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Original Research Article

Comparative Study between Laparoscopic and Open Cholecystectomy for Cholelithiasis

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ABSTRACT

For treating symptomatic gallstones laparoscopic cholecystectomy is used as a common procedure, and it is increasingly being requested by the informed general public. All patients undergo routine preoperative laboratory tests, including a complete blood count, and abdominal ultrasonography. Patients were randomised in the operating theatre and anesthetic technique and pain-control methods were standardized. The study was conducted in MIMS (Maharajah's Institute of Medical Sciences). The study population was enrolled after fulfilling the selection criteria from OPD (Out Patient Department) of General Surgery. In patients with successful LC, gallbladder perforation occurred in 18% and 31% of CC and AC patients, respectively (P<0.003). Missed stones occurred in 1.4% and 3.3% of the patients with successful LC for CC and AC, respectively. There is an increased conversion rate, longer operation time, longer hospital stay, and higher incidence of gallbladder perforation without an increase in the incidence of bile duct.

Key words: Cholecystectomy, Cholelithiasis, Laparoscopy, Gallstones.

INTRODUCTION

Laparoscopic cholecystectomy is now a common method of treating symptomatic gallstones, and it is increasingly being requested by the informed general public. [1] The short period of time, therapeutic laparoscopy has become an everyday part of the general surgeon's life. [2] Although laparoscopy provides distinct clinical advantages, it is not yet clear that it lessens the stress response typical of elective surgical procedures, and as such, the morbidity of surgery. [3]

Even for years gallstones may be asymptomatic and these stones can be called as "silent stones" and usually they do not require intervention. [4] The size and number of gallstones present does not appear to influence whether or not patients are symptomatic or asymptomatic. [5] A characteristic symptom of gallstones is a "gallstone attack", in which a person may feel profound pain in the upper-right side of the abdomen, often accompanied by nausea and vomiting, that steadily increases for approximately 30 minutes to several hours. [6] A patient may also experience referred pain between the shoulder blades or below the right shoulder. These symptoms may resemble those of a "kidney stone attack". [7] Often, attacks occur after a particularly fatty meal and almost always happen at night, and after drink. [8] The hypothesis that laparoscopic cholecystectomy produces less of a metabolic and stress hormonal response than open cholecystectomy. [9]

Patients with additional symptoms of bile duct stones or with biliary pancreatitis

were selected for LC if it was possible to successfully perform a preoperative endoscopic retrograde cholangiopancreatography (ERCP) and papillotomy (EPT) with gallstone removal. [10] In our study comparative between laparoscopic and open cholecystectomy for cholelithiasis. All patients underwent preoperative routine laboratory tests, including a complete blood count, and abdominal ultrasonography.

MATERIALS AND METHODS

Patients were randomised in the operating theatre and anesthetic technique and pain-control methods were standardized. The study was conducted in MIMS (Maharajah's Institute of Medical Sciences). The study population was enrolled after fulfilling the selection criteria from OPD (Out Patient Department) of General Surgery.

Thirty otherwise healthy women between 19 and 46 years of age with a history of uncomplicated symptomatic cholelithiasis undergoing either laparoscopic (n = 15) or open cholecystectomy (n = 15) were studied. The hormonal response of the adrenocortical (plasma and urinary epinephrine and norepinephrine), thyroid hormones, pituitary and serum glucose, homeostatic axes were measured serially over a 24-hour period.

Statistical analysis

Using SPSS software version 10 statistical analyses was done. The efficacy and safety variables using Student't' test.

RESULTS

The Conversion to open cholecystectomy was needed in 0.78% and 12.1% of the patients with CC and AC, respectively (P<0.01). Four percent of the female patients with AC needed conversion as compared to 23.8% in the males high significantly (P<0.02). The low conversion rate in CC limited gender comparison. Median operation time in the patients with CC was 55±22 minutes as compared with Mean and SD 74.5±35.7 minutes in those with AC significantly (P<0.02). Operation time in the male patients with CC and AC was significantly higher than in the female patients, even after excluding the converted cases (P<0.00). Median postoperative stay for patients with CC was 1.33±0.9 days as compared to 1.9±1.34 days in patients with AC significantly (P<0.01). No statistical significance in the hospital stay was found between males and females (in CC and AC). There was no mortality in the series. There were three bile duct injuries in the patients with CC.

