

SUBTOTAL LAPAROSCOPIC CHOLECYSTECTOMY: OUR EXPERIENCE OF 32 PATIENTS

BUTT F.,¹ BUTT A.F.² AND BUTT I.I.³

^{1,3}Department of Surgery, Sialkot Medical College, Sialkot and ²CMH Lahore Medical College, Lahore

ABSTRACT

Background and Objective: Laparoscopic Cholecystectomy (LC) is a commonly performed procedure for cholelithiasis. However, in cases with difficult surgical anatomy, instead of converting it to open procedure, an option is to go for subtotal laparoscopic cholecystectomy (SLC), which is a safe alternative with minimal morbidities. The objective of this study was to determine the post-operative course and outcome of patients undergoing SLC at our setup.

Methods: This retrospective descriptive case series was conducted at Medicare International Hospital Gill Road Gujranwala and Allama Iqbal memorial Trust Hospital Gujranwala. All the patients who had been operated for SLC in the hospital over the period of last 5 years, from January, 2012 to December, 2016, were included in the study. All details of these patients were reviewed. During this period, a total of 746 patients underwent LC. From all these 746 LC, 36 were SLC. All the data were entered on a pre-designed proforma. All data were analyzed by SPSS version 20.

Results: A total of 746 LC's were performed in this duration. SLC was performed in 36 patients. The frequency of SLC was found as 4.8%. Among these 36 patients, 4 patients had carcinoma of GB, so they were excluded and data was calculated for 32 patients. The mean age of patients was found to be 47.78 ± 8.96 years. Among these 32 patients, 25 patients (78.1%) were females. The mean length of pre-operative hospital stay was 1.40 ± 0.55 days. The mean operative time was found as 73.15 ± 1.99 minutes. Post-operative drain was placed in all of these patients and mean post-operative drain time was found as 1.90 ± 0.96 days. Regarding complications, 2 patients had minor biliary leak, one patient had intra-abdominal abscess formation and one patient had bleeding in drain in post-operative period. The most common reason for SLC was difficult anatomy, followed by sever adhesions, acute cholecystitis and sessile GB.

Conclusion: We conclude that SLC is a safe procedure with minimal morbidity and complication rate. So it may be opted as an alternative to conversion to open procedure safely, but after ruling out malignancy of GB. We also recommend SLC in those patients needing shorter anesthesia, weighing the side effects of longer anesthesia and doing SLC.

Keywords: Laparoscopic cholecystectomy; Subtotal cholecystectomy; Adhesions; Cholecystitis; Callot's triangle.

INTRODUCTION

Laparoscopic cholecystectomy (LC) is the procedure of choice for cholelithiasis as it has replaced open surgical procedures. Subtotal cholecystectomy is a known procedure which had been in use before start of laparoscopy.^{1,2} It is a procedure which is reserved for patients where anatomy is difficult and complete cholecystectomy may be hazardous and dangerous. Similarly in LC also, subtotal laparoscopic cholecystectomy (SLC) may be performed for difficult cases.³ During SLC, a portion of gall bladder (GB) is left by saving cystic artery and cystic duct and dissection of remaining GB from liver bed is done. However, in case of sever adhesions, again dissection of GB from liver may also be

dangerous and bleeding may occur.^{4,5} In such cases, usually posterior wall of GB, attached to the liver is left as such and partial cholecystectomy involving anterior wall only is excised. All these maneuvers are performed to decrease the morbidity which may be associated with LC in these patients with difficult anatomy. However, SLC is also not risk free and certain morbidities including post-operative bleeding from left stump of GB, bile leakage and inflammation of the remaining portion of GB may occur.⁶⁻⁸

The objective of this study was to determine the post-operative course and outcome of patients undergoing SLC at our setup.

