

A COMPARATIVE STUDY BETWEEN OPEN CHOLECYSTECTOMY AND LAPAROSCOPIC CHOLECYSTECTOMY IN RURAL MEDICAL COLLEGE SET UPA. Sinha¹, Ghajedra R², B. K. Ramu³**HOW TO CITE THIS ARTICLE:**

A. Sinha, Ghajedra R, B. K. Ramu. "A Comparative Study between Open Cholecystectomy and Laparoscopic Cholecystectomy in Rural Medical College Set Up". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 68, December 08; Page: 14663-14671, DOI: 10.14260/jemds/2014/3967

ABSTRACT: laparoscopic cholecystectomy has established itself as the gold standard for cholecystectomy replacing decades old open cholecystectomy. This study compared open cholecystectomy and lap chole in a medical college in rural setup and consisted of 40 patients with a diagnosis of gall stone disease, that underwent Cholecystectomy at M V J Medical College and Research Hospital from Nov 2011 T0 Oct 2013 to compare the advantages and disadvantages of both the methods. Patients with cholelithiasis proven by USG with at least one attack of upper abdominal pain were included in the study. Patients with CBD stones and aged above 70 yrs were excluded from the study. The main advantages of LC were the reduced post-operative pain with less duration of analgesic intake, more rapid recovery and reduced hospital stay.

KEYWORDS: cholecystitis, cholelithiasis, open cholecystectomy, laparoscopic cholecystectomy.

INTRODUCTION: In 1882 Carl Langenbuch performed the first Cholecystectomy, enunciating a principal "The gall bladder needs to be removed not because it contains stones, but because it forms them". Over the years open Cholecystectomy has been the gold standard in the treatment of gall stone disease.

In present day scenario, preference and demand for laparoscopic Cholecystectomy is logical since this procedure gives less pain, need far less medication, far shorter hospitalization and most important, permits an early return to family and normal work and activity. As an added bonus it has an excellent cosmetic result.

Here we are studying both the techniques and their standing in rural medical college setup.

AIMS AND OBJECTIVES OF THE STUDY:

1. Comparative study of the duration of Surgery in both groups.
2. Comparative study of post-operative hospital stay, Time taken for return to work and Study of conversion rate to open surgery.
3. Comparative study of post-operative complications in both groups.

MATERIAL AND METHODS: The study subjects consisted of 40 patients with a diagnosis of Cholelithiasis / Chronic cholecystitis that underwent Cholecystectomy at M V J Medical College and Research Hospital from Nov 2011 T0 Oct 2013.

INCLUSION CRITERIA: Patients with cholelithiasis proven by USG with at least one attack of upper abdominal pain and considered fit for elective Cholecystectomy were included in the study.

ORIGINAL ARTICLE

EXCLUSION CRITERIA: The patients with following conditions were excluded from the study:

- History or investigations suggesting CBD stones.
- History of prior abdominal surgery.
- Patient's age above 70 years.

Patients were randomly distributed into two groups of (laparoscopic Cholecystectomy and open Cholecystectomy). One group was subjected to laparoscopic Cholecystectomy and the other to open Cholecystectomy.

OBSERVATION AND RESULT: Twenty patients were randomized to each group. The results were:

- **Patients demographics:**

Sex	LC	OC
Male	5	10
Female	15	10

Table 1: SEX DISTRIBUTION

10 patients of OC and 5 patients of LC were males. Among OC group 10 were females and among LC group 15 were females.