The successful with patients LC, gallbladder perforation occurred in a 18% and 31% of CC and AC patients, There were significantly (P<0.003). Missed stones occurred in 1.4% and 3.3% of the patients with successful LC for CC and AC. Bile collection, which was treated this open drainage, occurred in a four patients with the CC and one patient with AC.

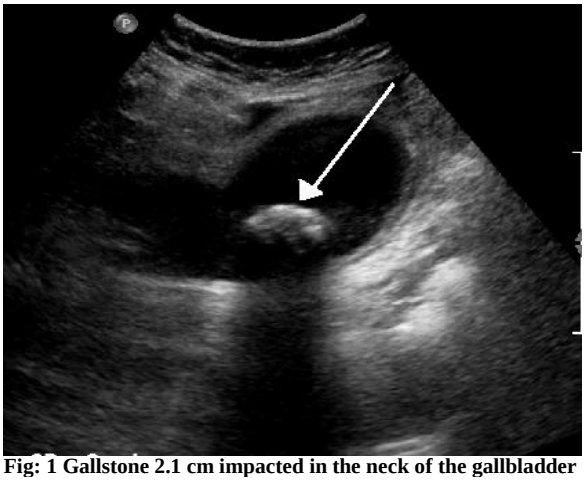

Fig: 1 Gallstone 2.1 cm impacted in the neck of the gallbladder and leading to cholecystitis as seen on Ultrasound, There is 4 mm gall bladder wall thickening.

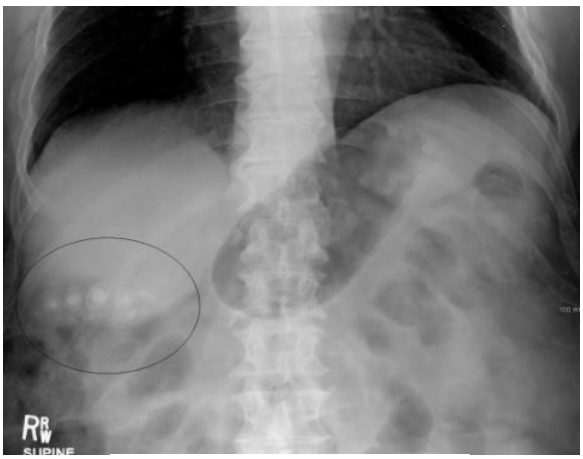

Fig: 2 Gallstones as seen on plain X-ray

Fig: 3 Acute cholecystitis with gallbladder wall thickening, a large gallstone, and a large gallbladder

Right upper quadrant abdominal ultrasound is most commonly used to diagnose cholecystitis. Ultrasound findings suggestive of acute cholecystitis include gallstones, fluid surrounding the gallbladder, gallbladder wall thickening, dilation of the bile duct, and sonographic Murphy's sign. Given its higher sensitivity, hepatic iminodiacetic acid (HIDA) scan can be used if ultrasound is not diagnostic. CT scan may also be used if complications such as perforation or gangrene are suspected.

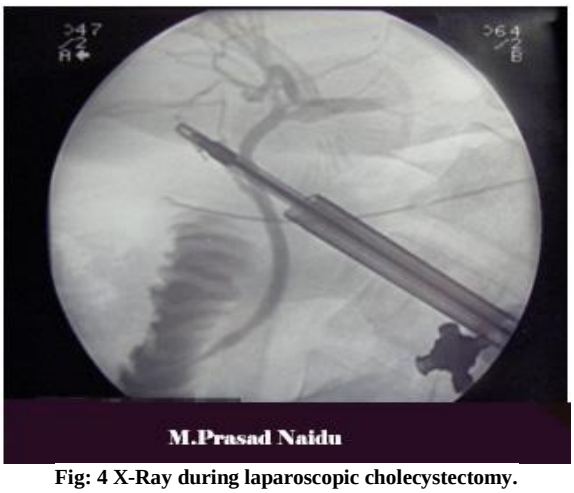

Fig: 4 X-Ray during laparoscopic cholecystectomy.

