CASE REPORT

Review of Outcome of Laparoscopic Cholecystectomy Done by Consultants vs Surgery Residents at Tertiary Care Teaching Hospital

Jasmine R Agarwal[1], Jitendra T Sankpal[2], Ratnaprabha P Jadhav[3], Shubham D Gupta[4], Supriya S Bhondve[5], Ruchira R Bhattacharya[6]

Abstract

Objective: The aim of this study was to assess morbidity, mortality, and outcome in selected patients after laparoscopic cholecystectomy (LC) performed by consultants or by surgical residents at Gokuldas Tejpal Hospital affiliated to Grant Government Medical College and Sir JJ group of Government Hospitals in Mumbai, India

Materials and methods: Between January 1, 2013 and December 31, 2016, 342 laparoscopic cholecystectomies were performed, 111 by residents and 231 by consultants. The routine blood investigations of all the patients were sent and they all had electrocardiography, chest X-ray, and abdominal ultrasound scan done preoperatively. All patients were induced with general anesthesia.

Results: Six conversions were required to an open procedure (four in the resident group and two in the group of consultants) because of impossible recognition of anatomy around Calot's triangle. The mean operative time was 59 minutes for the residents while for the consultants it was 47 minutes. Mortality rate was 0% in both groups. There were 27 major complications, 12 in the resident group and 15 in the consultant group. The mean hospital stay was 3.5 days and 2.3 days for patients operated by the residents and the consultants, respectively, while all the patients resumed their normal activities after 16.7 days and 15.1 days respectively.

Conclusion: Supervised LC performed by surgical residents does not increase surgical morbidity and does not compromise patient outcome.

Keywords: Cholecystecomy, Cholelithiasis, Complications, Laparoscopy, Outcome, Surgical training.

World Journal of Laparoscopic Surgery (2019): 10.5005/jp-journals-10033-1363

Introduction

The discipline of surgery has become even more complex with the rapid introduction of revolutionary technologies. Laparoscopic surgery is the simplest and first of those new directions. Several authors have described the establishment of laparoscopic cholecystectomy (LC) as a standard method and the associated learning curves.[1–3]

As the new technologies are introduced into our hospitals, our operative tables must be evaluated on multiple levels. Laparoscopic and robotic surgeries have created a need for advanced and different skills and abilities that both practicing surgeons and trainees should be familiar with. Training of future surgeons is a task of vital importance to the society. Since the introduction of the laparoscopic technique in 1985, LC has become the preferred procedure.[4] Some authors emphasize on the importance of LC because junior residents are performing a number of laparoscopic procedures under direct supervision, and an increasing number of LCs.[5]

This is a retrospective study aiming to compare the outcome, efficacy, and morbidity rates between patients who underwent LC by consultants and surgical trainees.

Materials and Methods

Between January 1, 2013 and December 31, 2016, 342 patients underwent LC at Gokuldas Tejpal Hospital, affiliated to Grant Government Medical College and Sir JJ group of Government Hospitals in Mumbai, India. Of these 342, 111 patients were operated on by three surgical residents, and the other 231 patients by three consultants.

In India, surgical residents begin to assist and operate under close supervision in the second or third year of their residency as per Medical Council of India. LC was done with the patient under general anesthesia.

[1]Department of General Surgery, Sir JJ Group of Hospitals, New Delhi, India

[2]Department of General Surgery, Sir JJ Group of Hospitals, Mumbai, Maharashtra, India

[3]Department of General Surgery, Sir JJ Group of Hospitals, Nanded, Maharashtra, India

[4]Department of General Surgery, Sir JJ Group of Hospitals, Datia, Madhya Pradesh, India

[5]Department of General Surgery, Sir JJ Group of Hospitals, Ahmednagar, Maharashtra, India

[6]Department of General Surgery, Sir JJ Group of Hospitals, Kolkata, West Bengal, India

Corresponding Author: Jasmine R Agarwal, Department of General Surgery, Sir JJ Group of Hospitals, New Delhi, India, Phone: +91 8510010756, e-mail: jasmineagarwal2810@gmail.com

How to cite this article: Agarwal JR, Sankpal JT, Jadhav RP, *et al.* Review of Outcome of Laparoscopic Cholecystectomy Done by Consultants vs Surgery Residents at Tertiary Care Teaching Hospital. World J Lap Surg 2019;12(1):43–44.

Source of support: Nil

Conflict of interest: None

Surgical Technique

After an infraumbilical incision, open method of creating pneumoperitoneum was used. Four ports were then inserted: two 10-mm ports in the subumbilical and subxiphoid regions, and two 5-mm trocars in the right hypochondrium. Meticulous dissection was carried out at Calot's triangle and around gallbladder using bipolar electrocautery and dissection hook, respectively. The cystic duct and cystic artery were clipped separately with metallic clips and then divided. One operator and two assistants complete an operation. In our study, the one who identified and dissected the structures in Calot's triangle was considered the principle surgeon.

Residents were introduced to laparoscopic techniques by lectures, seminars, and demonstrations. Subsequently, surgical residents assisted in operations as camera operators, and then progressed to being first assistants, and then operated as the first surgeons after acquiring appropriate skills.

