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International Journal of Current Research
Vol. 9, Issue, 12, pp.63722-63725, December, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

A HOLE IN THE BOWEL TREATED BY A HOLE– MINIMALLY INVASIVE APPROACH TO SMALL BOWEL PERFORATION

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ARTICLE INFO

Article History:
Received 14th September, 2017
Received in revised form
23rd October, 2017
Accepted 17th November, 2017
Published online 31st December, 2017

Key words:

Small bowel perforation,
Laparoscopy,
Intracorporeal suturing.

ABSTRACT

Background: Small bowel perforation is still a major health problem in the developing world with its attendant high morbidity and mortality. Till date Small bowel perforation has been treated by conventional laparotomy. Early surgery has become the accepted mode of treatment and this has improved survival in the patients. Reports are now available for the feasibility of laparoscopic repair of Small bowel perforation. Laparoscopy provides diagnostic as well as therapeutic capabilities with diagnostic accuracy reaching 100%. The objective of the study was to study the benefit of laparoscopic approach for small bowel perforation.

Methods: 5 patients who presented with the small bowel perforation from January 2017 to December 2017 were involved in the study. All patients were haemodynamically stable and were diagnosed within 48 hours of presentation and treated by Laparoscopic approach. Results were analyzed in terms of wound infection, hospital stay, return to work, and mortality.

Results: There was no conversion. 3 patients had Duodenal perforation and 2 had Illeal perforation. Perforations treated with intracorporeal suturing in all 5 patients. Laparoscopy reduces postoperative pain, wound infections, hospitalization, and early recovery. There was no chest infection, post-operative intra-abdominal collection and mortality.

Conclusions: Laparoscopy is an effective tool in avoiding negative and non-therapeutic laparotomy and offered profound therapeutic potential laparoscopic approach is safe, reliable and feasible, required shorter operative time, lesser analgesia, fewer complications, shorter hospital stay and early recovery.

Citation: Dr. Balaji, P., Dr. Rajkumar Rathinasamy and Dr. Rangarajan, 2018. "A hole in the bowel treated by a hole– Minimally invasive approach to small bowel perforation", *International Journal of Current Research*, 09, (12), 63722-63725.

INTRODUCTION

An acute abdomen is responsible for about 40% of all emergency-surgical hospital admissions. Majority of the cases are secondary to perforation or impending gastrointestinal perforation. Small bowel perforation is one such common surgical emergency which possess serious outcome in terms of morbidity and mortality ranging from various degree of peritonitis and shock. Management of small bowel perforation still remains a challenge for surgeons, especially in limiting wound related complications. Wound infection still remains the major reason for morbidity in these patients and can lead to burst abdomen. The mainstay of treatment for small bowel perforation is Surgery. There are several modalities of operations are done to improve outcome. However, laparoscopy is becoming the preferred surgical approach to different pathologies due to the possibility of accurate diagnose and treating them at the same time. It has become possible to carry out even complicated bowel surgeries with laparoscopic techniques. Laparoscopic management of small bowel perforation has been shown to be feasible and beneficial. Operative treatment of perforated duodenal ulcer consists of time honoured practice of omental patch closure but now this can be done by laparoscopic method. Laparoscopic approaches to closure of duodenal perforation are now being applied widely and may become the gold standard in the future especially in patient with <10mm perforation size presented with in the first 24 hrs of onset of pain. Perforated duodenal ulcer is a surgical emergency. Urgent simple closure of the perforation with omental patching is widely applied for the vast number of these patients the general consensus is to perform simple closure alone without definite procedures especially patients with poor surgical risks and sever peritonitis. Various laparoscopic techniques have been advocated for closing the perforation intra and extra corporeal knots, sutureless techniques, holding the omental patch by

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fibrin glue or sealing with a gelatin sponge, stapled patch closure, or gastroscopically aided management in the perforation. Many surgeons has reported patient with sealed perforation by peritoneal lavage and drainage only.

CASE SERIES

Case 1

35 year old, Ramesh Raja presented with acute abdomen pain with vomiting for the past 1 day, admitted to the emergency department with X-ray showing air under the diaphragm. Patient was subjected to diagnostic laparoscopy and proceed. Patients' vitals were stable at the time of presentation.

Patient Position

Patient placed on the operating table with legs in stirrups. The knee slightly bent and the operating table tilted head up approximately 15 degree. The surgeon stands between the patients leg. The camera surgeon on right side of patient and assistant surgeon on left side of patient.

