

Original research article

Management of Perforated Duodenal Ulcer by Laparoscopic Vs Conventional Surgery

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Abstract

Background: Laparoscopic surgery has become a standard of care in many of the elective procedures, For many surgeries for duodenal ulcer Laparoscopic repair has become gold standard for many elective procedures such as ant reflux procedures, laparoscopic cholecystectomy and in colorectal surgery. Although in the emergency setting such as in the management of perforated duodenal ulcer, for the treatment of perforated peptic ulcer Laparoscopic repair has been used which has been widely accepted as an effective method. Duodenal ulcer is defined as a peptic ulcer which develops in the first part of the small intestine called duodenum and usually present as a perforation of acute abdomen. In perforated duodenal symptoms as severe and sudden onset abdominal pain that is worse in right upper quadrant and epigastrium and usually followed by nausea and vomiting. In this situation there is rapid generalization of pain and in examination shows peritonitis with lack of bowel sounds.

Aim: The main objective of this study is to evaluate outcome of laparoscopic surgery in comparison with conventional surgery.

Material and methods: All the patients with clinically diagnosed with perforated duodenal ulcers presenting within 24 hours of symptoms and undergoing surgery were included during the study period. Total 50 patients were included with age group 15-65 years. All the patients with perforated duodenal ulcers were included which go through either conventional open or laparoscopic without omental patch repair.

Result: Total 50 patients were included in these studies which were divided into two group with 25 patients in each group as laparoscopic duodenal perforation repair group and conventional open repair group. group showed Post-operative complications as chest infection. In the conventional open repair group patients present with wound dehiscence and wound infection and Wound dehiscence and chest infection were 4(16%) and 5(20%) respectively whereas nil in Laparoscopic duodenal perforation repair group.

Conclusion: Duodenal ulcer perforation is a life-threatening emergency which required urgent management for the patients. Due to the advance in duodenal ulcer perforation closure by laparoscopy it becomes popular and favorite choice. With certain criteria, laparoscopic closure of perforated duodenal ulcer is safe and effective though it was associated with longer operating time and had no impact on the outcome. Hence laparoscopic closure was better in comparison to open repair for the earlier returns to normal daily activities, laparoscopic

correction of perforated ulcer causes less postoperative pain, postoperative complications.
Keywords: Duodenal ulcer, Laparoscopic repair, conventional surgery.

Introduction

Since 1990, for the treatment of perforated peptic ulcer Laparoscopic repair has been used which has been widely accepted as an effective methodⁱ. For many surgeries for duodenal ulcer Laparoscopic repair has become gold standard for many elective procedures such as ant reflux procedures, laparoscopic cholecystectomy and in colorectal surgery. Although in the emergency setting such as in the management of perforated duodenal ulcer Laparoscopic repair has been slow and limitedⁱⁱ. In the past few decades, disease of duodenal ulcer for the diagnosis and recognition for the pathogenesis causes and widespread eradication of helicobacter pylori and use of non steroidal anti-inflammatory drugs has extremely decreased the incident of diseaseⁱⁱⁱ.

Major complications of duodenal ulcer has not seriously decrease which become a common disease in surgical emergency^{iv}. Duodenal ulcer is defined as a peptic **ulcer** which develops in the first part of the small intestine called duodenum and usually present as a perforation of acute abdomen. In perforated duodenal symptoms as severe and sudden onset abdominal pain that is worse in right upper quadrant and epigastrium and usually followed by nausea and vomiting. In this situation there is rapid generalization of pain and in examination shows peritonitis with lack of bowel sounds^v. In the diagnosis of uncertain ulcer with delay for treatment in non-responders and unpredictable response that make it difficult to be applied to all clinical situations^{vi}. About 2–10% Perforation duodenum ulcer occur at high risk of mortality, especially among the elderly. Many studies has reported that disease of duodenum ulcer have short-term morbidity in up to about 50% of patients and mortality in up to about 30% respectively which is seriously life threatening of the health and life of human being^{ix}. Laparoscopic repair for perforated duodenal ulcer has benefits as that included reduced postoperative pain, less pulmonary infection, shorter hospital stay and also for earlier return to normal activities^x. The main objective of this study is to evaluate outcome of laparoscopic surgery in comparison with conventional surgery.

Material and methods

This study was a prospectively study which was carried out in the patients attending to hospital with the cases of perforated duodenal ulcers during the period of one year. This study was carried out in the Department of General Surgery, Anugrah Narayan Magadh Medical College And Hospital Gaya, Bihar. All the patients with clinically diagnosed with perforated duodenal ulcers presenting within 24 hours of symptoms and undergoing surgery were included during the study period. Total 50 patients were included with age group 15-65 years. All the patients with perforated duodenal ulcers were included which go through either conventional open or laparoscopic withoutomental patch repair.

Inclusion criteria

The inclusion criteria were patients with suspected perforated duodenal ulcer

Exclusion criteria

The exclusion criteria were patients with patients boeys score 2 or 3, gastric outlet obstruction.

RESULT:

Total 50 patients were included in these studies which were divided into two group with 25 patients in each group as laparoscopic duodenal perforation repair group and conventional open repair group. The comparison between Laparoscopic repair group and

Conventional repair group according to the gender and agewise distribution are shown in table no 1 and 2.

