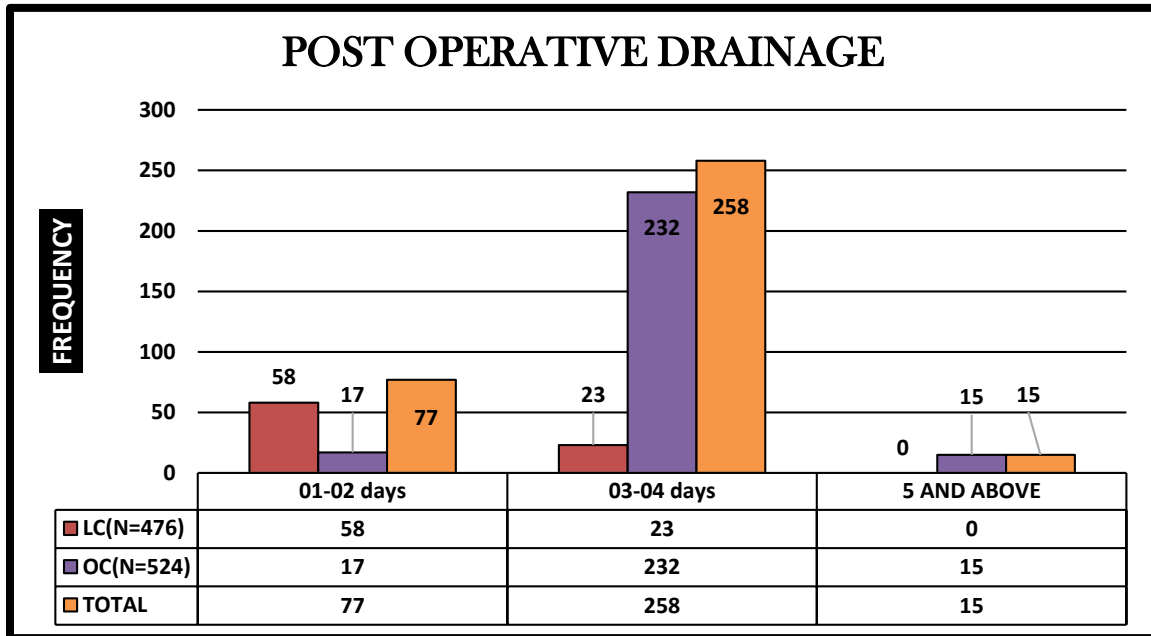
TABLE-10:-NURSING ASSESSMENT IN POST OPERATIVE DRAINAGE

DAYS (range)	Laparoscopic Cholecystectomy Frequency & % N=476	Open Cholecystectomy Frequency & % N=524	Total %	Z -score	P- value
1-2	58(12.1%)	17(3.2%)	77(7.7%)	5.3609	< .00001
3-4	23(4.8%)	232(44.27%)	258(25.8%)	-14.291	< .00001
>5	0	15(2.8%)	15(1.5%)	-3.7193	< .00001
Total	81(17.0%)	264(50.38%)	350(35.0%)	-11.084	< .00001

The result is significant at $p < .05$.

After providing required nursing interventions and management in post-operative drainage care, there were no infection in the drainage site and no post-operative bleeding seen from the drain in LC and OC. 12.1% Patient from LC require drain for 2 days and 4.8% patient needed for 3-4 days post-operatively, in OC 3.2% patient required drainage for 2 days and 44.2% patients for 3-4 days and 2.8% patient required it for more than 5 days due to high drain output.

FIGURE-10: POST OPERATIVE DURATION OF DRAINAGE IN LC AND OC



Drains were removed as soon as practicable and as ordered by the surgeon. The longer a drain remains in situ, the higher risk of infection as well as development of granulation tissue around the drain site, causing increased pain and trauma upon removal which was not seen in this series.

In this series the average duration of post-operative drainage is 2.6 days in LC and 3.3 days in OC. The average days for drainage in cholecystectomy are 3.1 days post-operatively.

TABLE-11: NURSING ASSESSMENT IN POST OPERATIVE DURATION OF CATHETER

DAY	LC (F & %)N=476	OC(F & %) N=524	Total%	z-score	p- value
0	374(78.57%)	299(57.0%)	673(67.3)	7.2416.	< .00001
2	96(20.16%)	31(5.9%)	127(12.7)	6.7599	< .00001
3	6 (1.26%)	138(26.33%)	144(14.4)	-11.279	< .00001
4	0(0)	56(10.68%)	56(5.6)	-7.3408.	< .00001

The result is significant at $p < .05$.

Table -11 depicted that 78.5% of patients from LC group and 57% patients from OC group did not required post-operative catheter. 20.1% from LC and 5.9% from OC patient had their removed by 2nd post-operative day .1.2% from LC and 26.3% from OC patient retained catheter till 3rd post-operative day and 10.6% patients had catheter till 4th post-operative day as shown in the above table-11.

