ORIGINAL ARTICLE

COMPARATIVE STUDY OF LAPAROSCOPIC CLOSURE OPEN PEPTIC PERFORATION CLOSURE
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ABSTRACT: Laparoscopic closure of perforated duodenal ulcer was first performed in the year 1990. Due to its advantage of better view of the peritoneal cavity an opportunity for thorough lavage and avoidance of upper abdominal incision, with its related complication, especially in high risk patients, this procedure has gained popularity all over the world. Approximately 10-20% of patients suffering from peptic ulcer develop perforation of stomach or duodenum in which, chemical peritonitis develop initially from gastric secretion and duodenal secretion the condition is life threatening. Early diagnosis and treatment is extremely important. Mortality will increase up if perforation exists more than 24 to 48 hours. Usually surgical intervention of simple closure with omental patch of the perforation is required. this study aims at evaluating efficacy, safety and outcome of laparoscopic surgery for perforated duodenal ulcer patients admitted during period Jan 2009 to Dec 2012 at tertiary hospital in north Karnataka A total of 61cases diagnosed as peritonitis secondary to duodenal ulcer perforation were involved in the study 30underwent open perforation closure and 31 cases underwent lap closure. Peptic ulcers are focal defects in the gastric or duodenal mucosa which extend into the sub mucosa or deeper. they may be acute or chronic and ultimately are caused by on imbalance between the action of peptic acid and mucosal defenses peptic ulcer remains a common outpatient diagnosis, but the number of elective operations for peptic ulcer disease have decreased dramatically over the past 30 decades due to the advent of H2 blockers However the incidence of emergency surgeries, and death rate associated with peptic ulcer are same.

KEYWORDS: Laparoscopy, Omentopexy, Peptic Perforation Peritonitis.

INTRODUCTION: Laparoscopic repair of perforated peptic ulcer is now of benefit unlike other procedures that have established the role of laparoscopy in elective surgery, however it is performed in patients with generalized peritonitis and often physiological insult of a tension CO₂ pneumoperitoneum, during laparoscopy may be exaggerated in such patients while the effect on immune system and its mediators is unpredictable. With the establishment of role of helicobacter pylori eradication is better than closure of perforated peptic ulcer in long term therapy. The balance of exchanging the obvious postoperative benefits of rapid recovery,²,³,⁴ reduced wound complication, improved respiratory function and improved cosmetic appearance, decreased incidence of incisional hernia to examine the risk and benefit of laparoscopic surgery for perforated peptic ulcer. Role of routine laparoscopy in diagnosis and management of peritonitis is accepted.⁴ This nonrandomized cohort comparison compared a consecutive series of laparoscopic repairs of perforated peptic ulcer (lap group)⁵,⁶,⁷ with a concurrent of series of consecutive open repairs (open group) this ambitious study was undertaken with the following aims and objective;
1. To evaluate safety and efficacy of laparoscopic repairs of perforated peptic ulcer cases in routine clinical practice.

2. To evaluate whether it is justifiable to perform laparoscopic Closure to peptic perforated cases and to find out whether it can stand against the conventional laparotomy to treat peptic perforations.

3. To evaluate laparoscopic peptic perforation closure is better than conventional laparotomy for peptic perforation closure in terms of benefits of minimal invasive surgery. All patients of duodenal ulcer perforation without extensive peritonitis are indicated for laparoscopic treatment.

Relative Contraindications are:
1. Elderly patients more than 70 years.
2. Cardiac pathology.
3. Chronic respiratory insufficiency.
4. Obesity.
5. Sever cirrhosis.

