USE OF 14-F VACUUM DRAIN IN LAPAROSCOPIC CHOLECYSTECTOMY: A PROSPECTIVE ANALYSIS OF 100 CASES
Sarbjeet Singh1, Prem Pal Bhati2, Shubham Lavania3

ABSTRACT: Laparoscopic cholecystectomy can be complicated by collection of bilious, feculent, haemorrhagic or purulent fluid in peritoneal cavity. Complication of bile leak is a significant cause of morbidity and mortality in these patients. Early detection and adequate drainage of intra-abdominal collection can avoid serious complications and decrease morbidity. A usual practice is to put a 14-F vacuum drain in difficult cases of laparoscopic cholecystectomy. In this study we have analyzed the advantages and disadvantages of non selectively putting a 14-F vacuum drain.

KEY WORDS: Laparoscopic cholecystectomy, 14-F vacuum drain.

INTRODUCTION: Laparoscopic cholecystectomy is known as treatment of choice for gall bladder diseases because of its advantages over the open cholecystectomy [1-3]. Being a technically complex procedure, its complications like bile leak, CBD stricture, bowel injury, vascular injury, gallstone spill, port site infection and hernia can occur. Different studies have shown that complication rate of bile duct injury and bile leak varies from 1.4 -2.5 %, possibility of bleeding is 1.17%, risk of bowel injury and fecal peritonitis is 0.75% [4, 5]. In view of such a low possibility of intra- peritoneal collection, the purpose of present study was to analyze the merits and demerits of putting a 14-F vacuum drain non-selectively in all the cases as a matter of routine protocol, irrespective of operative findings, any possibility of post operative complications and technical difficulty or ease of operative procedure.

MATERIAL AND METHODS: This study was conducted upon 100 patients of laparoscopic cholecystectomy operated during a period from February, 2012 to June, 2013 at our institute. Patients having symptomatic cholelithiasis were included in study. Patients having acute cholecystitis, cardio-respiratory diseases, previous surgery and extensive abdominal scars, adhesions, bleeding disorders and pregnancy were excluded from the study. All the cases were operated by four port technique. In all the cases regardless of any operative difficulty or operative findings, a 14- F vacuum drain was placed in subhepatic space through the 5 mm right lateral port, after completion of procedure. Data was recorded in terms of difficulty in dissection, difficult anatomy of biliary tree, intraoperative suspicion of bile duct injury, time take for insertion of drain, post operative events i.e. volume of drain output, nature of drain contents (haemorrhagic/bilious/purulent/feculent),vitals of patient ,findings of abdominal examination, any intervention/investigation if required and final outcome.

RESULTS: Average time taken for insertion of drain was 1-1.5 minutes. In this study 94 patients did not develop any complication in post operative period. Drain output in all these patients was either insignificant or nil. Nature of drain contents was serous. Clinical examination in these patients did
not reveal any intra-abdominal collection. So tube drain was removed on first post operative day about 24 hours after surgery. Average hospital stay in these patients was 1.5 to 2 days.

In 6 patients, bile leak was noticed on first post operative day. In 5 patients (out of the 6) drainage of bile was adequate. They had features of mild, localized peritonitis but USG did not show any intra abdominal collection. Bile leak resolved spontaneously over a period of 7 to 10 days, without further complication and did not need any further intervention. One patient did not respond to conservative trial due to formation of loculated biloma, probably because of blockage of drain. It required exploratory laparotomy and drainage of biloma followed by endoscopic retrograde cholangiography and biliary stenting. No mortality occurred in our study.

Out of 100 cases, we anticipated post operative bile leak in 15 patients including those 6 cases which actually developed post operative bile leak. In 8 cases there was difficulty in dissection due to adhesions. In 4 cases there was short and thick cystic duct. In 3 cases the plane of dissection in gallbladder fossa was deep.

None of these patients had complication of bowel injury, fecal peritonitis or haemorrhage.

DISCUSSION: Like every surgical procedure, laparoscopic cholecystectomy too, has its own complications. Injury to bile duct, bowel, blood vessel can lead to bile leak, faecal peritonitis and haemorrhage. As shown in other studies, bile leak is a significant cause of morbidity and mortality in laparoscopic cholecystectomy [6, 7]; in our study also bile leak was the main complication. It is defined as the persistent leakage of bile from the biliary tree. This can arise from an injury to the common bile/hepatic duct but it is generally accepted that the vast majority arise from the cystic duct stump or a sub-vesical duct of Luschka. Intra-abdominal collection of bile and biliary peritonitis can lead to significant morbidity and mortality but early and adequate drainage of bile prevents life threatening peritonitis and sepsis [8]. Convention is, a drain should be placed if needed and a 14-F vacuum drain is usually sufficient in laparoscopic cholecystectomy [9]. But in our study we used it in all the cases without any selectivity.

Technically, we did not find any difficulty to insert a 14-F drain as it could be inserted through the same incision used for 5mm lateral port. Nor the procedure was time consuming. It took a short time of 1-1.5 minutes on an average. Although in most of the patients (94%) no intraperitoneal collection developed and we realized that use of drain in non-difficult cases could be omitted but at the same time, it assured us for timely discharge of these patients without unnecessary observation. Moreover, we did not notice any disadvantage of putting drain in such cases.

Because of drain we could become aware of bile leak in all the 6 complicated cases at an early stage as bile leak was clinically evident on 1st post operative day. So 14-F vacuum drain served as good and early indicator of bile leak. Drainage was adequate and successful in 5 out of 6 cases.

1 of the 6 cases developed peritonitis and loculated biloma due to inadequate drainage. It was subjected to open drainage and lavage. Studies have shown that ERC is the preferred technique for such complicated cases [10-12]. So it was subjected to ERC and biliary stenting.

So we conclude that a 14-F vacuum drain can be easily and non-selectively inserted in all the cases of laparoscopic cholecystectomy. In complicated cases, it serves as an early and useful clinical indicator of bile leak. In uncomplicated cases it helps for timely discharge of patients without any
disadvantage. However, further studies are required to check its efficacy for adequate drainage of bile.

REFERENCES:

Figure 1: Placement of a 14-F vacuum drain following laparoscopic cholecystectomy.

Figure 2: Drain in an uncomplicated case of laparoscopic cholecystectomy.

Figure 3: Open drainage of biloma in a complicated case of laparoscopic cholecystectomy.
Percentage of Complicated and Uncomplicated cases.

AUTHORS:
1. Sarbjeet Singh
2. Prem Pal Bhati
3. Shubham Lavania

PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of General Surgery, Guru Gobind Singh Medical College, Faridkot, Punjab.
2. Post Graduate Student (Junior Resident), Department of General Surgery, Guru Gobind Singh Medical College, Faridkot, Punjab.
3. Post Graduate Student (Junior Resident), Department of General Surgery, Guru Gobind Singh Medical College, Faridkot, Punjab.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sarbjeet Singh,
223, Medical Campus,
Faridkot, Punjab.
Email – drsarab21@gmail.com

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