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ORIGINAL ARTICLE

Bile Duct Injury in Laparoscopic Cholecystectomy

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ABSTRACT

Background: Laparoscopic cholecystectomy is commonly performed surgical procedure for symptomatic gall stone disease due to its better cosmetic results and shorter hospital stay; however, its safety in some cases is still questionable[5].
Methods: A retrospective, observational study was done in surgical unit 1, Sir Ganga Ram hospital, Lahore, from January 2017 to December 2019.
Results: There were 209 cases whose surgical notes, hospital record and follow up notes were studied. Among these, 21 cases were converted to open. There was no injury of bile duct in any case.
Conclusion: Experience of surgeon, careful dissection at calot's triangle, use of critical view of safety and timely decision for conversion to open were factors participating insafe surgery.
Keywords: Laparoscopic Cholecystectomy, Bile duct injury, critical view of safety.

INTRODUCTION

Laparoscopic cholecystectomy has become the surgical treatment of choice for symptomatic gall stone disease[5]. It is considered safe when performed by experienced laparoscopic surgeons. Male gender, age> 60years and inflamed gall bladder are considered to be predictive factors for difficult anatomy.

Most important complication associated with laparoscopic cholecystectomy is common bile duct injury, which was once considered to be more in laparoscopic cholecystectomy than open cholecystectomy. Incidence of morbidity due to bile duct injury in laparoscopic surgery is 0.3 to 0.5%[6,10,13]. Poor identification of anatomical landmarks, cholecystitis, anatomical anomalies, improper use of monopolar coagulation, hemorrhage during the procedure obscuring view of surgical field and less experience of operating surgeons areassociated with higher incidence of bile duct injury[2,3]. There is long learning curve for laparoscopic surgery which has held many to go for laparoscopic surgery safely. Experienced laparoscopic surgeons can supervise and teach trainee surgeons with very less number of complications by using certain safety techniques[6].

The only thing keeping us reserved in this matter is its safety[11]. There was literature showing more bile duct injuries in laparoscopic surgery as compared to open[3]. But over the years, now we have learned many safe techniques which are being used. Infubdibular technique: in which we identify the junction of cystic duct and infundibulum of the gall bladder before dissection at calot's triangle. But this technique is no more helpful in short cystic duct, impacted stone at infundibulum and adhesions of the cystic duct with common hepatic duct[8]. Dome down or fundus first technique: it is widely used in difficult situation[1,4,7]. Gall bladder is first dissected from the liver bed, starting from fundus of the gall bladder and coming downwards towards the calot's triangle. This may become an error trap in cases of distorted anatomy of cystic plate and might lead to injury of right hepatic duct and other hilar structures[8].

There are many bail out procedures, including abort the procedure all together[12], conversion to open procedure and subtotal cholecystectomy (reconstituting, fenestrating)[7,8,12]. Intraoperative cholangiogram may help to identify cases of impending injury to bile duct[8,9]. Intraoperative ultrasonography and fluorescent imaging may also help to reduce bile duct injuries in selected cases[14,15].

Critical view of safety is considered to be most appropriate technique established so far for difficult cases[2,3,7,8]. Gall bladder is dissected from cystic plate removing all fats and fibrous tissue well above bile duct. The dissection is completed when only two structures entering the gall bladder are identified[8].

Exact documentation of calot's triangle is very important for future prevention of bile duct injury[8].

PATIENTS AND METHODS

This is a prospective study conducted from January 2017 to December 2019 in surgical unit 1, Sir Ganga Ram Hospital, Lahore. Cases include all laparoscopic cholecystectomy procedures done in this time period after approval from ethical committee. Total number of operations was 209. Among these 21 cases were converted to open, due to difficult dissection at calot's triangle and diffuse dense peri- gallbladder adhesions. The incidence of conversion is 10%.

There were three different surgical teams who performed surgeries; the chief surgeons being experienced laparoscopic surgeons. Some of the cases were assisted by trainee surgeons and junior consultants, while most of the cases were assisted by senior consultant surgeons.