PATHOPHYSIOLOGIC CHARACTERISTICS: A variety of factors may contribute to the development of peptic ulcer disease although it is now recognized that the large majority of duodenal and gastric ulcer are caused by H. pylori infection and by NSAID use. The final common pathway to ulcer formation is peptic acid injury of the gastro duodenal mucosal barrier. Thus the adage is ‘no acid no ulcer’ remains true even today acid suppression either with medicine or surgery remains a mainstay in healing both duodenal and gastric ulcers. And in preventing recurrence. It is generally thought that H. pylori predisposes to ulceration both by acid hyper secretions and by compromise to mucosal defense mechanism NSAID use is thought to lead to peptic ulcer disease predominantly by compromise of mucosal defenses. Duodenal has typically been thought of as a disease of increased peptic acid action –on duodenal mucosa when as gastric ulcer has been viewed as a disease of weakened mucosal defenses in the face of relatively normal action of peptic acid. However increased understanding of the pathophysiology of peptic ulcer gas blurred this distinction clearly weakened mucosal defenses play a role in many duodenal and most gastric ulcer, e.g. duodenal ulcer in an H. pylori negative patient on NSAID or in a patient with a typical type I gastric ulcer with acid hypo- secretion. Whereas increased aggressive activity of peptic acid may result in duodenal or gastric ulcer in the setting of normal mucosal defense e.g. Zollinger Ellison syndrome and gastric outlet obstruction syndrome. Elimination of H. pylori infection or NSAID use is important for optimal ulcer healing and perhaps even more important in preventing ulcer recurrence and its complication. Avariety of other diseases are known to causes peptic ulcers –e.g. Z.E syndrome gastrinomas, antral G. cell hyper function trauma, burns, major psychological stress. Drugs, aspirin, alcohol, smoking, etc. Halico bacter pylori infection is uniquely equipped for susvival in the hostile environment of the stomach. It possesses the enzyme urease which converts urea in to ammonia and bicarbonate, thus creating an environment around the bacteria that buffers the acid recreated by the stomach. The organism lives in the mucosal layer atop the gastric surface epithelial cells. And some attach to
these cells. H, pylori causes mucosal injury by producing toxins and cytokines. Use of non-steroidal anti-inflammatory drug (NSAID) have increased the incidence of peptic ulcers elderly patients with rheumatic arthritis and osteoarthritis who use NSAID 20% of them develop peptic ulcers, more than 50% of these peptic ulcer patients present with peptic ulcer hemorrhage or perforation. Many of these patients remain a symptomatic until they develop life threatening complication like perforation.

RESULTS: The duration of surgery was more with open type of operation i.e., 62.17 minutes & in lap. 56 minutes (p=0.0003). There was lesser antibiotic requirement for lap group than open type open; lap ratio was (5; 4.03 day p=0, 0010) the analgesic requirement open; lap ratio is (7.4; 8.7 day) p=0.001, lesser hospital stay (8; 6.17day p=0.001) There was reduced post-operative complications in lap group. 3% and in open group 9% in lap group 9.65% of patients were converted to open surgeries due to adhesions become earlier operations and other perforation like ileal perforation (typhoid perforation). The interval from onset of symptoms to the onset surgery ranged from 6hours to 36 hours. Oral fluid intake was permitted on third and fourth post-operative day Drain tube was removed on 3rd to 5th post-operative day patient had wound infection 3.3.1 in open closure 6 patients had wound infection i.e. 19.357 and one patient had partial wound dehiscence there was no mortality.

MATERIALS AND METHODS: All patients diagnosed clinically and by investigation as perforated peptic ulcer cases were prospectively nonrandomized to undergo either conventional open or laparoscopic closure peptic perforation with omental patch repairs (consent and cafeteria approach) who are admitted from Jan 2009 to Dec 2012 at tertiary hospital in north Karnataka the diagnosis of peptic perforation was made on the following criteria the history of acute abdominal pain starting in the upper abdomen and becoming generalized all over the abdomen on examination all patients had board like rigidity of abdomen with tachycardia X-ray erect abdomen, ultra sonography of abdomen & ECG were done pre operatively. All cases underwent preoperative assessment, the decision to operate lap or open surgery depending on patient presentation, Following parameters like operative time analgesia used post-operative complains and hospital stay. 61 patients were included in the study with 30 patients underwent laparoscopic closure and 31 patients underwent open laparotomy Closure.

The following parameters were evaluated for both laparoscopic and open procedures;

1. Method of patient selection.
2. Operative techniques.
3. Operative time.
4. Intra – operative and post-operative complications.
5. Post-operative pain and amount of analgesics required.
6. Time till resumption of diet.
7. Post-operative morbidity.
8. Hospital stay.
DISCUSSION: There was no difference in age weight, duration of symptoms. In analysis of our result with other studies, we observed that clinical parameters that are excluded for safe laparoscopic procedures are shock and symptom duration of more than 48 hours. The analgesic requirement was significantly less in lap group (p=002) the time to return to normal diet is shorter in lap group laparoscopic surgery minimizes post-operative wound pain and encourage early mobilization and return to normal daily life. Daily routine, early discharge and early return to work out weight open surgery.

