

# **ACUTE PERFORATED DUODENAL ULCER, SIMPLE CLOSURE OR DEFINITIVE SURGERY**

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## **ABSTRACT**

Base on a review of recent articles, acute duodenal ulcer perforation should be operated on with definitive procedure, unless the patient is in poor condition on admission, in the place where patient follow up and strict medical management are lacking. It has been estimated, in this particular place, that at least two-third of the patients who are treated with simple suture will finally come back with serious ulcer complications necessitating surgical intervention. When we take natural history of the patients after simple suture into account, i.e., one-third remains asymptomatic, one-third has recurrent ulcer symptoms which need antacid treatment and another one-third requires further definitive surgery to control the disease. Selection of the patients who are aged 40 to 60 years with a history of chronic symptoms prior to perforation and less than 12 hours duration after perfora-

tion, for definitive surgery, is likely to avoid unnecessary complicated procedures for those group who further definitive operations are not needed after simple suture and best results will be obtained in term of operative mortality and complications. Once the patient survive from definitive operation, its curative and morbid effects will follow those performed in elective cases. Vagotomy and antrectomy is the procedure of choice because studies showed that the procedure added no more disadvantage than vagotomy and drainage in this emergency situation. Although peritoneal cell vagotomy results reported are too early to be accepted, the procedure may be a compromise between conventional definitive procedures and simple closure.

## **INTRODUCTION**

Simple closure of acute perforated duodenal ulcer has been the most widely employed operation for about a century (1),

If perforation is an isolated event without prognostic importance, the simplest form of therapy seems indicated. However, Illingworth et al (2) in 1946 were among the first to suggest that perforation of a duodenal ulcer was a poor prognostic sign. They found that when patients were followed up long, as many as 70% had severe relapses. In addition, their data suggested that the number of complications increased with the length of time these patients were follow up. In the place where patient follow up is lacking and medical antacid treatment is inadequate as Thai community we expect to find a significant number of return of patients who were treated with simple suture, for their serious complications of continuing or recurrent ulcer as hemorrhage, reperforation and obstruction, necessitating surgical intervention because they had not been strict to antacid ingestion or whatever the reason was. An alternative approach beside simple closure as definitive procedures has their places when we are able to identify the patients with high risk of ulcer recurrence and exclude those whose mortality and morbidity are influenced by complexity of procedures. The simple suture technique however, has its advantage of simplicity. If we succeed in selecting appropriate group for definitive surgery, the curative and morbid effects of the performed procedure seem to be similar to that obtained after elective surgery.

## COMMENTS

Greco et al (3) in their review of 346 patients with acute perforated duodenal ulcer showed that 32% of patients treated by plication or nonoperative therapy (minor component) followed up 5 years or more remained asymptomatic, 37.6% were symptomatic and 30.4% required subsequent definitive surgery. Moreover, they found that definitive surgery to control recurrent symptoms was required in 65% of the male patients 40 to 64 year old with a history of chronic ulcer disease prior to perforation. The risk of a definitive procedure being required subsequent to plication in all other patients was only 18%. There were no deaths in patients treated nonoperatively or by vagotomy. and drainage. The operative mortality for plication was 5.5% whereas that for gastrectomy was 16.7%. However, there were only 7 patients (3.3%) and 4 patients (1.2%) underwent gastrectomy and vagotomy and drainage respectively. Culture reports obtained at the time of laparotomy gave positive results in 21.7% of the patients operated upon within 6 hours of the onset of symptoms. This increased to 29.6% at 12 hours and to 62.8% at 24 hour. This data more or less reflects increased degree of peritoneal contamination with time elapsed from perforation.

Kirkpatrick (4) showed that only 42% of the 67 surviving patients who underwent omental patch remained asymptomatic, 25%

required subsequent surgery, 22% further hospital care and 11% antacid therapy for continuing ulcer symptoms. These figures based on only 18-month follow up. In contrast, among the 36 patients undergoing a definitive procedure, no further surgery was required in the follow up period. Six percent required antacid therapy for epigastric distress and 8% complained of transient diarrhea, which must be presumed a sequel of vagotomy. There were 36 patients underwent a definitive operation and 113 patients were treated with omental patch. Eight deaths occurred following omental patch (10.7% mortality), two after a definitive operation (5.5%). The short-term morbidity (58%) from omental patch is substantially higher than from a definitive operation (14%). In a small group of patients namely those in shock from generalized peritonitis, the disease has a prohibited mortality (75%) regardless of the mode of therapy. The series confirm that in perforated ulcer disease mortality is determined primarily by the age and condition of the patient rather than the choice of operation.

