

A Study of Pain in Patients Operated with Conventional Laparoscopic Cholecystectomy as Compared to Single-Port Laparoscopic Cholecystectomy

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Abstract

Aims & Objectives: To study the pain felt by patients operated with conventional cholecystectomy (laparoscopic) comparing with single-port cholecystectomy (laparoscopic). **Materials & Methods:** 42 patients were studied in the group 1 who underwent routine laparoscopic cholecystectomy and 38 patients were in group 2 who underwent the single port cholecystectomy. VAS was used as the scale for measurement of post-operative pain at 3 different time points. A value of $p < 0.05$ was considered to be statistically significant. **Results:** In the results, inter group analysis did not show any significant difference in VAS scores between the two groups at any of the 3 time points studied. **Conclusion:** We concluded that there is no significant difference in the pain post-operatively between the two study groups.

Keywords: Cholecystectomy; Laparoscopic; Gall bladder; Aesthetic

Introduction

A cholecystectomy is simply defined as the surgery to remove the gallbladder which is small organ under the liver located on the upper right side of the belly or abdomen. The gallbladder stores a digestive juice called bile which is made in the liver. A laparoscopic cholecystectomy helps people having gallstones that are causing pain and infection. Gallstones are like crystals that are formed in the gallbladder. They may block the flow of bile out of the gallbladder into your digestive system. This roadblock causes cholecystitis (inflammation of the gallbladder).

Cholecystectomy is a common treatment of symptomatic gallstones and other gallbladder conditions. [1] After lots of changes in the surgical technique, finally a single incision in laparoscopy cholecystectomy is sort of an alternate surgery which may decrease the trauma caused by surgery, can enhance aesthetic outcome and also can decrease the complications post operatively. [2,3]

Pain is a very commonly found complication postoperatively which depends on various physiological factors like trauma extent, the surgical intervention, skill of the surgeon, any past disease and also the region and incision type; as well as factors of psyche such as fear, anxiety and finally the patients cultural factors. [4,5]

VAS scale has been used since long as an able method to assess the pain and to design the appropriate treatment method and the management modality so as to effectively manage the patient for early recovery. [6,7]

This study conducted aimed to assess the pain postoperatively by a VAS in the patients operated by (conventional) laparoscopic cholecystectomy with 4 ports in comparison with a single port laparoscopic cholecystectomy in which only 1 single incision is made in the umbilical area.

Methodology

This was across-sectional study with a prospective design which was conducted at the department of general surgery in a tertiary hospital in central India from January 2020 to December 2020. A total of 80 patients having symptoms of acute cholelithiasis from the age group of 18 to 70 years were included. Patients were then divided into 2 groups: 42 in group 1 with CLC and 38 in group 2 with SPLC.

Inclusion criteria

1. Patients above 18 years having symptoms of acute cholelithiasis,
2. Patients who gave informed consent to be a part in the study.

Exclusion criteria

1. Pregnancy in females
2. BMI greater than 35 kg/m²
3. Liver cirrhosis
4. Bleeding tendencies (platelet count less than 50,000/ μ l), taking antiplatelets like clopidogrel and acetylsalicylic acid.

Surgical Method

The surgery was planned and anesthesia was programmed as follows: Pre anesthetic medication which was given 3 hours

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Table 1: Mean of the anthropometric variables and age of patients.

Characteristic	Group 1 CLC	Group 2 SPLC	P value
Heights (m)	1.52 ± 0.06	1.57 ± 0.05	0.022
BMI	26.92 ± 5.51	23.51 ± 2.62	Not significant
Weights (kg)	68.41 ± 15.66	63.80 ± 8.62	Not significant
Ages in years	37.37 ± 10.71	33.20 ± 9.50	Not significant

Table 2: Pain assessment by mean (VAS) scores at 3 different time point in the two groups.

Visual analogue scale	Groups	Median	Mean	P value
Time point 1	Group 1	4.05	3.62 ± 2.37	0.817
	Group 2	3.05	3.50 ± 1.71	
Time point 2	Group 1	3.25	3.72 ± 2.41	0.422
	Group 2	2.65	3.12 ± 2.56	
Time point 3	Group 1	2.1	2.32 ± 1.84	0.965
	Group 2	2.1	2.2 ± 1.74	

Table 3: Intragroup comparison of the VAS scores.