Port Position

Four ports are then inserted (10mm) port is placed in umbilicus a (5-10mm) port inserted in right Upper quadrant (8-10mm) from mid line another (5mm) port in left upper quadrant another (5mm) port is placed at the right subxiphoid region to retract the quadrate lobe of liver.
Procedure:

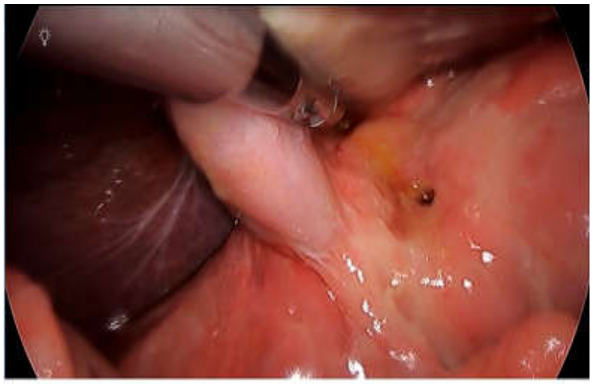
Laparoscopic Omentoplasty of Duodenal Perforation

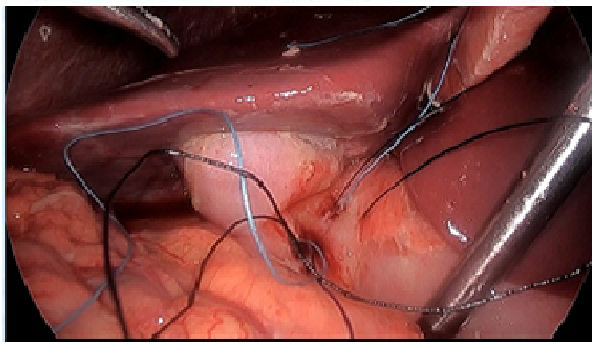
Telescope introduced at (10mm) umbilical port diagnostic laparoscopy was done later on whole abdomen should be irrigated and aspirated with about 10 liters of saline mixed with antibiotics. Each quadrant is cleaned methodically starting at the right upper quadrant, going to the left, moving down to the left lower quadrant, and then finally over to the right. Special attention should be given to the vesicorectal pouch. Three interrupted stitches are placed and kept without tying the mid line stitch passed through ulcer while another two of them cranial and another one caudal to perforation.

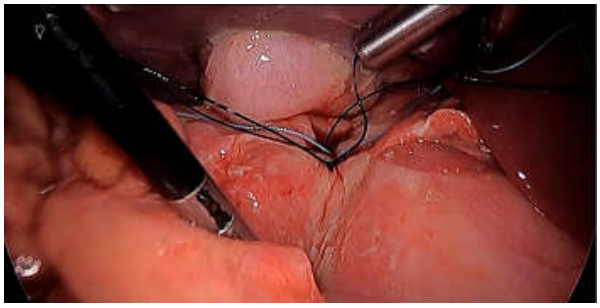
The omental flap is mobilized with intact blood supply is placed over perforation and held in place by grasper in the epigastria port which is also used for liver retraction are then tied over omental flap which completely seal perforation. Suture material used was vicryl (2-0).

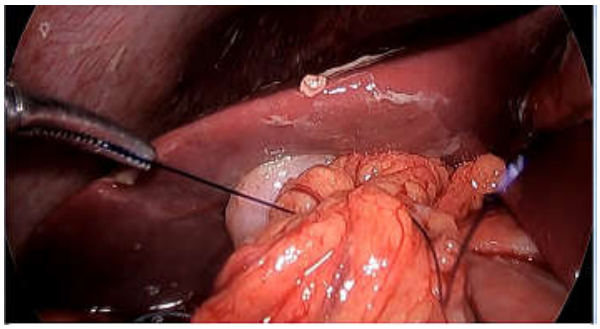
Through peritoneal lavage is then given with saline irrigation and suction special attention is given to suprahepatic, sub hepatic, left subdiaphramatic space, pelvic space. After lavage drain is kept in subhepatic space close to perforation in case of general peritonitis second drain is left in the pelvis. After that diagnostic laparoscopy was done again then ports were removed, and (10mm) ports were sutured, then skin was closed by many methods. Post operative H2 receptor antagonist or proton pump inhibitor was given with fluid, antibiotics and nasogastric suction.

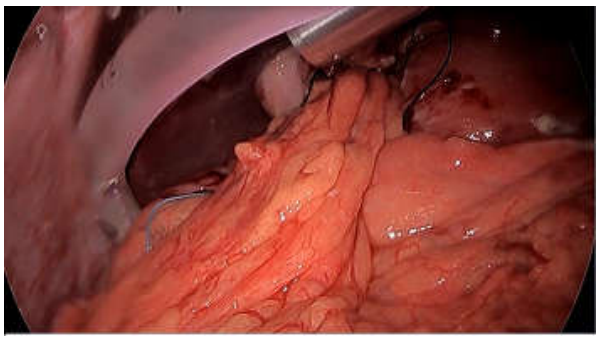
Post operative period was uneventful with oral fluid started on Day 2 and soft diet started on Day 4. Discharged on 10th post operative day.











Case 2

45 year old, Viswanath presented with acute abdomen pain with vomiting for the past 1 day, was admitted to the emergency department, H/O fever for the past 10 days, per abdomen findings – diffused tenderness with guarding, obliteration of liver dullness present. As patient condition was

haemodynamically stable, he was subjected to diagnostic laparoscopy and proceed.