METHODS

This retrospective descriptive case series was conducted at Medcare International Hospital, Gill Road, Gujranwala and Allama Iqbal Memorial Trust Hospital Atawa GT Road Gujranwala. The study was conducted after approval from ethical committee of the hospital. All the patients who had been operated for SLC in the hospital over the period of last 5 years, from January, 2012 to December, 2016, were included in the study. For this study, SLC was defined if cystic duct was not ligated and partial removal of GB was done. File charts of all patients were retrieved and all the information was sought. We excluded those patients whose charts were partially filled and no proper information could be extracted and those with carcinoma GB. All the per-operative details and post-operative course of the patients were assessed and noted. During this period, a total of 746 patients underwent LC. From all these 746 LC, 36 were SLC. All the data were entered on a pre-designed proforma. All data were analyzed by SPSS version 20. The qualitative variables were given as frequency while quantitative variables were presented as mean ± SD.

RESULTS/CONCLUSION

A total of 746 LC's were performed in this duration. SLC was performed in 36 patients. The frequency of SLC was found as 4.8%. Among these 36 patients, 4 patients had carcinoma of GB, so they were excluded and data was calculated for 32 patients (figure 1).

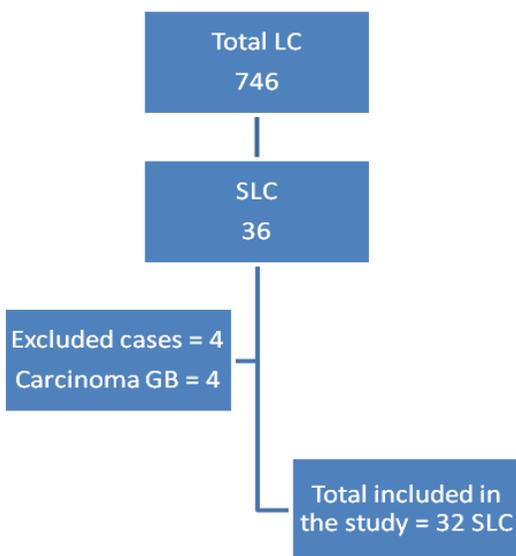


Fig. 1: Details of the patients with LC and SLC in this study.

The mean age of patients was found to be 47.78 ± 8.96 years among those who had undergone SLC. Among these 32 patients, 25 patients (78.1%) were females. The mean length of pre-operative hospitalization stay was 1.40 ± 0.55 days. Pre-operative White

blood cells count was found as 9.67 ± 4.87 × 10³/mm³. The mean operative time was found as 73.15 ± 1.99 minutes. Post-operative drain was placed in all of these patients and mean post-operative drain time was found as 1.90 ± 0.96 days. Overall post-operative hospital stay was 2.40 ± 1.04 days. Regarding the post-operative morbidity and complications, 1 patient had intra-abdominal subhepatic abscess which was managed conservatively. Two patients had minor biliary leak which also responded to observation within 48 hours. Also one patient had bleeding in drain in post-operative period, it also responded to blood transfusion and conservative management. All the post-operative outcome of patients is summarized in table 1.

Table 1: Per-operative and post-operative outcome of patients.

Operative time (in minutes) (mean ± SD)	73.15 ± 1.99
Post-operative drain time (days) (mean ± SD)	1.90 ± 0.96
Post-operative hospital stay (days) (mean ± SD)	2.40 ± 1.04
Post-operative complications N (%)	
Wound infection	5 (15.6%)
Biliary leak	2 (6.2%)
Bleeding	1 (3.12%)
Intra-abdominal abscess	1 (3.12%)

The most common reason for SLC was difficult callot's triangle dissection and anatomy in 19 patients (59.3%). Other reasons included Hartman's being densely adherent to CBD, acute cholecystitis and sessile GB. All data are given in figure 2.

DISCUSSION

Inflammation of GB, whether acute or chronic leads to adhesion formation around it and identification of cystic duct and other related structures particularly at callot's triangle is made difficult and sometimes impossible. Conventionally a difficulty LC is converted to open procedure in order to avoid the ambiguity and prevent the morbidity associated with it. However, SLC may be another option in such situations. Subtotal cholecystectomy was first described by Bornman and Terblanche in 1985 for open surgical cholecystectomy surgeries as an alternative,⁹ however, within few years, it became famous and was adopted for LC also.¹⁰ In our study, the prevalence rate of SLC among all patients undergoing LC was found as 4.8%. In a large study by Chowbey et al, among 1680 patients with LC, SLC incidence was 3.33%.¹¹ In another study, SLC was done in 4.42% of total LC procedures (49 of 1107 LC).¹²

