

Original Article

Assessment of efficacy of achievement of critical view of safety in laparoscopic cholecystectomy in avoiding the occurrence of bile duct injury

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ABSTRACT:

Background: Laparoscopic cholecystectomy (LC) is one of the most widely performed general surgical operations. The present study was undertaken for assessing the efficacy of achievement of critical view of safety in laparoscopic cholecystectomy in avoiding the occurrence of bile duct injury. **Materials & methods:** A total of 100 consecutive patients of gallbladder disease were included in the study. Patients were admitted a day prior to surgery in case of elective cholecystectomy from outpatient department (OPD) after complete investigations. Some patients were admitted from emergency with acute cholecystitis. Dissection of calot's triangle from both its dorsal and ventral aspects was performed using both blunt and electrocautry dissection. Haemostasis was achieved. Subhepatic drain was inserted. Postoperative follow-up was done and details were analysed. **Results:** Critical view of safety was achieved in 100 percent of the patients of the present study. Aberrant anatomy was encountered only in three cases. Those cases were converted into open cholecystectomy. **Conclusion:** The critical view of safety method of ductal identification is an effective approach according to the best evidence that exists to minimize the risk of BDI during LC.

Key words: Critical view, Safety

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INTRODUCTION

Laparoscopic cholecystectomy (LC) is one of the most widely performed general surgical operations. Its uptake into surgical practice some 20 years ago was rapid, unregulated and associated with an increase in the incidence and severity of bile duct injury (BDI). Although the frequency of BDI is relatively low (<0.5%), the large number of LCs performed across communities mean prevalence's remain unacceptably high. Bile duct injury is a catastrophic complication for the individual patient, resulting in significant reductions in the quality and quantity of life.¹⁻⁴ Checklists have been used widely throughout many industries to improve the completion of complex tasks, enhance communication and teamwork, and reduce error rates. Their recent introduction into surgery includes the widespread adoption of the World Health Organization (WHO) surgical checklist, which has been shown to reduce postoperative

mortality across a wide range of hospitals and health systems internationally. Based on this success, several specialties have begun to develop similar tools.⁵⁻⁸ Hence; the present study was undertaken for assessing the efficacy of achievement of critical view of safety in laparoscopic cholecystectomy in avoiding the occurrence of bile duct injury.

MATERIALS & METHODS

A total of 100 consecutive patients of gallbladder disease were included in the study. Inclusion criteria for the present study included: Patients with symptomatic gallbladder diseases

- Symptomatic gallstones
- Acute or chronic cholecystitis
- Mucocele/ Pyocele of gallbladder

Patients were admitted a day prior to surgery in case of elective cholecystectomy from outpatient department (OPD) after complete investigations.

Some patients were admitted from emergency with acute cholecystitis. The detail history taking and clinical examination as per proforma was done. Standard four port method of performing lap cholecystectomy was used. Dissection of calot's triangle from both its dorsal and ventral aspects was performed using both blunt and electrocautry dissection. Haemostasis was achieved. Subhepatic drain was inserted. Postoperative follow-up was done and details were analysed. Data was analysed statistically. All the results were assessed by SPSS Software.

RESULTS

Mean age of the patients of the present study was 42.2 years. 84 percent of the patients of the present study were females, while the remaining 16 percent were males. Pain was the most common clinical symptom encountered in patients in the present study found to be present in 100 percent of the patients. Dyspepsia and vomiting were found to be present in 42 percent and 5 percent of the patients. Mean levels of serum SGOT, SGPT, total bilirubin and alkaline phosphatase were 26.2 IU/L, 28.4 IU/L, 0.82 mg/dL and 69.2 IU/L respectively. Critical view of safety was achieved in 100 percent of the patients of the present study. Aberrant anatomy was encountered only in three cases. Those cases were converted into open cholecystectomy.

