

A RETROSPECTIVE CLINICAL STUDY OF LAPAROSCOPIC AND OPEN SURGERY FOR CHOLECYSTECTOMY PROCEDURE

Konduru Siva Prasada Raju¹, Kethavath Changa Thavarya Naik²

¹Assistant Professor, Department of General Surgery, Rajiv Gandhi Institute of Medical College, Ongole, Andhra Pradesh.

²Associate Professor, Department of General Surgery, Rajiv Gandhi Institute of Medical College, Ongole, Andhra Pradesh.

ABSTRACT

BACKGROUND

The gall stone is one of the commonest ailments for which the hospital doors are knocked in India. Recent statistics suggest that about 15 to 30 percent of women in the fourth and fifth decade of life commonly suffer from this. The gall bladder should not be removed just considering the fact that the stones are there but the stones are formed in it and one major problem is its recurrence. Recent non-operative procedures like shock wave therapy and drugs are non-promising. Minimal access surgery is now the trend in any kind of surgery and cholecystectomy is no exception. Initially there was a huge benefit seen but now more and more complications are reported. In this study an effort has been put to understand the complications involved in both the Laparoscopic and Open type of surgery. This study is intended to help the practicing surgeon to anticipate the commonly involved complications in both the type of surgeries and also to help them understand the pros and cons of each type especially in resource challenged settings.

MATERIALS AND METHODS

This study was done in the Department of General Surgery in RIMS Medical College at Ongole. This study was done from January 2014 to December 2016. A sample size of 131 patients was selected and the retrospective analysis was done.

RESULTS

The mean age of the population in the sample size was 44.18 years and the range of the patients included from 10 years to 81 years. There were thirty seven males and ninety four females in the total study population. Female preponderance was seen which was statistically significant. Open surgery is the method of choice in an emergency of choice in case of emergency. All twenty three patients who underwent open surgery had significant post operative pain complained of post-operative pain requiring analgesic intervention. Only two patients complained of post-operative pain in case of laparoscopic procedure and none of them needed analgesics. Other complications like wound infection was also higher in open type.

CONCLUSION

Even though the laparoscopy proves to be far more superior surgical option than the conventional method, it may still be advisable to practice and master open surgery since some cases may need conversion for multiple reasons as can be seen in this study as well where one out of one thirty one cases needed conversion to open surgery as the surgeons were unable to reach the operative field.

KEYWORDS

Laparoscopy, Open Surgery, Cholecystectomy, Gall Bladder, Complications.

HOW TO CITE THIS ARTICLE: Raju KSP, Naik KCT. A retrospective clinical study of laparoscopic and open surgery for cholecystectomy procedure. J. Evid. Based Med. Healthc. 2017; 4(20), 1148-1151. DOI: 10.18410/jebmh/2017/225

BACKGROUND

The gall stone is one of the commonest ailments for which the hospital doors are knocked in India.¹ Recent statistics suggest that about 15 to 30 percent of women in the fourth and fifth decade of life commonly suffer from this.¹

Financial or Other, Competing Interest: None.

Submission 02-02-2017, Peer Review 09-02-2017,

Acceptance 25-02-2017, Published 08-03-2017.

Corresponding Author:

Dr. Konduru Siva Prasada Raju,

Rajiv Gandhi Institute of Medical College,

Trunk Road, Ongole, Prakashm District -523001.

Andhra Pradesh.

E-mail: sivaprasadarajukonduru@gmail.com

drkctnaik@yahoo.com

DOI: 10.18410/jebmh/2017/225



The gall bladder holds about forty five ml of bile and is 7.5 cm long. It consists of fundus, body, infundibulum, neck and cystic duct. The fundus projects beyond the liver. The body lies in a fossa on the inferior surface of the liver. The infundibulum is the part of the organ between the body and the neck and it sags down as a pouch. This is known as pouch of Hartmann which is commonly seen towards the duodenum and is the first part usually to form adhesions to this part of the gut. The neck leaves the upper part of the infundibulum and soon narrows to form the cystic duct. The surgeons are expected to have a firsthand knowledge of all the structures and variations in order to give justice to the procedure. Development anomalies of the gall bladder include the congenital absence of the gall bladder but it is extremely rare. Other congenital anomalies include, the gallbladder may be septate, transversely or longitudinally. The gallbladder may be double with a single cystic duct. The gallbladder may be double with separate ducts opening into

hepatic or common or both ducts. The serosa may be separate or common. Small ducts may connect gallbladder with liver. Usually these become obliterated. They may persist, which is one of the reasons why drainage is advisable after cholecystectomy. The folded fundus (Phrygian cap) deformity is the commonest congenital abnormality of the gallbladder. It has no pathological significance but when present it can be seen on cholecystography. The gallbladder may have a mesentery it may be on the left of the falciform ligament, or it may be intrahepatic.

