Upsala J Med Sci 94: 129–136, 1989

Parietal Cell Vagotomy and Truncal Vagotomy in Elective Duodenal Ulcer Surgery— Results After Six to Twelve Years

Björn-Åke Elfberg, Folke Nilsson and Örjan Selking
Department of Surgery, University Hospital, Uppsala, Sweden

ABSTRACT

In a randomized trial between 1974 and 1980, parietal cell vagotomy (PCV) was compared with truncal vagotomy (TV) in the treatment of duodenal ulcer in 106 patients. After a mean period of 3.9 years no significant differences were found between PCV and TV patients with respect to Visick grading and recurrence rates. Nor did the preoperative location of the ulcer-prepyloric or duodenal-significantly influence the recurrences. The latter follow-up reported in 1981, showed that PCV was not superior to TV. The present paper describes a re-analysis of the same material in 1985. After a mean observation time of 8.7 years no significant differences in the ulcer recurrence rate were found between PCV and TV. Equal patient satisfaction with the two procedures was found. In patiens with prepyloric ulcers, pre-operatively, there was a higher recurrence rate among those who had undergone PCV than TV.

INTRODUCTION

Parietal cell vagotomy (PCV) has gradually tended to become the method of choice in the surgical treatment of duodenal ulcer disease. When PCV was introduced at our clinic in 1974, a prospective study was begun for comparison with abdominal truncal vagotomy with drainage (TV) (19). Fear that a new and technically demanding procedure would make us abandon a hitherto well documented operation was one reason for this comparative study. With fewer

demands for surgery in duodenal ulcer disease the experience and training in gastric surgery will definitely diminish and the need for procedures requiring skills that are easy to learn and to maintain is obvious.

Previously, a higher recurrence rate was usually found after PCV than after TV (3,8,11,13,16) but also a higher frequency of postgastrectomy syndromes after TV with drainage operation than after PCV (5,12). Similarly, a higher recurrence rate was previously found after PCV in patients with prepyloric ulceration than in patients with duodenal ulceration (4,10,12,15,17).

In the randomized trial between 1974 and 1980 (19) PCV was compared with TV in the treatment of duodenal ulcer in 106 patients. The results of this study after an average of 3.9 years (range 1-6 years) did not show any significant differences between PCV and TV with respect to Visick grading and recurrence rates. Thus, PCV was found not to be superior to TV. Nor did the preoperative location of the ulcer - prepyloric or duodenal - significantly influence the recurrence.

The aim of this paper was to report on a further follow-up 6-12 years after operation, with special regard to Visick grading, recurrences, and possible differences in recurrences between patients with prepyloric and duodenal ulcers.

MATERIAL AND METHODS

Between 1974 and 1980, 56 patients underwent PCV and 50 patients TV. The patient material was re-analyzed in 1985. The follow-up was performed through medical records and a questionnaire. The mean observation time was 8.7 years, with a range from 6 to 12 years. Seven patients died - 4 in the PCV group and 3 in the TV group. Three patients could not be traced, 2 from the PCV group and one from the TV group. The following report is thus based upon 96 patients, 50 belonging to the PCV group and 46 to the TV group. Twenty-nine patients had a gastroscopy during the last five years of the period. No secretion studies were repeated.

RESULTS

Mortality. Seven patients have died. No deaths were related to the ulcer disease or the vagotomy procedure.

Clinical evaluations. In the assessment of the clinical results a modified Visick grading system was used: (I) no symptoms, (II) mild but not troublesome symptoms, (III) more severe symptoms with some disability, (IV) disabling symptoms or recurrent ulcer. There was no significant difference between PCV and TV with respect to Visick grades (see Table 1).

Table I 50 PCV operated and 46 TV operated patients.
Visick grading 6-12 years after operation.

Visick grade	I	II	III	IV
PCV patients	22	13	2	13
TV patients	12	26	3	5

All patients graded as Visick III and IV were offered gastroscopy at the time of answering the questionaire, but none of them accepted. However, as mentioned above, 29 patients had undergone gastroscopy during the 5 last years with recurrence-findings as follows.