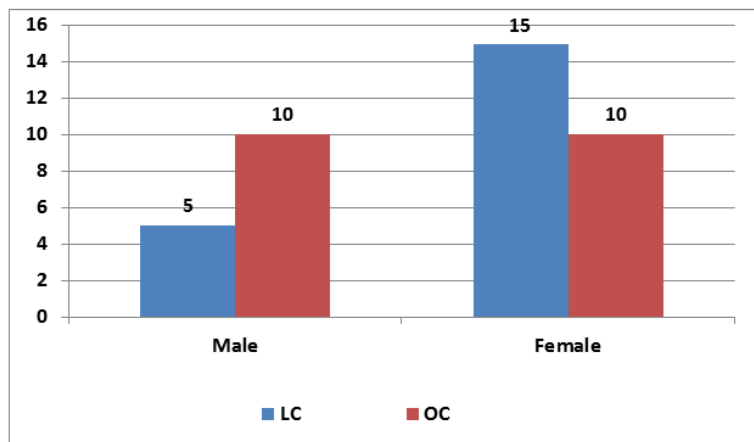


Chart 1

Complaints	LC	OC
Pain RUQ	20	20
Vomiting	7	6
Fever	5	4
Dyspepsia	4	4
Similar history	10	8

Table 2: Presenting complaint

p value > 0.05
(Chi Square test)

ORIGINAL ARTICLE

All patients in both the groups [20 (100%)] presented with pain in the right upper quadrant. The other complaints seen were fever (4 in OC and 5 in LC), vomiting (6 in OC and 7 in LC) and dyspepsia (4 each in OC and LC). None of the patients had jaundice or previous history of jaundice. 8 patients in OC and 10 patients in LC group had similar history of pain abdomen in the past.

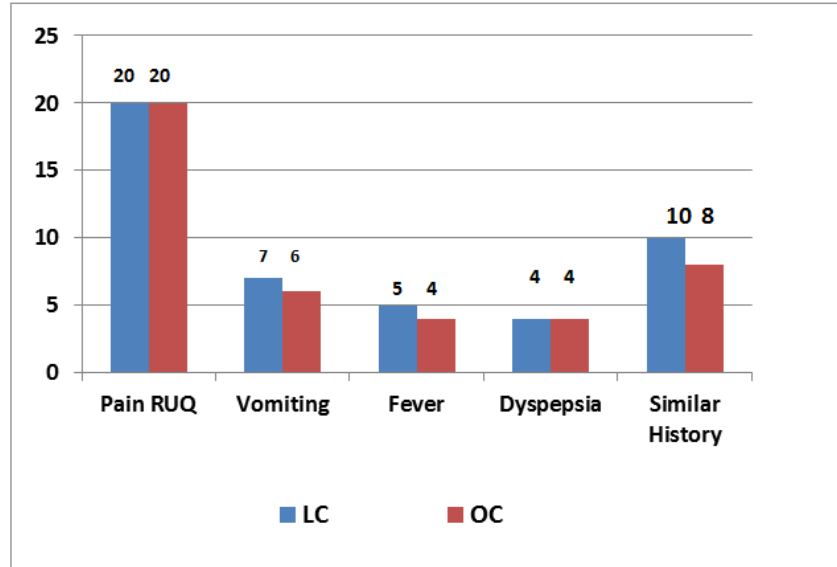


Chart 2

Operative findings	LC	OC	p Value
Operating time (in min) (range)	105 (60-160)	70 (40-135)	p=0.001* (S)
Blood loss <100 ml. >100 ml.	18 2	15 5	p>0.05+ (NS)
Complications Bile leak Stone spillage CBD Injury Adj. Organ injury	8 3 0 1	4 1 0 1	p>0.05+ (NS)
Drains used	17	19	p> 0.05+ (NS)
Conversion	2	--	

Table 3: Operative findings

--*Wilcoxon rank sum test

+Chi square test

ORIGINAL ARTICLE

All patients were operated under general anaesthesia. The median duration of operative procedure was 70min (40-135min) for OC and 105min (60-160min) for LC. The difference was found to be significant ($p=0.001$). The more time required in LC was due to intra-operative gas leak, Calot's triangle dissection, slippage of clip and delivery of gall bladder through the port site. The main complications noted were bile leak (8 patients in LC and 4 patients in OC group) and stone spillage (3 in LC and 1 in OC).

