

Per-Operative and Post-Operative Complications of Laparoscopic Cholecystectomy: A Cross-Sectional Study in a Tertiary Care Hospital in Bangladesh

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Abstract

Background: Cholecystectomy is now has become a common abdominal surgery which is mostly laparoscopic in developed countries. In USA, almost 90% of cholecystectomies are laparoscopic. For gallstone surgery, laparoscopic cholecystectomy is considered as a "gold standard". **Methods:** This study was a cross-sectional study which was conducted at Kumuduni Women's Medical College, Mirzapur, Tangail, Bangladesh. The study was conducted in between March 2020- April 2022. The total sample size for this study was 121. **Result:** Most of the patients 29(24%) were aged between 20-29 years. Most of the patients 102(84%) were female whereas only 19(16%) were male. Most of the patients 61(50.4%) required 15-30 mint, 54(44.6%) required 30-60 mint and 6(5%) required more than 60 patients. 67(55%) patients stayed in the hospital for only 24 hours whereas most of the patients 42(35%) stayed for 2 days and only 12(10%) had to stay more than 2 days. Dense Adhesion was found in 4(3.3%) cases, Uncontrolled Bleeding in 3(2.5%), Fibrotic Gallbladder in 2(1.7%), and huge distended and thick Gallbladder in only 1(0.8%) case. Most common complication Wound infection was seen in 12(9.9%) patients whereas 4(3.3%) had Biliary leakage, 2(1.7%) had bile duct stricture, 2(1.7%) had Post-site Hernia. **Conclusion:** Laparoscopic cholecystectomy is considered to have the utmost advantages and is also related with less postoperative complications, reduce hospital stay, reduce the overall morbidity and mortality in comparison with open cholecystectomy.

Keywords: Post-cholecystectomy, Laparoscopic cholecystectomy, Open cholecystectomy.

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INTRODUCTION

Cholecystectomy is now has become a common abdominal surgery which are mostly laparoscopic in developed countries. Laparoscopic cholecystectomy (LC) is commonly performed with more than 500,000 cases per year to treat gallbladder disease [1]. For gallstone surgery, laparoscopic cholecystectomy is considered as a "gold standard". This surgical procedure helps in decrease pain, recovers cosmesis, reduces hospital stays, and lessens work impairment [2-8]. Laparoscopic cholecystectomy has more risk of complication comparing to other open surgery. The patients with symptomatic cholelithiasis and asymptomatic cholelithiasis are at more risk for gallstones or gallbladder cancer. Intraoperative complications including vascular injury, intestine

perforation, mesenteric injury, and bile duct injuries need early laparotomy. Hence, laparoscopic surgery had better be switched to open in case the surgeon requires manual palpation and direct conception. If required, surgeons ought to execute open surgeries. However, the gallbladder hole can also be closed by forceps or sutured so that additional spilling can be avoided. Bile spilling devoid of stone spillage does not exaggerate postoperative complications [9]. Gallstones, specifically pigment stones, which harbor germs, are able to upsurge the risk of postoperative complication [10-15]. Hence, if it is conceivable, remove any of the discharged gallstones. This process needs large stone graspers. In case a trocar spears an important blood vessel, it must be left in place and a laparotomy should be done instantly. Trocars ought to be perceived with the laparoscope while removed in order to check for

torn abdominal wall vessels. Bleeding may be controlled through cautery, foley catheter balloon tamponade, or a figure-of-eight stitch. Observation and specifying the bowel damage during and after the surgery is also important. When there is any leakage, it can be treated laparoscopically or by openly extending the umbilical incision. After that laparoscopic surgery can be initiated. Bile duct damage has to be corrected instantly. Indocyanine green fluorescence imaging may perhaps define biliary anatomy and evade bile duct damage. Although this technique isn't recognized worldwide, but it appears promising [14, 15]. However, a number of bile duct injuries can't be recognized during the period of surgery and may appear later. Hence, all patients had better to be referred to an experienced biliary surgeon since the early treatment means the best possibility of success. If the surgeon is not available that time, then the patient must be externally drained. The aim of this study was to identify the post-cholecystectomy effects among patients undergoing laparoscopic cholecystectomy.

MATERIALS AND METHODOLOGY

This study was a cross-sectional study which was conducted at Kumudini Women's Medical College, Mirzapur, Tangail, Bangladesh. The study was conducted in between March 2020- April 2022. The total sample size for this study was 121.

Inclusion Criteria

- The adult patients who were aged not less than 20 years were included in this study.
- The patients who were underwent laparoscopic cholecystectomies.

