

## Case Series

### LAPAROSCOPIC REPAIR OF PEPTIC ULCER PERFORATION: OUR INITIAL EXPERIENCE

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**Objective:** To evaluate our experience of laparoscopic peptic ulcer repair at National Hospital, Lahore over a one-year period.

**Material and Methods:** A prospective case series study. The National Hospital and Medical Centre, Lahore. Four patients operated from January 2013 to December 2013. Post-operative pain, average hospital stay. Intra-operative and postoperative complications and outcome.

**Results:** Average operating time was 95 minutes, Average hospital stay 3.75 days. No intra-operative or postoperative complications documented so far.

**Conclusion:** Laparoscopic perforated duodenal ulcer repair is an excellent surgical option in selected patients without any added risk of complications.

**Key words:** Laproscopy ,peptic ulcer, Gut peroration.

#### Introduction

Peptic ulcers result as the result of the corrosive action of acid on the gastric and duodenal epithelium. Common sites for peptic ulcers are the first part of the duodenum and the lesser curve of the stomach. Important factors in the development of peptic ulcers include H-pylori Infection,<sup>1</sup> NSAIDs<sup>2</sup> and cigarette smoking.<sup>3</sup> NSAID-associated peptic ulcer disease is common in Pakistan and most frequently associated with gastric and duodenal ulcer. H. pylori infection is common in association with NSAID related peptic ulcers.<sup>4</sup>

Patient usually presents with periodic epigastric pain, vomiting and sometimes bleeding. Symptoms are usually more frequent after meals. Perforation is one of the most common complications of peptic ulcer disease. The classic presentation is a patient, usually with a history of peptic ulceration, who develops sudden-onset, severe, generalized abdominal pain. Initially mild leukocytosis can be seen. Mild elevation of serum amylase is also associated. An erect plain chest radiograph will reveal free gas under the diaphragm in more than 50% of cases. CT scan can be diagnostic in doubtful conditions. After initial resuscitation the patient is managed according to the age, co-morbid factors, duration, peritoneal contamination and haemo-dynamic status. Options for management include: conservative approach, simple closure, Graham's Patch Repair (Open or Laparoscopic) and Stamp repair. Omental patching first reported in 1937 by Dr. Graham of Toronto.<sup>5</sup> More than 70 years since its initial description, this technique is still commonly used in our country for the treatment of patients presenting with perforated

peptic ulcers. The initial laparoscopic graham's repair was reported in 1990 by Mouret.<sup>6</sup>

In patients without Boey's risk factors, laparoscopic repair of perforated peptic ulcers, compared to open repair, is associated to lower wound infection rate, less analgesic use, reduction in post-operative pain, shorter hospital stay.<sup>7</sup> Some of the main drawbacks are length of operative time and laparoscopic surgeon's experience in intra-corporeal knotting.

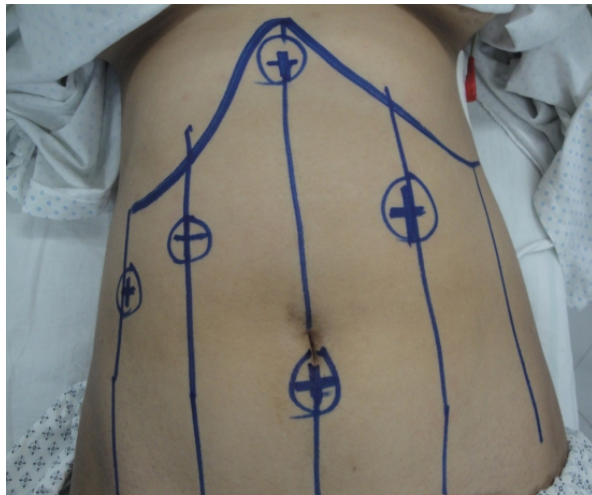
In this paper we describe our initial experience with laparoscopic Graham's patch repair of peptic ulcer perforation.

