World J. Surg. 24, 256–258, 2000
DOI: 10.1007/s002689910041

WORLD
Journal of
SURGERY

Current Status of Indications for Surgery in Peptic Ulcer Disease

Glyn G. Jamieson, M.B.B.S., M.S.

Department of Surgery, University of Adelaide, Royal Adelaide Hospital, Adelaide, South Australia 5000, Australia

Abstract. The eradication of *Helicobacter pylori* in patients with peptic ulcer disease has greatly diminished the need for antiulcer surgery. However, in societies where such drug therapy is considered too expensive and because occasional patients remain refractory to optimal medical therapy, elective surgery for duodenal ulcer disease is still carried out. If the required expertise is available, it can be undertaken laparoscopically. The advent of endoscopic therapies such as heater probe therapy and injection sclerotherapy has also greatly diminished the need for emergency surgery in bleeding peptic ulcer disease. Once again, however, when such therapy fails surgery is still indicated. Even with perforated peptic ulcer disease the role of surgery has receded somewhat, but here not because of changes in drug therapy. Nonoperative management of perforation is indicated in fit patients if the diagnosis is in doubt, in any patient when surgical facilities are unavailable (e.g., remote geographic areas, on board ship), or when a patient is extremely ill either because of comorbidity or late presentation of the disease. Operation should be considered in all patients when the perforation is established to be unsealed, particularly after a trial of conservative management, and in all patients who are otherwise fit.

Thirty some years ago in a well known surgical text of the era [1] indications for elective operation in peptic ulcer disease were listed as follows: (1) long history and failed medical therapy; (2) sustained pyloric stenosis or hourglass contracture of the stomach; (3) suspicion of malignancy; (4) previous complication, such as perforation or hemorrhage. With the exception of the last item, the indications for surgery have not changed greatly. What has changed, more than greatly, is medical therapy. Today medical therapy rarely fails to cure peptic ulcer disease, and therefore in many areas of the world elective surgery for peptic ulcer disease has all but disappeared.

Indications for Elective Surgery of Peptic Ulcer Disease

Failure of Medical Therapy

The medical literature of the world is dominated by studies in regard to *Helicobacter pylori*; and there is now clear evidence, and general acceptance, that treatment with eradication of *H. pylori* changes the natural history of peptic ulcer disease. For instance, a recent meta-analysis [2] showed that peptic ulcer recurrence was significantly less in patients in whom *H. pylori* had been eradicated when compared with patients in whom the organism had not been eradicated. The recurrent ulcer rates were 6% and 4% for duodenal and gastric ulcers when *H. pylori* was eradicated compared with 67% and 59%, respectively, when the organism was not eradicated. Because eradication can be achieved in about 95% of patients with peptic ulcer disease [3] it is clear that medical treatment cures most patients with peptic ulcer disease. Despite this enormous success of medical therapy, there are several reasons why elective surgery for peptic ulcer disease is unlikely to disappear altogether. First is the fact that medical treatment still sometimes fails; in such patients antiulcer surgery remains an appropriate option—more so since the advent of laparoscopic highly selective vagotomy [4]. Second is the cost of treatment, particularly when that treatment is centered on antisecretory drugs [5]. This means that in less economically developed countries, elective laparoscopic antiulcer surgery is likely to continue and may even flourish [6, 7]. Third is the fact that nonsteroidal antiinflammatory drug (NSAID)-induced ulcers are on the increase; and the role of antisecretory therapy, vis-à-vis laparoscopic antiulcer surgery for this type of peptic ulcer, has not yet been assessed.