Exclusion Criteria

- The patients with incomplete medical records were excluded from this study.

Four-port laparoscopic cholecystectomies were completed to the patients who were enrolled in this study. The data required for this study was demographics characteristics (age, gender), preoperative diagnosis such as CBC, bleeding-coagulation periods, liver function tests, renal function tests, blood glucose level, hepatitis screening, intra-operative findings including the time of operation, intra-operative bleeding and iatrogenic damages, conversion from laparoscopic to open cholecystectomy and causes of conversion, postoperative complications or hemorrhagic complications were also required. All the patients were followed up for three months after the surgery.

RESULT

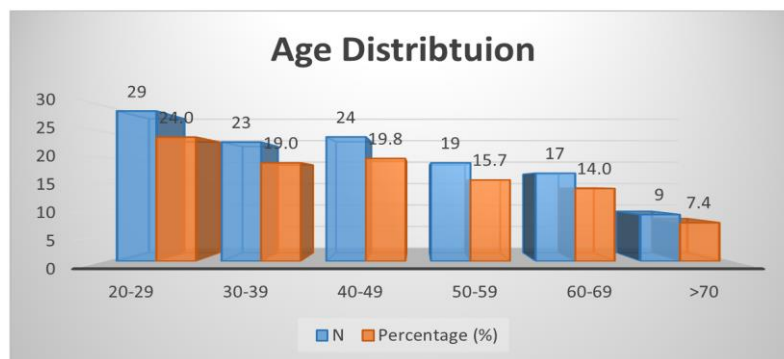


Figure I: Age distribution of the respondents

Figure I show the age distribution of the respondents. Most of the patients 29(24%) were aged between 20-29 years and followed by 23(19%) were

aged 30-39 years, 24(19.8%) aged 40-49 years, 19(15.7%) aged 50-59 years, 17(14%) aged 60-69 years and 9(7.44%) aged more than 70 years.

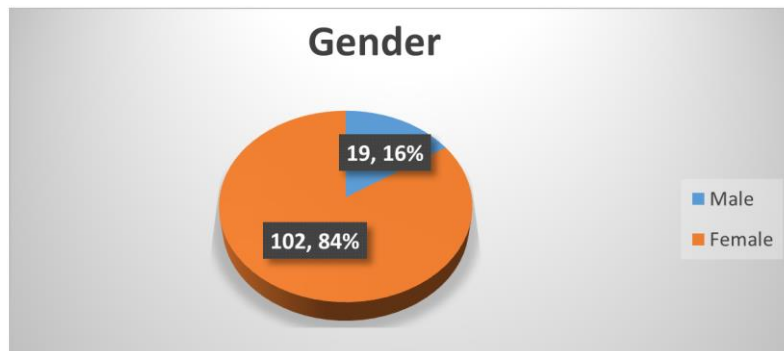


Figure II: Gender distribution of the study patients

Figure II shows the gender distribution of the study patients. Most of the patients 102(84%) were

female whereas only 19(16%) were male.

Table I: Operative time

| Operative time | N | Percentage (%) |
|----------------|----|----------------|
| 15-30 min | 61 | 50.4 |
| 30-60 min | 54 | 44.6 |
| > 60 min | 6 | 5.0 |

Table I shows the operative time needed among the study patients. Most of the patients

61(50.4%) required 15-30 mint, 54(44.6%) required 30-60 mint and 6(5%) required more than 60 patients.

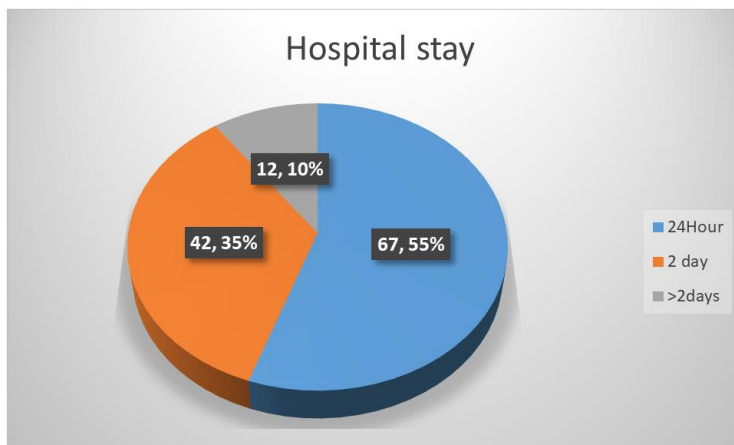


Figure III: Hospital stays

Figure III shows the duration of hospital stays. 67(55%) patients stayed in the hospital for only 24

hours whereas most of the patients 42(35%) stayed for 2 days and only 12(10%) had to stay more than 2 days.

