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Nazima Begum
M.Sc Nursing, Srimanta Sankaradeva University of Health Sciences (SSUHS), Guwahati, Assam, India

Corresponding Author:
Nazima Begum
M.Sc Nursing, Srimanta Sankaradeva University of Health Sciences (SSUHS), Guwahati, Assam, India

A comparative study of patient satisfaction in conventional versus laparoscopic cholecystectomy in a teaching hospital in Assam

Nazima Begum

Abstract
Objective: This study was carried out to assess and compare patient satisfaction, scar pain and cosmesis between open and laparoscopic cholecystectomies.
Study design: Prospective Comparative observational study
Place and duration of study: Guwahati Medical College Hospital (GMCH) and Mahendra Mohan Choudhury hospital (MMCH) May 2014 to Nov 2017
Methodology: A total of 500 patients from each group who had undergone open and laparoscopic cholecystectomy in all units of the Surgical Department, were included. Data was collected on questionnaires given and read to the patients along with counselling and information regarding scar-pain using visual analog score on a 0 - 10 scale and satisfaction using SAPS questionnaire. This was done pre and postoperatively on patients till the patient get discharged from the hospital.
Results: The Mean VAS score postoperatively was higher for open-cholecystectomy 8.14 (OC) compared to 4.97 for laparoscopic-cholecystectomy (LC) ($p< 0.001$ and < 0.001).
Women Aged between (20-45yrs) were interested to rate the cosmesis on the basis of length of incisional scar and post scare mark (58.1%) rated as best in LC and (36.9%) rated good with p-value < 0.0001. Mean-cosmesis score was higher for laparoscopic-cholecystectomy for those younger than 40, females and unmarried.
36.1% in LC and 19% in OC were very satisfied with the treatment care. In explanation of the treatment and result 42% LC and 24.6% OC patients were fully satisfied. In Clinical care part and only 20% of the LC and OC patients were fully satisfied with Hospital care.
Conclusion: Overall patient-satisfaction and cosmesis scoring was higher for laparoscopic-cholecystectomy especially among females, unmarried and younger than 40 years. Patients of 40 years and older had greater satisfaction scoring for open-cholecystectomy. Despite the superiority of LC in terms of overall morbidity, hospital stay and lesser pain and analgesic requirement, patients admitting in GMCH and MMCH, especially those belonging to rural areas, do not prefer the laparoscopic approach because LC in local language is referred to as laser surgery and chances of reoccurrence in LC is more as per the local belief. Greater fear and little knowledge of LC prior to surgery is associated with a lower or not opted for LC in GMCH and MMCH.

Keywords: Surgical audit, patient-satisfaction, laparoscopic cholecystectomy, conventional cholecystectomy

Introduction
Gallstones are common in Indian population and its treatment has shown a decisive shift from open to minimally invasive route.
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.
The subject on patient satisfaction has drawn much attention for research particularly in the specialized areas such as emergency department, coronary care units, orthopedic wards and medical Units. As on date, few surgical patient satisfaction studies have been conducted on surgical care units with cholecystectomies either by LC or OC [1-3].
Therefore, assessing patient satisfaction as well as the factors influencing it, can bring new changes in the approach of nursing care in the post-operative surgical patients with LC or OC in the surgical wards of a tertiary care hospital in Guwahati Assam.

Methodology

The target population of the study was male and female patients admitted in surgical units of GMCH and MMCH with age group between 13 to 80 years of age diagnosed with calculus and calculus cholecystitis, admitted for cholecystectomy operation either by LC or OC. In view of the wide coverage of population in the surgical units, the evaluation of patient satisfaction with psychological and physical factors in surgical unit would also contribute to post-operative outcome. The sample size consists of 1000 patients. 500 patients from OC group and 500 from LC group.

Inclusive criteria were Patient admitted in selected Hospitals with Gall stone diseases and willing to participate. Exclusion criteria were patients not willing to participate, Carcinoma of GB, Perforated GB, and Choledocholithiasis. Data collected from the Patients who were admitted for cholecystectomy either by laparoscopically or open in surgical units in GMCH and MMCH during data collection period and who fulfilled inclusion criteria were collected as samples by convenient sampling technique. Data collection tools were Bed Head Tickets (BHT): Self-prepared structured questionnaire, VAS [4] for Pain Assessment Short Assessment of Patient Satisfaction (SAPS) [5]. Study design is Prospective, comparative, Observational survey design. The sample size consists of 1000 patients. 500 patients from OC group and 500 from LC group.

Observation and Results (Demographic Variables)

Table 1: Gender distribution

Gender	Laparoscopic Cholecystectomy Frequency & % N=500	Open Cholecystectomy Frequency & % 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 259 (51.8) of patients being female patients in LC group and 301(60.2%) patients being female in OC group as shown in Table-1. Overall, 560 (56%) female and 440(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**.**

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

Table-2 depicted that maximum sufferer were between the age group of 26yrs to 55 yrs. 278 (27.8%) and 241(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 21(4.2%) in LC and 15(3%) in OC and higher age group i.e., in age group above 66 years is 12(2.4%) in LC and 9(1.8%) in OC. In the age group between 46-55, the number of sufferers were 53(10.3%) in LC and 67(13.4%) in OC. The Mean age group is 41.65years in OC and 41.25 years in LC.

