

## ORIGINAL ARTICLE

## Frequency of Wound Infection after Duodenal Ulcer Perforation Repair

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## ABSTRACT

**Aim:** To determine the frequency of wound infection after duodenal ulcer perforation repair.**Methodology:** This descriptive Case series Study in the department of Surgery, Khyber Teaching Hospital from February 2021-July 2021, Peshawar. A total of 123 patients with perforated duodenal ulcer, included those aged 20 to 60 years. Immuno-compromised patients, CRF & CLD were excluded. A single dose of broad-spectrum antibiotic was given prior to undergone open repair by a consultant surgeon followed by two more shorts of antibiotic given post operatively at the interval of 8 hours each. Patients were followed postoperatively for 4 weeks and surgical site infection was noted.**Results:** The study patients age ranged from 20 to 60 years, with a mean age of 43.77±9.35 years. Most of the patients 77(62.60%) were in the 20–40 years age range. Male to female ratio of these 123 cases was 2.1:1, with 83(67.48%) males and 40(32.52%) females. In our study, frequency of wound infection after duodenal ulcer perforation repair was found in 28(22.76%) patients.**Conclusion:** This study concluded that the clinicians should take some practical recommendations regarding control of surgical site infections in order to lower the morbidity and mortality of these specific patients.**Keywords:** perforated duodenal ulcer, open repair, surgical site infection.

## INTRODUCTION

Acid secretion and mucosal defence that prevent acid digestion are out of balance, which causes peptic ulcer disease (PUD). Additionally, research has demonstrated a strong link between *H pylori* infection of the gastric antral region and peptic ulcer disease. The *H pylori* infection affects peptic ulcer disease affects more than 90% of the population, and its removal not only completely heals the majority of but also significantly reduces the chance of recurrent ulceration. The use of NSAIDs is a secondary cause of the majority of peptic ulcer disease that is not linked to *H pylori*. Peptic ulcer disease's pathogenesis further influenced by steroid usage, smoking, fast stomach emptying, and faulty duodenal acid defence mechanisms. Patients with high gastrin levels are more likely to get peptic ulcer disease and subsequent perforations (such as those with Zollinger-Ellison syndrome). There has not been any change in the number of patients suffering from bleeding and perforation, despite the fact that the prevalence of ulcer disease has generally decreased<sup>1</sup>.

A fatal but uncommon disorder is duodenal perforation. In the literature, the mortality rate ranges from 8% to 25%<sup>1</sup>. Muralto and Lenepneau both described the perforated duodenal ulcer in 1688. Dean described the first patient, which had successfully undergone surgical closure of a perforated duodenal ulcer, later on in 1894<sup>2</sup>. A method for patching up holes using omentum was first published by Cellan Jones in 1929, and Graham subsequently updated it in 1937<sup>3</sup>. There are two types of duodenal perforation: free and confined. When intestinal contents spill into the abdominal cavity without restriction, a free perforation results, leading to diffused peritonitis. Contiguous organs like the pancreas that block off the region prevent free leaking when the ulcer produces a full thickness hole, which is known as a contained perforation<sup>4</sup>. Duodenal perforation is frequently caused by peptic ulcer disease<sup>5</sup>.

The standard surgical treatment for the perforated duodenal ulcer has been laparotomy with either a simple closure or an omental patch. Although the surgical procedure has not altered, the minimum access strategy is now often employed to treat perforated duodenal ulcers. In light of the first successful laparoscopic repair of a perforated duodenal ulcer, several prospective and retrospective studies have revealed superior

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outcomes over an open procedure<sup>5,6</sup>. Skin infections, respiratory complications, including pneumonitis and severe worsening of chronic obstructive pulmonary disease, burst abdomen, enterocutaneous fistula<sup>5</sup>, and mortality are the most frequent postoperative consequences after perforated duodenal ulcers<sup>6,7</sup>. In a study<sup>8</sup>, 13.2% of open duodenal ulcer perforation repairs had wound infections. Another study indicated that 20.45% of open duodenal ulcer perforation repairs had wound infections<sup>9</sup>.