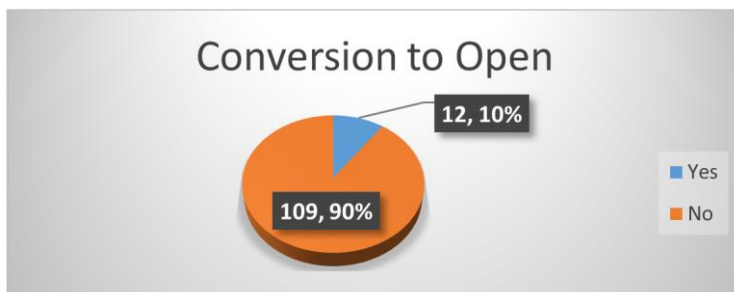


Figure IV: Conversion to open

Figure IV shows the conversion to open. Most of the patients 109(90%) did not required to go for open cholecystectomy, only 12(10%) require it.

Table II: Reasons for conversion

| Reasons For Conversion | N | Percentage (%) |
|--------------------------------------|---|----------------|
| Dense Adhesion | 4 | 3.3 |
| Uncontrolled Bleeding | 3 | 2.5 |
| Fibrotic Gallbladder | 2 | 1.7 |
| Huge distended and thick Gallbladder | 1 | 0.8 |

Table II denoted the reasons for conversion. Dense Adhesion was found in 4(3.3%) cases, Uncontrolled Bleeding in 3(2.5%), Fibrotic Gallbladder

in 2(1.7%), and huge distended and thick Gallbladder in only 1(0.8%) case.

Table III: Post-operative complications of LC

| Complications | N | Percentage (%) |
|---------------------|----|----------------|
| Wound infection | 12 | 9.9 |
| Biliary leakage | 4 | 3.3 |
| Bile duct stricture | 2 | 1.7 |
| Post-site Hernia | 2 | 1.7 |

Table III shows the post-operative complications of LC. Most common complication Wound infection was seen in 12(9.9%) patients whereas 4(3.3%) had Biliary leakage, 2(1.7%) had bile duct stricture, 2(1.7%) had Post-site Hernia.

DISCUSSION

Laparoscopic cholecystectomy (LC) is now has become popular surgical method in modern medical practice for treating patients with gallstone disease. The LC treatment is basically suggested to the patients with simple cholelithiasis. In this study, most of the patients 24% were aged between 20-29 years and followed by 19% were aged 30-39 years, 19.8% aged 40-49 years, 15.7% aged 50-59 years, 14% aged 60-69 years and 7.44 aged more than 70 years [figure I]. Among them most of the patients 84% were female whereas only 16% were male [figure II]. The age and gender distributions found in this present study were similar to those perceived in prior studies [16]. Most of the patients 50.4% required 15-30 mint, 44.6% required 30-60 mint and 5% required more than 60 patients which shows less than the operating duration of 70-90 minute reported in other studies [17-20]. This was most probable because of the case selection policy of this present study. 55% patients stayed in the hospital for only 24 hours whereas most of the patients 35% stayed for 2 days and only 10% had to stay more than 2 days [figure III]. Most of the patients 90% did not required to go for open cholecystectomy, only 10% require it. This shows similarity with the results reported in other studies [21- 25]. The common causes of conversion in this study were Dense Adhesion was found in 3.3% cases, Uncontrolled Bleeding in 2.5%, Fibrotic Gallbladder in 1.7%, and huge distended and thick Gallbladder in only 0.8% case [table II]. Most common complication Wound infection was seen in 12(9.9%) patients whereas 4(3.3%) had Biliary leakage, 2(1.7%) had bile duct stricture, 2(1.7%) had Post-site Hernia [table III]. In a study, clinically severe bleeding was found in 0.5% of LC patients [15]. For major infection and increased adhesion, the anatomy near the calot's triangle is covered, making division difficult and possibly dangerous. Hence, conversion might not be seen as a complication in these cases; somewhat, it must be seen as an attempt to resolve defects over greater surgical procedures [26]. Laparoscopic cholecystectomy (LC) has many benefits comparing to open cholecystectomy, but it has some risks as well [27]. This risk of bile duct injury through LC may vary from 0.2%- 0.9%. Hence, this is a particular matter of concern [28-32]. To many surgeons this comparatively

high rate of bile duct injury through laparoscopic cholecystectomy (LC) is thought to be the procedure's main problem. Also, this njury to the bile duct is related to a high rate of morbidity, prolonged hospital stays, more financial burden and even death [22]. But with the advancement of medical science, the prevalence of this complication is possible to reduce [33].