The complications encountered during LC may be attributed to many factors and most important of

these is the surgical expertise of the surgeon. All the procedure in our study were performed by senior consultant surgeons who are fully trained in laparoscopy. Also the advent of SLC has also reduced the complication rate in difficult cases. It is particularly true for biliary leak as these complications most commonly occur due to false recognition of biliary structures in case of severe adhesions, but in SLC, this problem is solved as minimal dissection is done in this plane.^{13,14} In this series, we had encountered only two patients with bile leakage, which was also minor leak and settled by conservative management. Similarly in a study by Nakajima, no bile leakage was identified among SLC patients.¹⁵

SLC also has some disadvantages. First of all, difficult dissection at Callot's triangle may be due to carcinoma GB, and doing SLC after leaving a stump of GB is hazardous and surely will lead to recurrence. So whenever it is being opted, it is compulsory to rule out carcinomatous cause of GB. For that matter, initial workup including ultrasound by an experienced sonologist, CT scan in selected cases and follow up of the patients is necessary. In this series, we had excluded the patients with carcinoma GB, otherwise it is important to be identified pre-operatively and per-operatively.

Inflammation, cholecystitis and hence adhesion formation is often more severe in elderly patients than those in younger age group.¹⁶ Also it is more common among those with history of myocardial infarction.¹⁷ So in such patients SLC may be a better option particularly as minimizing the operative time as well as post-operative complications is important in these patients. Many studies have verified the importance and role of SLC in elderly patients particularly.¹⁵

We **conclude** that SLC is a safe procedure with minimal morbidity and complication rate. So it may be opted as an alternative to conversion to open procedure safely, but after ruling out malignancy of GB. We also recommend SLC in those patients needing shorter anesthesia weighing the side effects of longer anesthesia and doing SLC.

Authors' Contribution

Conception and design: Farooq Butt, Collection and assembly of data: Farooq Butt and Ayesha Farooq Butt Analysis and interpretation of the data: Ayesha Farooq Butt, Imran Idrees Butt and Ayesha Farooq Butt. Drafting of the article: Imran Idrees Butt and Farooq Butt. Critical revision of the article for important intellectual

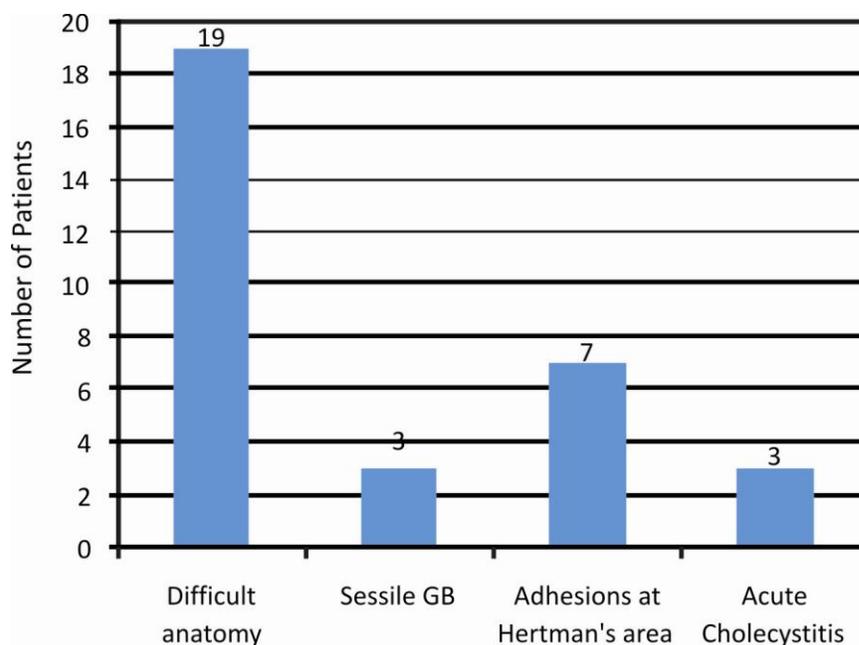


Fig. 2: Reasons for SLC in this study.

content: Farooq Butt. Statistical expertise: Imran Idrees Butt. Final approval and guarantor of the article: Farooq Butt.