Obstruction from Scarring

Liu and Wu have demonstrated the changes that have occurred in an *H. pylori*-aware world, documenting 701 patients who were treated surgically between 1982 and 1993. They found that the incidence of surgery overall had declined, even though the incidence of emergency surgery increased (see below). Furthermore, they found that after 1989 intractable pain and pyloric stenosis disappeared as indications for surgery [8]. It is almost certain that effective treatment of *H. pylori* and its associated peptic ulcer disease is responsible for these changes. In the unusual case where duodenal ulceration has led to fibrotic pyloric stenosis, we are still dealing with a mechanical problem, and surgery is strongly indicated. Laparoscopic truncal vagotomy/gastroenterostomy has been described for this condition and seems to be an attractive approach [9]. However, the paucity of patients in Western communities requiring such an operation today and the general belief that pyloroplasty is preferable to gastroenterostomy may slow the progression into the mainstream of laparoscopic procedures for this condition.

Suspicion of Malignancy

The problem of suspicion of malignancy in peptic ulcer disease is confined to gastric ulcers and is usually resolved with an initial biopsy or additional biopsies. For the rare nonhealing benign ulcer in the stomach, resection is indicated as much for cure of the problem as for preventing the development of malignancy.

Emergency Surgery for Peptic Ulcer Disease

The indication for surgery of peptic ulcer disease has largely contracted to complications of peptic ulcer disease, Although there is now little doubt that *H. pylori* plays a causative role in the development of peptic ulcer disease, it does not appear to influence its severity. For instance, Lee et al. [10] demonstrated that the *H. pylori* seropositivity of patients having complications of their peptic ulcer was similar to that for patients not having complications.

It also must be noted that the percentage of operations being carried out in patients with peptic ulcer disease has sharply increased in regard to emergency surgery, and there is no doubt that a large part of this increase has been due to the decrease in elective surgery. However, there is also a widespread belief that the need for emergency surgery has not fallen, probably because of the increasing incidence of NSAID-associated complications [11].

Hemorrhage

Meilahn and Ritchie [12] pointed out that about 70% of patients who present with bleeding from peptic ulceration stop bleeding without surgical or medical intervention. Therefore the task of the clinician is to select those patients who will require intervention. These authors listed the indications for significant risk of rebleeding as follows: (1) patients who present with shock and acute anemia; (2) documented coagulopathy; (3) hospitalized patients for other significant co-morbidity; (4) active bleeding at endoscopy or a visible vessel in the base of an ulcer.

In the past any of these situations would likely have led to early surgery. However, advances in the endoscopic treatment of bleeding vessels has changed the approach, and there is no doubt that the need for emergency surgery has greatly diminished. Endoscopic therapy for bleeding ulcer, whether by electrocautery, heater probe, or injection sclerotherapy, seems to control bleeding in 80% to 90% of cases. For those cases where bleeding recurs or is not controlled, surgery is indicated [12].

A small prospective, randomized, controlled study comparing old-style medical/surgical therapy with treatment by heater probe or injection sclerotherapy has been reported. It confirmed the now widespread belief that these endoscopic forms of therapy are much superior to medical/surgical therapy [13].

Perforated Peptic Ulcer

The era of H_2-receptor blocker treatment for peptic ulcer disease had already led to a sharp decline in the elective treatment of such disease [14]. Yet during this era there did not appear to be any fall in the rates of peptic ulcer perforation [15]. This seems surprising and means that we cannot assume on a priori grounds alone that the rate of perforation will fall during the *H. pylori* era. It is interesting that Liu and Wu [8] found no decrease in the incidence of peptic ulcer perforation during the period 1988–1992 compared to the 4-year period prior to 1988. On the other hand, over the period 1972–1992, one study did find a significant reduction in the incidence of perforated peptic ulcer [16].

Whatever the incidence of perforation, however, there is universal agreement today that those patients who have a perforated ulcer tend to be older, sicker, and taking NSAIDs [17] in comparison to patients of the pre-*H. pylori* era. Therefore the indications for surgery in patients with a perforation have changed somewhat.

Three risk factors must be considered when addressing indications for operation in these patients. The first is the presence of severe co-morbidity. The second is duration of perforation of more than 24 hours, and the third is the presence of hypotension on presentation (systolic blood pressure < 100 mmHg) [18]. Each of these factors increases the likelihood of a fatal outcome from surgery. It has been well established that conservative management with nasogastric suction, circulatory support, and antibiotics can be an effective treatment of perforated ulcer [19]; therefore it is clear that conservative management warrants serious consideration in older patients with the risk factors outlined above. Although each case must be individualized and not withstanding the foregoing, if a Gastrografin upper gastrointestinal series shows continuing free perforation despite the best conservative management, surgery may well become indicated.

