No Drainage tube in duodenal perforation laparotomy

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Abstract
Duodenal ulcer perforation peritonitis is the commonest cause for emergency laparotomy in India. Abdominal cavity is highly contaminated with bile, food particles and pathogens. It is customary to keep drainage tube on both flanks after laparotomy for duodenal perforation closure. Drainage fluid is minimal if the perforation is closed by live omental patch technique after thorough peritoneal lavage. Drainage tube itself may act as a track for skin pathogens to migrate from skin to the abdominal cavity. This comparative study was conducted between two groups of patients underwent laparotomy with and without drainage tube for duodenal ulcer perforation. Patients in our surgical unit were treated without drainage tube and compared with other surgical unit where patients were treated with drainage tube. The study reveals that the outcome was similar between the two groups. Drainage tube is unnecessary in laparotomy for duodenal ulcer perforation.

Keywords: DT, Duodenal perforation, Laparotomy, No drainage tube.

Introduction
Duodenal ulcer perforation is the commonest cause of acute abdominal conditions necessitating urgent laparotomy. It is customary to keep two drainage tubes in both the flanks. The drainage from drainage tube usually stops in a few hours and remains dry. So we decided to do a comparative study of duodenal ulcer perforation closure without keeping a drainage tube and compare with patients who underwent perforation closure with a drainage tube.

Materials and Methods
About 100 cases of duodenal ulcer perforation are treated every year at Thanjavur medical college hospital, Thanjavur. This comparative study was conducted at Thanjavur Medical College Hospital, Thanjavur from July 1999 to June 2000. Patients who underwent laparotomy in our surgical unit were treated without drainage tube, while the patients underwent laparotomy with drainage tube in other surgical unit were taken as controls. Patients whose general condition were not fit for laparotomy and underwent flank drainage were excluded from the study. These two groups were followed up to post operative period clinically and with USG abdomen for complications and compared with each other.

Results
32 patients were treated without drainage tube in our surgical unit is compared with 38 patients were treated with drainage tube in other surgical unit.

Patients presented with abdominal pain, abdominal distension and vomiting. There was a history of acid peptic disease in 10 patients treated with drainage tube and 12 patients treated without drainage tube. History of acid peptic disease was present in1/3 of cases in both groups.

History of drug intake was present in 10 patients treated with drainage tube and 8 patients treated with out drainage tube. History of NSAID drug intake was present in1/3 of cases in both groups.

More than 50% of patients presented with symptoms for more than 24 hours. (Table no.1)

All the patients had perforation at the first part of the duodenum. Size of the perforation varied from pin hole to 1 cm. Most of the patients had a perforation of less than 0.5 cm diameter. The peritoneal fluid was about 500 to 2000ml.The peritoneal fluid was bilious or purulent in nature. Flakes were present in most of the cases.

Abdomen became soft on the 2nd post operative day (Table no.2). This was delayed up to 4^{th} postoperative day in 15% of cases treated with drainage tube.

Ryle's tube was removed on the 3 rd post operative day. (Table no.3) Ryle's tube removal is comparatively delayed in patients treated with drainage tube.

Oral fluids were started around the 3 rd post operative day (Table no.4). Oral fluids were started comparatively earlier in patients treated without drainage tube.

Post operative stay was around 8 to 10 days. (Table no. 5). Prolonged post operative stay for more than 10 days was found in 30% of patients treated with drainage tube.

For all the cases peritoneal fluid drained during laparotomy was sent for culture. No growth occurred in 18 patients from each group. Growth occurred in 14 patients (43.75%) treated without drainage tube and 20 patients (52.63%) treated with the drainage tube. The most frequently cultured organisms were E.coli and k.Pneumoniae. Poly microbial culture was obtained in 6 patients (18.75%) treated without drainage tube and 8 patients (21%) treated with drainage tube. Cultures were positive in patients who presented symptoms of more than 24 hours duration.

Drainage tube was removed on the second or the third post operative day for patients treated with drainage tube. Culture from the drainage tube tip was sent. It was E.coli, K.pneumoniae and S.aureus. Same organisms from first culture taken during intra operative peritoneal fluid samples were found in 12 patients (31.57%) and different organisms were found in 8 patients (21%). Drain site infection occurred in 10 patients (26.32%)

Post operative ultrasound was done on 5th postoperative day in all cases. Intra peritoneal collection was found in 4 patients (12.5%) treated without drainage tube and 6 patients (15.78%) treated with drainage tube (Table no.6).