In the age group between 19- 25 years, the total sufferer was 42(8.2%) in LC and 49(9.8%) in OC. It is also seen from the above table that 53(10.3%) of LC and 67(13.4%) of OC patient falls in the age group between 56-65 years.

Part-11: Post-Operative patient satisfaction with LC & OC.

The Short Assessment of Patient Satisfaction (SAPS) consist seven items assessing the core domains of patient satisfaction which include treatment satisfaction, explanation of treatment results, clinician care, participation in medical decision making, respect by the clinician, time with the clinician, and satisfaction with hospital/clinic care

Table 23: (1) How satisfied are you with the effect of your treatment/care.

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very dissatisfaction (0-10)	0 (0%)	0(0%)	0(0%)	--	--
Dissatisfaction (11-18)	48(10%)	67(12.7%)	115(11.5%)	-1.3377	.18024
Satisfied (19-26)	256(53.7%)	304(58%)	560(56%)	-1.347	.17702
Very satisfied (27-28)	172(36.1%)	153(19.1%)	325(32.5%)	-3.881	.0001

The quality and adequacy of healthcare services can be measured based on views and satisfaction of patients. In this series 10% from the LC group and 12.7% from the OC group were dissatisfied with post-operative effect of the treatment/care due to fever and post-operative infection. 53.7% of the LC and 58% of OC group were satisfied with the effect of the treatment /care. 36.1% of the LC and 19.1% of the OC group were highly satisfied with the

treatment/care. There is significant differences seen in satisfaction and dissatisfaction in both the group in post-operative effect of treatment and care in LC and OC as seen in table 23(1).

Table 23: (2) How satisfied are you with the explanations the {doctor/other health professional}? Has given you about the results of your {Treatment/care}?

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very dissatisfaction (0-10)	2(0.4%)	37(7%)	39(3.9%)	-5.4175	.0001
Dissatisfaction (11-18)	70(15.1%)	162(30.9%)	234(23.4%)	-6.6811	.0001
Satisfied (19-26)	200(42%)	196(37.4%)	396(39.6%)	1.4894	.13622
Very satisfied (27-28)	204(42.8%)	129(24.6%)	333(33.3%)	6.112	.0001

Pre-operative and post-operative explanation of the treatment outcome is needed for a positive outcome postoperatively with early ambulation and recovery. 0.4% from LC and 7% from OC patient were very dissatisfied with the treatment explanation. 15.1% from LC and 30.9% from OC patients were dissatisfied about the explanation provided to the patients in both the group.42% from LC and 37.4% from OC group were satisfied and 42.8% and 24.6% were highly satisfied from LC and OC respectively as shown in table 23(2).

Table 23: (3). The {doctor/other health professional} was very careful to check everything when examining you/.

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very dissatisfaction (0-10)	2(0.4%)	16(3%)	18(1.8%)	-3.128	.00174
Dissatisfaction (11-18)	6(1.2%)	32(6.1%)	38(3.8%)	-4.003	.0001
Satisfied (19-26)	66(13.8%)	380(72.5%)	446(44.6%)	-18.635	.0001
Very satisfied (27-28)	402(84.4%)	96(13.1%)	498(49.8%)	20.889	.0001

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

From the above data it is depicted that 0.4% of LC and 3% from OC patients were very dissatisfied about the handling of patients by the health care professionals during post-operative interventions especially while removing Ryle's tube and drainage tube. 1.2% from LC group and 6.1% from OC group were dissatisfied. 13.8% and 72.5% were satisfied the way patients were examined and intervened postoperatively in the LC and OC patients respectively. 84.4% from LC and 13.1% from OC group were very satisfied as seen from the table 23(3).

Table 23: (4) How satisfied were you with the choices you had in decisions affecting your health care?

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very dissatisfaction (0-10)	0%	0%	0%		
Dissatisfaction (11-18)	11(2.3%)	38(7.2%)	49(4.9%)	-3.6149	0.0001
Satisfied (19-26)	419(88%)	390(74.4%)	809(80.9%)	5.4632	0.0001
Very satisfied (27-28)	46(9.6%)	96(13.1%)	142(14.2%)	-3.9168	0.0001

The result is significant at $p< 0.01$.

In this series no patient were very dissatisfied in deciding the treatment choices which was affecting the post-operative outcome. 2.3% from LC and 7.2% from OC patient were dissatisfied in their choices in making health care decisions. 88% from LC and 74.4% from OC group were satisfied and 9.6% patients from LC and 13.1% patients from OC were very satisfied as their scores falls between 27-18 as shown in table -23(4).

