

CLINICAL STUDY OF THE DRAIN IN VARIOUS ABDOMINAL SURGERY

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Article Submitted on: 20
August 2018

Article Accepted on: 06
September 2018

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Abstract:

Introduction- The need to drain the peritoneal cavity following abdominal surgery had long been a subject of controversy. Many authors believe that the drainage can limit postoperative complications particularly in the presence of peritonitis.

Material and methodology- The patient were divided into the drainage and non drainage group and we have observed 50 patients of drainage group and 50 patients of non drainage group. In this study patients were included from both elective and emergency operations for various intraabdominal conditions. Culture from the drainage site taken up with the aseptic precaution and sent to the pathology department of the district hospital Chhindwara after putting in the autoclave (bottles vials); Post operative ultrasound abdomen was done at the Radiology department district hospital Chhindwara (M.P.) on the 2nd, or 3rd, postoperative day or on the day of removal of drain. All the drains were removed after cessation of the significant amount.

Conclusion- The insertion of intraperitoneal drain decrease the chances of wound infections prolong hospital stay, and takes extra time for insertion during surgery and managing it postoperatively. Thus it was concluded there was significant advantages of placing the drain into the peritoneum routinely in abdominal surgery.

Key Words- Intraperitoneal drain, Peritoneal cavity, ultrasound abdomen.

Introduction

In all walks of life drains are used to lead away unwanted material. Drainage of the abdomen is no exception. The need to drain the peritoneal cavity following abdominal surgery had long been a subject of controversy. Many authors believe that the drainage can limit postoperative complications particularly in the presence of peritonitis.

Drainage of body cavities has been practiced in medicine for a long time. Historical reports of drainage of chest empyema and ascites go back to the Hippocratic

era.¹ During the last 2 centuries, surgeons also used drains for prophylactic purposes. Prophylactic drains have been employed to remove intraperitoneal collections such as ascites, blood, bile, chyle, and pancreatic or intestinal juice. These collections might become potentially infected or are, in the case of bile and pancreatic juice, toxic for adjacent tissue. Another potential function of prophylactic drains is their signal function to detect early complications, such as postoperative hemorrhage and leakage of enteric suture lines² Therefore, prophylactic drainage has gained wide acceptance as a useful method to prevent complications after gastrointestinal (GI) surgery.

Sims was the first surgeon who used prophylactic drains after gynecologic operations in the last quarter of the 19th century¹ Since that time, surgeons have routinely used prophylactic drainage of the peritoneal cavity after abdominal surgery. Theodor Billroth was convinced that prophylactic drainage of the peritoneal cavity saved many lives after GI surgery³ Other contemporaries believed that drainage of the peritoneal cavity is impossible and, therefore, prophylactic drainage is useless.^{4,5}

Recent articles and text on the subject of drains are essentially repetitious. These appears to be unanimity of opinion as to be the indications for drainage in intraperitoneal infections and for uncontrollable oozing.

Drains in the abdominal cavity probably serve two purposes. First is the provision of egress of loculated pus or intestinal contents. Second is the prophylactic removal of any fluids within the peritoneal cavity such as bile and pancreatic fluids before their presence can lead to complications. Abdominal drains are quickly surrounded by omentum and bowel, which isolate the drains as ineffective sinus tracts. Soft drain prevent the collection of serum or blood underneath large undermined areas. However drains must not be considered a substitute for homeostasis or as a replacement for meticulous technique. For either prophylactic or therapeutic indications the surgeon should select the form of drainage either passive or active, that is best suited for the purpose intended. The drains must appropriate to the demand of viscosity and In general, prophylactic drainage must be best accomplished by the use of close wound suction drainage and where the volume or complexity of drainage increases passive or sump drains are more efficacious. Decreased drainage or the absence of which the drain is made of is of utmost concern. It should be soft to avoid injury, non irritating to the tissue, firm to remain in intended places, resistant to decomposition and smooth to allow easy removable.'