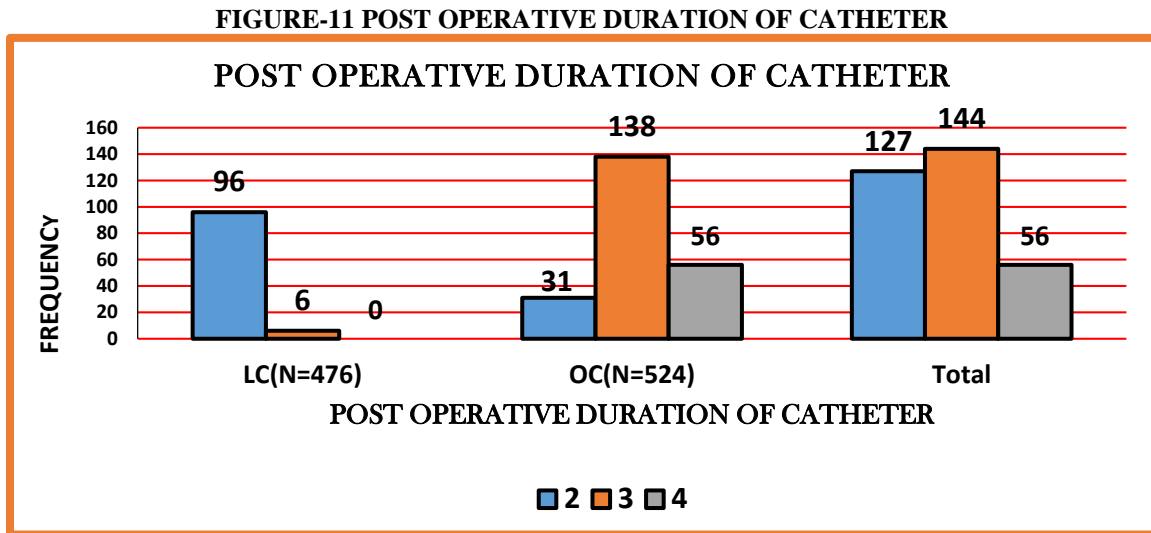


TABLE -11 (A) AVERAGE DURATION OF CATHETER IN LC AND OC

	Minimum days	Maximum days	Mean days	SD	Gr Mean	Gr SD
LC	2	3	2.34	0.852	3.21	1.351
OC	2	4	3.23	1.59		

The average duration of post-operative catheter is 2.34 days in LC and 3.23 days in OC, the average duration of catheter in cholecystectomy is 3.2 days in this series as shown in table-11(A).

TABLE -12: AVERAGE POST OPERATIVE DURATION OF RYLE’S TUBE

	Minimum	Maximum	MEAN	SD	Gr Mean	Gr SD
LC	1	3	2.59	0.49	1.29	1.56
OC	2	4	3.10	1.43		

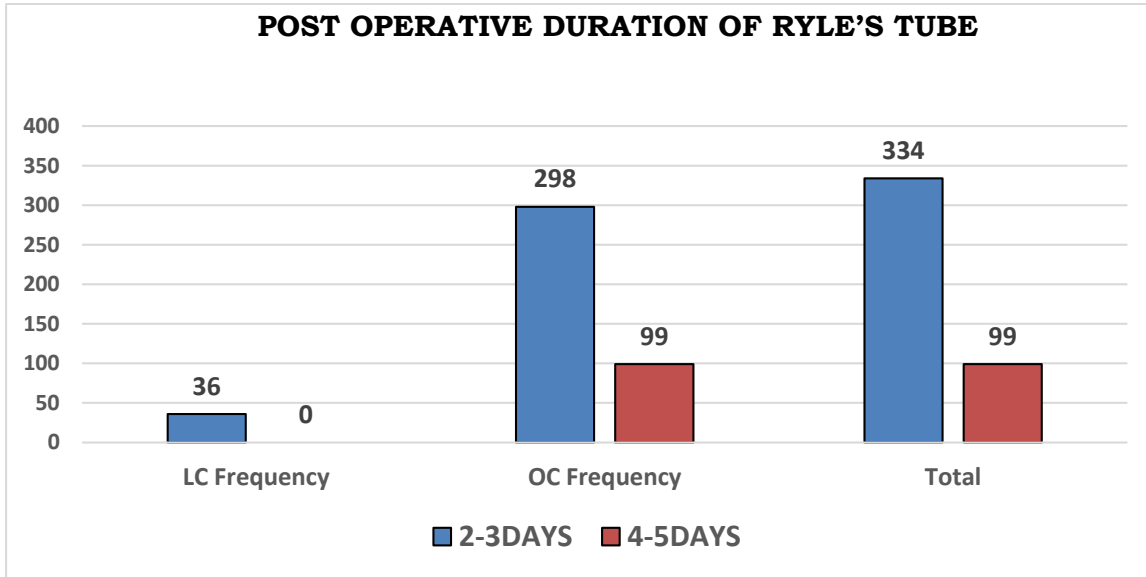
Table-12 shows that the average duration of post- 2.5 days in LC with minimum for 1 day and maximum for 3 days and in OC average operative of Ryle’s tube is 3.1 days with minimum for 2 days and maximum for 4 days.