#### Material And Methods

Data was collected prospectively for patients undergoing laparoscopic graham's patch repair at the hospital and evaluated retrospectively.

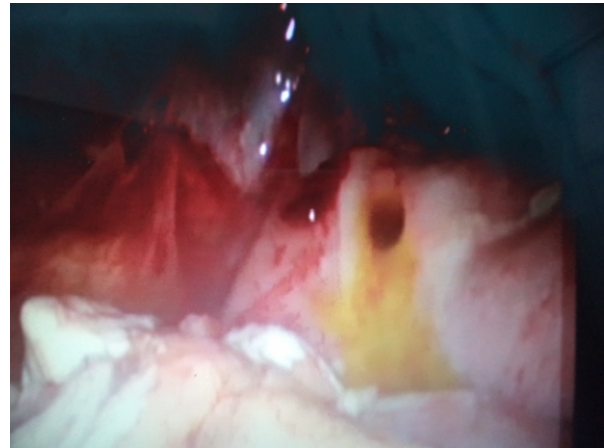
The Boey's scoring system<sup>8</sup> for risk stratifications was used because of its simplicity and high predictive value for mortality in perforated peptic ulcers. Boey's risk factors include: pre-op shock (<100mmHg), perforation present for >24hours, associated medical co-morbidities. Each of these risk factors scores 1 point to a maximum of 3 points with corresponding mortality rates. We selected patients having no risk factor. After initial resuscitation, patients underwent laparoscopic Graham's Patch repair. Patients were placed in supine position and subjected to general anesthesia. The arms are secured into the anatomic position with adequate padding. The patient is secured to the table. A nasogastric tube and Foley's catheter was inserted. 1 gram of a 3rd generation cephalosporin and 500mg metronidazole were given at the time of induction

and continued post-operatively for 3 doses. Patient is positioned in 15-20 degree reverse Trendelenburg's position. The surgeon and camera operator stand on the patient's right side. The assistant surgeon is on the left side. Pneumoperitoneum is created by insertion of Verses' Needle in the infra-umbilical region. First 10 mm port is inserted via an infra-umbilical incision. A 10mm camera is placed via the port. Two working ports are inserted on each side of the camera port. The left-hand working port (5 mm) is placed in the right mid-clavicular line, above the level of the umbilicus. The right-hand working port (5mm) is placed in right upper quadrant, 8-10cm from the midline. The upper trocar is inserted in the sub-xiphoid area that is used for irrigation & suction and/or retraction of the quadrate lobe of the liver. The gallbladder which usually covered the perforation was retracted upward and the adhesions were divided. Gallbladder was held