Recurrence rate. Twelve patients in the PCV group (24 %) and 5 in the TV group (11.9 %) had a verified recurrence. The time of the recurrences and the probability of cure can be seen in Figure 1.

The 13th patient in the PCV-group graded as Visick IV had problems with gastric emptying. From 1980 recurrent ulcers were verified in 3 PCV patients and in one TV patient. Preoperatively in the PCV group there were 11 prepyloric ulcers and 45 duodenal ulcers and 15 respectively 35 in the TV group. Six of the recurrences (50 %) were noted among the 11 patients with prepyloric ulcer in the PCV group. In the TV group 2 of the recurrences occurred among the 15 patients with prepyloric ulcer. After PCV there were significantly more recurrences among patients with prepyloric ulcer than with duodenal ulcer ($p<0.01$). This was not the case in the TV group.

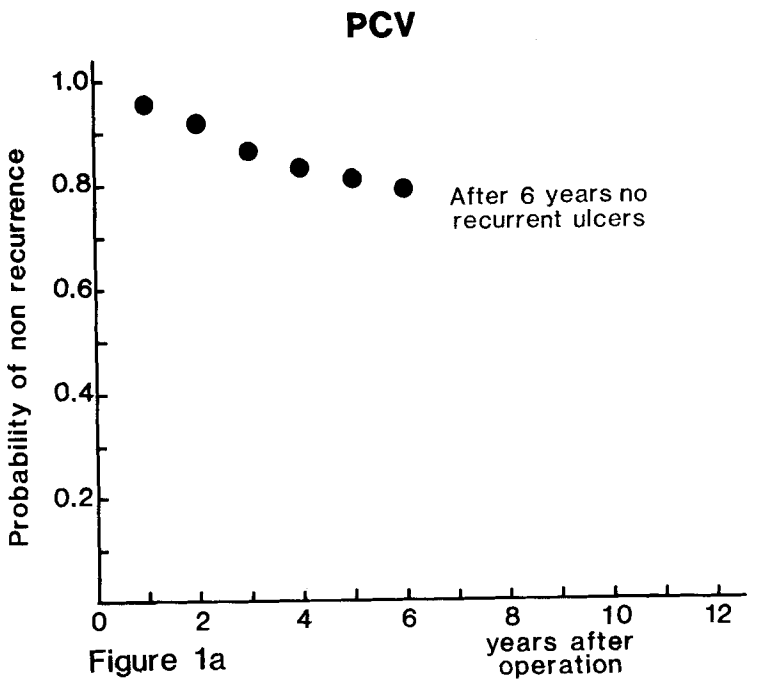

Figure 1a

Probablity of non-recurrent ulcers within 12 years after parietal cell vagotomy (Fig. 1 a) and after truncal vagotomy with drainage (Fig. 1 b.)

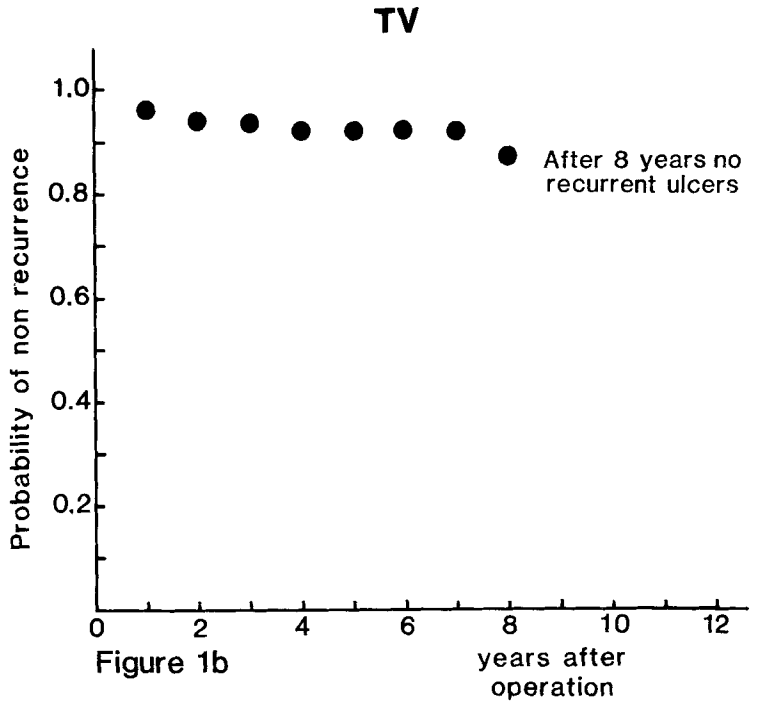

Figure 1b

Among the patients with recurrences after 1980, 2 PCV patients had previously been classified as Visick I and one as Visick IV. In the TV group the one patient with recurrent ulcer had previously been classified as Visick II. All recurrences were verified endoscopically.