TABLE-12 (B) POST OPERATIVE DURATION OF RYLE’S TUBE

DAYS	LC (F & %) N=476	Open Cholecystectomy Frequency & % N=524	total%	z-score	p-value
2-3	36(7.6%)	298(56.8%)	334(33.4%)	-16.510	.000
4-5	0	99(18.8%)	99(9.9%)	-9.990	.000

The result is significant at $p < .05$. The duration of post –operative Ryle’s tube is 2-3 days for 7.8 % of patients in LC and 56.8 % of patients in OC group, on the other hand 9.9 % of OC patients retained Ryle’s tube for 4-5 days for as shown in table-12(B).

FIGURE -12(B): DAY ON WHICH RYLES TUBE REMOVED



Post-operative Nurses interventions in Ryle's tube were gastric irrigation to empty the stomach bile and other content and amount and color 4 or 6 hourly to check the output and complications like bile leakage and bleeding.

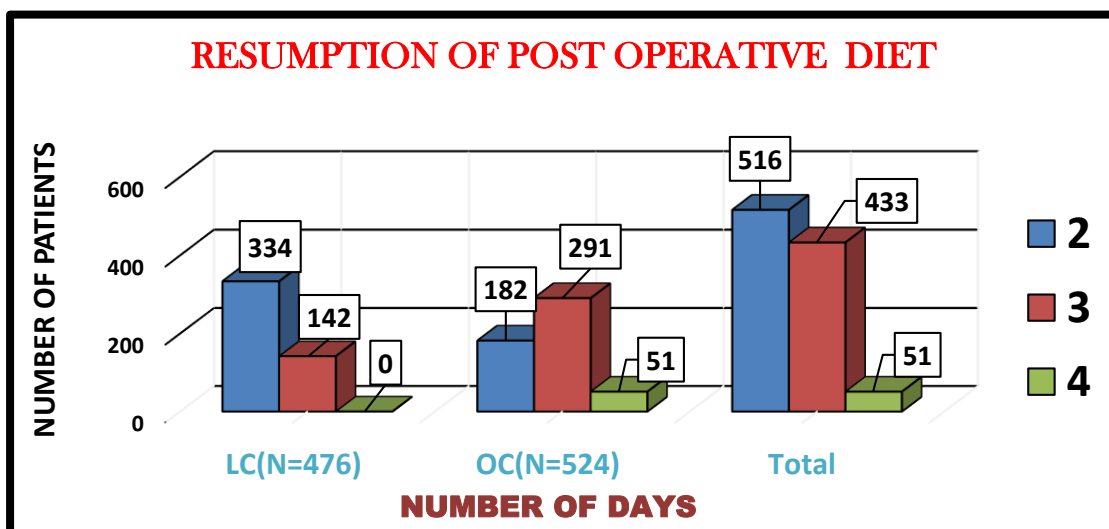
TABLE-13: POST OPERATIVE RESUMPTION OF ORAL DIET

Days	LC (F & %) N=476	OC(F &%) N=524	Total & %	z-score	p- value
2	334(70.17%)	182(34.73)	516(51.6%)	11.198	< .00001
3	142(29.83%)	291(55.5%)	433(43.3%)	-8.192	< .00001
4	0	51(9.7%)	51(5.1%)	-6.987	< .00001

The result is significant at $p < .05$.

From table -13 we can conclude that after assessing the presence of bowel movement and passage of flatulence. 70.1% of LC patient and 34.7 % of OC patients started with liquid diet or sips of water on post-operative day 2 .Due to the presence of Ryle's tube and patient c/o nausea and vomiting 29.8% in LC and 55.5% started liquid diet on post-operative day 3rd. 9.7% OC patient had fever nausea, and develop fullness had resume diet post-operative day 4th .

FIGURE-13: POST OPERATIVE RESUMPTION OF DIET



In this series a clear liquid diet or sips of water is given as first post-operative meal regardless of early or delayed administration after assessment of the presence or absence of bowel sounds by using a stethoscope, listening for the presence of bowel activity and gently palpating the abdomen noting firmness and excessive tenderness as indicated by the patient's response. Once bowel activity has returned, the diet is resume with a clear liquid diet and the patient instructed to sip a small amount of fluid to determine if he or she can tolerate fluid as per the treating doctor's instruction.

TABLE -14: NURSING ASSESSMENT IN POST-OPERATIVE AMBULATION

The value of p is < .00001. The result is significant at p < .05.