Two patients were converted from laparoscopy to open surgery due to:

- Slippage of the clip applied to the cystic artery.
- Dense adhesions in the Calot's triangle in a case of acute cholecystitis.

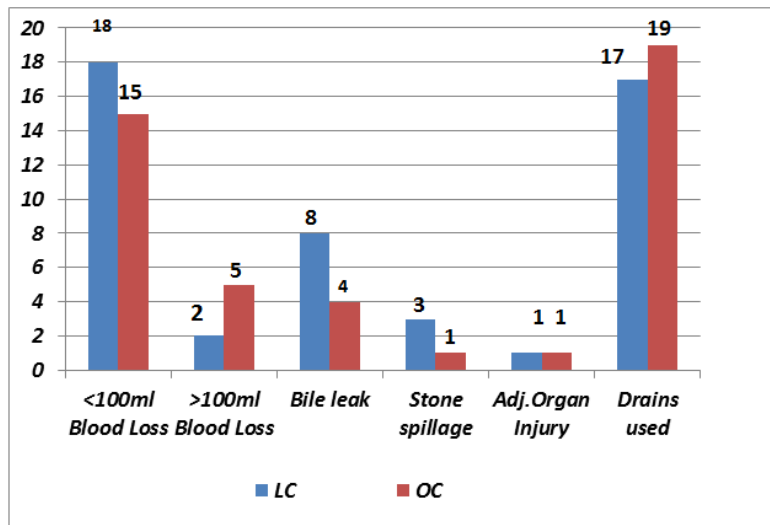


Chart 3

	LC	OC	p Value*
VAS (Grades 0-5) (Range)	Grade 2 (0-3)	Grade 3 (1-5)	$p=0.024$ (S)
Duration of pain (days) (Range)	2 (1-6)	4 (2-10)	$p=0.001$ (S)
Analgesic used for (days) (Range)	3 (2-6)	5 (2-10)	$p=0.016$ (S)

Table 4: Pain score and medication

* Wilcoxon rank sum test The VAS was median Grade3 in OC group as compared to median Grade2 in LC group, $p=0.024$. The pain was more in the initial 2 days in both groups and it lasted for median duration of 4days in OC group compared to 2 days in LC group, $p=0.001$. The NSAID's were used for more days in OC group (median-5days) compared to LCgroup (median-3days), $p=0.016$.

