ORIGINAL ARTICLE

TOTAL LAPAROSCOPIC CLIPLESS CHOLECYSTECTOMY BY HARMONIC SCALPELS IN PATIENTS WITH GALL BLADDER STONES

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ABSTRACT:

Background: Gallstones are common in western countries. Usually in minimally invasive cholecystectomy, cystic artery and duct both are separately ligated using metallic clips and then divided. Harmonic scalpel is effectual, useful, and secure instrument regarding control of blood loss and dissection especially in laparoscopic procedure for cholecystectomy.

Objective: To delineate outcome of totally clipless laparoscopic cholecystectomy with harmonic scalpels in gall stones disease.

Methods: This research (a retrospective case study) was done at surgical department, Lahore General Hospital, Lahore for 12 months. Total 195 patients fulfilling the inclusion & exclusion criteria were enrolled. Then patients underwent surgery under general anaesthesia. During surgery, operative time, gall bladder perforation and blood loss were noted. Patients were evaluated if conversion to open surgery was required. After surgery, patients were followed-up in OPD for 7 days for assessment of infection.

Results: Mean age of patients was 45.75±14.98 years. Among patients 93(47.7%) were male and 102(52.3%) were female. Mean duration of gall bladder stone was 5.02±0.80 months. Mean time for operation was 50.27±12 minutes. Mean loss of blood was 73.11±20.46 ml respectively. There were 24(12.3%) cases who had perforation. Total 35(17.9%) patients suffered from infection post operatively.

Conclusion: Total laparoscopic clipless cholecystectomy by harmonic scalpels is fully safe and useful technique in surgery for gall bladder stones.

Key words: Total laparoscopic clipless cholecystectomy, Harmonic scalpels (HS), Gall bladder stones

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INTRODUCTION

Gallstones are common in both western as well as eastern countries.[1] They are precipitates of biliary constituents. Stones are formed inside gallbladder and considerably vary in diameter.[2] Gallstones are produced due to crystallization of chemically imbalanced bile. Cholelithiasis is a major morbidly in modern society.[3] However, gallstones are demonstrated in egyptian mummies dating back to 1000 BC [4, 5]. Gallstones are more prevalent in developed nations than in developing populations [6]. Indication for treatment of cholelithiasis is mainly the presence of symptoms. Commonly in laparoscopic cholecystectomy, the cystic duct and artery are ligated by metallic clips prior to their division[11].

Just after 5 yrs of introduction laparoscopic cholecystectomy replaced open cholecystectomy as a

gold standard of treatment [7-8]. Laparoscopic procedure is more common with a quicker recovery. Prolonged hospital stays and extra costs are reported with conversion to open surgery. Accurate measurement of stone helps lower this risk of conversion [1]. Mostly Titanium based surgical clips are used for cystic duct ligation [7]. HS denatures protein by heat delivered by means of ultrasonic vibrations at 55.5 K Hz with excursion of 50–100 µm leading to cutting and coagulation both at the same time [11]. HS is an excellent replacement for electro cautery in patients with pace maker [12]. Harmonic Scalpel uses ultrasound energy (piezoelectric effect) to cut and seal tissue at same time.
The motive for this research was to delineate the outcome of total laparoscopic clipless cholecystectomy by harmonic scalpels in patients with gall bladder stones. Literature showed that total laparoscopic clipless cholecystectomy by harmonic scalpels can be done in shorter period of time and has few or almost no complications. But contradictory results has been retrieved. Moreover, there is no local evidence found in literature. So with this study we may be able to implement total laparoscopic clipless cholecystectomy by harmonic scalpels as first line treatment modality in local setting.