Structure of gallbladder and bile duct: The gallbladder has serous, fibro – muscular and mucous coat. The mucous membrane of the gallbladder and bile ducts is lined with columnar epithelium. In the neck of the gallbladder there are few mucous glands in the bile ducts there are many mucus-secreting glands. Elastic tissue is found in the gallbladder and duct walls. The mucous membrane of the cystic duct forms a spiral fold which has no valvular action as it offers no resistance to flow into or out of the gallbladder. The mucus glands in the bile ducts can secrete mucus at much greater pressure than that at which the liver cells can secrete bile. If the bile duct is blocked, the liver may, because of the increase of pressure in the duct system be unable to secrete bile, which is then absorbed into the blood. The mucus glands in the ducts, however, go on secreting mucus. A patient may, therefore, be deeply jaundiced while his ducts contain mucus (white bile). The veins of the gallbladder drain into the quadrate lobe area of the liver directly or via the pericholedochal plexus and ultimately enter the hepatic veins. Occasionally a vein may be found passing with the cystic artery, or independently of it, into the portal vein. The lymphatics of the gallbladder run in two groups to the nodes in the free border of the lesser omentum and thence to the pro-aortic group. In acute cholecystitis, pain may be referred to the skin overlying the acromion. The phrenic nerve arises from, the same segments of the spinal cord (C3, 4 and 5). Irritation of that portion of the diaphragmatic peritoneum supplied by the phrenic nerve accounts for the pain referred to the distribution of the supra clavicular nerve.

The gall bladder should not be removed just considering the fact that the stones are there but the stones are formed in it and one major problem is its recurrence.^{2,3} Recent non operative procedures like shock wave therapy and drugs are non promising.⁴⁻⁶ Minimal access surgery is now the trend in any kind of surgery and cholecystectomy is no exception.⁷ Initially there was a huge benefit seen but now more and more complications are also reported.⁸

In this study an effort has been put to understand the complications involved in both the Laparoscopic and open type of surgery. This study is intended to guide the practicing surgeon to anticipate the commonly involved complications in both the type of surgeries and also to help them understand the pros and cons of each type.

AIMS AND OBJECTIVES

1. To understand the complications involved in laparoscopic as well as the open type of surgery.
2. To identify the pros and cons of each type of surgery.

MATERIALS AND METHODS

This study was done in the Department of General Surgery in RIMS Medical College at Ongole.

This study was done from January 2014 to December 2016.

A sample size of 131 patients was selected and the study was conducted.

Inclusion Criteria

1. Only patients who were suffering from symptomatic gall stones needed to be operated were selected. This was done to prevent the disease related bias and the procedures pure complications needed to be accessed.

Exclusion Criteria

1. Patients who were diabetics were not considered for the study.
2. Patients who were on steroids and chemotherapy were not considered.
3. Carcinoma patients were not considered.

All the patients were subjected to detailed physical examination after taking the detailed history.

All the patients underwent detailed Medical Examination and were certified fit for the procedure.

Detailed Pre – anesthesia evaluation were conducted.

All the statistical were done using Annova 2016.

RESULTS

Number of Patients	Mean age	Range
131	44.18 years	10 years to 81 years

Table 1. Mean Age of the Population

The mean age of the population in the sample size was 44.18 years and the range of the patients included from 10 years to 81 years.

Number of Patients	Male	Female
131	37	94

Table 2. Sex Distribution

There were thirty seven males and ninety four females in the total study population.

Number of Patients	Male	Female	Significance (Two Tailed)
131	37	94	0.0026

Table 3. Association of the Disease

Statistically significant female preponderance was seen showing strong associated of females with the disease.

