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General

Comparative Study between Drain versus No Drain in Elective Cholecystectomy

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Original Research Article

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Abstract: The drainage in cholecystectomy is a matter of considerable debate. Therapeutic drains are necessity for sub hepatic abscess, but prophylactic drains are in question as it increases risk of infection and hospital stay. The study was designed to compare post-operative abdominal complication associated with elective cholecystectomy *with* drain vs *without* drain placement. This was a prospective study of 200 patients admitted for elective Cholecystectomy laparoscopic and open both in the Department of Surgery, J.A. Group of Hospitals and G.R. Medical College, Gwalior (MP) during 2015-2016. Each case was then analyzed with respect to post-operative parameters like pain, subhepatic collection, wound infection, hospital stay. Patients in "without drain" group have lesser post-operative pain; lesser sub hepatic collection and shorter hospital stay and less wound infection in elective Cholecystectomy compare to "with drain" group. Hence it is concluded that, in patients undergoing elective cholecystectomy, keeping drain can be avoided as it does not provide any additional benefit.

Keywords: Cholecystectomy, Drain placement.

INTRODUCTION

Gallstone disease is the pathologic state of stones or calculi within the gallbladder lumen and biliary tree. This is a common digestive disorder worldwide, with occurrence varying from 6-20% [1]. The definitive management of symptomatic gallstones is surgical. The two surgical approaches are conventional and laparoscopic. First successful removal of gallbladder was done by Carl Langenbuch in 1882 for stone disease [2].

Laparoscopic cholecystectomy has gradually replaced open cholecystectomy (OC) as the treatment of choice for symptomatic gall stone disease. Better cosmetic results, shorter hospital stay, early recovery and return to physical activity and work have all contributed to the popularity of this technique, establishing it as the gold standard for the treatment of cholelithiasis [3-5].

The major reason for drainage of the subhepatic space after cholecystectomy is the fear of bile leakage in gallbladder fossa that may lead to bile peritonitis. The belief that surgical drainages serve as an early warning of bile leakage, impending bile peritonitis or intra-abdominal haemorrhage is nowadays in dispute.

The need to put a drain has always been a controversial subject in surgery mainly due to risk of ascending infection, pain and hospital stay. Therapeutic drains are necessity, but prophylactic drains are in question. Higher wound infection has been reported in drain group. Hospital stay has also prolonged, as none of the patient can be discharged on same day.

So, present study is planned with the aim to evaluate merits and demerits of drainage versus non-drainage in the patients undergoing elective cholecystectomy and to find out clinicopathologic condition in which placement of drain is justifiable.

MATERIALS AND METHODS

After obtaining approval from ethical committee, the present prospective study entitled "Comparative study between drain versus no drain in elective cholecystectomy" was conducted on 200 patients admitted for elective Cholecystectomy in the department of surgery, J.A. Group of hospitals and G.R. Medical College, Gwalior (MP) during December 2015 – November 2016 after getting written informed consent from the patients.

Type of study

Prospective study, n = 200.

Inclusion criteria

All patients who were diagnosed as case of cholelithiasis, were admitted and gave consent for Cholecystectomy were included in the study.

Exclusion criteria

- Gallstone with any other associated intraoperative finding like ascites, tuberculosis, suspected mass.
- Gall bladder carcinoma with gall stones
- Cholelithiasis with intraoperative suspicion of choledocholithiasis
- Incidental cholecystectomies with other procedures

Method of collection of data:

The patients selected for this study were those who were posted for elective Cholecystectomy, for indications like acute cholecystitis, chronic acalculous cholecystitis, chronic calculous cholecystitis, mucocele gall bladder, etc. Based on detailed history, thorough clinical examination and USG abdomen, routine necessary investigations. After ensuring for surgery, elective Cholecystectomy was performed.

Each case was analyzed with respect to post-operative abdominal complications like wound infection, biliary peritonitis, subhepatic collection / abscess, postoperative pain and hospital stay. Subhepatic collection was measured by ultrasonography abdomen in cases of elective cholecystectomy in without drain group and subhepatic collection is measured by ultrasonography abdomen plus collection in drainage beg in cases of elective cholecystectomy with drain group.

OBSERVATION AND RESULTS

A total number of 200 patients who underwent elective cholecystectomy in Department of Surgery, G R Medical College and J A Group of Hospitals, Gwalior were included in this study from December 2015 to November 2016. These cases were randomly divided into drain and without drain group following results were obtained using of SPSS 23.0

In this study VAS grade in patients with drain was G4 [48%], G3 [47%] then G2[5%]. VAS grade in without drain group was G2 [48%] followed by G3 [31%] then G1 [16%]. P<0.001, there was statistically significant difference observed between the two groups.