After the interventions 73.7% of the patients from LC and 1.9% of OC patients were ambulated on day 2nd. On post-operative day 3rd 26.2% form LC and 69.4% from OC patient were ambulated. 28.6% of the OC patient were ambulated on day or due to weakness and vomiting and general weakness postoperatively. Few OC patient delayed in ambulation due to presence of Ryle's tube and drainage.

Days	LC (F & %) N=476	OC (F & %)N=524	Total %	Z-SCORE	P – VALUE
2	351(73.7%)	10(1.9%)	361(36.1%)	22.9351	.00001
3	125(26.2%)	364(69.4%)	489(48.9)	-13.650	.00001
>4	0	150(28.6%)	150(15.0%)	-12.661	.00001

FIGURE-14 :- POST OPERATIVE AMBULATION

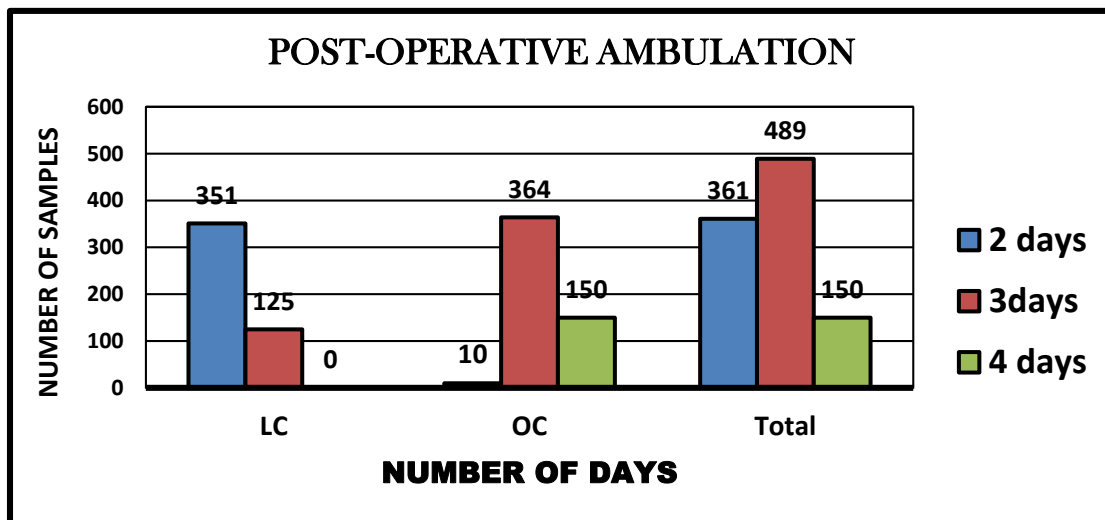


TABLE-15: - NURSING ASSESSMENT IN POST-OPERATIVE WOUND INFECTION.

Post-operative wound Infection	LC(F & % N=476)	OC (F & % N=524)	Total %	z-score	p-value
	16(3.3%)	40(7.5%)	56(5.6%)	2.9346	.00338

The result is significant at p < .05. In this series the number of post-operative wound infection is 3.3% in LC and 7.5% in OC. A total of 5.6% patients had post-operative wound infection in Cholecystectomy as shown in table-15.

FIGURE-15: -POST-OPERATIVE WOUND INFECTION

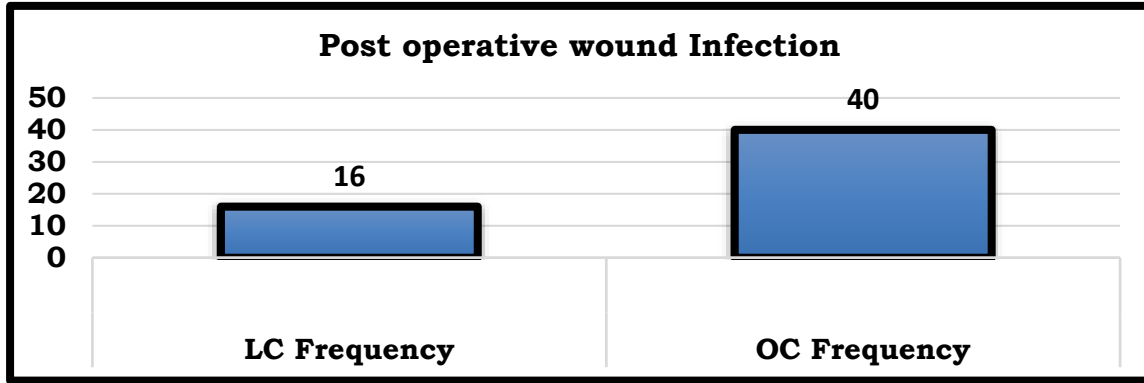


TABLE-16: NURSING ASSESSMENT IN POST-OPERATIVE COMPLICATIONS

Post-operative Complications	LC (F& %)	OC (F& %)	Z -score
	39(8.19%)	94(17.9%)	-4.5326

The result is significant at $p < .01$. P value $< .00001$

After Post – operative nursing assessment and interventions the % of complications were reduced, and total complications was 8.19% in LC and 17.9% in OC as stated in table-16.