Table 23: 5(A) How much of the time did you feel respected by the {Doctors/Nurses/other health professional}

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very Dissatisfaction (0-10)	0%	0%	--	--	--
Dissatisfaction (11-18)	59(12.3%)	74(14.1%)	133(13.3%)	-0.8033	.42372
Satisfied (19-26)	317(66.5%)	402(76.7%)	719(71.9%)	-3.5561	.0003
Very satisfied (27-28)	100(21%)	48(9.1%)	148(14.8%)	5.2695	.0001

Health care professionals /nurses given maximum time to the post-operative patients with cholecystectomy to prevent complications and for early recovery. 12.3% of LC patient and 14.1% of OC patient were dissatisfied as few health care workers were least interested to their complains and didn't visited after repeated calling. Patient were satisfied by the time provided to the patient as 66.5% from LC and 76.7% from OC had scores between 19-26. 21% and 9.1% of patients are very satisfied as score falls between 27-28 in LC and OC respectively.

Table 23: (6) The time you had with the {doctor/other health Professional} was too short.

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very Dissatisfaction (0-10)	23(4.8%)	29(5.5%)	52(5.2%)	-0.4996	.61708
Dissatisfaction (11-18)	70(14.7%)	120(22.9%)	19(19%)	-3.2991	.0009
Satisfied (19-26)	130(27.3%)	174(33.2%)	304(30.4%)	-2.0241	.04338
Very satisfied (27-28)	253(53.1%)	201(38.3%)	454(45.4%)	4.6923	.0001

The result is significant at $p< 0.01$.

From the above table we conclude that the 4.8% of LC patients and 5.5% of OC patients were very dissatisfied with the time they got to spend with the health care professionals post operatively (scores between 0-10). 14.7% from LC and 22.9% from OC patients were dissatisfied (Scores 11-18). From LC 27.3% were satisfied and 53.1% were very satisfied as score falls between (19-26) and (27-28) respectively. In OC 33.2% were satisfied with the time they had with the health care professional and 38.3% were highly satisfied as shown in the Table-23(6).

Table 23: (7) Are you satisfied with the care you received in the {hospital/clinic}?

Satisfaction grade	LC Frequency & % N=476	OC Frequency & % N=524	Total %	Z -Score	P value
Very Dissatisfaction (0-10)	35(7.5%)	46(8.7%)	81(8.1%)	-0.8253	.40654
Dissatisfaction (11-18)	42(8.8%)	120(22.9%)	162(16.2%)	-6.034	.0001
Satisfied (19-26)	301(63.2%)	252(48%)	553(55.3%)	4.8104	.0001
Very satisfied (27-28)	98(20.5%)	106(20.2%)	204(20.4%)	0.1480	.8886

The result is significant at $p< 0.01$.

Above table depicted that 7.5% of LC and 8.7% from OC patients was highly dissatisfied by the post-operative care in pain management, wound care and Dressing of the surgical wound. Overall, the patients reported positive experiences with all aspects of their primary care postoperatively. 8.8% from LC and 22.9% from OC were dissatisfied as scores falls between (11-18). In LC 63.2% patient were satisfied and 20.5% were highly satisfied with the hospital care given postoperatively. In OC 48% patients were satisfied and 20.2% were highly satisfied with the post-operative care provided to the patient as shown in table-23 [7].

Discussion

Open cholecystectomy has been replaced by laparoscopic cholecystectomy as the gold standard treatment for cholecystitis throughout the world. Various studies have praised the procedure for its superior cosmesis, pain of surgery and scar, and patient satisfaction. However, in these studies scar pain, cosmesis and patient-satisfaction were not objectively studied [6, 7, 8, 9].

Despite adequate counselling and information given to patients regarding the superiority of laparoscopic cholecystectomy in terms of overall morbidity, hospital stay and treatment costs, patients, especially those belonging to rural areas, do not prefer the laparoscopic approach. Laparoscopic cholecystectomy in local language is referred to as laser surgery which is a misnomer as laser is not used. These are, however, without basis in scientific fact or data. Various factors can be attributed to the spread of these beliefs. These include a general lack of laparoscopic expertise and a general lack of education and awareness of the patients and their attendants. With regard to the same beliefs or myths, patients especially from rural areas prefer open cholecystectomy and are satisfied with their wounds despite relatively large scars, not complaining of pain even when in some cases the wounds were infected or had stitch sinus. At the same time, patients undergoing laparoscopic cholecystectomy, especially females, have been observed with pain, severe in some cases at the port sites, especially umbilical. However, assessment of these patients do not reveal wound infection, port site herniation (on ultrasonography) or other organic causes. It is therefore, surmise that patient beliefs, which are not founded in scientific fact, have a considerable effect on such findings.

Conclusion

From the results of present study, I can conclude that Laparoscopic cholecystectomy can be recommended as first choice of operative treatment for patients with cholelithiasis as compared to Open cholecystectomy. The advantages of this procedure over the conventional approach relate primarily to patient satisfaction, reduction in hospitalization, ease of recovery, earlier return to work, and cosmetic considerations. My results support the view that laparoscopic cholecystectomy is a safe and justified replacement for open cholecystectomy in north-east region of India.

Limitations in the study that, it was concluded in patients of gall stone disease using strict inclusion criteria and therefore not representative of the entire spectrum of patients with the disease.

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