SSI's related to duodenal ulcer perforation repair represents a serious while an infection may lengthen a patient's hospital stay by up to two weeks, double the incidence of re-hospitalization, and raise care expenses, it is a serious and disastrous complication for patients, doctors, and hospital institutions, as well as lead to significant physical limitations that significantly lower the patient's quality of life after the surgery. Immense body of literature might be existing about SSI in duodenal ulcer perforation repair internationally but i have found very limited literature on SSIs in duodenal ulcer perforation repair locally. A tertiary care facility that serves a large population will also host this study's operations. This facility handles complicated cases from low socioeconomic class. As a result, this study aims to be useful in developing the implementable preventative strategies to lessen the financial burden on patients, hospitals, and the nation.

In order to decrease morbidity and death in these specific patients, my work will be a valuable contribution to the local literature that will assist doctors in making some practical suggestions in our everyday practice about treatment of surgical site infections.

## METHODOLOGY

This descriptive Case series Study in the department of Surgery, Khyber Teaching Hospital from February 2021-July 2021, Peshawar. Both male and female gender with age 20-60 years having emergency and elective cases done were included in this study while immuno-compromised patients (taking radiotherapy or chemotherapy for any malignancy), patients with chronic renal failure (s/creatinine > 1.5 mg/dl) and with chronic liver disease were excluded from this study.

After approval from institutional ethical review committee, a dose of broad-spectrum antibiotic was given prior to anesthesia.

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Two more shorts of antibiotic were given after the patient is shifted to the ward following surgery at the interval of 8 hours each. Patients were followed postoperatively for 4 weeks and surgical site infection (as per-operational definition) was noted.

## RESULTS

The study patients age ranged from 20 to 60 years, with a mean age of  $43.77 \pm 9.35$  years. Most of the patients 77 (62.60%) were in the 20–40 years age range. Male to female ratio of these 123 cases was 2.1:1, with 83 (67.48%) males and 40 (32.52%) females. Mean BMI was  $28.85 \pm 3.22 \text{ kg/m}^2$ . Frequency of wound infection after duodenal ulcer perforation repair was found in 28 (22.76%) patients.

Table 1:

Co-morbid conditions		Wound infection		P-value
		Yes	No	
BMI (kg/m <sup>2</sup> )	≤30	17	48	0.343
	>30	11	47	
DM	Yes	12	53	0.228
	No	16	42	
Mode of operation	Elective	05	23	0.418
	Emergency	23	68	

## DISCUSSION

Peritonitis is frequently brought on by duodenal ulcer perforations. Cellan-Jones originally described the traditional pedicle omental patch, which is used to seal these perforations, in 1929<sup>10</sup>. Despite the fact that Graham is frequently, and incorrectly, credited with having described using a free omentum graft to heal the hole in 1937<sup>11</sup>. This method, which entails drawing a strand of omentum across the perforation and securing it in place with full thickness sutures placed on each side of the perforation, is considered the "gold standard" for the treatment of these lesions. However, infrequently, extensive duodenal perforations may occur, and when these are closed using this straightforward technique, there is a risk of post-operative leakage<sup>12,13</sup>. Other surgical treatments, such as partial gastrectomy, proximal gastrojejunostomy, jejunalserosal patch, jejunal pedicle graft, free omental plug, suturing of the omentum to the nasogastric tube, or even gastric disconnection, may be necessary in this situation<sup>12-14</sup>.

According to a study published in Sindh, post-operative leaks were discovered in 3.6% of cases, while 3.1% of patients had their incisions reopened and a mortality rate of 5.1% was recorded. Wound infections occurred in 6.2% of cases, chest infections in 3.6%, intra-abdominal abscesses in 4.1%, and post-operative leaks in 3.6% of cases<sup>15</sup>. In another study from Pakistan's Quetta Following duodenal ulcer perforation, organ space infections developed in 16 (6.13%) individuals and sepsis in 10 (3.83%)<sup>16</sup>. The most frequent complications following peptic ulcer repair, according to a study from Korea, were leakage or fistula (5/75, 6.7%), followed by an infected wound (4/75, 5.3%)<sup>17</sup>. While in our study surgical site infection were most frequently noted in patients operated in emergency with (p=0.418).

## CONCLUSION

This study concludes that the frequency of wound infection after duodenal ulcer perforation repair was found in 22.76% patients. So

we recommend that clinicians should take some practical recommendations regarding control of surgical site infections in order to lower the morbidity and mortality of these specific patients. **Recommendation:** Patients who underwent surgery for a duodenal ulcer should receive broad-spectrum intravenous antibiotics both before and after the procedure, good nutrition, and prompt reporting of the culture and sensitivity of the infected surgical site in the event that such patients are received.

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