Though the incidence of peptic ulceration has reduced the management of perforated peptic ulcer remains a challenging diseases 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 to conventional open surgery because of the absence of complications as compared to conventional surgery open conversion may be required especially in the presence of certain high risk factors as follow;

1. Peritoneal adhesions due to previous surgeries.
2. Peritonitis due to other perforations like ileal typhoid perforations.
3. Localized abscess formation.
4. Presence of shock.

It was found that post-operative pain was lower after laparoscopic repair than open repair. In laparoscopic repair there was significant reduction in post-operative analgesic requirement and significant reduction in wound infection laparoscopic repair for perforated duodenal ulcer was a safe and reliable procedure associated with short operating time reduced chest complication shorter post-operative hospital stay and early return to normal daily activity than conventional open repair operative time is also shorter and morbidity is lower in laparoscopic repair of perforated duodenal ulcer. There was low mortality and better cosmetic out come with laparoscopic repair. There were less post-operative adhesions and no incisional hernia in laparoscopic repair. The patient’s subjective well-being was better offer laparoscopic repair. Laparoscopy provides better vision of peritoneal cavity and allows early mobilization. This technique is well used as a diagnostic method in chronic and active abdominal pain. Its particular value has been well established in the detection of peritoneal diseases that are difficult to diagnose by any other technique, unless the patient had ascitis or bulky peritoneal disease Its main limitation is in the evaluation of posterior extension of any disease perforation is the second most common complication of peptic ulcer. Well over 20% of patients over the age of 60 presenting with perforated ulcer are taking NSAIDS at the time of perforation. The mortality rate for perforated gastric ulcer is higher than duodenal ulcer cases.

CONCLUSION: Laparoscopic repair of perforated peptic ulcer is a safe and reliable procedure and is proven to be efficient Lap group it has less post-operative pain, reduced analgesic usage, shorter post-operative hospital stay, then open surgery lap surgery has lesser morbidity and mortality as compared to open group.
Data from the present study indicate that laparoscopic surgical treatment of patient with peptic ulcer perforation can be implemented and completed safely in large proportion of patients with the responsible surgical team along with the appropriate technical expertise and laparoscopic repair has become the gold standard procedure.

**SURGICAL PROCEDURE:**

**Open Repair:** All open repairs were perforated according to standard techniques described in surgical text book. We used an upper mid*line incision of approximately 12-15cm in length. After identification of the site of perforated it was closed by polygalactin 3-0 (Vicryl, Ethicon) omental patch was placed over the perforation site, thorough peritoneal lavage was given.

**Laparoscopic Closure:**

The laparoscopic was performed under general anesthesia position of patient; the patient was kept in reverse trendenburg position at 15-20.
With the surgeon standing on the left said of the patient sites of trocars the pneumoperitoneum was creted by Hasson, s open technique, inflation pressure was maintained at 11mm -12mm pf HG.

**Four ports were inserted**:  
1. **1st** Trocar (10mm) through the umbilicus for telescope  
2. **2nd** Trocar (5mm) at the left mid –clavicular the between xiphysternum and umbilicus  
3. **3rd** Rt anterior axillary line at the level of the umbilicus.  
4. **4th** Trocar (5mm) accessory trocar in epigastric region right to the falciform ligament to retract the rt lobe of the liver and gallbladder.

Thorough peritoneal lavage with saline was given perforation was closed with polygalactin 2-0 (vicryl) ehicon on skk needle by intracorporeal suturing needle was passed through a good bite of full thickness healthy tissues taken longitudinally across the perforation. Omental flap was raised with intact blood suplly. Thorough peritoneal lavage was given drain was kept in subhepatic space from axillary port site port sites closed by prolene 2.0 with port closure needle. Patient was kept NBM for 2-3 days and RT aspiration for 48 hours (all the data expressed as median and quartile rang unless stated. Comparison between two groups was made using non – parametrical methods. Comparison was done using independent samples t-test p<0.05 takenas statistically significant.

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