

## Research Article

DOI: <http://dx.doi.org/10.18203/2349-2902.ijssj20162742>

# Laparoscopic peptic perforation repair: our experience at rural tertiary care center

Prem Prakash Sharma\*, Atul Jhanwar, Fateh Singh Mehta

Department of General Surgery, Geetanjali medical college and hospital, Udaipur, Rajasthan, India

Received: 21 May 2016

Revised: 02 July 2016

Accepted: 04 July 2016

**\*Correspondence:**

Dr. Prem Prakash Sharma,

E-mail: dr\_prem\_9@yahoo.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Peptic perforation is a life threatening complication of peptic ulcer disease requiring prompt surgical management. Omental patch repair with peritoneal lavage is the mainstay of treatment for perforated peptic ulcer at most of the centres. Laparoscopic repair has been described by various authors since 1990 in different part of world. In current study we have assessed the feasibility and safety of use of laparoscopy for this life threatening surgical emergency. The outcome were analyzed in terms of operating time, post-operative complications, medication, hospital stay, morbidity and mortality.

**Methods:** This study was carried out in period of two years from January 2012 to December 2013. Patients were initially assessed in emergency department and then after resuscitation taken up for surgery. Patients with provisional diagnosis of perforated peptic ulcer were included in the study, meeting inclusion criteria.

**Results:** Total 30 patients were studied out of total 38, who were operated in the study period. 26 males and 4 females, age ranged from 18-60 years, operative time was 55 to 110 minutes. In post-operative period the need for intravenous medication (analgesics and antibiotics) was less, early assumption of routine activity and early discharge. A very important factor noted that patient were psychologically so happy and convinced that they did not have big wound over abdomen and they can resume their routine activity as before.

**Conclusions:** Laparoscopic repair of perforated peptic ulcer is safe and effective in experienced hands in most of the patients. It offers all advantages of laparotomy without compromising the safety and outcome.

**Keywords:** Perforated peptic ulcer, Laparoscopy

## INTRODUCTION

Peptic ulcer is a well-known disease widely prevalent in all socio economic strata all over world. The management of this common disease has evolved over a period of time. Current medical management with proton pump inhibitors and H.pylori eradication has drastically reduced the various complications and need of surgical interference. Still, peptic perforation is quite prevalent life threatening surgical emergency encountered in general surgical practice. Omental patch repair (modified

Graham repair) with thorough peritoneal lavage is the mainstay of treatment at most of the centers.<sup>1</sup>

Laparoscopy has emerged as gold standard for surgical treatment of various diseases in last 2-3 decades due to its certain advantages like less post-operative pain, less hospital stay, less wound complications, early return to normal activity etc.<sup>2</sup>

This study is aimed to assess the feasibility, safety and advantages of use of laparoscopy in the treatment of this

life threatening surgical emergency in order to reduce the post-operative morbidity. This study also analyse feasibility and possible risk factors associated with use of laparoscopy for this surgical emergency.

## METHODS

This is a retrospective study of 30 pts admitted in GMCH udaipur between Jan. 2012 to Dec. 2013. All the patients presented as acute abdomen were evaluated. Patients with provisional pre-operative diagnosis of perforated peptic perforation were assessed. Patients were taken up for surgery after initial resuscitation.

The inclusion criteria for the patients for the study were:

1. The patients presented in first 36 hours after onset of symptoms.
2. Patients without any significant cardiopulmonary co-morbidity.
3. Age between 18- 65 years.
4. Without inotropic agent support.
5. Size of perforation up to 1cm.

### Exclusion criteria:

1. History of previous upper abdominal surgery.
2. Suspected malignancy.

**Surgical technique:** After resuscitation patients were taken up for surgery under general anaesthesia. Position of patient placed in Llyod devis position initially which could be changed as per requirement for peritoneal lavage. Position of surgeon in between the legs of pt. while camera assistant on right and scrub nurse on left side. Position of the surgical team was amenable to change as per need for peritoneal lavage. One monitor placed on head end of the pt and second towards foot end.

A four port technique was used.

1. 10 mm supra umbilical port was used for 10 mm 30 degree telescope and made preferably by open technique.
2. Left 5mm port in left mid clavicular line subcostally as right hand working port.
3. Right 5mm port in right mid clavicular line as left hand working port.
4. Right 5mm port anterior axillary line subcostally for liver retractor.

After port placement, first step of the surgery is to identify the site of perforation. Sequential peritoneal lavage of all peritoneal recess (subphrenic, subhepatic, perisplenic, paracolic gutters and pelvis) is routinely performed under vision till all the recess cleared of debris. Repair of perforation is done by interrupted intracorporeal suturing by silk suture no 1-0. Lastly pedicled omentoplasty was performed in all the cases and

2 drains were put, one in pelvis and other in right sub hepatic space from right sided ports.

**Post-operative assessment:** Post operative outcome of the patients were assessed on day to day basis till discharge and then in follow up till 6 months in all the patients.