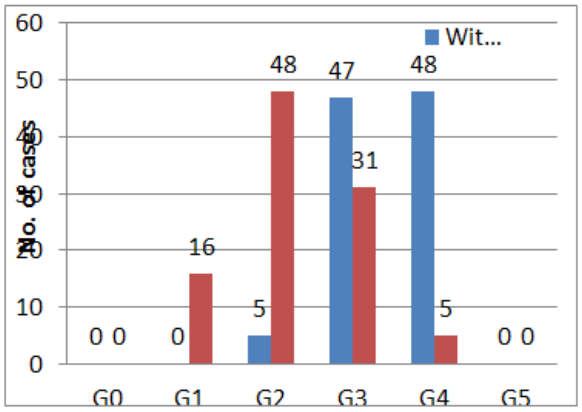

Fig-01: Post-operative pain

In the presents study wound infection is noted in 14(7%) with drain and 2(1%) in without drain group hence p -value is 0.007. So there was statistically significant difference noted between the two study groups.

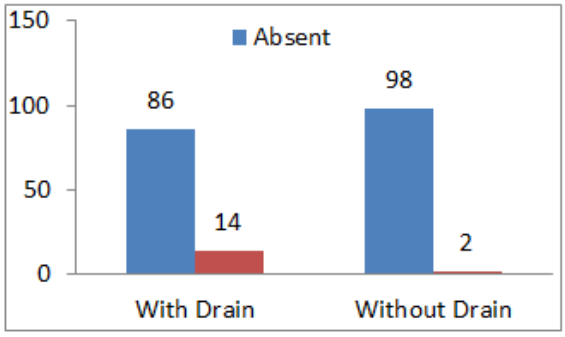

Fig-02: Post-operative wound infection

In the present study mean subhepatic collection noted in patients with drain on1st day was 26.3+/-12.7ml and on 3rdday was 37.85+/-12.65 ml and on 7th day was 22.83+/-9.88ml.Mean subhepatic collection in patients without drain on 1st day was 20+/-7.84 ml and on 3rd day was 24+/-9.34 ml and on 7thday 15.35+/-7.48 ml. P-value<0.001, there was statistically significant difference noted between the two study groups.

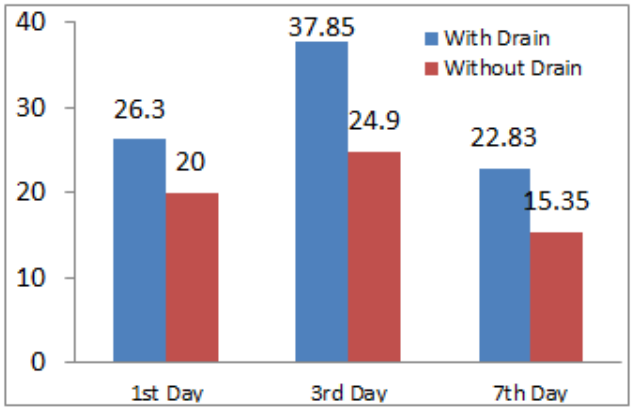

Fig-03: Sub hepatic collection

In the present study the mean hospital stay in patients with drain was 8.38 +/- 1.86 days and patients without drain was 4.68+/- 1.25 days. P<0.001, there was statistically significant difference noted between two study groups.

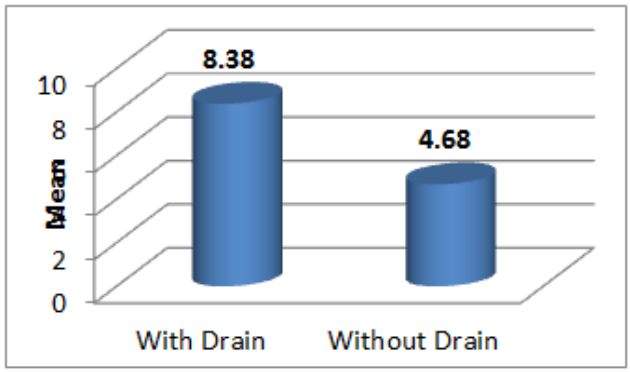

Fig-04: Post-operative hospital stays (days)

DISCUSSION

Cholecystectomy is the treatment of choice for symptomatic cholelithiasis. In the present prospective study 200 cases with symptomatic & asymptomatic cholelithiasis were subjected for elective cholecystectomy. These cases were randomly divided into drain and without drain group. Statistics obtained in this study conducted in Department of Surgery J.A.Group of Hospitals and Gajra Raja Medical College Gwalior from December 2015 to November 2016 were compared with other studies

POST OPERATIVE PAIN

In this present study VAS median grade in patients with drain was G4(48%), followed by G3(47%) then G2(5%). VAS median grade in without drain group was G2(48%), followed by G3(31%) and G1(16%).