CONCLUSION

Laparoscopic cholecystectomy is considered to have the utmost advantages and is also related with less postoperative complications, reduce hospital stay, reduce the overall morbidity and mortality in comparison with open cholecystectomy. In Bangladesh, although there are many insufficiencies in health care facilities, but in government hospital, the operative procedures are free of cost and the doctors are also experienced there. Moreover, the cost of laparoscopic cholecystectomy is almost the same comparing to the open conventional procedure performed in private hospital. Hence, laparoscopic cholecystectomy is highly recommended.

REFERENCES

1. Cullen, K. A., Hall, M. J., & Golosinskiy, A. (2009). Ambulatory surgery in the United States, 2006. In National Health Statistics Reports; United States Department of Health and Human Services: Washington, DC, USA, pp. 1–25.
2. Soper, N. J., Stockmann, P. T., Dunnegan, D. L., & Ashley, S. W. (1992). Laparoscopic cholecystectomy. The new 'gold standard'? *Arch Surg*, 127, 917.
3. Schirmer, B. D., Edge, S. B., Dix, J. A. N. E. T., Hyser, M. J., Hanks, J. B., & Jones, R. S. (1991). Laparoscopic cholecystectomy. Treatment of choice for symptomatic cholelithiasis. *Annals of surgery*, 213(6), 665.
4. Wiesen, S. M., Unger, S. W., Barkin, J. S., Edelman, D. S., Scott, J. S., & Unger, H. M. (1993). Laparoscopic cholecystectomy: the procedure of choice for acute cholecystitis. *The American journal of gastroenterology*, 88(3), 334-337.
5. Wilson, R. G., Macintyre, I. M., Nixon, S. J., Saunders, J. H., Varma, J. S., & King, P. M. (1992). Laparoscopic cholecystectomy as a safe and effective treatment for severe acute cholecystitis. *British Medical Journal*, 305(6850), 394-396.
6. Rattner, D. W., Ferguson, C., & Warshaw, A. L. (1993). Factors associated with successful