Signs and Symptoms	Male	Female
Pain	34	94
Fever	21	35
Vomiting	03	53

Icterus	13	14
Tenderness	37	94
Obesity (BMI >28)	28	94
Table 4. Commonest signs and Symptoms		

Number of Patients	Laparoscopy	Open Surgery
131	108	23
Table 5. Operative Procedure Employed		

Year	2014	2015	2016
Number of Cases	45	45	41
Table 6. Case Distribution in Each Year			

Procedure	Laparoscopy	Open Surgery
Mean Operative Time	109.37 Minutes	69.66 minutes
Table 7. Mean Operation Time		

Procedure	Laparoscopy	Open Surgery
Post – operative pain	2	23
Anelgesia	Nil	23
Table 8. Postoperative Pain and Analgesia Requirement		

All twenty three patients who underwent open procedure complained of post - operative and all of them needed analgesic intervention. Only two patients complained of post – operative pain in case of laparoscopic procedure and none of them needed any analgesics.

Procedure	Laparoscopy	Open Surgery
Post – operative pain	2	23
Wound Infection	Nil	03
Wound Dehiscence	Nil	01
Keloid Formation	Nil	Nil
Fever	01	09
Table 9. Postoperative Complications		

As can seen from the tables complications are seen more in cases of open surgery when compared to the laparoscopy and this is statistically significant as seen by the P value of 0.003

Number of Patients	Laparoscopy	Open Surgery	P Value	Sig
131	108	23	0.003	Significant
Complications	3	23		
Table 10. Association of Complications				

Procedure	Laparoscopy	Open Surgery
Mean Hospital Stay	3.4 days	09 days
Table 11. Mean Hospital Stay		

Procedure	Laparoscopy to Open Surgery
Conversion	1
Table 12. Conversion of Lap to Open Surgery	

DISCUSSION

Even though the results are overwhelmingly favouring laparoscopic surgeries in this study, the conventional open surgery has its own merits. In one case the laparoscopy had to be converted to open surgery because of the adhesions. In open surgery the surgeon has a large area that he can operate. He can directly see the operation area and can take appropriate steps. All twenty three patients complained of post - operative pain in case of open surgery and all of them needed analgesic intervention. Only two patients complained of post – operative pain in case of laparoscopic procedure and none of them needed analgesics. Clearly the complications are seen more in cases of open surgery when compared to the laparoscopy. There is a strong association of complications with that of open surgery. This is in agreement with the other studies conducted by Goco IR et al and O'Dwyer PJ et al.^{9,10}

Only handful of patients turn up for the operative procedure because majority of them are asymptomatic.¹¹⁻¹⁵ There are different ways of conducting the open surgery some of the time tested are discussed below. In Cholecystectomy, if the approach is open surgery then the incision may be upper paramedian or midline incision, but some surgeons may prefer a transrectus approach. When performing a cholecystectomy, the surgeon must remember that there are many variations from the normal anatomy of the vessels and bile ducts in the hepatoduodenal ligament. The dissection of these structures can commence in the triangle of Calot which is formed by the common hepatic duct on the left, the cystic duct on the right and the liver above. The cystic artery is first ligated and divided after which the cystic duct and its junction with the common bile duct is defined. At this stage an operative cholangiogram is performed by passing a line catheter down the cystic duct and injecting a radio-opaque fluid into the bile ducts. Apart from demonstrating the presence of stones and drainage of contrast material or drainage of dye into the duodenum, it may demonstrate congenital anomalies of the biliary system. An alternative method of removing the gallbladder is to start the dissection at the fundus of the gallbladder and to continue the dissection down to the cystic duct by remaining in a plane close to the gallbladder. Although the dissection is somewhat haemorrhagic (the cystic artery is ligated only during the course of the dissection), there is practically no danger of damaging the common bile duct. This method of cholecystectomy should be used if any difficulty is experienced in defining the anatomy in Calot's triangle. To do so is good judgement and not an admission of defeat.