REFERENCES

1. Cawich SO, Wilson C. Stump cholecystitis: laparoscopic completion cholecystectomy with basic laparoscopic equipment in a resource poor setting. *Case Rep Med.* 2014; 2014: 787631.
2. Simpson LK, Baker AJ, Jing K, Shuo-Dong W. Post-operative Delayed Duodenum Perforation following Elective Laparoscopic Cholecystectomy. *Case Rep Med.* 2014; 2014: 823149.
3. Shingu Y, Komatsu S, Norimizu S, Taguchi Y, Sakamoto E. Laparoscopic subtotal cholecystectomy for severe cholecystitis. *Surg Endosc.* 2016; 30: 526-31.
4. Strasberg SM, Pucci MJ, Brunt LM, Deziel DJ. Subtotal cholecystectomy-"fenestrating" vs "reconstituting" subtypes and the prevention of bile duct injury: Definition of the optimal procedure in difficult operative conditions. *J Am Coll Surg.* 2016; 222: 89-96.
5. Yetisir F, Sarer AE, Acar HZ, Parlak O, Basaran B, Yazicioglu O. Laparoscopic resection of cholecystocolic fistula and subtotal cholecystectomy by tri-staple in a type V mirizzi syndrome. *Case Reports Hepatol.* 2016; 2016: 6434507.
6. Dissanaik S. A step-by-step guide to laparoscopic subtotal fenestrating cholecystectomy: A damage control approach to the difficult gallbladder. *J Am Coll Surg.* 2016; 223: e15-8.
7. Di Sano SJ, Bull NB. Reformed gallbladder after laparoscopic subtotal cholecystectomy: correlation of surgical findings with ultrasound and CT imaging dagger. *J Surg Case Rep.* 2015; 2015.
8. Kaplan D, Inaba K, Chouliaras K, Low GM, Benjamin E, Lam L, et al. Subtotal cholecystectomy and open total cholecystectomy: alternatives in complicated cholecys-

- titis. *Am Surg.* 2014; 80: 953-5.
9. Bornman P, Terblanche J. Subtotal cholecystectomy: for the difficult gallbladder in portal hypertension and cholecystitis. *Surgery*, 1985; 98: 1-6.
 10. Philips J, Lawes D, Cook A, Arulampalam T, Zaborsky A, Menzies D, et al. The use of laparoscopic subtotal cholecystectomy for complicated cholelithiasis. *Surg Endosc.* 2008; 22: 1697-700.
 11. Chowbey PK, Sharma A, Khullar R, Mann V, Baijal M, Vashistha A. Laparoscopic subtotal cholecystectomy: a review of 56 procedures. *J Laparoendosc Adv Surg Tech A.* 2000; 10: 31-4.
 12. Shin M, Choi N, Yoo Y, Kim Y, Kim S, Mun S. Clinical outcomes of subtotal cholecystectomy performed for difficult cholecystectomy. *Ann Surg Treat Res.* 2016; 91: 226-32.
 13. Krähenbühl L, Sclabas G, Wente MN, Schäfer M, Schlumpf R, Büchler MW. Incidence, risk factors, and prevention of biliary tract injuries during laparoscopic cholecystectomy in Switzerland. *World J Surg.* 2001; 25: 1325-30.
 14. Archer SB, Brown DW, Smith CD, Branum GD, Hunter JG. Bile duct injury during laparoscopic cholecystectomy: results of a national survey. *Ann Surg.* 2001; 234: 549-59.
 15. Nakajima J, Sasaki A, Obuchi T, Baba S, Nitta H, Wakabayashi G. Laparoscopic subtotal cholecystectomy for severe cholecystitis. *Surgery today*, 2009; 39: 870-5.
 16. Tang C, Ha J, Li M. Laparoscopic cholecystectomy versus open cholecystectomy in elderly patients with acute cholecystitis: retrospective study. *Hong Kong Med J.* 2002; 8: 394-9.
 17. Bingener J, Richards ML, Schwesinger WH, Strodel WE, Sirinek KR. Laparoscopic cholecystectomy for elderly patients: gold standard for golden years? *Arch Surg.* 2003; 138: 531-6.