Three or four ports were used according to the chief surgeon's preference.Critical view of safety was utilized in most of the cases; however, dome down technique was also used successfully in some cases. Aftercalot's triangle dissection, cystic duct and cystic artery were clipped and divided, respectively. Gall bladder was dissected from liver bed by electrocautery. Hemostasis was secured with electrocautery and gauze pressure. Drain was placed in right subhepatic space in case of bile spillage and removed after first 24 hrs.

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RESULTS

There was no case of common bile duct injury in laparoscopic cholecystectomy in these three years. There were 209 cases, 169 females and 40 males. Among these 21 cases were converted to open. All patients had a good post operative recovery and discharged safely from hospital. There was no evidence of common bile duct injury on post operative follow up at 1 month and 6 months.

Fig. 1

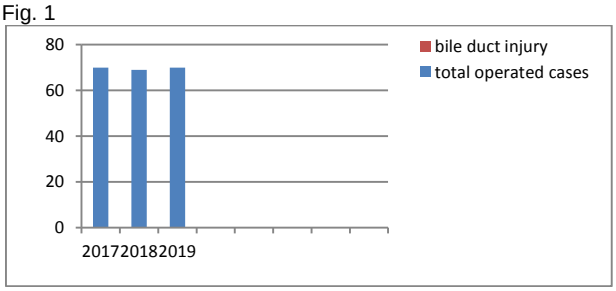


Fig. Laparoscopic cholecystectomy converted to open

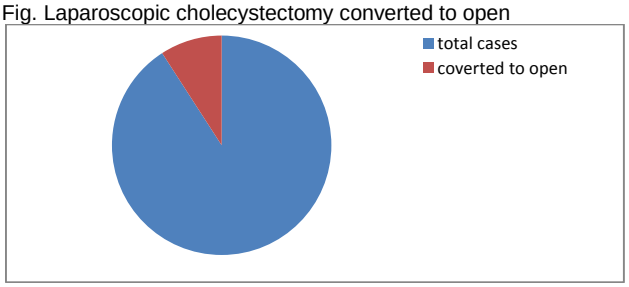
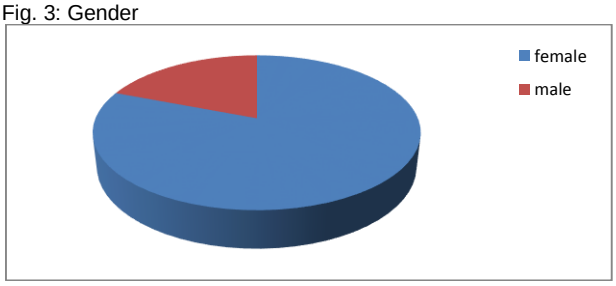


Fig. 3: Gender



DISCUSSION

Laparoscopic surgery is no more a fancy procedure. It has become a routine procedure in all teaching as well as non teaching public sector hospitals. More and more surgeons are opting it for their patients. Patients also prefer it over open surgery due to its better post operative recovery and cosmetic results. It is now included in all major surgical training programs which means there will be many junior consultants performing it in coming years.

Safety of the procedure is the most important factor for the choice of procedure. The results of surgical unit 1 are good in terms of safety as there is no case of bile duct injury. The choice of safety technique used, depends on the anatomy of calot's triangle. Most commonly used maneuver for identification of anatomical landmarks is infundibular technique. However if anatomy is not clear fundus first technique was used in few. Most commonly relied technique was critical view of safety. However Intraoperative cholangiogram and ultrasound or fluorescent imaging was not used in any case. If used these radiological investigations, conversion rate would have been much low.

CONCLUSION

Laparoscopic cholecystectomy is quite safe for symptomatic gall stone disease in experienced hands, provided careful dissection of calot'striangle is performed. Critical view of safety is helpful in difficult cases. Conversion to open is always available option when anatomy is not clear and its importance for safe surgery should not be underestimated.

Details of the anatomy of each case and their relations with respect to surrounding structures are very important and should be carefully noted in operative notes.

Conflict of interest: Nil

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