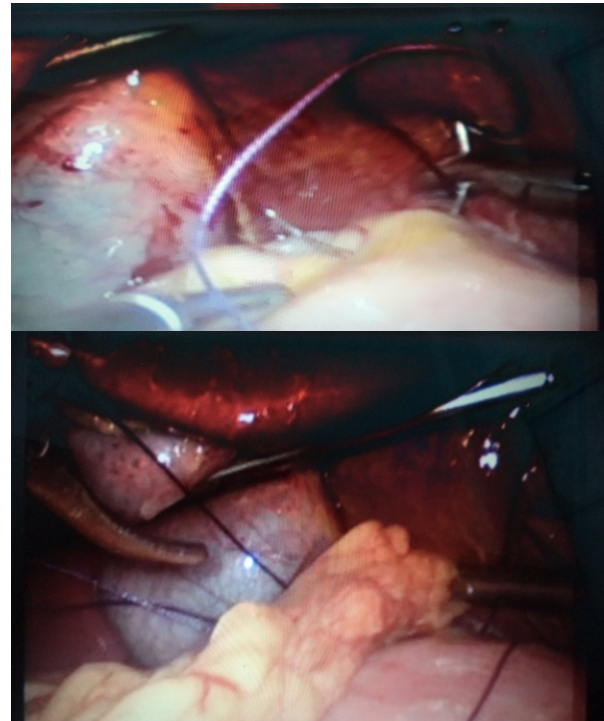


**Fig-1:** Ports Inserted

by the assistant using the sub-xiphoid port. The area was observed carefully and the perforation identified. Whole of abdomen is cleaned and irrigated quadrant by quadrant, using about 6 liters of isotonic sodium chloride solution. Fibrinous membranes on the small bowel are removed as much as possible without damaging the serosal surfaces. The perforation is closed using the classic Graham patch technique with Vicryl 2/0 sutures. Three interrupted sutures are placed on either side of the perforation and kept without tying. An omental flap was raised with intact blood supply and placed over



**Fig-3:** Duodenal ulcer Perforation.



**Fig-4:** Graham's Patch Repair.

**Table-1:** Summary of Cases.

Variable	Patient 1	Patient 1	Patient 2	Patient 3	Average
Operating Time	102 min	126 min	82 min	62 min	93 min
Post operating pain	3 days	4 days	3 days	5 days	3.75 days
Hospital stay	None	None	None	None	None
Chest Infection	None	None	None	None	None
DVT	None	None	None	None	None
Intra-abdominal Abscess	None	None	None	None	None
Suture site leak	None	None	None	None	None
Wound Infection	None	None	None	None	None

the perforation and kept without tying. An omental flap is raised with intact blood supply and placed over the perforation, held in place by the grasper in the epigastric port, and the sutures are tied over the omental flap. Intra-corporeal suturing is used.

Following suturing the peritoneal cavity is suctioned dry. Drain is placed at the site of repair via the xiphoid port. Pneumo-peritoneum abolished and wounds closed in reverse order

### Discussion

Duration of operative procedure has been reported to be an average of 85 minutes in a series consisting of 85 cases.<sup>9</sup> Currently our average operative time is 93 minutes. This is due to the fact that this is still a comparatively new procedure in our setup. Median hospital stay has been reported to be 6.1 days.<sup>9</sup> By comparison our patients had a median stay of 3.75 days. AlJohari H<sup>10</sup> in 2013 reported in a series of 191 patients who underwent laparoscopic repair of duodenal perforation reported that four patients had intra-abdominal abscesses, one patient developed pneumonia and one had pulmonary embolism. So far we have had no complications, small sample sized.

The advantages that the laparoscopic surgery offers over the open approach are immense. The huge vertical incision running down the middle of much of the abdomen of the patient is replaced by much smaller incisions for the ports.

Thus there is marked reduction in the post-operative pain and ultimately scar formation. Therefore it is easier to mobilize the patient earlier in laparoscopic surgery which helps in the reduction of incidence of DVT. Furthermore the reduced pain allows the patient to breathe effectively thereby reducing the chances of post-operative chest infection.

However, there is fear of post-operative infection either within the abdominal cavity either due to

ineffective irrigation and suctioning of the contamination or secondarily due to give way of repair. In patients who are selected according to the Boey's criteria, irrigation and suction is done much more effectively via the laparoscopic approach as there is minimal contamination and easy access to all the quadrants of the peritoneal cavity without the need for big incisions. Furthermore the chances of give way of repair are almost minimal in surgeons with prior laparoscopic experience.

As a result of decreased pain, early mobility and resumption of feeding the duration of stay of patient in hospital is much less as compared to the open approach. Furthermore the early mobility of patient and better chest expansion due to the decreased pain results in early return to work and decreased chances of DVT.

### Conclusion

Laparoscopic repair of perforated peptic ulcer is a safe and reliable procedure. It was associated with a shorter operating time, less postoperative pain, reduced chest complications, a shorter postoperative hospital stay, and earlier return to normal daily activities than the conventional open repair. However, considering the small number of patients that have been operated via this approach a larger sample size is needed before further conclusions can be drawn.

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