FIGURE-16: POST PERATIVE COMPLICATIONS

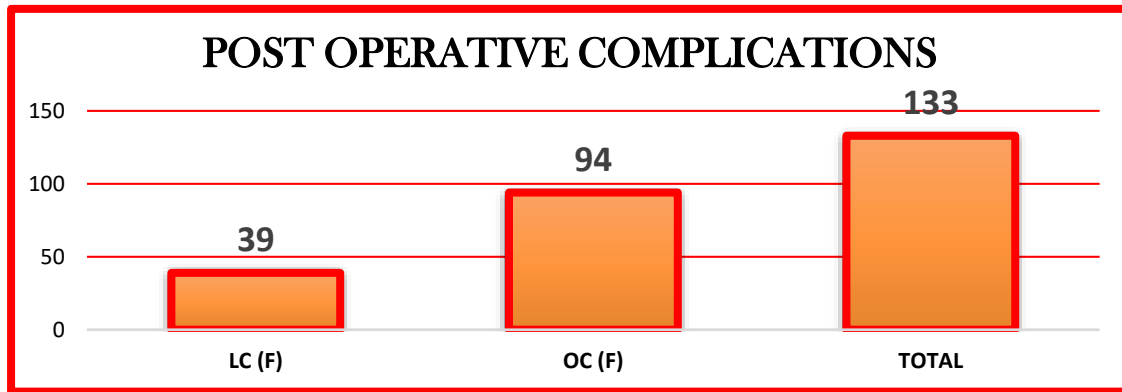


TABLE-17: POST-OPERATIVE PATIENT COMPLICATIONS

Complications	LC frequency & % N=476	OC frequency & % N=524	Total	z-score	p-value
Bile leakage	16(3.3%)	28(5.3%)	44(4.4%)	-3.3487	.000(S)
Fever	12(2.5%)	42(8.0%)	54(5.4%)	-3.8392	.000(S)
Malaise/weakness	6(1.2%)	11(2.0%)	17(1.7%)	-1.0247	.307(NS)
Vomiting	5(1%)	14(2.6%)	19(1.9%)	-1.8756	.060(NS)

The value of p is $< .00001$. The result is significant at $p < .05$

In this series the post-operative complication consist of Bile leakage 16(3.3%) in LC and 28(5.3%) in OC, fever 12(2.5%) in LC 42(8.0%) in OC Weakness/Malaise 6(1.2%) in LC and 11(2.0%) in OC vomiting 5(1%) in LC and 14(2.6%) in OC as shown in table-17 .

FIGURE-17: POST OPERATIVE PATIENT COMPLICATIONS

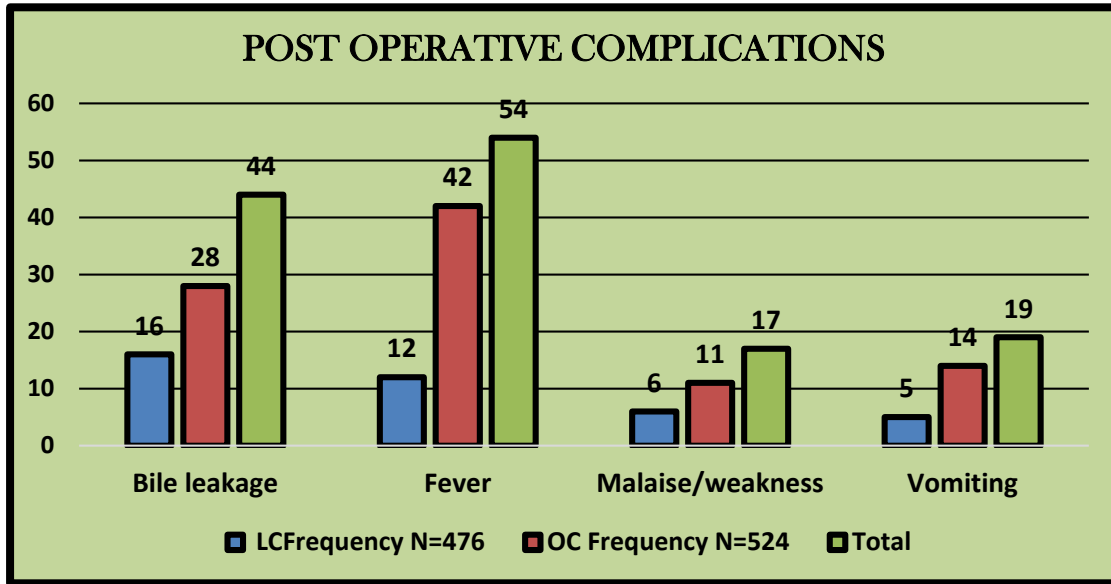


TABLE-18: POST OPERATIVE OF HOSPITAL STAY

Days (Range)	LC (F & %) N=476	OC (F & %) N=524	Total%	Z -score	P value
Up to 7 days	476(100%)	288(54.9%)	764(76.4)	16.751	.0001
>7days	00	236(45.0%)	236(23.6)		
Total	476(100%)	524(100%)	1000		

The result is significant at $p < .01$.