Reoperations. Six patients in the PCV group and 2 in the TV group underwent reoperation because of recurrence. As reported earlier (19), the reoperations performed in 11 patients before 1980 were mostly carried out because of problems with gastric emptying and in one case gastro-oesophageal reflux. After 1980 one additional reoperation was performed because of gastric emptying difficulties after PCV.

Postoperative diarrhoea. Four patients in the PCV group and 10 in the TV group experienced episodes of diarrhoea after the operation. There was only one case with somewhat troublesome diarrhoea in the TV group.

Additional findings. Those patients with recurrences who were not reoperated upon were successfully treated with intermittent H_2-receptor blockade.

DISCUSSION

The use of the Visick grading system to evaluate clinical results after ulcer surgery has been questioned. Muller and collaborators (14) found that the Visick grade pattern 5 years after PCV was almost identical to that of healthy controls. Nevertheless, these authors regard Visick grading as a useful tool to express overall clinical results after surgery. They also suggest that the differentiation into 4 grades should be abandoned. In recent years Visick grading is often presented in 2 groups: good or fair results and bad or poor (7, 21). If the material in the present study were classified into 2 groups only, the proportion of good or fair results after PCV would be 70 % and after TV 83 %. Thus, our results regarding the well-being of the patients after the different procedures are almost identical to the fair and poor results reported by Elder JB, et al (7) and by Clark CG, et

al (5). As judged by these clinical parameters, the two surgical procedures seem to be equivalent.

In our earlier follow-up (19) no significant difference in recurrence rate between PCV and TV patients was observed after a mean observation time of 3.9 years. Nor were there any significant differences in recurrence rates between the two operative procedures with respect to the preoperative location of the ulcer - prepyloric or duodenal. Now, after a mean observation time of 8.7 years another 3 patients in the PCV group and one in the TV group have relapsed. This means that 26 % of the patients of the PCV group have had recurrences, compared with 12 % of those in the TV group. This difference was not statistically significant, however. Andersen et al (2) reported a higher recurrence rate in patients with prepyloric ulcers. The same was also found in our previous follow-up, although the difference was not statistically significant. This difference has now increased and has reached a significant level in the PCV group ($p<0.01$) but not in the TV group. However, when judging this difference between the two groups, one has to bear in mind that only a limited number of patients accepted gastroscopy. Like Adami et al (1) and Stoddard et al (21), we found that the tendency for the ulcer disease to relapse decreased with time.

A main objection to TV is the possibility of severe diarrhoea which has been reported to occur in 12-28 % (6,7,10,12,20,21). Periodic diarrhoea was recorded in patients of both groups, but only one TV patient had somewhat troublesome problems.

In conclusion, this study, 6-12 years after operation, confirmed the results obtained 1-6 years after operation (19). The advantage with PCV reported by others (18) a greater patient satisfaction was not found in this study. We found an equal patient satisfaction with the two methods. Both TV and PCV are safe procedures and no statistically significant difference in recurrence rate between the methods was established. However, in prepyloric ulcers PCV seems to have more recurrences than TV, and it could be questioned if PCV should be performed at all in prepyloric ulcers.