Patient Position

Patient placed on the operating table with legs in stirrups. The knee slightly bent and the operating table tilted head up approximately 15 degree. The surgeon stands between the patients leg. The camera surgeon on right side of patient and assistant surgeon on left side of patient.

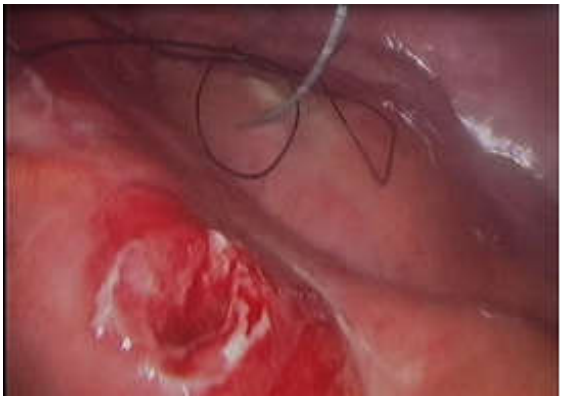
Port Position

Four ports were inserted (10mm) port is placed in umbilicus a (5-10mm) port inserted in left iliac fossa and left hypochondrium. Another 10 mm port introduced in the lumbar.

Procedure

Laparoscopic closure of the ileal perforation (intra corporeal)

Telescope introduced at (10mm) umbilical port diagnostic laparoscopy was done later on whole abdomen should be irrigated and aspirated with about 10 liters of saline mixed with antibiotics. Each quadrant is cleaned methodically starting at the right upper quadrant, going to the left, moving down to the left lower quadrant, and then finally over to the right. Special attention should be given to the vesicorectal pouch. Single Perforation site was identified in the distal ileum 60 cms from the ileocaecal junction. Perforation site was repaired by interrupted suturing with 2 – 0 vicryl in two layers. Thorough peritoneal lavage was given with normal saline in all spaces. Wide bore drainage tube kept in pelvic cavity. Post operative period was uneventful with oral fluid started on Day 3 and soft diet started on Day 5. Discharged on 14th post operative day.



DISCUSSION

Though the incidence of peptic ulceration has reduced the management of perforated duodenal ulcer remains a challenging disease for the surgeons since it is an emergency procedure. The proper management of this complication of peptic ulcer disease has generated a lot of discussion, laparoscopic surgical treatment of perforated duodenal ulcer is an attractive alternative for conventional treatment because of the absence of complications as compared to conventional surgery for patients who develop perforation in the setting of H-pylori infection. Eradication of infection may prevent ulcer recurrence. Those patients who tolerate insult and ulcer was sealed may be adopted non operative therapy. However decision of non operative therapy is difficult and can be done only after evaluation by and close consultation with an experienced surgeon. If non operative treatment chosen then the patient require frequent clinical examinations so the operative therapy can be done at the first sign of clinical deterioration. A variety of laparoscopic techniques have been described. A combined laparoscopic-endoscopic method described, also mini laparoscopy was described. The definitive surgical procedure of choice in perforated duodenal ulcer is patch closure and highly selective vagotomy. Although this

procedure has low mortality and morbidity it is technically demanding and requires experienced surgeon to ensure adequate vagotomy.

Open conversion may be required especially in the presence of certain high risk factors as:

- Inadequate ulcer localization.
- Posterior location of gastric ulcer.
- Pancreatic infiltration (penetrating ulcer)
- Localized abscess formation

It been shown that the age, presence of concomitant disease and length of free air or fluid collection in abdominal CT Scan correlate with conversion in meta analysis of 13 publication comprising 658 patients Comparing open versus laparoscopic closure of perforated Duodenal Perforation. It was found that post operative pain was lower after laparoscopic repair than open repair supported by significant reduction in post operative analgesic requirement after laparoscopy repair meta analysis demonstrated a significant reduction in wound infection after laparoscopic repair as compared with open.

Laparoscopic small bowel perforation closure was a safe and reliable procedure associated with

- Short operating time,
- Less postoperative pain,
- Reduced chest complication,
- Shorter postoperative hospital stay and
- Earlier return to normal daily activity than conventional open repair.
- Low mortality,
- Better cosmetic outcome
- Post operative adhesions and incision hernia was lower
- Safe and effective as open repair.
- Patients subjective well being was better after laparoscopic repair.
- Better vision of peritoneal cavity, also allow early mobilization.

Conclusion

Laparoscopy & laparoscopic assisted procedures in patients with a small bowel perforation who are haemodynamically stable are feasible, safe and many benefits including reduction in peri-operative morbidity and mortality. Laparoscopy provides diagnostic as well as therapeutic capabilities with diagnostic accuracy reaching 100% laparoscopy reduces postoperative pain, aids in the recovery of GI function, reduces wound infections, reduces hospitalization, and enhances the cosmesis. Laparoscopy is an effective tool in avoiding negative and non-therapeutic laparotomy and offered profound therapeutic potential.

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