

Original article

Laparoscopic perforated duodenal ulcer repair: Our experience

Dr Savita K S

Department of Surgery, ESIC Medical College, Gulbarga , India

Corresponding author : Dr Savita K S

Abstract:

Laparoscopy is an important milestone in the history of surgery. Almost all abdominal surgeries can now be approached laparoscopically. Laparoscopic perforated duodenal ulcer(DU) repair has been shown to be feasible . However, whether its superior to open repair is yet to be established and has not become the standard of care . Laparoscopy offers better visualisation and early recovery. The avoidance of the upper abdominal incision with its associated pulmonary effects is another advantage . In the presence of adequate surgeon experience and hemodynamically stable patient , it is safe to repair DU perforation laparoscopically. Our four port approach is easier to adapt to for surgeons newly beginning to do laparoscopic DU perforation repair.

Introduction:

Laparoscopy is an important milestone in the history of surgery. Almost all abdominal surgeries can now be approached laparoscopically. Laparoscopic perforated duodenal ulcer(DU) repair has been shown to be feasible⁽¹⁾ . However, whether its superior to open repair is yet to be established and has not become the standard of care . Laparoscopy offers better visualisation and early recovery. The avoidance of the upper abdominal incision with its associated pulmonary effects is another advantage⁽²⁾.

Here we present our experience of initial eight cases using our approach.

Aims and Objectives:

To present our approach and analyse the outcome of the laparoscopic repair using different parameters like analgesic requirement, time to starting oral fluids , return to activity, duration of hospital stay and occurrence of complications.

Materials and methods: A retrospective analysis of case records of all patients treated by laparoscopic closure of perforated DU was performed. A total of eight patients were treated laparoscopically in the period from

March 2011 to June 2012 at KLES Dr P K Charitable Hospital, Belgaum.

All our patients were initially stabilized with intravenous fluids, Ryles tube aspiration and antibiotics and then taken up for surgery at the earliest.

Surgical technique: The patients were positioned supine with 15-20 degree reverse Trendelenburg's position. The operating and the camera surgeon stood on the patient's left side and the assistant surgeon on the right side. The port positions are as shown in the figure^(figure.1)

First, three interrupted sutures of 2-0 polygalactin were taken and kept without tying. An omental flap was placed over the perforation, held in place by the grasper in the extreme right port, and the sutures were tied over the omental flap, completely sealing the perforation. Thorough peritoneal lavage was then given with saline irrigation and aspiration. If difficulty was experienced in reaching the pelvis the extreme right port was used for suction- irrigation of the pelvic cavity. After lavage and aspiration of all the fluid, the same port was used to bring out the tube drain kept in the subhepatic space. Postoperatively, proton pump inhibitors, intravenous fluids, and broad-spectrum antibiotics were given. On

discharge, all patients were prescribed proton pump inhibitors for 6 weeks.

Observation & Results:

Eight patients were included in our study, six male and two female. The mean age was 51 years, our oldest patient was 69 years old and the youngest was 30 years. All patients presented with abdominal pain and distension, three of them had obstipation. The mean of duration of symptoms was 72 hours (range 48 -96 hours). Seven patients had high-grade temperature and tachycardia and all had diffuse tenderness and board-like rigidity. All had leucocytosis with raised serum urea levels. The mean operative time was 75 minutes, ranging between 60 to 90 minutes. All were treated with intracorporeal omental patch closure of perforation. Post operatively the injectable analgesic was given for a mean of 2 days, oral feeding was resumed on the second postoperative day in six patients and after three days in two patients. Seven patients were ambulant on post operative day 3, the eighth one took 5 days. We had no mortality, complications observed were delayed drain site healing in two patients and atelectasis in one patient. Three patients were discharged on post operative day five and the remaining on post operative day eight.

Discussion:

Laparoscopy is an important turning point in the history of surgery. Not only have all organs in the abdomen become accessible to laparoscopy but also it has paved the way for further modifications like single port/incision and robotic surgery. Indeed it has changed the whole perception and concept of surgery. Yet, it has not made great inroads in every abdominal surgery, the way it did with cholecystectomy, specially abdominal emergencies. There may be various issues here, viz. the emergency operation theatre staff not having adequate experience in laparoscopy, the surgeon is fatigued at the end of the day, or the patient's general condition may not be fit for laparoscopy. But some surgeries like duodenal ulcer perforation are ideal for the laparoscopic approach as no tissue needs to be removed, the procedure is

concentrated in one area (except for the irrigation), not much dissection is required.

Most of the published studies, describe the French position i.e the surgeon standing in between the legs of the patient⁽⁵⁾. What is unique about our technique is that we have used port positions similar to that for four port laparoscopic cholecystectomy, only the epigastric port is placed slightly lower^(Figure 2). The fourth port is versatile and is used for liver retraction with a blunt-tipped instrument; for holding the omentum in position; suction-irrigation of the pelvis as it has better reach due to its lower position; and finally the drain is brought out through the same port. A surgeon experienced in doing laparoscopic cholecystectomies may find it easier to start doing DU perforation repair as his/her orientation to the tissues remains unchanged.

Laparoscopic perforation repair was first reported by Nathanson (suture repair) and Mouret (sutureless) in 1990^(3,4). The different techniques described include simple suture, omentopexy with single or three stitches, omental plug with fibrin glue, gelatine sponge closure etc⁽⁵⁾. We have used the conventional three stitch omentopexy in our study. In a review by Lunevicius et al, the median operating time in retrospective studies was 90 minutes and in prospective studies, it was 72 minutes⁽⁵⁾. We took 75 minutes (60-90 minutes) which is comparable. However, studies comparing open and laparoscopic approaches show laparoscopy to take longer time^(2,6). Lau et al in their meta analysis noted laparoscopy to be associated with better cosmesis, lesser analgesic usage and lower wound infection rates⁽⁷⁾. Our study had only two days analgesic usage, and no post operative wound infection. In Palanivelu et al series the mean duration for ambulation was 1.5 days and hospital stay was 6 days⁽⁸⁾. In our study it is 2 days and 5-8 days respectively. Laparoscopy has been found to be safe and feasible for DU perforation repair^(9,10). Current recommendations for laparoscopic approach are hemodynamically stable patients with <5mm perforations⁽¹⁾.

Conclusions:

In the presence of adequate surgeon experience and hemodynamically stable patient , it is safe to repair DU

perforation laparoscopically. Our four port approach is easier to adapt to for surgeons newly beginning to do laparoscopic DU perforation repair.

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