According to Sawyers et al's series (5), simple closure was done in 254 patients with a mortality of 6.7%, a morbidity of 21% and an average hospital day of 11.9 days. In 106 patients (29%) who underwent definitive operation for treatment of duodenal ulcer disease at time of perforation the mortality was 2.8%, the morbidity was 15% and the average hospital stay was nine days. Follow up studies ranging from 6 months to 20 years of simple closure in

patient with no previous ulcer symptoms showed that 72% of the patients remained asymptomatic, in patients with previous ulcer symptoms, only 23% were asymptomatic. Forty-two percent of the patients having prior ulcer symptoms before perforation required subsequent definitive operation whereas the patients with no prior ulcer symptoms before operation; subsequent definitive operation was necessary in 20%. Follow up results in patients who had definitive operation as initial treatment for perforated duodenal ulcer; excellent or satisfactory results were obtained in 96%. No patient required subsequent operation for peptic ulcer disease. In addition, the type of definitive surgical procedure did not appear to influence the patient's outcome. This series advocate simple closure in patients whose general condition is poor prior to perforation and in whom there is extensive soiling of the peritoneum from perforation.

Coutsoftides et al (6) found that one of 78 perforated duodenal ulcer operated on less than 12 hours after the appearance of symptoms died whereas 8 of 15 patients who had a delay in surgery greater than 12 hours died. Most of the deaths were related to the development of peritonitis with abscess and fistula formation. There was 2% mortality (2 of 95) in duodenal ulcer patient less than 60 years old and a 19% mortality (7 of 37) in those more than 60 years old. Within this series, there was no significant difference in either postoperative mortality or complications between patients with simple plication or definitive surgery.

Skarstein et al (7) in the studies of patients in 2 departments which each of them had different rules of acute duodenal ulcer perforation treatment, i.e., simple closure and partial gastric resection respectively, each department took care of all admissions every other day, revealed mortality of 7.5% in closure group and 2.1% in the resection group. Types of complications occurring in this series do not seem to be specific for the two groups. The results were significantly in favour of the resected group when the patients were aged 50-59 years, had had dyspepsia for more than 5 years before perforation and had had a duration of perforation of less than 6 hours,

Jordan et al (8): 20% operative deaths of 40 patients treated by simple closure died. Most of these deaths were due to poor patient condition and medical problems. There was one operative death after vagotomy and hemigastrectomy from suture line leak, leaving 49 patients after vagotomy and drainage and 55 patients after vagotomy and hemigastrectomy. Reoperation was necessary in three patients after vagotomy and drainage. One needed a gastrojejunostomy because of pyloric obstruction. The other 2 patients had positive Hollander tests and recurrent ulcer.

Of the acute duodenal ulcer perforation patients who were treated with simple closure, 22% to 42% remained asymptomatic,

20% to 37.6% had recurrent ulcer symptoms and 25% to 58% required further definitive surgery for ulcer disease control (3,4,5,6). The natural history of duodenal ulcer disease after perforation simple suture seems to be divided into 3 categories, i.e., one-third has recurrent ulcer symptoms and another one-third requires further definitive operation. The figures vary in different series depending on follow up duration. The tendency for decreasing in percentage of patients who remain asymptomatic can be expected in prolonged follow up period. Thus, in the place where patient follow up and strict medical management are lacking, the estimation of patients who will return for their complications as hemorrhage, reperforation and obstruction should be at least two-third after they have been treated with simple closure.

Study of Skarstein et al (7) is the only one that has some features of a randomized trial. However, operative mortality favours the definitive operation in most series (Table I) especially those of Sawyers et al and Jordan et al which had rather large collection of cases with regard to definitive operation. Together with operative complications these figures of operative mortality more or less showed that definitive operation has a significant place in treatment of acute perforated duodenal ulcer without adding much further mortality and complications when compares with simple closure.