In this series the duration of hospital stay after operation is up to 7 days in LC (100%) and in OC (54.9%) and 45 % patient stayed more than 7 days in OC as shown in Table-18

FIGURE: - 18 -POST OPERATIVE HOSPITAL STAY

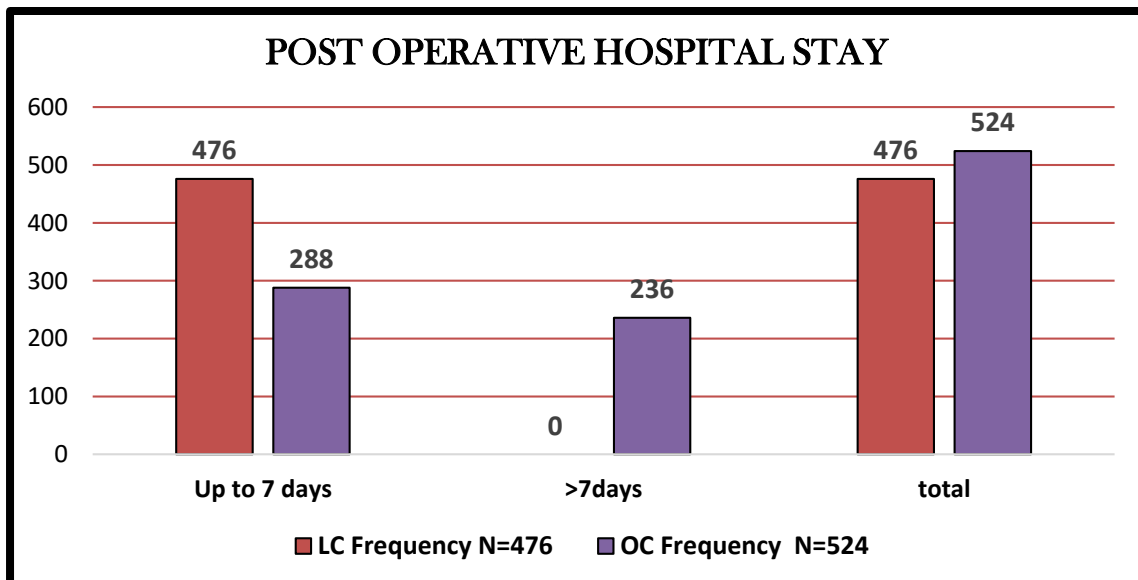


TABLE-19: LENGTH OF HOSPITAL STAY

Days (Range)	LC Frequency & % N=476	OC Frequency & % N=524	Total%	Z- Score	P-value
Up to 7 days	353(74.1%)	00	353(35.3%)	24.5074	<.00001
>7days	123(25.8%)	524(100%)	647(64.7%)		
TOTAL	476(100%)	524(100%)	1000(100%)		

The value of p is < .00001. The result is significant at p < .05.