Pringle's manoeuvre is one of the type in which the vessels in the free border of the lesser omentum may be controlled by compression between the thumb and index finger of the left hand. The measure is an emergency one which may be useful in cases of injury to one of the large vessels in the area or in hepatic injuries. It is safe for 30 minutes if the blood pressure is normal. But in the presence of shock the pressure should be released each 15 minutes. Superior transrectus incision is one more commonly practiced in which the Kocher's incision for approach to the liver, gallbladder, and bile ducts. The incision commences at the tip of the xiphoid process and passes down and to the right, parallel to the costal margin and two finger-breadths below it. The rectus is cut across in the line of the incision. Deep to it is the 9th thoracic nerve which passes downwards and inwards. It is preserved by being drawn carefully aside. (This advice may fail in practice, as the nerves are so easily damaged by the manipulations necessary to the operation.) The intercostal nerves to the upper rectus pass beneath the costal cartilages to gain the abdominal wall, insinuating themselves between the digitations of the diaphragm and the transversus abdominis. These nerves, having reached the abdominal wall, loop upwards in a manner reminiscent of costal cartilages. The 9th nerve is encountered in this incision; the 7th and 8th lie above the incision. This incision divides: (a) skin; (b) anterior rectus sheath; (c) rectus; (d) posterior rectus sheath; (e) fascia transversalis; (f) extraperitoneal (g) peritoneum. The laparoscopic procedure is not a new area to be discussed. Plethora of publication is there about it and thus there is no need for it to be introduced in here.

CONCLUSION

Even though the laparoscopy proves to be far more superior surgical option than the conventional method but it may still be advisable sincerely advisable for younger surgeons to learn and master the open surgery as well, since many patients may need to be converted to be open emergently, as seen in this study as well where one out of thirty one cases, needed that immediate conversion to open surgery as the surgeons were unable to reach the operative field.

REFERENCES

[1] Khuroo MS, Mahajan R, Zargar SA, Javid G, Sapru S (1989) Prevalence of biliary tract disease in India: a sonographic study in adult population in Kashmir. *Gut* 30: 201-205.

- [2] Ellis H (2009) John Stough Bobbs: father of gall bladder surgery. *Br J Hosp Med (Lond)* 70: 650.
- [3] Traverso LW (1976) Carl Langenbuch and the first cholecystectomy. [Internet]. *American journal of surgery* p 81-82.
- [4] Villanova N, Bazzoli F, Taroni F, Frabboni R, Mazzella G, et al. (1989) Gallstone recurrence after successful oral bile acid treatment. A 12-year follow-up study and evaluation of long-term post dissolution treatment. *Gastroenterology* 97: 726-731.
- [5] Della Bianca P, Bonvin B (1990) [Lithotripsy of biliary calculi by shock waves. Current possibilities and perspectives]. *Helv Chir Acta* 56: 913-916.
- [6] Fromm H (1989) Gallstone dissolution therapy with ursodiol. Patient selection. *Dig Dis Sci* 34: 36S-38S.
- [7] Paulino-Netto A (1993) A review of 391 selected open cholecystectomies for comparison with laparoscopic cholecystectomy. *Am J Surg* 166: 71-73.
- [8] Cheslyn-Curtis S, Russell RC (1991) New trends in gallstone management. *Br J Surg* 78: 143-149.
- [9] Goco IR, Chambers LG (1988) Dollars and cents: minicholecystectomy and early discharge. *South Med J* 81: 161-163.
- [10] O'Dwyer PJ, McGregor JR, McDermott EW, Murphy JJ, O'Higgins NJ (1992) Patient recovery following cholecystectomy through a 6 cm or 15 cm transverse subcostal incision: a prospective randomized clinical trial. *Postgraduate Medical Journal. BMJ Group* 68: 817-819.
- [11] Mühe E (1992) Long-term follow-up after laparoscopic cholecystectomy. *Endoscopy* 24: 754-758.
- [12] Jani K, Rajan PS, Sendhilkumar K, Palanivelu C (2006) Twenty years after Erich Muhe: Persisting controversies with the gold standard of laparoscopic cholecystectomy. *Journal of Minimal Access Surgery* 2: 49-58.
- [13] Friedman GD (1993) Natural history of asymptomatic and symptomatic gallstones. *Am J Surg* 165: 399-404.
- [14] McSherry CK, Ferstenberg H, Calhoun WF, Lahman E, Virshup M (1985) The natural history of diagnosed gallstone disease in symptomatic and asymptomatic patients. *Ann Surg* 202: 59-63.
- [15] Meshikhes AW (2002) Asymptomatic gallstones in the laparoscopic era. *Journal of The Royal College Of Surgeons Of Edinburgh* 47: 747-478.