2 patients from each group had minimal pleural effusion. But these patients did not require any intervention. (Table no.7)

Table 1: Duration of symptoms

Duration of symptoms	< 12 hrs	12-24 hrs	24-48 hrs	48- 72 hrs	> 72 hrs
Without DT	3	6	16	5	2
With DT	2	5	18	9	4

Table 2: Abdomen become soft on POD

Abdomen become soft on POD	1	2	3	4
Without DT	3	20	9	-
With DT	6	18	8	6

Table 3: Ryle's tube removal on POD

Ryle's tube removal on POD	2	3	4
Without DT	8	16	8
With DT	6	18	14

Table 4: Oral fluids started on POD

Oral fluids started on POD	2	3	4	5
Without DT	4	16	8	4
With DT	4	14	16	4

Table 5: Postoperative stay in days

Postoperative stay in days	8-10	10-15	>15
Without DT	30	2	-
With DT	26	10	2

Table 6: Post operative USG abdomen

Post operative USG abdomen	Normal	Abnormal
Without DT	28(87.5%)	4 Pelvic collection-2 Sub diaphragmatic collection with pleural effusion - 2
With DT	32(84.21%)	6 Pelvic collection-4 Sub diaphragmatic collection with pleural effusion - 2

Table 7: Postoperative complications

Postoperative complications	Without DT	With DT
Febrile episodes	6	10
Abdominal distension	1	3
Paralytic ileus	-	1
Wound infection	8	10
Burst abdomen	-	1
Wound gaping	2	4
Respiratory complications	6	8
Diarrhoea	2	4
Septicaemia, Death	-	-

Discussion

Duodenal ulcer perforation is the commonest cause for emergency laparotomy in south India.[1] It was also the commonest cause for emergency laparotomy in Thanjavur medical college, Thanjavur. Peritoneal cavity is contaminated with bile, food particles and pathogens.[2] The duodenal ulcer perforation peritonitis is treated with emergency laparotomy, thorough peritoneal lavage and closure of the perforation with live omental patch.[3,4] It is customary to keep drainage tube both flanks.[5,6] The role of drainage is questionable in laparotomy.[7]

This study was designed to do a comparative study between the two groups of patients treated with and without drainage tube. Our hospital had six surgical units, each unit had admission day on fixed days. So it was decided to compare our surgical unit cases with another unit cases. Hence the case selection is unbiased and comparable. 32 patients were treated without drainage tube in our surgical unit is compared with 38 patients were treated with drainage tube in other surgical unit. The number of patients in both

groups is comparable. There was no bias in selection of the patients.

50% of patients presented with symptoms for more than 24 hours Presenting complaints and history of acid peptic disease or NSAID drug intake were similar in both groups

Midline incision is faster, safer and bloodless for emergency laparotomy and gives adequate access for giving thorough peritoneal lavage.[8] Midline incision was made in all the cases. All the patients had perforation at the first part of the duodenum as this is the commonest place for duodenal ulcer. Size of the perforation varied from pin hole to 1 cm, but most of them were less than 0.5 cm in size. Bigger size perforations were associated with history of treatment for acid peptic disease. The amount of peritoneal fluid present varied from 500ml to 2000ml. larger volumes of peritoneal fluid was present with delayed presentation. The peritoneal fluid was bilious or purulent in nature. Peritoneal fluid was bilious in early presenting cases and purulent in cases delayed presented cases. Flakes were present at the peritoneal surfaces in cases of delayed presentation and sepsis.[9] Thorough peritoneal lavage was done to remove the peritoneal contamination. The perforation was closed with live omental patch. Operative findings in both the groups were similar.

Abdomen mostly became softer earlier in patients treated without drainage tube. Abdominal guarding and rigidity passes off when the peritoneal inflammation subsides. Removal of contaminants by thorough peritoneal lavage speeds up the recovery time. Paralytic ileus consequent to the peritonitis recovers earlier with thorough peritoneal lavage. Oral fluids were started once the paralytic ileus subsided and bowel sounds were heard. Presence of drainage tube inside the peritoneal cavity would have delayed the recovery from paralytic ileus. Post operative period was better in patients treated without drainage tube.

Drainage tube was removed on the second or the third post operative day for patients treated with drainage tube. Drainage fluid was minimal as source of infection was removed; the peritoneal lavage was given thoroughly and copious. Peritoneal exudates was absorbed, drain was dry. Constitutional symptoms like fever subsided third post operative day and delayed in those cases of delayed drain removal.

Post operative stay was delayed in patients treated with drainage tube. This could be due to multiple factors such as delay in starting oral feeds, wound infection, sepsis etc.

Peritoneal fluid cultures were positive in patients who presented symptoms of more than 24 hours duration. In 21% patients treated with drainage tube cultures from the drainage tube tip showed different organisms from cultures obtained from peritoneal fluid drained during laparotomy. S.aureus found in the culture from drain tip indicates the migration of skin flora into the peritoneal cavity.[10-12]

There was no much difference in the post operative complications between the two groups. Few complications like postoperative fever, drain site infection, wound dehiscence, retained drainage tube etc can be avoided by not keeping drainage tube.[13-15]

Some of the studies advocate the usage of drainage tubes as routine in laparotomy.[16-18] One study before our period of research had come out with similar inference.[19] Few recent studies also suggest that there is no need for drainage tube in laparotomy for duodenal ulcer perforation.[20,21]

Conclusion

Postoperative recovery was better in patients treated without drainage tube than patients treated with drainage tube. Postoperative stay was less in patients treated without drainage tube. Post operative complications were similar in both the groups. Hence drainage tube is not necessary in laparotomy for duodenal ulcer perforation.

Sources of funding

None.

Conflicts of interest

None.

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How to cite: Ulaganathan P. No Drainage tube in duodenal perforation laparotomy. *J Surg Allied Sci* 2020;2(1):22-5.