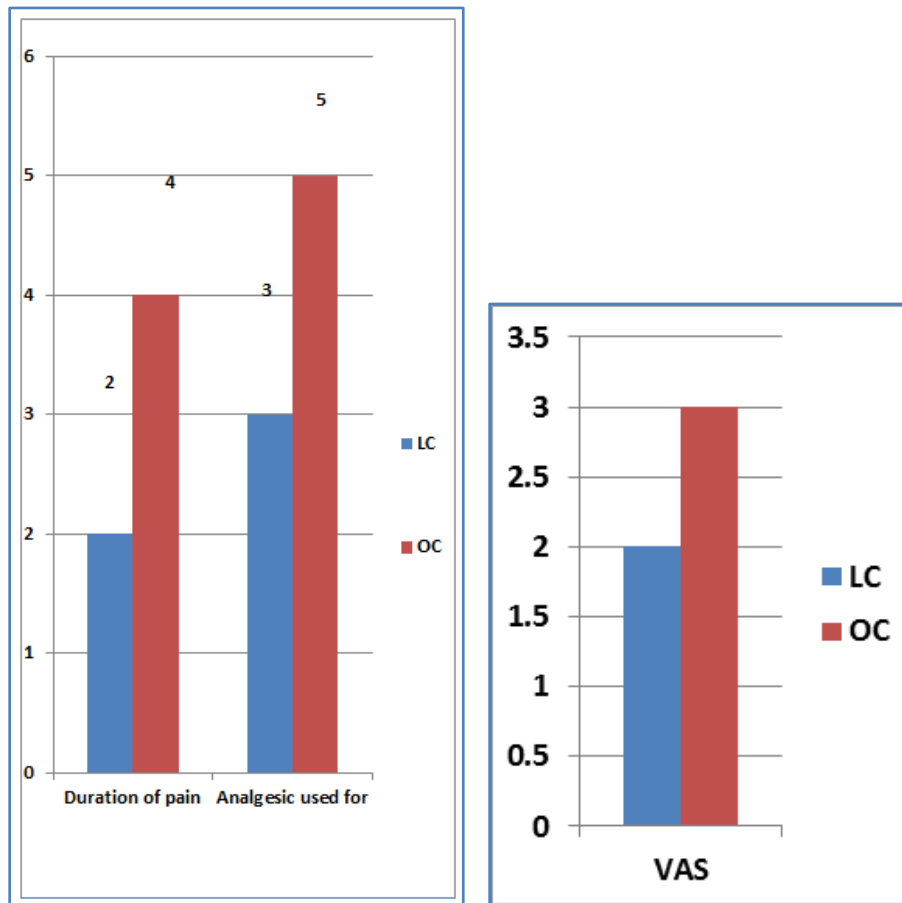


Chart 4

Post-operative outcome	LC	OC	p Value*
Wound infection	19	15	p>0.05 (NS)
Nil	1	3	
Moderate Severe	0	2	
Duration of Antibiotics used in days (Range)	5 (3-7)	7 (5-14)	p=0.1 (NS)
Incisional hernia 0 1	0	1	

Table 5: Post-operative outcome and antibiotics used

* Wilcoxon rank sum test

There was difference in wound infection rate, 5 patients in OC group compared to only 1 patient in LC group, p>0.05. One patient in OC group had wound dehiscence which was sutured later under anaesthesia. Due to this, the antibiotics were used for 7 days in OC group compared to 5 days in LC group. One patient who underwent OC developed incisional hernia at 6 months follow up which

ORIGINAL ARTICLE

was repaired by on lay mesh repair. The drains were kept for an average of 3 days in OC group compared to 2 days in LC group. They were removed once the drainage was <10 ml in 24 hours.

