

# SURGICAL TREATMENT OF DUODENAL ULCER: HOW TO APPROACH

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## SUMMARY

This report describes a personal experience of 2472 operations carried out for duodenal ulcer between 1964 and 1980 in Athens, Greece. An attempt is made to assess the short and long-term results after different surgical approaches including truncal vagotomy + antrectomy (TV+A), truncal vagotomy + drainage (pyloroplasty or gastrojejunostomy) (TV+D), polygastricomy (PG), and proximal gastric vagotomy (PGV). All the above procedures were used in dealing with this series of patients. Through a selection process by use of clinical and operative criteria for each individual case, each procedure was carried out to fit the individual demands of each patient. From the above policy our results were satisfactory. We had an overall mortality rate of 0.58 % with a late re-operation rate of 4 % which included patients with recurrent peptic ulcer, dumping, and alkaline gastritis.

## RESUMO

### Tratamento cirúrgico da úlcera duodenal: Técnicas de abordagem

Este trabalho descreve a experiência pessoal do autor relativa a 2472 intervenções cirúrgicas por úlcera duodenal levadas a efeito em Atenas, Grécia, entre 1964 e 1980. Procura-se estabelecer o resultado a curto e longo prazo das diferentes técnicas cirúrgicas nomeadamente a vagotomia troncular + antrectomia (TV+A), vagotomia troncular + drenagem (piloroplastia ou gastrojejunostomia (TV+D), gastrectomia tipo polya (PG) e vagotomia gástrica proximal (PGV). Todas as técnicas citadas foram utilizadas na presente série obedecendo a selecção a critérios clínicos e cirúrgicos baseados nas características de cada caso individual. Os resultados obtidos foram satisfatórios sendo a mortalidade global de 0,58 %. A percentagem de re-intervenções cifrou-se em 4 % incluindo os casos de úlcera péptica recorrente, dumping e gastrite de refluxo.

## INTRODUCTION

The choice of the surgical approach for the treatment of duodenal ulcer remains a subject of controversy. It has been shown that truncal vagotomy and antrectomy, when feasible, might offer for both the patient and the surgeon the most satisfactory results.<sup>1-3</sup> On the other hand it has been demonstrated that proximal gastric vagotomy might also be associated with good results.<sup>4, 5</sup>

This study has been designed to delineate our results in dealing with 2472 patients with duodenal ulcer. Further, a discussion of our policy to adjust each operative procedure to the individual demands of each patient is made, and the different surgical procedures used in dealing with this series of patients are presented.

## PATIENTS

From 1964 to June 1980, 2472 patients presented for surgical treatment of duodenal ulcer by the author on various hospitals in Athens, Greece. Each patient was assessed regarding the length of history, the severity of symptoms, the age and the results of investigations which included barium meal studies of the upper gastrointestinal tract, endoscopic studies, gastric acid stimulating secretory tests, and routine haematological tests.

Patients were divided into two categories following the above criteria. Thus in Category A were included those with a history of the disease more than 15 years, with more than two bleeding episodes and with any history of previous perforation irrespective of their age. Patients under the age of 60 presenting without the above clinical criteria but with findings of aggressive ulcerative disease documented either by barium meal or by a sharp response to an augmented Histalog stimulation test, or by the endoscopic finding of pyloric stenosis were also included in Category A.

In Category B were included patients without evidence of advanced ulcerative disease, with a short history and free from episodes of bleeding or perforation and with moderate abnormalities of radiological, endoscopic and gastric acid stimulation test.

It should be noted that the final decision for classification was taken in the operating theatre and depended upon the operative findings, location and extent of ulcer, feasibility for antrectomy, and that 38 patients who were initially considered to belong to Category A were re-classified during surgery to Category B, and 59 patients with a pre-operative assessment for Category B were found during surgery to fulfil the criteria for inclusion in Category A.

Using this classification there were 1955 patients in Category A and 517 patients in Category B.

TABLE 1 Total Mortality and Causes of Death After Surgery on 2472 Cases of Duodenal Ulcer

Procedure	No. Pts.	No. Deaths	Sepsis	Pulmonary Embolism	Cerebral Haemorrhage	Cardiac Failure
TV + A	1266	7	3	2	2	0
TV + D	382	3	1	2	0	0
P. gastrectomy	689	7	4	0	0	3
PG. vagotomy	135	0	0	0	0	0
Total	2472	17	8	4	2	3

The follow-up was from one to ten years. It included a thorough physical examination at yearly intervals and repeated barium meal studies, endoscopy, basal and Histalog stimulated acid secretory studies at two yearly intervals. The number of patients who attended the follow-up was for the years 1-10, 2218, 2019, 1952, 1847, 1803, 1731, 1682, 1524, 1447 and 1321 patients respectively.

### CLINICAL HISTORY & OPERATIVE FINDINGS

There were 1887 men and 585 women. Ages ranged from 18 to 82 years with an average of 45 years. The time from appearance of symptoms to surgical treatment ranged from 8 to 20 years with an average of 14 years.

#### Symptomatology

Pain was the main symptom in 85% of our cases. It occurred at different intervals with deterioration during spring and autumn. Sixty percent of the patients had a history of more than two previous episodes of gastrointestinal bleeding. Fifteen percent were previously asymptomatic, and underwent emergency surgery because of either a perforation (5%), or a serious and life-threatening bleeding (10%).