Table 1: showing patients according to gender in both groups

| Gender | Laparoscopic duodenal perforation repair group | Percentage (%) | Conventional open repair group | Percentage (%) |
|--------|--|----------------|--------------------------------|----------------|
| Male | 16 | 64 | 17 | 68 |
| Female | 9 | 36 | 8 | 32 |
| Total | 25 | 100 | 25 | 100 |

Table 2: showing patients according to age in both groups

| Age | Laparoscopic duodenal perforation repair group | Percentage (%) | Conventional open repair group | Percentage (%) |
|-------|--|----------------|--------------------------------|----------------|
| <25 | 4 | 16 | 6 | 24 |
| 26-50 | 14 | 56 | 15 | 60 |
| >50 | 7 | 28 | 4 | 16 |
| Total | 25 | 100 | 25 | 100 |

Mean duration of operation (in minutes) was 105.4 ± 10.4 In laparoscopic duodenal perforation repair group whereas mean duration of operation (in minutes) was 67.3 ± 8.6 in conventional open repair group as shown in table no 3.

Table 3: showing mean duration of operation in laparoscopic duodenal perforation repair group and conventional open repair group.

| Groups | Mean duration (minutes) | S.D. | S.E. of mean |
|--|-------------------------|------|--------------|
| Laparoscopic duodenal perforation repair group | 105.4 | 6.5 | 1.2 |
| Conventional open repair group | 67.3 | 3.9 | 0.7 |

Table no 4 showed that mean duration of number of doses of analgesics required in laparoscopic group and conventional open group as 9.5 ± 1.7 and 17.2 ± 3.1 respectively.

Table 4: showing number of doses of analgesics used post-operatively in both the groups.

| Groups | Mean duration (minutes) | S.D. | S.E. of mean |
|--|-------------------------|------|--------------|
| Laparoscopic duodenal perforation repair group | 9.5 | 0.9 | 0.2 |
| Conventional open repair group | 17.2 | 1.1 | 0.2 |

Out of 25 patients in each group of laparoscopic duodenal perforation repair group and the conventional open repair group the outcome were noted with their post operative complication as shown in table no 5 below. In Post-operative complications 21(84%) patients in laparoscopic duodenal perforation repair group and 14(56%) patients in conventional open repair group had no complications. 4 (16%) patients in the laparoscopic duodenal perforation repair group and 2(8%) patients in conventional open repair group showed Post-operative complications as chest infection. In the conventional open repair group patients present with wound dehiscence and wound infection and Wound dehiscence and chest infection were 4(16%) and 5(20%) respectively whereas nil in Laparoscopic duodenal perforation repair group.

Table 5: showing post-operative complications in the laparoscopic duodenal perforation

repair group and conventional open repair group.

| Post-operative complications | Laparoscopic duodenal perforation repair group | Percentage (%) | Conventional open repair group | Percentage (%) |
|--------------------------------------|--|----------------|--------------------------------|----------------|
| No complications | 21 | 84 | 14 | 56 |
| Wound dehiscence and wound infection | 0 | 0 | 4 | 16 |
| Chest infection | 4 | 16 | 2 | 8 |
| Wound dehiscence and chest infection | 0 | 0 | 5 | 20 |

DISCUSSION

Patients suffering from duodenal ulcer disease required surgery to flush peritoneal cavity^{xi}. In 2013 according to the World Journal of Emergency Surgery guidelines for management of intra-abdominal infections, for the treatment of the duodenal ulcer disease Surgery is the treatment of choice. Without mental patch or with Simple closure is a safe and effective procedure to address small perforated ulcers and laparoscopic repair is effective and safe for experienced surgeons^{xiii}. Many studies showed that laparoscopic repair is helpful for the better result in lower postoperative analgesic use, good outcome and earlier discharge compared with open repair. In the past Laparoscopic surgery was not widely used in concern to the perforated ulcer due to the technical challenge of two-handed manipulation and intracorporeal suturing of indurated and friable tissue. There are many studies which confirmed the good result of the laparoscopic perforated peptic ulcer in selected patients. In this study mean duration of operation (in minutes) in the laparoscopic and open repair group was 105.4 ± 10.4 and 67.3 ± 8.6 respectively which is similar to the study of Bertleff MJ et al^{xv} and Nicolau AE et al. According to the study of Troidl H et al, Lunevicius R et al and Vishwanath Golash et al laparoscopic repair of peptic ulcer perforation in the patients uses less number of analgesic doses in the post-operative period which is similar to this study as 9.5 ± 1.7 and 17.2 ± 3.1 number of doses of analgesics required in laparoscopic group and conventional open group respectively. In this study, the patients in the laparoscopic duodenal perforation repair group and patients in conventional open repair group 21(84%) and 14(56%) had had no complications respectively. Patients showed Post-operative complications as chest infection in the laparoscopic duodenal perforation repair group and conventional open repair group was 4 (16%) and 2(8%) respectively. This study also showed that 4(16%) and 5(20%) patients in conventional open repair group with wound dehiscence and wound infection and Wound dehiscence and chest infection respectively where as there was zero no of patients in Laparoscopic duodenal perforation repair group which is similar to the study of Wing T. Siu et al^{xx} as it showed fewer chest infections in the laparoscopic group as compare to results of open versus laparoscopic repair for perforated peptic ulcers. Another study of V Golash et al^{xxi} showed laparoscopic repair patients had fewer complications as compare the result of open and laparoscopic repair of perforated peptic ulcers which was also similar to this study.

CONCLUSION

Duodenal ulcer perforation is a life-threatening emergency which required urgent management for the patients. Due to the advance in duodenal ulcer perforation closure by laparoscopy it becomes popular and favorite choice. With certain criteria, laparoscopic closure of perforated duodenal ulcer is safe and effective though it was associated with longer operating time and had no impact on the outcome.

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