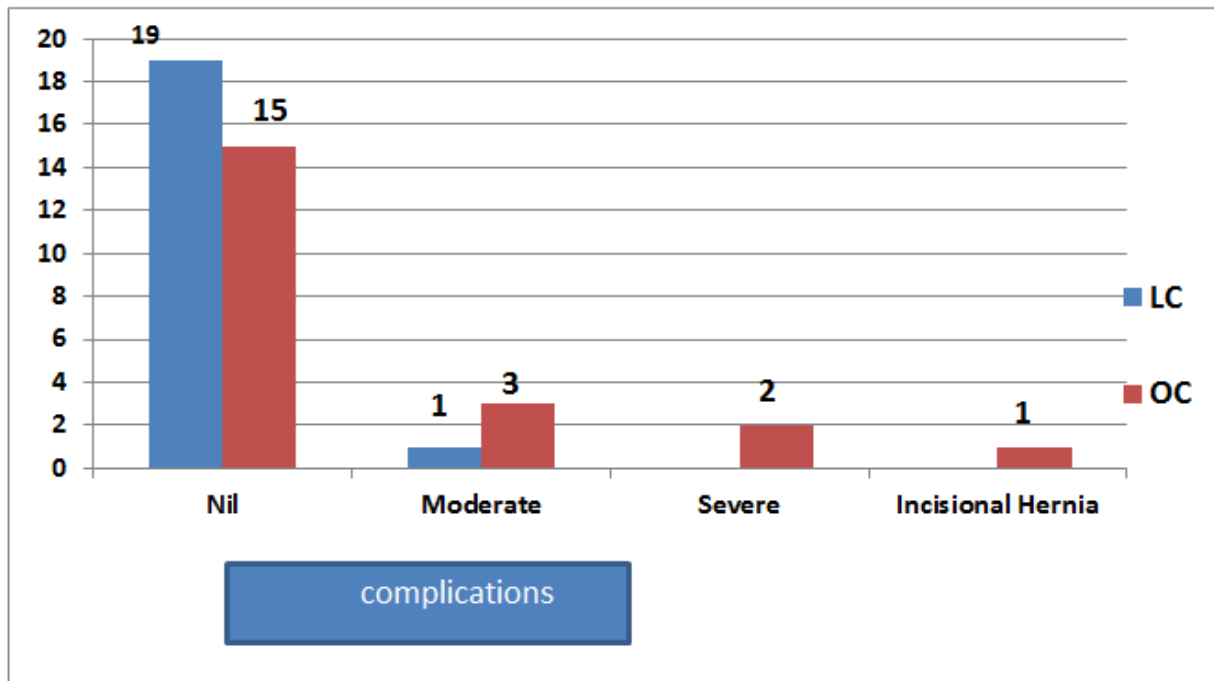


Chart 5

Postoperative recovery	LC	OC	p Value*
Time taken to return of bowel sounds (in hrs)+	9 (6-12)	21 (12-30)	p=0.21(NS)
Time to resumption of oral feeds (in hours)+	9 (6-18)	21 (12-36)	p=0.345(NS)
Duration of hospital stay (in days)+	4 (2-7)	7 (4-10)	p=0.001(S)
Time taken to return to normal work (in days)+	5 (3-10)	8 (5-14)	p=0.018(S)

Table 6: Post-operative recovery

+Values are in median (range) * Wilcoxon rank sum test

The LC group patients were started on oral feeds at an average of 9 hours (6-8hours) while in OC group patients it took an average of 21 hours (12-36 hours).The duration of hospital stay was for a median period of 4days (2-7days) in LC group and 7days (4-10days) in OC group. The difference was statistically significant, p=0.001. It was more in OC group due to increased pain, wound infection, injectable antibiotics used and less mobilization due to pain. All patients who underwent LC were able to return to normal work on an average of 5 days compared to 8 days in OC group. The difference was statistically significant, p=0.018.