Will the advent of laparoscopic treatment of perforated peptic ulcers alter the indications for surgery? So far, prospective comparisons of open surgery versus laparoscopic closure of perforations, whether in nonrandomized [20, 21] or randomized [22] studies have not established the superiority of the laparoscopic procedure in terms of morbidity. Therefore the answer to the question is: not at present.

Résumé

L'éradication de *H. pylori* chez les patients porteurs d'un ulcère gastroduodénal a beaucoup diminué l'indication chirurgicale. Cependant, dans les pays où les médicaments sont considérés comme trop chers, et parce que quelques patients restent réfractaires au traitement médical optimal, la chirurgie élective est toujours d'actualité pour la maladie ulcéreuse, et si l'expertise est disponible, elle peut être effectuée par laparoscopie. La possibilité de traitement endoscopique tel la coagulation «bicap» et la sclérothérapie ont également beaucoup diminué le besoin de chirurgie d'urgence pour hémorragie. Cependant, quand ces modalités thérapeutiques ne marchent pas ou ne sont pas disponibles, on peut encore avoir recours à la chirurgie. Par contre, pour la perforation, si le rôle de la chirurgie a rétrocédé un peu, ce changement n'a pas de rapport avec la disponibilité des médicaments. Le traitement non-opératoire de la perforation est indiqué chez le patient sans tare, en cas de doute diagnostique, et lorsque la chirurgie n'est pas disponible (par exemple, un patient qui se trouve en pays éloigné, sur un bateau, etc.), ou quand un patient est très sévèrement atteint soit en raison de ces tares, soit quand le diagnostic est établi tardivement. Une intervention est envisagée chez tout patient lorsqu'on se rend compte que la perforation n'est pas couverte, particulièrement après un essais de traitement conservateur, et chez tous les patients capables de supporter la chirurgie.

Resumen

La erradicación el "*H. pylori*" en pacientes con úlcera péptica ha disminuido drásticamente la necesidad del tratamiento quirúrgico de las úlceras gastroduodenales. En sociedades en las que esta terapia medicamentosa no puede ser ni considerada, debida a sus elevados costos, o en pacientes refractarios a este tratamiento, la cirugía electiva continua siendo la terapia de elección de la úlcera duodenal; si se adquiere una experiencia suficiente el tratamiento quirúrgico puede realizarse por vía laparoscópica. El advenimiento de terapias endoscópicas, tales como la termoterapia y escleroterapia, han disminuido drásticamente la cirugía de urgencia por estómago sangrante. Sin embargo, si estos tratamientos fracasanhabrá de recurrirse al quiúrgico. En las úlceras perforadas la circugía también ha sido relegada pero no, por el tratamiento médico. En perforado con buen estado físico, sobre todo cuando el diagnóstico es dudoso, puede instaurarse un tratamiento conservador; también serán subsidiarios del mismo, aquellos pacientes en los que no haya posibilidad de intervenir quirúrgicamente (p. ej. en áreas geográficas remotas, en navegantes, etc.) o cuando el paciente esté gravemente enfermo por causa de una comorbilidad o por haberse establecido muy tardíamente el diagnóstico. La indicación operatoria viene dada por toda perforación no tapada, especialmente después de un tratamiento conservador y en todos los pacientes que se encuentra en buen estado general.

