

# Surgical Outcome of Large and Giant Duodenal Ulcers Perforations

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## Abstract

Duodenal Ulcer perforations be it large or giant, is frequently encountered surgical emergency in clinical practice. Its quiet prevalent in tropical and sub tropical countries like ours and accounts for high number of hospital admissions. It's a treatable surgical disease with good clinical outcome but has potential for morbidity and mortality in the event of delayed treatment. Despite the advances made in surgical therapy the diagnosis of Large and Giant duodenal perforations is quiet difficult and the management is highly demanding. In our study of 30 patients, we report our experience of Cellan-Jones omental patching with feeding jujenostomy in cases of large duodenal ulcer perforations and also the experience of treating giant duodenal ulcer perforations with jujenal serosal patching with feeding jujenostomy and with Anterectomy plus Bilioth-II in selective cases.

## Key Words

Duodenal Ulcer, Perforation, Cellan-Jones Omental Patching, Jujenostomy

## Introduction

Duodenal ulcer perforations are common surgical cause of peritonitis. The overall prevalence of duodenal ulcer perforations increased several times in the beginning of 20th century and decreased substantially in second half of the century (1). The classical pedicled omental patch that is performed for plugging of these perforations was first described by Cellan-Jones in 1921(2). Graham described the use of a free graft of the omentum to repair the perforation in 1937 (3). In these techniques, a stand of omentum is drawn over the perforation and held in place by full thickness sutures places on either side of the perforation and this procedure has become the gold standard for the treatment of duodenal ulcer perforations. Occassionally, Large and Giant duodenal perforations of the duodenum may be oncountered in which there exists the threat of post operative leakage following cloare by these methods (4-6).

The other surgical methods historically used in Large and Giant duodenal perforations wise partial gashectomy,

jujenal several patch, jujenal pedicled graft suturing of the omentum to the nasogastic tube, proximal gastrojujenostomy and sometimes the gastric disconnection followed by electine emastomosis (5-10).

## Material and Methods

Among 144 patients which were subjected to emergency laparotomy for duodenal ulcer perforations, 114 were having small duodenal perforations with size of perforations less than 1cm in diameter in greatest dimension. These patients were excluded from the study. The remaining 30 patients were divided into two groups.

*Group A* was constituted by 22 patients and the size of perforations was more than 1cm but less than 3cm in diameter in greatest dimension and called as 'Large perforations'.

*Group B* had 8 patients with size of perforations > 3cm and called as 'Giant perforations'.

*Group A* was surgically treated with cellan-jones omental patching with feeding jujenostomy. Six patients

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of group B were subjected to jejunal serosal patching with feeding jejunostomy and the procedure of antrectomy with Billroth II was employed in two patients. These two groups of patients were then analysed with regards to their duration of symptoms, surgery performed and the outcome. Before contemplating the procedure all baseline investigations like CBC, Blood Sugar Levels, PTI, RFT's, LFT's, Blood Grouping and X-ray chest P/A view with ultrasound abdomen, were done.

**Table 1. Comparative Surgical Profile**

	<b>Group A - Large (1-3cm)</b>	<b>Group B- Giant (More than 3cm)</b>
Number of cases	22 (73.34%)	8 (26.66%)
Age of patient	50 - 70 (years)	60 - 80 (years)
Male to female ratio	10 : 1	7 : 1
Surgery performed	Cellan-Jones omental patching with feeding jejunostomy	Jujenal serosal patching with feeding jejunostomy = 5 patients. Anterectomy with Bilioth II = 3 patients.
Post operative leak	1(4.54%)	Nil
Mortality	4(18.18%)	4(50%)

**Results**

Out of 30 patients operated for Large and Giant duodenal ulcer perforations at our institution over two years, there were 28 males and 2 females, giving a male to female ratio of 9:1. The age ranged from 50-80 years.

The patients were divided into two groups. Group A belonged to Large perforations and Group B belonged to Giant perforations. Large duodenal ulcer perforations were found in 22 (73.34%) and Giant perforations were found in 8 (26.66%) patients. The surgery performed in Group A was Cellan-Jones omental patching with feeding jejunostomy 5 patients of Group B were subjected to jejunal serosal patching with feeding jejunotomy and in 3 patients the procedure of antrectomy with Bilioth II was done.

In Group B one patient developed post-operative leak,

which was managed conservatively and the patient was discharged after 3 weeks. Four patients of Group A died, they succumbed to repticemia and all of them presented late to the hospital with duration of symptoms ranging from 6 days to 8 days.

All other patients of group A were discharged on 12th postoperative day after removal of skin sutures and the feeding tube. Among group B patients 4 deaths were reported. Two patients were having bad chest, one was chronic smoker, male patient elderly and other was a

**Table 2. Complication Rate of two procedure**

<b>Complications</b>	<b>Group A</b>	<b>Group B</b>
Chest Infections	8	2
Wound Infections	3	1
Burst Abdomen	2	1

female patient who was a known case of Asthma and was on steroids. These two patients were surgically treated with jejunal serosal patching with feeding jejunostomy out of four patients which were subjected to resectional surgery (Anterectomy and Billroth-II) two patient died of septicemia shock. They also presented late to the hospital. Duration of symptoms in one patient was 5 day and in other was 7 days.

The four patients who survived, were discharged after 3 weeks of primary surgery. There was considerable morbidity in both the groups. Common morbidity encountered was chest infections (Group A = 8, Group B = 2) wound infection (Group A = 3, B = 1) Burst abdomen (A = 2, B = 1). Burst abdomen patients were managed by tension suturing and stiches were removed after 12 days.