ORIGINAL ARTICLE

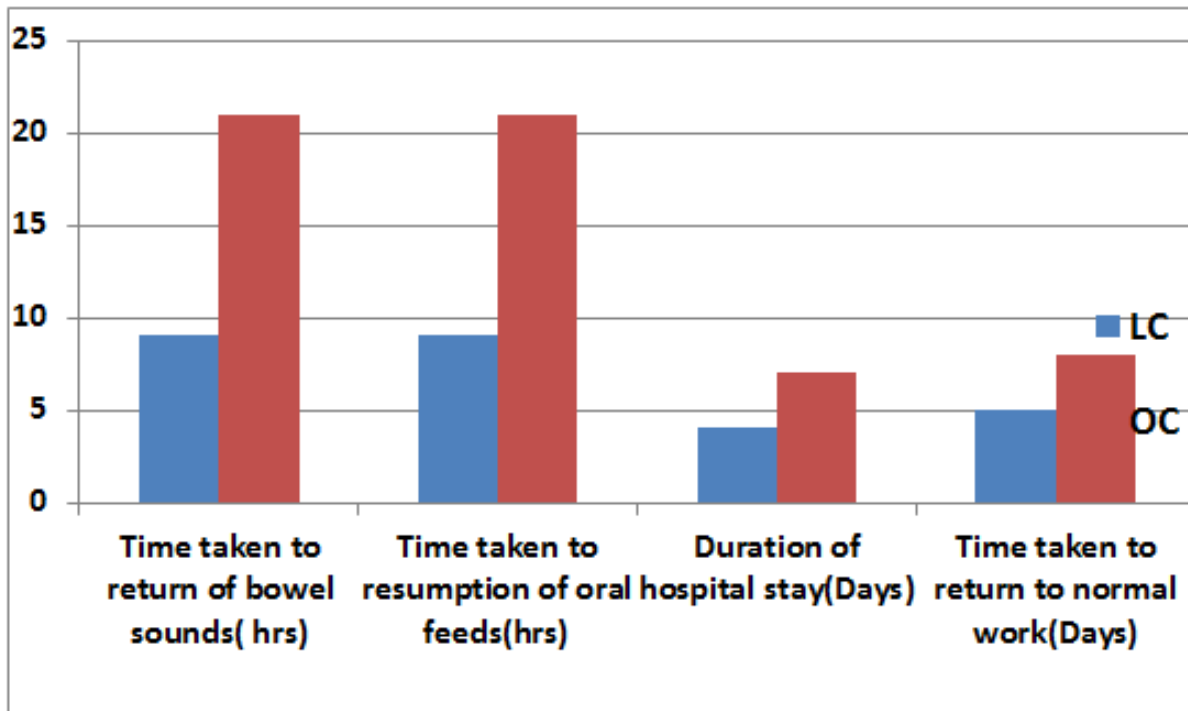


Chart 6

p value > 0.05(NS)
(Chi Square test)

16 patients who underwent LC felt that they had a good cosmetic end result while only 6 patients of open group acceptable, $p > 0.05$.

The length of the incisional scar in open group ranged from 5-10 cm and was visible as a thick scar.

Cost in Rs	LC	OC
<3000	2	8
<3000-6000	14	8
>6000	4	4

Table 7: Cost analysis

p value > 0.05(NS)
(Chi Square test)

LC was costlier compared to the cost of the open procedure. (Average of Rs.4070 in OC group compared to Rs.4642.50 in LC group; $p > 0.05$). The cost in the LC group was more due to its increased operative costs. The difference was not found to be statistically significant.

ORIGINAL ARTICLE

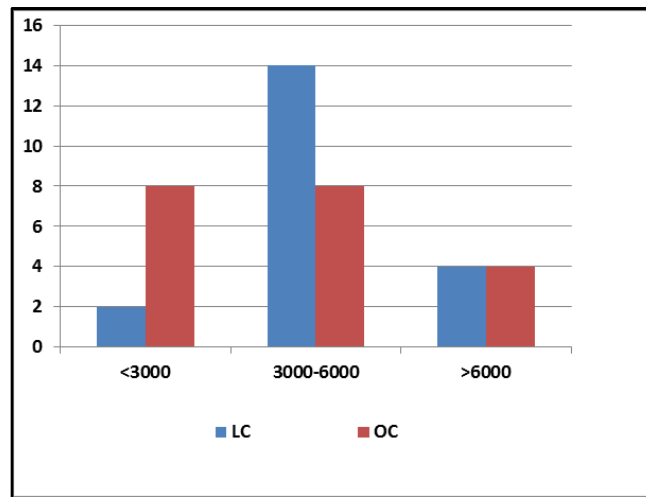


Chart 7

DISCUSSION: This study showed that morbidity rate is more with open Cholecystectomy than laparoscopic Cholecystectomy. The open procedure was associated with a shorter operating time (LC 60-160min and OC 40-135min). This is comparable with that of Trondsen¹. In this study the complications observed were bile leak, stone spillage and blood loss which were found to be comparable in both the groups. Other studies also reported similar results, Hardy²

The conversion was necessary in 2 patients out of 20. One patient (10%) required conversion due to difficult dissection in view of acute cholecystitis and the other due to slippage of clip applied to cystic artery.

The wound infection rate in this study was found to be less in laparoscopic group, being (5% in laparoscopic group versus 25% in open group). The VAS was significantly less for LC group [Grade2 (median) for LC and Grade3 (median) for OC; $p=0.024$]. Kum³ also found a mean VAS score of 3.8 v/s 7.4 between LC and OC.

