SURGICAL MANAGEMENT OF PEPTIC ULCER DISEASE IN PROTON PUMP INHIBITOR ERA

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ABSTRACT

Objective — *To evaluate the important risk factors involved in complications of peptic ulcer disease and the need, timing, extent and outcome of surgery with the evolution of proton pump inhibitors.*

Study design — *Descriptive study.*

Place & Duration of study — *POF Hospital Wah Cantt, from December 2006 to December 2008.*

Patients and Methods — *All the patients presenting with complications of peptic ulcer disease (perforation, bleeding duodenal ulcers and gastric outlet obstruction) were included in this study.*

Results — *A total of 46 patients were included in this study. Thirty five patients had peptic ulcer perforation, 8 patients presented with bleeding peptic ulcer that failed to respond to medical and endoscopic treatment and 3 patients presented with gastric outlet obstruction. Smoking was the most common risk factor followed by the use of non streroidal anti inflammatory (NSAID) drugs and steroids. Ramadan fasting was also a factor in patients with history of dyspepsia. Peptic ulcer perforation was more common in patients in second and third decade of life as compared to bleeding which was more prevalent in fourth decade.*

Conclusions — *Modern medical and endoscopic therapy has caused a decline in complications of peptic ulcer disease but they are still prevalent in developing world. Smoking is one of the most common and important risk factors.*

Key words — *Perforated peptic ulcer, Bleeding peptic ulcer, Gastric outlet obstruction, NSAIDS, Smoking*

INTRODUCTION:

Medical therapy cures peptic ulcer in the vast majority of cases, therefore in many areas of the world elective surgery for peptic ulcer disease has almost but disappeared.[1] Selective histamine receptor blockers, proton pump inhibitors and antibiotic therapy were found to eradicate H pylori. Advances in the understanding of pathophysiology of petic ulcer disease has led to changes in its treatment. Surgical management of peptic ulcer disease is still useful in cases of drug failure or for patients unable to obtain the drugs or to comply with medical therapy. In most parts of the world, surgical therapy is now utilized primarily for complications of peptic ulcer disease. These are usually emergency operations. Currently up to 90 percent of all ulcer operations are interventions for complications including hemorrhage, perforation and gastric outlet obstruction.[2] Some believe that the need for emergency surgery has not reduced, probably because of the increasing incidence of NSAID-associated complications.[1]

Duodenal perforation is a common complication of duodenal ulcer. Perforated duodenal ulcer is mainly a disease of young men. Because of increasing smoking

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in women and use of NSAID in all the age group, nowadays peptic ulcer is commonly reported in all adult population. Up to eighty percent of patients with perforated duodenal ulcers are Helicobacter pylori positive. Perforation is the commonest and potentially fatal complication of peptic ulcer in patients who have chronic peptic ulcer symptoms with inadequate or no medical treatment.[3]

The incidence of gastroduodenal bleeding secondary to acid-peptic disease and hospital admissions for this complication have not significantly changed in the last 2 decades.[4] Evidence suggests that bleeding is more common as age increases. Mortality rates following ulcer bleeding have remained at approximately 10%.[5]

Gastric outlet obstruction is the third most frequent complication of peptic ulcer disease after bleeding and perforation and can occur during the acute phase of the disease or in chronic disease. Gastric outlet obstruction has traditionally been considered synonymous with pyloric stenosis as a result of peptic ulcer disease in adults. Recent reports concerning eradication of Helicobacter pylori associated with successful relief of obstruction without surgery contend that continued use of NSAIDs is associated with recurrent obstruction.[6]

PATIENTS AND METHODS:

This descriptive study was conducted at POF Hospital Wah Cantt from December 2006 to December 2008. All patients diagnosed with perforated duodenal ulcer presenting in emergency department, bleeding peptic ulcers failing to respond to medical therapy and benign gastric outlet obstruction were included in the study. A detailed history regarding previous episodes of dyspepsia, smoking, NSAID and steroid use was recorded on a simple questionnaire.