Pre-operative diagnosis of duodenal ulcer proved to be correct in 2455 patients. Barium meal studies gave a correct diagnosis in 2007 patients but had been equivocal in 292 or had been interpreted by the radiologist as normal in 173 patients. Gastroscopy was carried out in 892 patients. It yielded a visual diagnosis of duodenal ulcer in 840 patients and this was confirmed histologically in 833 patients. Indeed gastroscopy proved useful in both defining the diagnosis of duodenal ulcer in 448 patients from those 465 who were radiologically mis-interpreted and in confirming the radiological findings in the remaining 392 patients. Thus the combination of gastroscopy and radiology gave an accurate diagnosis in 2455 patients. The remaining 17 patients were diagnosed during urgent laparotomy for perforated duodenal

ulcer. Finally, gastric acid stimulating secretory studies were carried out in 887 patients. They revealed a sharp response to an augmented Histalog stimulation test in 567 patients in Category A and in the remaining 320 patients — Category B — showed a mild response.

#### Operative Findings

In all 2472 patients a duodenal ulcer was found. This was single in 2003 patients and double in 469 patients. In 1948 patients it was located in the first part of the duodenum and in 524 patients in the second part. It was associated with a duodenal diverticulum in 97 patients, with a biliary fistula in 14 patients, and with a colonic fistula in 2 patients. In 1867 patients it was located in the anterior wall of the duodenum and in the remaining 605 patients on the posterior wall.

#### Operative Procedure

The choice of our procedure was based on the elements already mentioned, and we proceeded to a truncal vagotomy and antrectomy in 1266 patients, to a 2/3 poly gastrectomy in the remaining 689 patients in Category A who were considered on the basis of our criteria to be high risk candidates for recurrent peptic ulcer.

For Category B we proceeded to a TV + pyloroplasty in 192 patients, to a TV + gastrojejunostomy in 190 patients and to a proximal gastric vagotomy in the remaining 135 patients. The choice of the drainage procedure was based on the presence or absence of advanced deformity in the pyloroduodenal area. Thus for patients with such deformity which could be regarded as potential for post-operative pyloric stenosis, we prefer a gastrojejunostomy. Finally, proximal gastric vagotomy was carried out in high risk patients, and in those with moderate findings from the duodenal ulcerative process, and in whom a normally open pyloric stoma could be confirmed.

TABLE 2 Causes and Number of Post-Operative Complications

	No. Pts	Wound Infection	Pul. Emb.	Bleeding	Delayed Gastric Emptying	DVT	Total No. Complications	No. Immediate Re-operations
Truncal Vagotomy + Antrectomy	1266	49	9	—	—	13	73	0
Polya Gastrectomy	689	10	3	3 *	2 *	—	18	5
Truncal Vagotomy + Drainage	382	6	—	2 *	8 *	—	16	10
Proximal Gastric Vagotomy	135	1	—	—	1 *	—	2	1
Total number of patients and incidence of complications	2472	66	12	5 *	11	13	109	16

\* Complications leading to immediate re-operation.

TABLE 3 Late Complications

	No. Pts.	Dumping	Peptic Ulcer	Alkaline Gastritis	Total No. Complications
Truncal Vagotomy + Antrectomy	1266	2	8	10	20
Polya Gastrectomy	689	20	5	15	40
Truncal Vagotomy + Drainage	382	6	33	3	42
Proximal Gastric Vagotomy	135	—	5	—	5
Total	2472	28	51	28	107

TABLE 4 Total Number of Late Complications Treated Conservatively

	Total No.	Anaemia	Weight Loss	Fullness	Diarrhoea	Total
TV + A	1266	2	18	15	4	39
TV + D	382	1	5	4	2	12
PG	689	7	15	12	2	26
PGV	135	—	—	4	—	4
Total	2472	10	38	35	8	91

### Operative Results

There were 17 deaths in the series of 2472 patients (Table 1). Early complications were encountered in 109 patients for which an immediate reoperation was warranted in 16 (Table 2). Late complications (peptic ulcer recurrence, severe dumping and severe alkaline reflux gastritis) were noted in 107 patients (Table 3). All those 107 patients underwent further revisional surgery. Late post-operative symptoms and sequelae such as post-operative weight loss, post-cibal fullness, diarrhoea and anaemia were rare and mild in severity and occurred in 91 patients without any difference in their incidence related to the procedure performed (Table 4).

### DISCUSSION

From our results it seems likely that our policy to individualise each patient and to carry out the procedure which meets best his individual needs, has been justified. Indeed we have a low mortality (0.58%) and early morbidity rate (4%), while our long-term results have to be considered satisfactory. Thus our overall late re-operative rate, where we include revisional surgery for recurrent peptic ulcer, dumping and alkaline reflux gastritis was 4.43%.

The above features compared with the findings in the literature<sup>5-7</sup> have to be considered most satisfactory. Moreover we believe that by our policy of avoiding resection in patients in whom it could be hazardous, we were able to obtain a low mortality and morbidity rate, without increasing our late re-operative rate. This is due to the fact that practically truncal vagotomy and antrectomy was carried out in almost 50% of the patients presented in this paper. In the remainder the risk of potential peptic ulcer recurrence particularly in patients of advanced age and in poor general condition and/or with a scarred ulcer deep in the duodenum, is worth taking into consideration before proceeding to an unnecessary and highly risky procedure.

Finally, for those patients where the clinical and operative findings are not suggestive of an aggressive ulcerative disease, other surgical approaches such as truncal vagotomy gastrojejunostomy, or truncal vagotomy pyloroplasty, and highly selective vagotomy were carried out with reasonable

long-term results. Indeed, our overall late reoperation rate being 4.43%, it seems worth mentioning that this percentage was 3.7% after PGV, 5.8% after PG, 1.5% after TV + A and 10.3% after TV + D, suggesting that, when the patients are carefully selected, a less aggressive approach might achieve just as good results. It would appear, though, that less patients should be submitted to TV + D, procedure where the highest reoperation rate was observed. Analysing the end-point of our presently discussed policy it appears reasonable to suggest that the criteria under evaluation should be utilized in the selection of patients for operation, as well as the best procedure to meet each one individual's needs.

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