**Discussion**

Duodenal ulcer perforation is a common surgical emergency in our part of the world. The overall reported mortality rate varies between 1.3 to nearly 20% (11-14) in different series, and recent studies have shown it to be

around 10% (14). Factors such as advancing age, concomitant disease, preoperative shock, size of the perforation, delay in presentation and operation, have all been defined by various authors to be risk factors for mortality in such a situation (12-15). The size of a perforation is an important measure in determining the outcome of the disease and are classified as Large and Giant based on the longest diameter of the size of perforations (4). There are no specific recommendations regarding the management of giant / large perforations, which are said to be "difficult" to manage and have been associated with high leak rates and mortality.

The size of Large/Giant duodenal ulcer perforations has arbitrarily been defined by various authors as being greater than 0.5 cms (10), 1 cm (5, 6), or 2.5 cms (9) in greatest diameter.

These perforations are considered particularly hazardous because of the extensive duodenal tissue loss and surrounding tissue inflammation, which are said to preclude simple closure using omental patch, often resulting into post-operative leak or gastric outlet obstruction (5, 6). The tendency to leak may further be aggravated by the high Intraluminal pressures, extrusion of the duodenal mucosa through the closure, and, autodigestion by the pancreatic enzymes and bile, thereby further compromising an already sick patient (16).

Duodenal perforations can be classified into three main groups (1) small perforations that are less than 1 cm in size, and have the best outcome; (2) large perforations, that have a size between 1 cm and 3 cms; and, (3) giant perforations that exceed 3 cm size. The usage of the word 'giant' for a duodenal perforation should be restricted to such large defects, where omentopexy may be deemed unsafe, and other options may be thought to be necessary (4). In literature, different authors have recommended varied surgical options from time to time, based on their experience and research. These have included resection of the perforation bearing duodenum and the gastric antrum in the form of a partial gastrectomy, with reconstruction as either a Billroth I or II anastomosis, or the more morbid procedure of gastric disconnection in

which vagotomy, antrectomy, gastrostomy, lateral duodenostomy and feeding Jejunostomy are performed, with restoration of intestinal continuity electively after 4 weeks of discharge (11). Others have recommended conversion of the perforation into a pyloroplasty, or, closure of the perforation using a serosal patch or a pedicled graft of the jejunum, or, the use of a free omental plug to patch the defect, and even, suturing of the omentum to the nasogastric tube (5, 6, 8-11). Proximal gastrojejunostomy and / or vagotomy may be added to these procedures to provide diversion and a definitive add reducing procedure respectively (11). However, as can be appreciated, each of these procedures not only prolongs the operating time, but also requires a level of surgical expertise that may not be available in the emergency (9). In addition, each of these procedures has its own morbidity that may add up significantly to alter the final outcome of the patient, and more importantly, none of them is immune to the risk of leak in the post-operative period, which has been the main concern against performing the omental patch in larger perforations (5, 6). The results of omentopexy large sized perforations in the present series give good results. The leak rates and mortality in Group A after omentopexy remain comparable with previous studies, thereby suggesting that this may be considered as the procedure of choice in all perforations upto a size of 3 cms. The procedure is simple and easy to master, and, avoids the performance of a major resection in a patient who is already compromised. In fact, Sharma et al also reported the success of the omental plug in perforations of duodenal ulcers more than 2.5 cms in size; only, they preferred using a free graft of the omentum rather than a pedicled one (9). We feel that mobilization of the omentum on its pedicle from the colon, and placement of sutures into the normal duodenum away from the perforation makes the performance of omental patch safe even in the presence of large sized perforations. We also feel that addition of feeding jejunostomy in Group A patients for the purpose of enteral nutrition helped in early recovery of the patient as reported by Malhotra *et. al.* (7)

In the present series, 8 cases were defined to be 'giant' according to the size (more than 3 cm) and they underwent Antrectomy and Billroth II reconstruction, 5 other, a jejunal serosal patch with feeding jujenostomy. Two patients (antrectomy) succumbed to the septicaemic shock and one patient survived. Feeding jujenostomy was done in all cases of Group B which was surgically managed with jujenal serosal patching and were found quite helpful like Group A patients.

This is the group of patients with truly giant perforations who need to be analyzed further to determine the best course of action i.e. resectional versus non-resectional surgery. However, the less number of patients in this group did not allow us to reach any definite conclusion regarding their ideal management. Further study is needed to optimize our efforts to this target group.

Controlled tube duodenostomy in the management of giant duodenal ulcer perforation: a new technique for a surgically challenging condition recorded 100% success rate in comparison to 30% in the control patients. (17)

Giant Duodenal ulcer perforation is the most catastrophic complication of peptic ulcer and is a common cause of peritonitis, remains a well-known surgical emergency requiring prompt surgical intervention. Factors such as advancing age, concomitant disease, pre-operative shock, delay in presentation, operation and size of perforation have been defined to be risk factors for mortality (18). However, no such attempt was made in the current study to analyse such factors.

### Conclusion

Large/Giant duodenal perforations should be classified as large or giant according to their size encountered at laparotomy. In the emergency setting, such patients are often seriously ill and it is not advisable to perform major surgical procedures on them. The Cellan-Jones omental patch is simple and can be performed in a relatively short time, The addition of a feeding jejunosomy and placement of a tube drain in the Morrison's space and pelvic cavity offers an early recovery of the patient. Jujenal serosal patching when combined with feeding jujenostomy is found to be life saving in patients with Giant duodenal ulcer

perforations. Resectional surgeries doesn't provide additional benefits. They should be used in selective patients and surgical expertise should be available.

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