References

1. Bailey, H.: Stomach and duodenum. In: Short Practice of Surgery, eds. H. Bailey, McN. Love, editors, London, Lewis, 1962, pp. 728–772
2. Hopkins, R.J., Girardi, L.S., Turney, E.A.: Relationship between Helicobacter pylori eradication and reduced duodenal and gastric ulcer recurrence: a review. Gastroenterology *110*:1244, 1996
3. Moayyedi, P., Sahay, P., Tompkins, D.S., Axon, A.T.R.: Efficacy and optimum dose of omeprazole in a new one week triple therapy regimen to eradicate Helicobacter pylori. Eur. J. Gastroenterol. Hepatol. *7*:835, 1995
4. Dubois, F.: Laparoscopic vagotomies. Probl. Gen. Surg. *8*:348, 1991
5. Fletcher, D.R.: Peptic disease: can we afford current management? Aust. N.Z. J. Surg. *67*:75, 1997
6. Ravindranath, K.: Laparoscopic vagotomy. Asian J. Surg. *21*:19, 1998
7. Casas, A.T., Gadacz, T.R.: Laparoscopic management of peptic ulcer disease. Surg. Clin. North Am. *76*:515, 1996
8. Liu, T.J., Wu, C.C.: Peptic ulcer surgery: experience in Taiwan from 1982–1993. Asian J. Surg. *20*:305, 1997
9. Wyman, A., Stuart, R.C., Ng, E.K.W., Chung, S.C.S., Li, A.K.C.: Laparoscopic truncal vagotomy and gastroenterostomy for pyloric stenosis. Am. J. Surg. *171*:600, 1996
10. Lee, W.J., Wu, M.S., Chen, C.N., Yuan, R.H., Lin, J.T., Chang, K.J.: Seroprevalence of Helicobacter pylori in patients with surgical peptic ulcer. Arch. Surg. *132*:430, 1997
11. Bliss, D.W., Stabile, B.E.: The impact of ulcerogenic drugs on surgery for the treatment of peptic ulcer disease. Arch. Surg. *126*:609, 1991
12. Meilahn, J.E., Ritchie, W.P.: Bleeding gastric or duodenal ulcer. In: Surgery of the Upper Gastrointestinal Tract, 5th ed., G.G. Jamieson, H.T. Debas, editors, London, Chapman & Hall, 1994, pp. 476–492
13. Gralnek, I.M., Jensen, D.M., Kovacs, T.O.G.: An economic analysis of patients with active arterial peptic ulcer haemorrhage treated with endoscopic heater probe, injection sclerosis or surgery in a prospective, randomised trial. Gastrointest. Endosc. *46*:105, 1997
14. Jamieson Glyn G.: Surgery for peptic ulcer disease in the era of H_2 receptor blockers. Dig. Dis. *7*:76, 1989
15. Alagaratnam, T.T., Wong, J.: No decrease in duodenal ulcer surgery after cimetidine, in Hong Kong. J. Clin. Gastroenterol. *10*:25, 1988
16. Hermansson, M., Von Holmstein, C.S., Zilling, T.: Peptic ulcer perforation before and after the introduction of H_2 receptor blockers and proton pump inhibitors. Scand. J. Gastroenterol. *32*:523, 1997
17. Walt, R.: Rising frequency of perforation in elderly people in the UK. Lancet *1*:489, 1986
18. Boey, J., Choi, S.K.Y., Poon, A., Alagaratnam, T.T.: Risk stratification in perforated duodenal ulcers: a prospective validation of predictive factors. Ann. Surg. *205*:22, 1987
19. Crofts, P.J., Park, K.G., Steele, R.J., Chung, S.S., Li, A.K.: A randomised trial of non-operative treatment for perforated peptic ulcer. N. Engl. J. Med. *320*:970, 1989
20. So, J.B., Kum, C.K., Fernandez, M.L., Goh, P.: Comparison between laparoscopic and conventional omental patch repair for duodenal ulcer. Surg. Endosc. *10*:1060, 1996
21. Miserez, M., Eypasch, E., Spangenberger, W., Lefering, R., Troidla, H.: Laparoscopic and conventional closure of perforated peptic ulcer, a comparison. Surg. Endosc. *10*:831, 1996
22. Siu, W.T., Leong, H.T., Li, M.K.W.: Laparoscopic treatment of perforated peptic ulcers. Asian J. Surg. *21*:22, 1998