Material and methodology

This study was conducted in 100 patients admitted in District hospital Chhindwara from July 2015 to September 2017. The Name, Age, Sex Addresses, Ward/Bed of each patient noted. Routine investigation (Blood, urine, radiological) were done before the operation. The patient were divided into the drainage and non drainage group and we have observed 50 patients of drainage group and 50 patients of

nondrainage group. In this study patients were included from both elective and emergency operations for various intraabdominal conditions. Most of the patients were operated on by senior surgeons. Culture from the drainage site taken up with the aseptic precaution and sent to the pathology department of the district hospital Chhindwara after putting in the autoclave (bottles vials); Post operative ultrasound abdomen was done at the Radiology department district hospital Chhindwara (mp) on the 2nd, or 3rd, postoperative day or on the day of removal of drain. All the drains were removed after cessation of the significant amount.

In this study we had considered the drain fever after other possible causes where ruled out. All the patient were discharge post operatively when they were able to do the normal essential activities.

Observations and Results

This study is conducted in 100 patients admitted in District hospital, Chhindwara M.P. from July 2015 to September 2017.

The patient were divided into the drainage and nondrainage group and we have observed 50 patients of drainage group and 50 patients of nondrainage group. In this study patients were included from both elective and emergency operations for various intraabdominal conditions. Most of the patients were operated on by senior surgeons.

Post Operative Hospital Stay:

Post Operative Hospital Stay

S.N.	Factor	Drainage Group	Nondrainage Group
1	Range of duration of hospital stay	7-10	11-14 days
2	Mean duration of hospital stay	9 days	12 days

Above table shows that range of duration of postoperative stay in nondrainage group was wider as compare to drainage group. Mean duration of postoperative hospital stay was 3 day longer in nondrained group as compare to drained group.

Type Of Surgery

Table-XI -Type Of Surgery

No.	Type Of Surgery	Drainage	Non Drainage	Total Cases
I	Peptic perforation	10	10	20
II	Enteric perforation	8	8	16
III	Traumatic perforation	15	15	30
IV	Appeddicectomy	5	5	10
V	Pyoperitoneum & Adhesions	6	6	12
VI	Sigmoid volvules	4	4	8
VII	Koch's abdomen with peritoneal adhesions			
IX	Resection & anastomosis for intestinal obstruction	2	2	4
	Total No. of cases	50	50	100

Age And Sex

In our study of 100 cases, we cases, we were divided the cases in decades group. Maximum patients represented in 3rd and 4th decades of life that comprises 46% of the total cases.

Duration Of Drainage

The present study 50 patients were included in the drainage group. Out of these in 35 (70%) cases corrugated drain was used where as remaining 10 cases were drained by the tube drain and 5 cases negative suction drain was used. In 45 (90%) patients drain was removed at 2nd and 3rd postoperative days. In remaining 5% cases drain were removed as in 3 patients on 4th postoperative day, in 3% cases on 5th day and in 2% cases at 6th-7th postoperative day.

Ultrasonography Study Of Abdomen

The U.S.G. of intraperitoneal drains after abdominal surgery has been controversial since a long period, unfortunately it has been not possible in the past to define the precise incidence of collection of fluid after surgery. However the value of ultrasound scanning in the detection of intraperitoneal fluid is now well established.

In our study all patients of drainage group and nondrainage group were underwent postoperative U.S.G. study of

abdomen for detection of intraperitoneal fluid collection out of them 8 patients of drainage group and 30 patients (23%) of nondrainage group had shown intraperitoneal fluid collection.

Culture From Drainage

In our study culture from drainage site done in 50 cases, in 30 cases (60%) culture of drainage was sterile and in 20 cases (around 40%) bacterial growth was present.

Type Of Drain Used

In our study out of 50 cases of drainage group in 40 cases (80%) corrugated rubber drain was used. In remaining 15% cases closed suction drain was used 5% tube drain.

Post Operative Pyrexia (Drain Fever)

In our study of 50 cases of drainage group and 25 cases drainage group, in 25 cases of non drainage group showed post op pyrexia. The difference was statistically not significant.

Wound Infection And Wound Dehiscence

In this study out of 50 cases of drainage group in 4% cases were developed wound dehiscence and 8-9% case of nondrainage was developed the wound dehiscence. These were underwent for secondary suturing.