FIGURE -19: TOTAL LENGTH OF HOSPITAL STAY

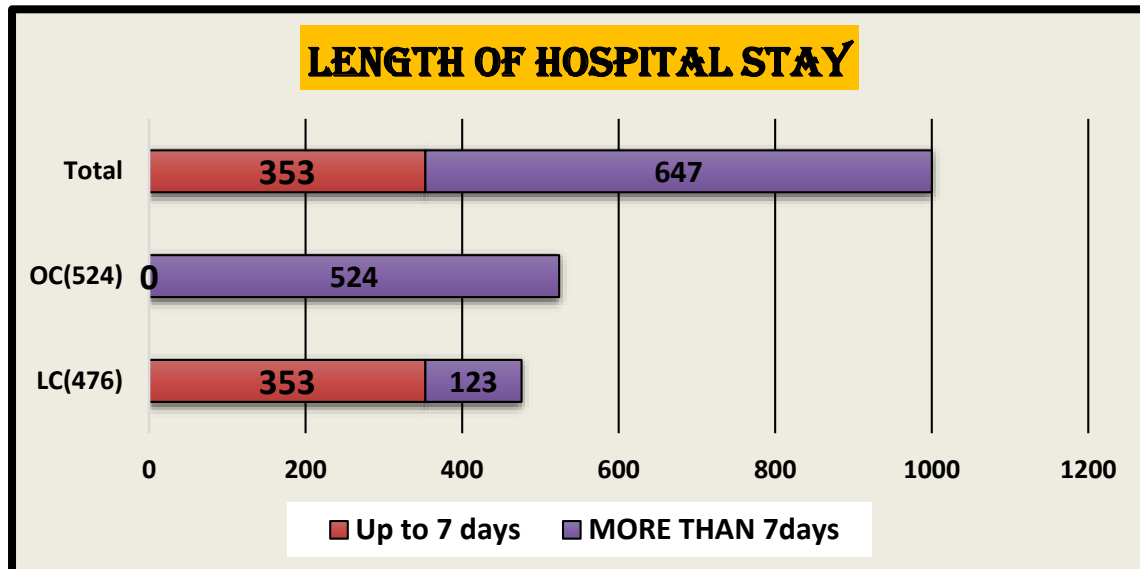


TABLE-19(A): AVERAGE LENGTH OF HOSPITAL STAY.

Operation	Mean days	SD	Minimum m	Maximum	Gr mean	Gr SD
LC	6.76	1.51	5	15	8.46	2.374
OC	10.01	1.918	8	31		

From the above table-19(A) depicted that the average length of hospital stay for cholecystectomy is 8.46 days with mean days 6.75 for LC and 10.01 for OC. Length of hospital stay is calculated from the day of admission to the day of discharge.

DISCUSSION

Carl Langenbuch, the pioneer of open cholecystectomy had very famously stated that “gall Bladder should be removed not because it contains stones, but because it forms them”³ “The purpose of both Open Cholecystectomy and Laparoscopic Cholecystectomy is to provide relief to the patient by safely removing the diseased gall bladder .

No age is said to be immune to gall bladder disease. The sex ratio found in this study was 12:13(48.2%:51.8%) in LC and 2:3(39.8%:60.2%) in OC group. however, sex ratio observed by Iqbal J⁴.et al in their study was 13.5:1 for OC and 10.19:1 for LC patients. The incidence of gall stone diseases increases after the age of 40 years and it becomes 4-10 times more common in old age. As many as 16% and 29% of women above the age of 40-49 years and 50-59 years respectively, had gall stone^{4,5}.In our study high incidence is seen in 3rd -4th decade with mean age 41.25 yrs in LC and 41.65yrs in OC group. Daradkeh⁵, Bigener et al⁶reported mean age 47.2 and 40 years respectively. Series by Thomas B Hugh et al ⁷, R Schmitz et al⁸ have reported a similar

peak incidence in the 4th and 5th decades. In contrast to our study high incidence has been shown by Rosen Muller. M et al⁹ years for OC and 54 years for LC group.

In the present study there was a female preponderance (56%) amongst the patients and majority of them were in 25-55years of age groups which are very much similar to those observed by Frazee et al¹⁰ and U. Berggren⁶ and Dr Arun Singh¹¹ (79%) female and 21% male out of 743 cases. These findings are consistent with results of similar studies.^{12,13}

Deb Barma D (2018)¹⁴ reported the peak incidence in 3rd and 4th decade followed by female preponderance (85%) female (15%) male. Findings were consistent with Singh P et al¹⁵ where 79% of cases are female age group of 41-60 years. Same high incidence has been shown in 3 to 5th decade by K. Altaf et al,¹⁶

Alok Chandra Prakash et a ¹⁵⁹ analyzed 180 patients with gallstones were most common in third and fourth decade with mean age being 38 years.

Food habits in the present study was found Mixed Diet (predominantly non-vegetarian diet). 952 samples were non

vegetarian from which 93% underwent LC and 97% underwent OC. Similar study was observed by Alok Chandra et al¹⁷ where 128 out of 180 patients consumed a mixed diet and the rest 52 out of 180 patients consumed a vegetarian. Non-vegetarians were found to be more commonly involved with cholelithiasis than vegetarians. Cholelithiasis is more in non-vegetarians, the cause could be due to the consumption of high protein and fat. The findings were similar with the findings in a study done by Maskey et al.¹⁸ in 1990 AD in Nepal where incidence of cholelithiasis was found more frequently among the people who consumed more fat and protein^{19,20} Several studies that have evaluated the role of diet as a potential risk factor for gallstone formation, including energy intake, cholesterol, fatty acids, fiber, carbohydrates, vitamins and minerals, and alcohol intake.²¹

Post-operative Pain is assessed with VAS. Pain course was experienced by both groups with variable intensity, Higher in OC as compared to LC. Pain is an inevitable outcome of any surgical procedure and early relief from pain is one of the primary goals of treatment. Early relief from post-operative pain was seen in group LC as compared to group OC patients in the present study. The VAS was significantly less for LC group as compared to OC. In the present study duration of postoperative pain score was 4.97 and 8.34 in group LC and OC group respectively. In a similar study by Shukla A et al²² duration of postoperative pain was 14.68 hours in LC Group and 27.92 hours in OC Group.

Kum²³ also found a mean VAS score of 3.8 v/s 7.7 between LC and OC. It was also demonstrated that patients undergoing open cholecystectomy required more analgesic than those undergoing laparoscopic cholecystectomy group especially when the patients develop wound infection.