For most people with acute cholecystitis, the treatment is surgical removal of the gallbladder, cholecystectomy. Until the late 1980s surgical removal was usually accomplished by a large incision in the upper right quadrant of the abdomen under the rib cage. Since the advent of laparoscopic surgery in the early 1990s, laparoscopic cholecystectomy has become the treatment of choice for acute cholecystitis. Laparoscopic cholecystectomy is performed using several small incisions located at various points across the abdomen. Several studies have demonstrated the superiority of laparoscopic cholecystectomy when compared to open cholecystectomy. Patient undergoing laparoscopic surgery report less incisional pain postoperatively as well as having fewer long term complications and less disability following the surgery. Additionally, laparoscopic surgery is associated with a lower rate of surgical site infection.

During the days prior to laparoscopic surgery, studies showed that outcomes were better following early removal of the gallbladder, preferably within the first week. People receiving early intervention had shorter hospital stays and lower complication rates. In the era of laparoscopic surgery, a similar approach is still advocated. In a 2006 Cochrane review, early laparoscopic cholecystectomy was compared to delayed treatment.

In operative time (mean± standard error of the mean, (70±6) minutes compared with 77±6.3 minutes) or hospital stay 1.3± 0.2 compared with 1.1 ± 0.1 days). Assessment of postoperative pain using an analog pain score was less in the laparoscopic group Mean and SD (4.9 ±1.3 compared with 12.3±2.5, p=0.01). The response of the adrenocortical, adrenomedullary, thyroid, and glucose axes were similar or identical in both groups. Antidiuretic hormone levels were greater in the laparoscopic group at one hour intraoperatively (281±79 pg/mL compared with Mean and SD 54 ± 18 pg/mL, $p < 0.02$), and at extubation (130±19 pg/mL compared with 39±8 pg/mL, $p<0.01$). Serum glucose levels were greater immediately following laparoscopic cholecystectomy. (Table 1) Glucose and insulin levels were greater at four, 13, and 24 hours after open cholecystectomy. There was no significant variation inter between the groups for age, sex and BMI of Asian

Anaesthesiologists grade. Laparoscopic cholecystectomy took in longer than small-incision cholecystectomy (median 66 [levels between 28-141] min vs 41 [19-143] min, p<0·001). The operating time included operative cholangiography which was attempted in all patients. We found no significant difference between the groups for hospital stay (postoperative nights in hospital, median 4·0 [1-17] nights for laparoscopic vs 3·5 [1-14] nights for small-incision, p=0·5), time back to work for employed persons (median 6·0 weeks vs 3.5·0 weeks; p=0·42), and time to full activity (median 4·0 weeks vs 3·5 weeks; p=0·20).

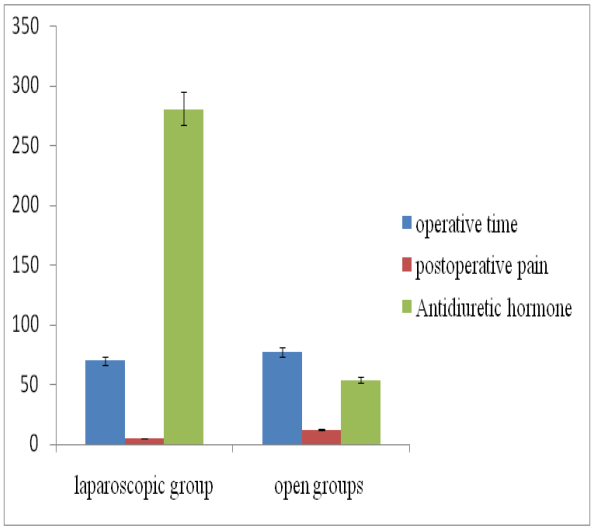

Fig: 5 Difference was seen between the laparoscopic and open groups

Table 1: Main Characteristics Comparision Between the groups

Characteristics	Mean ± SD Comparison Between the groups		*P*- value
Operative time	70 ± 6	77 ±6.3	< 0.01
Postoperative pain	4.9 ± 1.3	12.3 ± 2.5	< 0.01
Antidiuretic hormone (pg/mL)	281 ±79	54 ± 18	<0.0.2
ADH extubation (pg/mL)	130 ± 19	39 ± 8	<0.01