METHODS:

It was a retrospective (outcome measuring) case study at Department of Surgery, Lahore General Hospital, Lahore. Duration of study was 12 months i.e. Jan to Dec 2019. Sample size of 195 cases was calculated talking 95% confidence level, and assuming expected percentage of gall bladder perforation i.e. 7.5% with total laparoscopic clipless cholecystectomy by harmonic scalpels. Sampling Technique was non probability type consecutive sampling.
All patients with 16-70 yrs age of both genders presenting with gall stones (presence of calculi or stones >2mm in size in gall bladder detected on ultrasound of abdomen for >3months) were included
Patients with diabetes, renal disease, INR>2, liver disease, previous open upper abdominal surgery, on going acute cholecystitis, stones in common bile duct and cystic duct >5 mm were excluded.
195 patients according to above mentioned criteria were enrolled from general ward. Then their informed consents and demographic information were recorded. Then patients underwent surgery by a consultant surgeon with assistance of researcher under general anesthesia and were for 7 days. All findings noted down in this time period. Data for each patient was recorded on a patient's proforma. The study data was analyzed by latest SPSS Vr-21.0.

RESULTS:

Mean age of patients was 45.75±14.98 years with male to female ratio of roughly 1:2. Most patients were overweight. ASA I were more than ASA II. Mean duration of gall bladder stone was 5.02±0.80. Table 1. Mean operation time was 50.27±12 minutes. Mean loss of blood was 73.11±20.46 ml respectively. Among these patients 24(12.3%) had perforation. Total 35(17.9%) patients suffered from infection post operatively. Table2

Table-1: Demographics of patients

Category	Sub Cat	'n' & %
Age (yrs)		45.75±14.98
Gender	Male	93 (47.7%)
	Female	102 (52.3%)
BMI	Normal	76 (39%)
	Overweight	66 (33.8%)
	Obese	53 (27.2%)
ASA status	ASA-I	109 (55.9%)
	ASA-II	86 (44.1%)
Stone duration		5.02±0.80

Table-2: Statistics of HS outcome

Operative time	50.27±12.00
Blood Loss	73.11±20.46
Perforation	24 (12.3%)
Infection	35 (17.9%)

DISCUSSION:

A study showed the overall incidence of gallbladder perforation using HS was just 9.3% (7 cases) [7]. Similar finding was published by Tharwat [27], Zanghi[15], and varuan[10] with a rate of 7.1%, 6.98%, and 16.7% respectively. While in our study gallbladder perforation was 12.3%. In clipless cholecystectomy by HS, the average duration of the procedure was 35.6 ± 7.1 min [17] and 48.4±16.9min [12]. While in our study it was 50.27±12 mins. Bleeding in surgery was 73.11±20.46 ml in one study [7].Mean age of patients was 45.75±14.98 yrs and male to female ratio was roughly 1:2. Most patients (almost 2/3) were overweight. ASA I were slightly more than ASA II. Mean duration of gall bladder stone was 5.02±0.80 months. Mean operation time was 50.27±12 minutes. Mean loss of blood was 73.11±20.46 ml respectively. Among these patients 24(12.3%) had perforation of gall bladder during surgery. Total 35(17.9%) patients suffered from infection post operatively. These results are mainly

consistent with the international studies performed earlier.

CONCLUSION

Totally laparoscopic clipless cholecystectomy done by harmonic scalpels (HS) is safe and effective method for treating gall bladder stones. It provides a superior alternative to high-frequency monopolar cautery. Outcome becomes better in HS due to shorter operative time and lower incidence of gallbladder perforation.

ETHICAL APPROVAL

The study was approved from Ethical Review Committee of Postgraduate Medical Institute, Lahore, Pakistan, vide reference No, AMC/PGMI/LGH/Article/ Research No./00-155-20, dated July 13, 2020

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AUTHORS' CONTRIBUTION:

MI: concept, study design, acquisition of data Manuscript writing
AF: Data analysis, interpretation of data, proof reading
MN: Case selection, data collection
MA: Statistical analysis, interpretation of data for the work
SZA: Data collection, perioperative patient care
MR: Data collection, perioperative patient care