## RESULTS

**Total no. of patients:** 30

**Age:** 18-25 years

### Sex

Male: 26

Female: 04

**Site of perforation**

D1: 26

Prepyeloric: 04

**Duration of surgery:** 55 - 110 min.

**Post-operative period:** Ambulation was started within 24 hours in all the patients.

**Table 1: Post-operative outcome.**

Post op day	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>
Analgesic need	20 pt.	7pt.	3pt.		
IV Antibiotic given		15 pt.	13pt.	2pt.	
CRTS kept	10 pt.	17 pt.	3 pt.		
Oral feeding started		10 pt.	16 pt.	4 pt.	
Discharge		10 pt.	15 pt.	5 pt.	

**Complications:** Post-operative complications were minimal in our study. Two patients had post-operative pleural effusion (reactionary) and improved conservatively. 3 patients had post-operative wound infection in supra umbilical port. No residual intra-abdominal collection was noted in any of our patient.

**Follow up:** Patients were followed up for 6months. No long term complication was observed in our series. We did not observe even a single case of incisional hernia in our series in the short follow up period of 6 months.

## DISCUSSION

Although advances in the medical treatment of peptic ulcer disease have led to a significant decrease in the number of elective ulcer surgeries performed, still the number of patients requiring surgical intervention for complications such as perforation remains relatively

unchanged. Minimal access surgery has gained wide acceptance amongst surgeons and general public all over world due to its definitive advantages. Although there are still some constraints amongst conventional surgeons for the use of this technique in certain surgical emergencies.



**Figure 1: Post-operative photograph showing port position for laparoscopic peptic perforation repair.**

In 1990 Mouret et al. reported the first laparoscopic sutureless fibrin glue omental patch for perforated duodenal ulcer repair.<sup>5</sup> The first successful laparoscopic suture repair for perforated peptic ulcer was described by Nathanson et al. in 1990.<sup>6</sup> Since then, many studies have been conducted by various authors in different parts of the world to define the use of laparoscopy in surgical management of perforated peptic ulcer. Costalat et al. reported a combined endoscopic and laparoscopic approach using ligamentum teres hepatis.<sup>7</sup> In 1993 Darzi et al. and Nassar et al. in 1994 reported laparoscopic omental patch repair with the use of automated stapler.<sup>12,13</sup> Siu WT et al. described single stitch laparoscopic omental patch repair of perforated peptic ulcer in 1997.<sup>3</sup> Masao Matsuda et al. from Japan also published an article suggesting that laparoscopic omental patch repair offers advantages of laparoscopic surgery and an attractive alternate to open surgery.<sup>17</sup>

After Mouret and Nathanson, many authors worked in this field and described various techniques of perforated peptic ulcer closure i.e. simple suturing, by gelatin sponge and fibrin glue, stapled omental patch repair, gastroscopy assisted insertion of ligamentum teres hepatis to close the perforation, gastroscopic guided omental plugging to close the perforation.<sup>22</sup> single suture with omental patch repair.<sup>3</sup>

Studies were done to compare open versus laparoscopic repair.<sup>16,19,20,23</sup> Siu et al. found that laparoscopic repair was superior than open in terms of size of incision, requirement of post op analgesia, less hospital stay, early return of normal activity, less immediate and long term complications etc. although the operating time was more in laparoscopic group in some studies but can be reduced

by adopting certain techniques and with more and more experience. Almost all study groups recommended proper selection of patients and demands surgeons having good laparoscopic suturing skills and experience.

In our study, after analyzing the results it was found that duration of surgery was between 55-110 minutes. Time taken was more in initial cases and in few more contaminated cases, after that the operating time was nearly same as we take in open surgery and even less in few cases. Post-operatively patients needed round the clock Intravenous analgesics for 2-3 days, Ryles tube could be removed in 2-3 days except in two cases in which we had to keep Ryles tube for 4 days which was badly contaminated large perforation of about 1cm. We have started oral feeding in 3-4 days in most of the cases except in 5 cases which were having large perforation with more peritoneal contamination. Hospital stay was 4-5 days in most of the cases; only 3 patients had 6 days stay. 2 patients had chest complications in immediate post op period which were managed comfortably in ICU and recovered in 2-3 days. There was no wound gap, no burst abdomen, no residual collection or pelvic abscess noted in any case. No incidence of any incisional hernia was noted in any case. Patients were allowed and encouraged to return to the normal activity after 7-10 days. No mortality was noted in our series.

## CONCLUSION

The management of this common disease has evolved over a period of time. Current medical management has drastically reduced the various complications and need of surgical interference. Still peptic perforation is quite prevalent. Gold standard treatment is conventional laparotomy and omental patch repair (modified Graham repair). Laparoscopy has emerged as gold standard for surgical treatment of various diseases in the last few decades. We conclude with the present study that laparoscopy is an effective tool in the surgical management of perforated peptic ulcer.