Table 1: Distribution of clinical manifestations

Clinical manifestation	Frequency	Percentage
Pain	100	100
Dyspepsia	42	42
Vomiting	5	5
Febrile	15	15
Tachycardia	20	20
Rt upper quadrant tenderness	18	18

Table 2: Descriptive results

Parameter	Mean
SGOT (IU/L)	26.2
SGPT (IU/L)	28.4
Total bilirubin (mg/dL)	0.82
Alkaline phosphatase (IU/L)	69.2

Table 3: Achievement of Critical View of safety

Critical view of safety	Frequency	Percentage
Achieved	100	100
Total	100	100

Table 4: Number of cases converted to open cholecystectomy

Parameter	Frequency	Percentage
No. of cases converted to open cholecystectomy	3	3

DISCUSSION

In the previous studies, it has been pointed out how a —Critical view of safetyll (CVS) should be achieved every time, by dissecting the entire infundibulum off the liver bed and by freeing it of all fatty tissue, both on its dorsal and ventral aspects and how this would help prevent accidental biliary and vascular injuries, due to uncommon variations, injudicious bleeding control, or unclear/distorted anatomy. These principles have been ignored until recent years gaining credence over the past 15 years or so only.⁸⁻¹⁰ Hence; the present study was undertaken for assessing the efficacy of achievement of critical view of safety in laparoscopic cholecystectomy in avoiding the occurrence of bile duct injury.

Mean age of the patients of the present study was 42.2 years. 84 percent of the patients of the present study

were females, while the remaining 16 percent were males. Pain was the most common clinical symptom encountered in patients in the present study found to be present in 100 percent of the patients. Dyspepsia and vomiting were found to be present in 42 percent and 5 percent of the patients. Mean levels of serum SGOT, SGPT, total bilirubin and alkaline phosphatase were 26.2 IU/L, 28.4 IU/L, 0.82 mg/dL and 69.2 IU/L respectively. In a previous study conducted by Almutairi AF et al, authors presented a new safe triangle of dissection. 501 patients under went LC in the following approach; The cystic artery is identified and mobilized from the gall bladder (GB) medial wall down towards the cystic duct which would simultaneously divide the medial GB peritoneal attachment. This is then followed by dividing the lateral peritoneal attachment. The GB will be

unfolded and the borders of the triangle of safety (TST) are achieved: cystic artery medially, cystic duct laterally and the gallbladder wall superiorly. The floor of the triangle is then divided to delineate both cystic duct and artery in an area relatively far from CBD. There were little significant immediate or delayed complications. The mean operating time was 68 minutes, nearly equivalent to the conventional method. Dissection at TST appears to be a safe procedure which clearly demonstrates the cystic duct and may help to reduce the CBD injuries.¹⁰

Critical view of safety was achieved in 100 percent of the patients of the present study. Aberrant anatomy was encountered only in three cases. Those cases were converted into open cholecystectomy. Similar findings were reported in the study conducted by Avgerinos C et al. Authors presented the method of "critical view of safety" (CVS) as safe and feasible for the prevention of bile duct injuries during laparoscopic cholecystectomy. 1,046 LCs (369 men and 677 women) were assessed mainly for symptomatic gallstone disease. The CVS technique recommends clearing the triangle of Calot of fat and fibrous tissue and taking the gallbladder off the lowest part of its attachment to the gallbladder bed. The "infundibular" technique (identification of cystic duct and gallbladder junction) was used whenever CVS was not possible to perform. The CVS was performed in 998 patients (95.4%). Overall, 27 patients needed conversion to the open approach (2.6%). This rate was higher in patients with acute inflammation undergoing early operation (nine of 128, 7%) compared with patients operated later or electively (18 of 914, 1.9%).¹¹ Our results were also in concordance with the results obtained by Emous M et al, who also reported similar findings. They recorded by photo prints and video images in 102 consecutive laparoscopic cholecystectomies. The mean age of the patients was 54 years (range, 22-83 years), and 71% were women. The diagnosis for 62 of the patients was symptomatic cholecystolithiasis, and 18 patients had acute cholecystitis. The remaining patients had earlier experienced acute cholecystitis, biliary pancreatitis, or endoscopic retrograde cholangiopancreatography (ERCP). Respectively, 30% and 21% of the CVS photo prints were judged to be of insufficient quality to determine whether CVS had been established, mostly because of difficulties adequately showing the lateral side ($\kappa = 0.67$). In all but two video images,

achievement of CVS was documented sufficiently to be judged 97% ($\kappa = 1.00$).¹²

CONCLUSION

The critical view of safety method of ductal identification is an effective approach according to the best evidence that exists to minimize the risk of BDI during LC.

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