The two most beneficial aspects of LC are the short hospital stay and the rapid recovery Attwood⁴. In this study, the median duration of hospital stay was 4days for LC group and 7days for OC group. The difference was found to be statistically significant ($p=0.001$). Porte⁵ and Lujan⁶ also found similar results. This was also confirmed in various other series.^{7,8,9,10}

CONCLUSIONS: Laparoscopic Cholecystectomy is a considerable advancement in the treatment of gall bladder disease.

The advantages of laparoscopic Cholecystectomy are several:

- The antibiotic usage in LC is comparatively lesser than that of OC.
- The degree of post-operative pain and its duration is less.
- The duration of hospital stay is less and patients can be discharged quickly from the hospital to resume their work.
- The cosmetic advantage in LC is obvious.
- The only disadvantage of the laparoscopic Cholecystectomy over the open procedure is the duration of operating time which is significantly longer.

BIBLIOGRAPHY:

1. Trondsen E, Riertsen O, Anderson OK, Kjaersgaard P. Laparoscopic and open Cholecystectomy: A prospective randomized study. *Eur J Surg* 1993Apr; 159(4): 217-21.
2. Hardy KJ, Miller H, Fletcher DR, Jones RM, Shulkes A, McNeil JJ. An evaluation of laparoscopic versus open Cholecystectomy. *Med J Aug* 1994 Jan17; 160 (2): 58-62.
3. Kum CK, Wong CW, Goh PM, Ti TK. Comparative study of pain level and analgesic requirement after laparoscopic and open Cholecystectomy. *Surg Laparosc Endosc* 1994 Apr; 4 (2): 139-41.
4. Attwood SE, Hill AD, Mealy K, Stephens RB. A prospective comparison of laparoscopic Cholecystectomy versus open Cholecystectomy. *Ann R Coll Surg Engl* 1992Nov; 74(6): 397-400.
5. Porte RJ, De Vries BC. Laparoscopic versus open Cholecystectomy: a prospective matched-cohort study. *HPB Surg* 1996; 9(2): 71-5.
6. Lujan JA, Parrilla P, Robles R, Marin P, Torralba JA, Garcia-Ayllon J. Laparoscopic versus open Cholecystectomy in the treatment of acute cholecystitis: a prospective study. *Arch Surg* 1998 Feb; 133(2): 173-5.
7. Anderson RE, Hunter JG. Laparoscopic Cholecystectomy is less expensive than open Cholecystectomy. *Surg Laparosc Endosc* 1991Jun; 1(2):82-4.
8. Kelley JE, Burrus RG, Burns RP, Graham LD, Chandler KE. Safety, efficacy, cost and morbidity of laparoscopic versus open Cholecystectomy: a prospective analysis of 228 consecutive patients. *Am Surg* 1993 Jan; 59 (1): 23-7.
9. Farrow HC, Fletcher DR, Jones RM. The morbidity of surgical access: a study of open v/s laparoscopic Cholecystectomy. *Aust NZJ Surg* 1993 Dec; 63(12): 952-4.
10. Fullarton GM, Darling K, Williams J, MacMillan R, Bell G. Evaluation of the cost of laparoscopic and open Cholecystectomy. *Br J Surg* 1994 Jan; 81(1): 124-6.

AUTHORS:

1. A. Sinha
2. Ghajedra R.
3. B. K. Ramu

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of surgery, MVJ Medical College and Research Hospital.
2. Post Graduate, Department of Surgery, MVJ Medical College and Research Hospital.
3. Professor, Department of Surgery, MVJ Medical College and Research Hospital.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Arunabha Sinha,
Flat No. D-0, Shilpitha Crystal Apartment,
6th Cross Kaggadasapura,
Bangalore-560093.
Email: arunabha_sinha@yahoo.com

Date of Submission: 17/11/2014.
Date of Peer Review: 18/11/2014.
Date of Acceptance: 03/12/2014.
Date of Publishing: 06/12/2014.