It requires experience and technical expertise in laparoscopic surgery. If proper selection of patients is done laparoscopic repair is safe and feasible. It does not increase the cost of treatment; in fact it helps in reducing the cost by less hospital stay, less medication required, less morbidity, early return to normal activity and to workplace. We hereby recommend laparoscopic repair in selected patients as treatment of choice as it offers all the advantages of laparoscopy without increasing the risk. It is a safe, effective and cost effective method for the treatment of perforated peptic ulcer.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

## REFERENCES

1. Siu WT, Leong HT, Bonita KB. Laparoscopic repair of perforated peptic ulcer, *Ann Surg.* 2002;253(3): 313-9.
2. Wadaani HA. World journal of emergency surgery 2013;8:10.
3. Siu WT, Leong HT, Li MKW. Single stitch laparoscopic omental patch repair of perforated peptic ulcers. *J R Coll Surg Edinb.* 1997; 42: 92-4.
4. Tate JJ, Dawson JW, Lau WY, Li AKC. Suture less laparoscopic treatment of perforated duodenal ulcer. *Br J Surg.* 1993;80:235.
5. Mouret P, Francois Y, Vagnal J. Laparoscopic treatment of perforated peptic ulcer. *Br J Surg.* 1990;77:1006.
6. Nathanson LK, Easter DW, Cuschieri A. Laparoscopic repair/periitoneal toilet of perforated duodenal ulcer. *Surg Endosc.* 1990;4:232-3.
7. Costalat G, Dravet F, Noel P. Coelioscopic treatment of perforated gastroduodenal ulcer using the ligamentum teres hepatis. *Surg Endosc.* 1991;5:154-5.
8. Fletcher DR, Jones RM. Perforated peptic ulcer. A further application of laparoscopic surgery. *Aust NZ J Surg.* 1992;62:323-4.
9. Sigman HH, Garzon J, Marelli D. Laparoscopic closure of perforated duodenal ulcer. *J Laparoendosc Surg.* 1992;2:325-7.
10. Sunderland GT, Chisholm EM, Lau WY. Laparoscopic repair of perforated peptic ulcer. *Br J Surg.* 1992;79:785.
11. Benoit J, Champault GG, Labhar E, Sezeur A. Sutureless laparoscopic treatment of perforated duodenal ulcer. *Br J Surg.* 1993;80:1212.
12. Darzi A, Cheshire NJ, Somers SS. Laparoscopic omental patch repair with an automated stapler. *Br J Surg.* 1993;80:1552.
13. Nassar A. Laparoscopic omental patch repair of perforated duodenal ulcer with automated stapler. *Br J Surg.* 1994;81:1393.
14. Walsh CJ, Khoo DE, Motson RW. Laparoscopic repair of perforated peptic ulcer. *Br J Surg.* 1993;80:127.
15. Schein M. Laparoscopic repair of perforated peptic ulcer. *Br J Surg.* 1993;80:1212.
16. Eypasch E, Spangenberger W, Ure B. Laparoscopic and conventional suture of perforated peptic ulcers: a comparison. *Chirurgie.* 1994;65:445-50.
17. Matsuda M, Nishiyama M, Hanai T. Laparoscopic omental patch repair for the perforated peptic ulcer. *Ann Surg.* 1995;221:236-40.
18. Lau WY, Leung KL, Zhu XL. Laparoscopic repair of perforated peptic ulcer. *Br J Surg.* 1995; 82: 814-6.
19. Miserez M, Eypasch E, Spangenberger W. Laparoscopic and conventional closure of perforated peptic ulcer. A comparison. *Surg Endosc.* 1996;10:831-6.
20. Johansson B, Hallerback B, Glise H, Johnsson E. Laparoscopic suture closure of perforated peptic ulcer. A nonrandomized comparison with open surgery. *Surg Endosc.* 1996;10:656-8.
21. Druart ML, Hee RV, Etienne J. Laparoscopic repair of perforated duodenal ulcer: a prospective multicenter clinical trial. *Surg Endosc.* 1997;11:1017-20.
22. Pescatore P, Halkic N, Calmes JM, Blum A, Gillet M. Combined laparoscopic-endoscopic method using an omental plug for therapy of gastroduodenal ulcer perforation. *Gastrointest Endosc.* 1998;48:411-4.
23. Naegaard JM, Edwin B, Reiertsen O, Trondsen E, Færden AE, Rosseland AR. Laparoscopic and open operations in patients with perforated peptic ulcer. *Eur J Surg.* 1999;165:209-14.
24. Katkhouda N, Mavor E, Mason R, Campos GM, Soroushyari A, Berne TV. Laparoscopic repair of perforated duodenal ulcers. Outcome and efficacy in 30 consecutive patients. *Arch Surg.* 1999; 134: 845-850.
25. Paterson-Brown S. Emergency laparoscopic surgery. *Br J Surg.* 1993;80:279-83.

**Cite this article as:** Sharma PP, Jhanwar A, Mehta FS. Laparoscopic peptic perforation repair: our experience at rural tertiary care center. *Int Surg J* 2016;3:1534-7.