All operations by surgical trainees were performed under the instruction and supervision of an experienced laparoscopic surgeon.

The routine blood investigations of all the patients were sent (like complete hemogram, liver function tests, and renal function tests) and they all had electrocardiography, chest X-ray, and abdominal ultrasound scan done preoperatively.

Statistical Analysis

The Statistical Package for the Social Sciences was used to collect all the data. An unpaired *t* test was used, and the mean duration of the surgery, the mean duration of hospital stay, and the number of days needed for resuming daily activities were compared. To compare the complication rates, conversions to open surgery, and mortality rates, a X^2 test was used. A probability of <0.05 was accepted as significant. An independent researcher reviewed the results.

Results

The data comparing patients who underwent LC by surgeons and residents are in Table 1.

The mean duration of the operation was 49 minutes for the surgeons and 57 minutes for residents ($p = 0.12$). Neither conversion rate to laparotomy ($p = 0.17$) nor complication rate ($p = 0.06$) was significantly different between surgeons and residents. Finally, the mean hospital stay was 2.3 days and 3.5 days, respectively ($p = 0.33$).

Table 1: Comparison of laparoscopic cholecystectomies performed by surgeons and residents

	Surgeons (n = 231)	*Residents (n = 111)*	*p value*
Mean duration of operation (minutes)	49 (27–78)	57 (33–97)	0.12
Major complications	15	12	0.06
• Intraoperative			
Bowel thermal injury	1	0	
Bile duct injury	0	0	
Bile leak	4	3	
Hemorrhage	3	2	
Hematomas at trocar site	0	0	
• Postoperative			
Inflammation at port site	4	4	
Paralytic ileus	1	2	
Jaundice	2	1	
Conversion to laparotomy	2	4	0.17
Mortality rate (%)	0	0	0.22
Mean hospital stay (days)	2.3	3.5	0.33
Return to normal activity	15.1	16.7	0.27

Discussion

Considerable concerns exist that shortening the time period of training will compromise the competence of new surgeons. The surgical trainees must obtain adequate operative experience without any unfavorable outcomes to the patient. This retrospective study has shown that the level of the principle operating surgeon does not predict the mortality or morbidity in patients undergoing LC.

Several authors have criticized that the laparoscopic generation of surgeons start their training in biliary surgery with less experience with the open technique;[6] however, studies have shown that less experience in open cholecystectomy does not influence the safety of LC.[7] Instead, surgeons who started LC after their residency encountered more biliary complications than did their colleagues who learned LC during their residency.[5]

All similar studies' results indicate that with proper training and guidance, surgical residents can achieve a satisfactory level of competence in this procedure.[3]

After LC, two patients operated on by a surgeon and one by a resident became jaundiced, and endoscopic retrograde cholangiopancreatography was performed. These patients underwent a papillotomy because of common bile duct stones, which were successfully removed.

Conclusion

We conclude that when surgical residents perform LC after sufficient training in laparoscopy and under proper supervision and guidance, favorable outcomes are achieved. The learning and experienced surgeons must be aware of the possible complications and the necessary prerequisites that should be taken for their prevention.

References

1. Cagir B, Rangraj M, Maffuci L, et al. The learning curve for laparoscopic cholecystectomy. J Laparoendosc Surg 1994;4(6): 419–427. DOI: 10.1089/lps.1994.4.419. http://www.ncbi.nlm.nih.gov/pubmed/7881146 (accessed November 5, 2016).
2. Hunter JG. The learning curve in laparoscopic cholecystectomy. Minim Invasive Ther Allied Technol 1997;6(1):24–25. DOI: 10.3109/13645709709152820.
3. Pariani D, Fontana S, Zetti G, et al. Laparoscopic cholecystectomy performed by residents: a retrospective study on 569 patients. Surg Res Pract 2014;2014:912143. DOI: 10.1155/2014/912143.
4. Reynolds W Jr. The first laparoscopic cholecystectomy. J Soc Laparoendosc Surg 2001;5(1):89–94. http://www.ncbi.nlm.nih.gov/pubmed/11304004 (accessed February 25, 2017).
5. Friedman RL, Pace BW. Resident education in laparoscopic cholecystectomy. Surg Endosc 1996;10(1):26–28. DOI: 10.1007/s004649910005. http://www.ncbi.nlm.nih.gov/pubmed/8711600 (accessed March 4, 2017).
6. Hodgson WJ, Byrne DW, Savino JA, et al. Laparoscopic cholecystectomy. The early experience of surgical attendings compared with that of residents trained by apprenticeship. Surg Endosc 1994;8(9): 1058–1062. DOI: 10.1007/BF00705719. http://www.ncbi.nlm.nih.gov/pubmed/7992175 (accessed March 4, 2017).
7. Böckler D, Geoghegan J, Klein M, et al. Implications of laparoscopic cholecystectomy for surgical residency training. J Soc Laparoendosc Surg 1999;3(1):19–22. http://www.ncbi.nlm.nih.gov/pubmed/10323164 (accessed February 25, 2017).