Table I Summary of various mortality, complication rates and recommendations in 6 series. (\*not mentioned)

Authors	Type of operation	No. of cases	Operative mortality	Operative Complications	Recommendations
Greco et al	Plication	297	5.5 %	13.8 %	Suture remains the treatment of choice except in male patients 40 to 64 years old with a history of chronic ulcer disease prior to perforation.
	Definitive	17	16.7 %		
Kirkpatrick	Plication	75	10.7 %	NM *	Vagotomy and pyroloplasty is the procedure of choice unless the patient is in septic shock at admission
	Definitive	36	5.5 %	NM	
Sawyers et al	Plication	254	6.7 %	20.8 %	Definitive operation is indicated in good risk patients who have a history of ulcer
	Definitive	106	2.8 %	15.1 %	
Coutsoftides et al	Plication	109	6 %	5 %	Definitive operation is the operation of choice. The delay in surgery increased operative mortality
	Definitive	23	9 %	13 %	
Skarstein et al	Plication	73	6.8 %	7.5 %	Partial resection was a better form of treatment when the patients are aged 50-59 years, had dyspepsia for more than 5 years before perforation and a duration of perforation of less than 6 hours
	Definitive	53	3.8 %	2.1 %	
Jordan et al	Plication	40	20 %	NM	Parietal cell vagotomy may be a compromise.
	Definitive	117	1 %	NM	

Age at operation, presence of symptoms prior to perforation and duration between perforation and operation seem to influence recurrent rate of symptoms and represent the groups which definitive operation yielded various results in three series (3,6,7). Greco et al (3) emphasized sex (male) as a high risk of recurrence group. However male patients comprised almost five times female patients in most series. All series agreed that poor patient's conditions as shock, severe sepsis and preexisting cardiopulmonary diseases preclude definitive operation and it is this in whom simple sicculation is warranted.

Concerning choice of definitive procedures, vagotomy and drainage offered little or no advantage over vagotomy and hemigastrectomy in terms of morbidity and mortality (8). In addition recurrence is least common after vagotomy and antrectomy (approximately 2%) and greatest (approximately 7%) after vagotomy and drainage in elective cases (9). The incidence of dumping and diarrhea is much less after parietal cell vagotomy than other operations for the treatment of duodenal ulcer (10). Early results suggest this method of treatment may be a satisfactory compromise between the use of simple closure that does not protect patient against recurrent ulcer and the use of vagotomy and antrectomy and drainage which impose increased morbidity and death rates on those patients who might not have further ulcer disease. Fur-

thermore, the advantages of parietal cell vagotomy over other definitive procedures are a reduce of sequels from the "postgastrectomy syndrome" (8).

## CONCLUSION

1. Unless the patient is in poor condition at admission, definitive procedure is the operation of choice especially in the place where patient follow up and strict medical management are lacking.
2. In the place where patient follow up and strict medical management are practical, selection of patients who are aged 40 to 60 years with chronic symptoms prior to perforation and less than 12 hours duration of perforation, for definitive operation, is likely to yield best results in terms of operative mortality, complications and unnecessary operation performed on those groups who definitive procedures may not be needed.
3. Vagotomy and antrectomy will be the procedure of choice when we decide to perform definitive operation.
4. Parietal cell vagotomy may be a satisfactory compromise between the use of simple closure and vagotomy and antrectomy and drainage.

## REFERENCES

1. Booth AD, Williams JA, Mortality of perforated duodenal ulcer treated by simple suture. Br J Surg 1971; 58: 42-44.

2. Illingworth GPW, Scott LPW, Progress after perforated peptic ulcer. *Br Med J* 1946; 1 : 787.
3. Greco RS, Cahow CE, Alternative in management of acute perforated duodenal ulcer. *Am J Surg* 1974; 127 : 109-114.
4. Kirkpatrick JR, The role of definitive surgery in the management of perforated duodenal ulcer disease. *Arch Surg* 1975; 110 : 1016-1020.
5. Sawyers JL, Herrington JL, Acute perforated duodenal ulcer. An evaluation of surgical management. *Arch Surg* 1975; 110 : 527-530.
6. Coutsoftides R, Himal HS, Perforated gastroduodenal ulcers, factors affecting morbidity and mortality and the role of definitive surgery. *Am J Surg* 1976; 132 : 575-576.
7. Skarsein A, Hoisaeter PA, Perforated peptic ulcer: a comparison of long term results following partial gastric resection or simple closure. *Br J Surg* 1976; 63 : 700-703.
8. Jordan PH, Korompai FL, Evolvement of a new treatment for perforated duodenal ulcer. *Surg Gyn Obs* 1976; 142 : 391-5.
9. Schwartz. *Principles of surgery*. 2nd ed, McGraw-Hill Co., 1974; p 1067.
10. Amstrup E, Jensen HE, Clinical results of parietal cell vagotomy (highly selective vagotomy) two to four years after operation. *Ann Surg* 1974; 180 : 279-284.