	Group 1	Group 2
T1 × T2	P=0.757	P=0.548
T1 × T3	P=0.006*	P=0.007*
T2 × T3	P=0.001*	P=0.225

prior to surgery. Conventional cholecystectomy (laparoscopic). Patient to be positioned in a dorsal horizontal position on the OT table and was given general anesthesia. Pneumoperitoneum was created using a pressure of about 12 mmHg. In both the procedures same conditions were kept. The difference laid in the surgical technique in which in the single port method only one port *i.e.* the SILS port was introduced into the abdomen through a trans-umbilical horizontal incision of 2 cm. VAS was used as the tool for the Pain measurement which was done as planned at 3 different time points: T1-6 h, T2-12 h, and T3-24 h.

Results

A total of 80 patients were studied. Group 1 had 42 patients and group 2 had 38 patients. Height of the patient showed significant difference between the 2 groups ($p=0.021$). Among the 2 groups, 6 (14.2%) patients in the group 1 and 12 (31.5%) in group 2 were smokers [Table 1].

The pain scores when compared between the 2 groups showed that they were lower in the group 2 at T1 and T2, while the values matched at T3. The intergroup analysis however revealed no significant difference in VAS scores between the 2 groups at any of the 3 time points [Table 2].

VAS scores when compared between the 2 groups, we found a significant decrease in the scores intragroup between T2 × T3 and T1 × T3 for group 1 and between T1 × T3 for group 2 ($p \leq 0.05$) [Table 3].

Discussion

Over the ages there has been a dramatic change in the area of surgery. Sushrut was the father of surgery as per our ancient Indian texts so taking that thing into consideration many people have started thinking that our ancient medicine can surpass modern medicine but it's actually not like that. People are alive today only because of the modern medicine otherwise in ancient times people had many children as many often died young

by simple easily preventable infections. The local herbs and indigenous medicines were always there but it could not help in curing the patients of the simple infections hence there was a need of modern medicine.

Likewise after Vesalius the father of anatomy dissected the human body and found out the correct anatomy, the world actually knew how organs work and how removal of a bad organ can save the life of the patient. Thus the branch of surgery erupted which was mainly dealing with removal of bad or infected parts out of the body to save the rest of the body.

Gall bladder too has historical importance as the bile is called as pitta and it is a composition of many branches of traditional medicine. The function of bile and the actual function of gall bladder were however studied only by the modern surgeons. Later newer and newer techniques were developed and thus came the branch of laparoscopy. Laparoscopy essentially involves a laparoscope which is an endoscope which is inserted inside the abdominal cavity after creating a pneuperitoneum and the inside is visualised on the computer monitor and then using the ports, scissors, cautery etc. are also introduced inside making minimum scars and the diseases organ is carefully removed. As the incision is very less, blood loss is very less and visuals on the monitor make the complications less likely than the conventional open surgery. More advancement into the laparoscopic surgery has been tried since many years. Some are good while some have not found to be better. Our study is just like this matter. Laparoscopic cholecystectomy is defined as a minimally invasive surgery to remove the gallbladder. It is for people when gallstones cause inflammation, pain or infection. The surgery comprises of a few small incisions, and most people go home the same day and soon return to normal activities. Any surgery may cause pain which may later affect a patient's recovery.^[8] There are various modes of assessment of pain post-surgery. This pain assessment definitely aids in improving the pain management. ^[9-11] White et al. ^[12] in their study found that

the relationship between types of surgical method and duration/intensity of postoperative pain was significant. Studies have reported lower levels of pain in mini-laparoscopy as compared to laparoscopy. [13] However inconclusive nature of most studies was consistent. [14] Cauet et al. [15] in his study of 346 patients found that in the first 24 hrs after the surgery there was a prevalence of severe pain in 43.4% of the patients. Shrey et al. compared intraperitoneal ropivacaine and bupivacaine for postoperative analgesia in laparoscopic cholecystectomy. [16] Related studies were reported by Kailuke et al. [17] Ladke et al. [18] Nayak et al. [19] and Rallabhandi et al. [20] Relevant studies from literature on related aspects were reviewed. [21-26]

So eventually people may come and go and may discover newer and newer methods to make world a beautiful place to live in but the ultimate truth is that not all newer things are better and sometimes just for the sake of good times we have to stick up to the old classical surgical techniques like laparoscopy instead of worrying too much about the aesthetic appeal and concentrate more on the surgery instead. Thus our study was a revolutionary study which stated that no matter how never the technique is and how good it looks, when it comes to operation there is nothing which can beat the good old laparoscopic cholecystectomy using 4 ports.

Conclusion

The present study concluded that though there is some cosmetic benefit but there is no significant difference in pain postoperatively observed between the single port cholecystectomy and conventional cholecystectomy.

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