DISCUSSION

Our study demonstrates LC has been found to be superior to OC, with less mortality and morbidity, and has become the treatment of choice for CC. There is OC still was considered the treatment of choice for symptomatic gallstone disease. Mortality rates have declined to between 0% and 1% in most recent reports, and in an elective setting, the rate of major complications is approximately 4.5%. AC was initially considered a contraindication for LC, especially in severe attacks or if the gallbladder wall thickness was more than 4 mm. It is well recognized, however, that in AC, there is an increased rate of conversion to OC when compared to CC.

Overall complication rate for OC was 8.9% in comparison with only 2.3% in the laparoscopic group, and this difference was equally notable for an elective setting, where complications occurred in 9.2% of cases with OC versus 2.3% for LC.0.01). In patients with successful LC, gallbladder perforation occurred in 18% and 34% of CC and AC patients, respectively (P<0.003).

Missed stones occurred in 1.7% and 4.2% of the patients with successful LC for CC and AC, respectively. We had no problems with the 4.3% missed stones. In OC, it is less of a problem because they can be retrieved more easily. Some studies reports have discussed in the effect of gender on the course of LC in CC and AC and reported in a higher conversion rates into the males in both CC and AC.

CONCLUSIONS

Elective laparoscopic and open cholecystectomy for uncomplicated cholelithiasis results in similar degrees of perioperative hormonal stimulation. The different hormonal responses in the immediate and later postoperative periods after laparoscopic and open cholecystectomy suggest differential stressful stimuli between the two procedures. Laparoscopic cholecystectomy takes longer to do than small-incision cholecystectomy and does not have any significant advantages in terms of hospital stay or postoperative recovery. There is an

increased conversion rate, longer operation time, longer hospital stay, and higher incidence of gallbladder perforation without an increase in the incidence of bile duct.

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REFERENCES

1. Gharaibeh, Kamal IA, et al. "Laparoscopic cholecystectomy for gallstones: a comparison of outcome between acute and chronic cholecystitis." Annals of Saudi medicine 21.5/6 (2001): 312-316.
2. Weeks, Jane C., et al. "Short-term quality-of-life outcomes following laparoscopic-assisted colectomy vs open colectomy for colon cancer: a randomized trial." Jama 287.3 (2002): 321-328.
3. Sylla, Patricia, Irena Kirman, and Richard L. Whelan. "Immunological advantages of advanced laparoscopy." Surgical Clinics of North America 85.1 (2005): 1-18.
4. Paumgartner, G., and T. Sauerbruch. "Gallstones: pathogenesis." The Lancet 338.8775 (1991): 1117-1121.
5. Csendes, Attila, et al. "Number and size of stones in patients with asymptomatic and symptomatic gallstones and gallbladder carcinoma: a prospective study of 592 cases." Journal of Gastrointestinal Surgery 4.5 (2000): 481-485.
6. Lalor, Liz. "Proving of Desmodium elegans." Homoeopathic Links 27.02 (2014): 107-109.
7. Rani, kirti. "Historical Review on Cholelithiasis" Int J of Curre Med Scien 5.1(2015): 14-18.
8. Njeze, Gabriel E. "Gallstones." Nigerian Journal of Surgery 19.2 (2013): 49-55.
9. Nguyen, Ninh T., et al. "Systemic stress response after laparoscopic and open gastric bypass." Journal of the American College of Surgeons 194.5 (2002): 557-566.
10. Ruiz, Martın, Velo Trinchet, and Duque Ots. "Biliary Tract." Dig Surg 15 (1998): 421-616.

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