LC is a minimally invasive procedure affecting limited tissue area and therefore reported lesser pain as compared to OC. Similar study by Mintu Mohan nandi et al²⁴ showed pain duration of 2 days for LC and 4 days in OC and duration of Analgesics used (mean 2 days for LC and 4 days for OC) also were significantly less in LC group.

A post-operative resumption of normal diet was possible within 2 days in LC while OC group required longer time. A similar finding was observed by Shukla A et al²² with mean time of 11.68 hours in LC Group and 17.24 hours in OC Group for restoration of oral feeds.

In present study post-operative wound infection was found in 3.3% patients in Group LAP and in Group OPEN wound infection was found in 6.8% patients. Siddiqui K et al²⁵ observed wound infection 2% and 6% respectively in laparoscopic cholecystectomy and open cholecystectomy group. The rate of surgical site infection was higher in OC (6.8%) as compared to LC (3.3%). Karim T et al²⁶ reported wound infection rate in open procedure to be 3 times the laparoscopic procedure. The above table showing studies with similar results as compared with the present study.

Wound infection in open procedure is 3 times the laparoscopic procedures. Jatzko et al²⁷ In their study observed that complications rate is lower in laparoscopic cholecystectomy group (0.3%) as compared to open cholecystectomy group (5.1%). Barkun JS et al²⁸. In a series it is observed that number of complications in laparoscopic cholecystectomy were significantly less than number of complications in open cholecystectomy. Siddiqui et al.²⁵ in their study observed that frequency of wound

infection was three times common in open cholecystectomy as compared to laparoscopic cholecystectomy in acute cholecystitis LC is associated with shorter hospital stay and quicker convalescence as compared to Classical OC. The Hospital stay in this study ranged from 3.97 days in OC and 7.66 Days in LC with mean length of hospitalization 3.97 days in LC and 7.66 days in OC.

In a study by Anmol N et al²⁹ the median duration of hospital stay was three days for LC and seven days for OC which is in accordance with our study. Among the 100 patients studied by Karim T et al²⁶, OC was associated with a mean post-operative hospital stay of 5.46 days, considerably greater than 3.7 days seen in patients undergoing LC group.

Nandi et al²⁴ also found similar results. Many publications have reported that LC is associated with shorter hospital stay.^{30,31}. In this series the average length of stay of 3.97 days for LC, versus 7.66 days for OC group .

Patient who underwent OC need antibiotics coverage for at least 3-4 days more than the patients who undergo LC according to Supe AN et al.³² **Antibiotics** requirements was found to be less in LC according to Foster D.S et al³³. In the present study all patients who underwent LC were given a mean days of (3.37) of antibiotics and OC. (6.19 Mean days)

In this study LC requires analgesics for shorter duration as compared to open because of smaller keyhole incisions thereby causing less pain in contrast to longer muscle cutting in open method. Similar findings were observed by Smith JF et al (1992)³⁴, and Trondsen et al (1993)³⁵.

In this studies early ambulation is seen in LC as compared to OC. Similar results has been found by Porte RJ³⁶, Shukla et al²².

In this series, there were no major complications and had several minor ones. There was no peri-operative mortality. Bile leak through drain tube in LC group was supposed to be from the gall bladder bed in liver due to minor injuries. All the patients were treated conservatively, drains were kept for a period of 2 days or more as the leak subsided. The main reason for blood loss in LC group was from the gall bladder bed which eventually stopped on conservative management.

From this study the following conclusion were drawn.

- The Mean Age in this series is 41.25 years in LC and is 41.65 years in OC.
- There was a female preponderance in both the groups with 51.8% of patients being female patients in LC and 60.2% patients being female in OC group .
- A total of 95.2% were non-vegetarian and this may be one of the main reasons for increasing number of GB stone diseases in Northeastern region, Assam.
- The level of patient satisfaction was very high in LC (27.73%) in comparison to OC (7.82%).
- Mean days of Antibiotic requirement is 3.37 days (LC) & 6.19 day (OC).

- Mean days for Analgesic requirement is 2.21 days (LC) & 3.6 days(OC).
- The Mean VAS score is 4.97 in LC and 8.14 in OC.
- Resumption of post operative diet (mean days) is 2.29 (LC) & 2.7(OC).
- The Post operative complication rate is 8.19% in LC and 17.9% in OC .
- The post operative Wound Infection is 3.3% in LC & 7.5%in OC.
- Mean days of hospital stay in LC is 6.76 and in OC group is 10.01days.
- The average ambulatory day is 2.26 in LC & 3.97 days in OC.

VI. CONCLUSION

The present study was carried out to assess the nursing perception regarding the effectiveness of treatment and outcome of LC and OC. Early post-operative recovery depends on educating patients on self-care, wound care and providing clear information in pre and post-operative and as well as before during and before discharge .

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