REFERENCES

1. Adami HO, Enander LK, Ingvar C & Rydberg B: Clinical results of 229 patients with duodenal ulcer 1-6 years after highly selective vagotomy. Br J Surg 67:29, 1980.
2. Andersen D, Amdrup E, Hostrup H & Hanberg Sörensen F: Gastrin and the vagus (Ed. J F Rehfeldt & E Amdrup) Academic Press, London 1979.
3. Andersen D, Amdrup E, Hostrup H & Hanberg Sörensen F: The Aarhus county vagotomy trial: trendsin the problem of recurrent ulcer after parietal cell vagotomy and selective gastric vagotomy with drainage. World J Surg 6:86-92, 1982.
4. Anderson D, Hostrup H & Amdrup E: The Aarhus County vagotomy trial: II. An interim report on reduction in acid secretion and ulcer recurrence rate following parietal cell vagotomy and selective gastric vagotomy. World J Surg 2: 91-100, 1978.
5. Clark CG, Fresini A, Araujo JGC & Boulos PB: Proximal gastric vagotomy or truncal vagotomy and drainage for chronic duodenal ulcer. Br J Surg 73:298-300, 1986.
6. Davies JAL: Late results of vagotomy combined with gastro-jejunostomy on pyloroplasty in the treatment of duodenal ulceration. Br Med J 2:10861091, 1956.
7. Elder JB, Ganguli PC, Koffman CC, Hay DJ, Gillespie IE, Mantoudis SM, Tweedle DEF, Schofield PF & Palmer M: Randomized trial of elective highly selective or truncal vagotomy in chronic duodenal ulceration. Can J Surg 26:119-122, 1983.
8. Goligher J, Hill G, Kenny T & Nutter E: Proximal gastric vagotomy with out draninage for duodenal ulcer: results after 5-8 years. Br J Surg 65:145-151, 1978.
9. Herrington JL: Vagotomy-pyloroplasty for duodenal ulcer: a critical appraisal of early results. Surgery 61:698-784, 1967.
10. Hollinshead JW, Smith RC & Gillett DJ: Parietal cell vagotomy: experience with 114 patients with prepyloric or duodenal ulcer. World J Surg 6:596-602, 1982.
11. Jensen HE & Amdrup E: Follow-up of 100 patients five to eight years after parietal cell vagotomy. World J Surg 2:525-532, 1978.
12. Jordan PH & Thornby J: Should it be parietal cell vagotomy of selective vagotomy-antrectomy for treatment of duodenal ulcer? Ann Surg 205; 5:572590, 1987.
13. Madsen P & Kronborg O: Recurrent ulcer $5\frac{1}{2}$-8 years after highly selective vagotomy without drainage and selective vagotomy with pyloroplasty. Scand J Gastroenterol 15: 193-199, 1980.
14. Muller C, Engelke B, Fiedler L, Marrie A, Mühe E, Schmitz-Harbauer W & Zumtobel V. How do clinical results after proximal gastric vagotomy compare with the Visick grade pattern of healthy controls. World J Surg 7:610-615, 1983.
15. Muller C, Lieberman-Meffert D & Allgöwer M: The different outcome of duodenal and pyloric channel ulcers after proximal gastric vagotomy. Scand J Gastroenterol 592: 19:210-214, 1984.
16. Nisell K: Five to nine years results of selective proximal vagotomy with and without pyloroplasty for duodenal ulcer. Acta Chir Scand 145: 145-151, 1979.
17. Rheault MJ: The difficulty in assessing the rate of recurrence after proximal gastric vagotomy. Can J Surg 26:202-203, 1983.
18. Salk RP, Gerson Greenburg A & Peskin GW: Pros and cons of parietal cell versus truncal vagotomy. Am J Surg 146:93, 1984.
19. Selking Ö, Krause U, Nilsson F& Thorén L: Parietal cell vagotomy and truncal vagotomy as treatment of duodenal ulcer. Acta Chir Scand 147: 561567, 1981.

20. Stoddard CJ, Vassilakis JS & Duthie HL: Highly selective vagotomy or truncal vagotomy and pyloroplasty for chronic duodenal ulceration: a randomized, prospective clinical study. Br J Surg 65:793-796, 1978.
21. Stoddard CJ, Johnson AG & Duthie HL: The four to eight year results of the Sheffield trial of elective duodenal ulcer surgery - highly selective or truncal vagotomy? Br J Surg 71:779-782, 1984.

Address for reprints

Björn-Åke Elfberg, M.D.
Department of Surgery
University Hospital
S-751 85 Uppsala
SWEDEN