POST OPERATIVE WOUND INFECTION

Table-05: Wound infection in different studies

Study	With Drain	without Drain
Bawahab	1/38	1/65
Druart	01/26	0/24
Lewis	08/246	06/248
Huguier	03/50	02/50
Present Study	14/100	2/100

In the present study 02(1%) patient in without drain group and 14(7%) patients in drain group developed postoperative wound infection. Wound infection more common in open procedure. In Bawahab study, 1(2.6%) patient in with drain group and 1(1.54%) patient in without drain group developed wound infection. In Lewis study 6(2.4%) patients in without drain group and 8(3.2%) patients with drain group developed wound infection. Similar results were noted in Druart and Huguier study subgroup.

SUBHEPATIC COLLECTION

Table-06: Sub hepatic collection in different studies

Study	With Drain		Without drain	
	N	Mean (SD)	N	Mean (SD)
Shamim	79	3.13(3.6)	76	2.85(3.6)
Pichhio	15	30(5)	15	30(5)
Lucarelli	53	55(23.2)	53	77(26.02)
Present Study	100	37.85(12.65)	100	24(9.34)

In the study conducted by Lucarelli, mean subhepatic collection on 7th day was 55+/-23.2ml in drain group and 77+/-26.02ml in without drain group. In study conducted by Picchio[6] mean sub hepatic collection was 30+/-5ml in drain and in without drain group. In the Study conducted by Shamim showed mean subhepatic collection of 3.13+/-3.6 ml in drain group and 2.85+/-3.6 ml collection in without drain group.

In this study drain was removed when there is very minimal amount of subhepatic collection (<25 ml) measured by ultrasonography abdomen plus colleen drainage bag.

In the present study mean subhepatic collection noted in patients with drain on 1st day was 26.3+/-12.7ml and 3rdDay was 37.85+/-12.65 ml and on 7th day was 22.83+/-9.88 ml. Mean subhepatic collection in patients without drain on1st day was 20+/-7.84 ml and on 3rd day was 24+/-9.34 ml and on 7thday 15.35+/-7.48 ml. P<0.001, there was statistically significant difference noted between the two study groups.

HOSPITAL STAY

Table-07: Hospital stays in different studies

Study	With Drain		Without Drain	
	N	Mean(SD)	N	Mean(SD)
Bawahab	38	4.48(2.18)	65	2.50(2.20)
Saad	50	10.2(1.4)	50	8.7(0.9)
Gurer	51	4(2.9)	241	2.9(1.9)
Lewis	246	5.9(2)	248	5.5(2)
Adloff	100	7.9(0.13)	100	7.56(0.11)
Present Study	100	8.38(1.86)	100	4.68(1.25)

In Bawahab study showed hospital stay of 4.48+/-2.18 days in patients with drain group and of 2.5+/- 2.2 days in patients of without drain group. In the study conducted by Lewis subgroup post-operative hospital stay was 5.9+/-2 days in drain group and 5.5+/-2 days in without drain group. Similar studies conducted by Adloff subgroup and Saad subgroup showed that post-operative hospital stay was longer in drain group compared to without drain group. In the study conducted by Gurer [7], hospital stay in drain group was 4+/-2.9 days and in without drain group was 2.9+/-1.9 days. In the present study post-operative hospital stay in drain group was 8.38+/-1.86 days and without drain group were 4.68+/-1.25 days.

CONCLUSION

Cholelithiasis is a common digestive disorder worldwide, with occurrence varying from 6-20%. In India it is estimated to be around 4%.

In the present study 200 cases with primary diagnosis of symptomatic and asymptomatic calculouscholecystitis were subjected to elective cholecystectomy and were randomly divided into drain and without drain group from December 2015 to November 2016. The following conclusions can be made from the study:-

- Patients in “without drain” group have noted lesser post-operative pain, lesser subhepatic collection and shorter hospital stay and less wound infection in elective Cholecystectomy compare to “with drain” group .
- There is more wound infection noted in open cholecystectomy (OC) as compare to laparoscopic Cholecystectomy.
- There is no significant difference as far as post-operative wound infection in elective laparoscopic Cholecystectomy with drain or without drain. Therefore in patients undergoing elective

cholecystectomy keeping drain can be avoided as it does not provide any additional benefit.

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