- laparoscopic cholecystectomy for acute cholecystitis. *Annals of surgery*, 217(3), 233.
7. Johansson, M., Thune, A., Nelvin, L., Stiernstam, M., Westman, B., & Lundell, L. (2005). Randomized clinical trial of open versus laparoscopic cholecystectomy in the treatment of acute cholecystitis. *Journal of British Surgery*, 92(1), 44-49.
 8. Yamashita, Y., Takada, T., Kawarada, Y., Nimura, Y., Hirota, M., Miura, F., ... & Sachakul, V. (2007). Surgical treatment of patients with acute cholecystitis: Tokyo Guidelines. *Journal of hepatobiliary-pancreatic surgery*, 14(1), 91-97.
 9. Jones, D. B., Dunnegan, D. L., & Soper, N. J. (1995). The influence of intraoperative gallbladder perforation on long-term outcome after laparoscopic cholecystectomy. *Surgical endoscopy*, 9(9), 977-980.
 10. Deziel, D. J., Millikan, K. W., Economou, S. G., Doolas, A., Ko, S. T., & Airan, M. C. (1993). Complications of laparoscopic cholecystectomy: a national survey of 4,292 hospitals and an analysis of 77,604 cases. *The American journal of surgery*, 165(1), 9-14.
 11. Carlin, C. B., Kent, R. B., & Laws, H. L. (1995). Spilled gallstones—complications of abdominal-wall abscesses. *Surgical endoscopy*, 9(3), 341-343.
 12. Horton, M., & Florence, M. G. (1998). Unusual abscess patterns following dropped gallstones during laparoscopic cholecystectomy. *The American journal of surgery*, 175(5), 375-379.
 13. Zamir, G., Lyass, S., Pertsemliadis, D., & Katz, B. (1999). The fate of the dropped gallstones during laparoscopic cholecystectomy. *Surgical endoscopy*, 13(1), 68-70.
 14. Ishizawa, T., Bandai, Y., & Kokudo, N. (2009). Fluorescent cholangiography using indocyanine green for laparoscopic cholecystectomy: an initial experience. *Archives of Surgery*, 144(4), 381-382.
 15. Pertsemliadis, D., Barzilai, A., Pertsemliadis, D. S. S., Zinberg, J., & Aufses, A. H. (1993). Enhanced laparoscopic visualization of the extrahepatic bile duct with intravenous indocyanine green. *Am J Gastroenterol*, 88, A230.
 16. Vagenas, K., Karamanakos, S. N., Spyropoulos, C., Panagiotopoulos, S., Karanikolas, M., & Stavropoulos, M. (2006). Laparoscopic cholecystectomy: a report from a single center. *World Journal of Gastroenterology: WJG*, 12(24), 3887.
 17. Shrestha, S., Pradhan, G., Bhoomi, K., Dhital, A., & Bhattachan, C. L. (2007). Review of laparoscopic cholecystectomy in Nepal Medical College Teaching Hospital. *Nepal Medical College Journal*, 9, 1.
 18. Lim, S. H., Salleh, I., Poh, B. K., & Tay, K. H. (2005). Laparoscopic cholecystectomy: an audit of our training programme. *ANZ journal of surgery*, 75(4), 231-233.
 19. Merdad, A. M. (1999). Laparoscopic cholecystectomy: Rate and predictors for conversion. *Saudi Journal of Gastroenterology*, 5(3), 117.
 20. Keulemans, Y., Eshuis, J., de Haes, H., de Wit, L. T., & Gouma, D. J. (1998). Laparoscopic cholecystectomy: day-care versus clinical observation. *Annals of Surgery*, 228(6), 734.
 21. Baird, D. R., Wilson, J. P., Mason, E. M., Duncan, T. D., Evans, J. S., Luke, J. P., ... & Lucas, G. W. (1992). An early review of 800 laparoscopic cholecystectomies at a university-affiliated community teaching hospital. *The American surgeon*, 58(3), 206-210.
 22. Wherry, D. C., Marohn, M. R., Malanoski, M. P., Hetz, S. P., & Rich, N. M. (1996). An external audit of laparoscopic cholecystectomy in the steady state performed in medical treatment facilities of the Department of Defense. *Annals of surgery*, 224(2), 145.
 23. Hadad, S. M., Vaidya, J. S., Baker, L., Koh, H. C., Heron, T. P., & Thompson, A. M. (2007). Delay from symptom onset increases the conversion rate in laparoscopic cholecystectomy for acute cholecystitis. *World journal of surgery*, 31(6), 1300-1303.
 24. Lichten, J. B., Reid, J. J., Zahalsky, M. P., & Friedman, R. L. (2001). Laparoscopic cholecystectomy in the new millennium. *Surgical endoscopy*, 15(8), 867-872.
 25. Kaushik, R., Sharma, R., Batra, R., Yadav, T. D., Attri, A. K., & Kaushik, S. P. (2002). Laparoscopic cholecystectomy: an Indian experience of 1233 cases. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 12(1), 21-25.
 26. Lim, K., Ibrahim, S., Tan, N., Lim, S., & Tay, K. (2007). Risk factors for conversion to open surgery in patients with acute cholecystitis undergoing interval laparoscopic cholecystectomy. *ANNALS-ACADEMY OF MEDICINE SINGAPORE*, 36(8), 631.
 27. Berggren, U., Gordh, T., Grama, D., Haglund, U., Rastad, J., & Arvidsson, D. (1994). Laparoscopic versus open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. *Journal of British Surgery*, 81(9), 1362-1365.
 28. Soper, N. J., & Dunnegan, D. L. (1993). Laparoscopic cholecystectomy: experience of a single surgeon. *World journal of surgery*, 17(1), 16-20.
 29. Deveney, K. E. (1993). The early experience with laparoscopic cholecystectomy in Oregon. *Archives of Surgery*, 128(6), 627-632.
 30. Club, S. S. (1991). A prospective analysis of 1518 laparoscopic cholecystectomies. *The New England Journal of Medicine*, 324(16), 1073-1078.
 31. Shea, J. A., Healey, M. J., Berlin, J. A., Clarke, J. R., Malet, P. F., Staroscik, R. N., ... & Williams, S. V. (1996). Mortality and complications associated

- with laparoscopic cholecystectomy. A meta-analysis. *Annals of surgery*, 224(5), 609.
32. Terpstra, O. T. (1996). Laparoscopic cholecystectomy: the other side of the coin. *BMJ*, 312(7043), 1375-1376.
33. Dunn, D., Nair, R., Fowler, S., & McCloy, R. (1994). Laparoscopic cholecystectomy in England and Wales: results of an audit by the Royal College of Surgeons of England. *Annals of the Royal college of Surgeons of England*, 76(4), 269.