Post Operative Hospital Stay

In our study we had found that duration of postoperative hospital stay in the drainage group where as it was 7-11 days and mean 9 days, 11 to 14 the nondrainage group. Although the difference was not significant but range of duration of post operative hospital stay was wider in the non drainage group as compared to the drainage group..

Type Of Surgery

In our study of 100 cases. the cases were divided according to

the type of surgery performed. Peptic perforation 10, Enteric perforation 8, Traumatic perforation 10, Appendicectomy 15, Pyoperitoneum & Adhesions 5, Sigmoid volvulus 6, Koch's abdomen with peritoneal adhesions 4, Resection & anastomosis 2 for intestinal obstruction.

Clinical pictures of various abdominal surgery



Discussion

The use of the drainage originate from Hippocrates who drained empyema. Later Aurelius celsus drained ascitis. In the mid nineteenth century drainage assumed a prophylactic role, and by 1891, conviction of the value of drainage led to Tait immortal word “When in doubt drain”. The majority of the surgeons continue to use drainage in most of the patients undergoing for study comparison of a statistical advantage of peritoneal cavity over nondrainage or vice versa.

Appendectomy

Appendectomy is the most common GI operation, usually performed for acute appendicitis. The stage of appendicitis can range from a simple acute type to a severe gangrenous or perforated form. Two RCTs investigated the value of prophylactic drainage after open appendectomy for acute/simple appendicitis.. One study reported a significantly higher wound infection rate in drained patients with acute/simple appendicitis⁶ whereas the other study found similar wound and intra-abdominal infection rates in drained and nondrained patients.⁷ in our there was reduction in infection rates in drained than nondrained patients.

Perforated duodenal ulcer, Enteric perforation and Traumatic perforation Surgery

We found only 1 nonrandomized prospective cohort study (level 2b) that examined the role of prophylactic drains after surgery for perforated duodenal ulcer.⁸ In this study, 119 patients underwent surgery with omental patch technique for perforated duodenal ulcer. Based on the surgeon’s decision, 75 patients received a prophylactic drain, whereas 44 patients had no intraperitoneal drains after surgery. Drainage neither reduced the incidence of intra-abdominal fluid collections including abscesses nor the duration of hospital stay. Furthermore, there were a significant number of drain-related complications such as drain tract infections (10.7%) and acute intestinal obstruction (2.7%).

In our study there is significant reduction in intra abdominal fluid collection and duration of hospital stay and infection rate.

Resection & anastomosis for intestinal obstruction

What can colorectal surgeons expect for using surgical drain in colorectal surgery? One believes that accumulation of large amount of fluid or blood may lead to subsequent abscess, particularly in the extraperitoneal space where fluids are not absorbable due to the lack of peritoneum. Hence, drains are expected to evacuate potentially contaminated or known contaminated fluid,⁹ so that prophylactic drain may minimize the severity of related symptoms. One believes that drains can track the integrity of the anastomosis, and it can alert clinicians to the early diagnosis of anastomotic complication when a bowel content, pus or excessive fluid

comes out through the drains^{9,10}. One can rely on the role of drain that can detect intraabdominal or intraperitoneal hemorrhage in the early postoperative period.¹⁰

Pyoperitoneum & Adhesions, Sigmoid volvulus, Koch's abdomen with peritoneal adhesions

In our study drain only reduce the infection rate but also morbidity and mortality related to surgery

Postoperative U.S.G. study of abdomen

In our study all patients of drainage group and nondrainage group were underwent postoperative U.S.G. study of abdomen for detection of intraperitoneal fluid collection out of them 8 patients of drainage group and 30 patients (23%) of nondrainage group had shown intraperitoneal fluid collection.

Conclusion

The conclusion arrive is as follows :-On analyzing the data we found that the peritoneal drainage after various abdominal surgeries did not affect the mortality. But it surely decreased the morbidity.

The insertion of intraperitoneal drain decrease the chances of wound infections prolong hospital stay, and takes extra time for insertion during surgery and managing it postoperatively. Thus it was concluded there was significant advantages of placing the drain into the peritoneum routinely in abdominal surgery.

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