Patients with bleeding ulcers failing to respond to medical and endoscopic therapy including blood transfusion were referred from medical department as those with complaints of dysphagia and vomiting diagnosed as benign gastric outlet obstruction, proven on biopsy and barium studies. All the patients were resuscitated with intravenous fluids, nasogastric aspiration, urinary catheterization, analgesics, intra venous proton pump inhibitors and parenteral antibiotics. After adequate preoperative management, emergency laparotomy was done in all cases.

RESULTS:

A total of 625 patients presented to dyspepsia clinic during the study period. Forty six patients were finally included in the study. Thirty five patients presented with perforation, 8 with bleeding ulcers and 3 with gastric outlet obstruction. Out of 35 patients presenting with perforated peptic ulcer 32 patients were males and 3 females. The age range was between 18-70 years. Maximum number was seen in the third decade. Twenty nine (85%) patients presented within 24 hours while the rest of the patients presented with in 48 hours. Abdominal tenderness and generalized board-like rigidity were the most constant and prominent signs in 95% patients. Dehydration was found in 52%, fever in 40% and 10% patients were in state of shock at the time of admission.

Fifteen (42%) patients had previous history of peptic ulcer/dyspepsia of variable duration ranging from 1-2 years. 79% of patients with perforated duodenal ulcer were smokers, smoking 10-30 cigarettes per day. History of regular intake of NSAIDs was present in 4 patients. Two patients had a history of regular steroid intake for asthma. Immediate confirmatory investigations consiststed of radiological examination of the abdomen and chest in erect position which was positive in 85% cases. Duodenal perforation was found in 33 patients. Gastric perforation was seen in 2 patients. Both were in the third decade of life. One was an addict and the other one was heavy smoker.

All the patients with perforation were resuscitated and after adequate preoperative management, emergency laparotomy was performed. Complications occurred in 9 patients. Two had wound infection, four had ileus and three had post operative pneumonia. Two patients died in our series.

In patients with signs and symptoms of massive upper gastrointestinal bleeding (54 patients at the time of admission presented with signs of active bleeding, the remaining patients presented with signs and symptoms of recent gastrointestinal bleeding), intensive anti-shock treatment was urgently administered. All patients received 40- 80mg omeprazole and Sucralfate (after endoscopy). All patients underwent gastroscopy within 12 hours of admission. Sclerotherapy was done in all patients and bleeding was controlled in 36. Re-bleeding occurred in 18 patients and re-sclerotherapy was attempted in all. Good control was achieved in 4 patients while 8 were referred to surgery department. Six patients were operated in emergency with a mean blood transfusion of 5 units. Two patients were electively prepared and stabilized. Partial gastrectomy and vagotomy was done in one patient and local excision with vagotomy with gastric ulcers and vagotomy with pyloroplasty was done in rest of the patients.

Gastric outlet obstruction as a complication of peptic ulcer disease was seen in 3 patients. The most common complaints were early or late vomiting after meals, epigastric pain or discomfort and weight loss. Initially endoscope could not be passed through the pylorus in

any patient. At endoscopy ulceration with hyperemia was found in these patients. Stricture was seen in one of them. Barium studies confirmed gastric dilatation. All were male patients with age range of 22-48 years. All three had already completed H. Pylori eradication course. All were smokers and one also had a history of NSAID intake. All three patients were given parenteral nutrition for one week before operation and gastric lavage was done prior to surgery. Two patients were found to have pyloric scarring and Billroth type I gastrectomy was performed with vagotomy while pyloroplasty done in third patient. One patient developed ileus. All others had an uneventful recovery.

DISCUSSION:

Duodenal ulcer perforation is a common surgical emergency in our part of the world. The epidemiology of peptic ulcer disease (PUD) continues to change. A little more than a decade ago, the number of patients undergoing operation for complications appeared to be relatively stable. From a surgeon's perspective, data related to H Pylori infection and the classic indications for surgery—perforation, bleeding, and gastric outlet obstruction have until recently been largely inferential based upon treatment of those with uncomplicated peptic ulcers. Deviation from traditional surgical management might prove detrimental if other non-operative modalities be used.

Complications of peptic ulcer disease requiring operative intervention have remained important. However, the absolute number of procedures performed has significantly diminished in recent years.[7] The reason for the decrease in surgical intervention, both emergent and elective is multifactorial. Improvements in therapeutic endoscopy, the introduction of effective antacid therapy, and the recognition and treatment of H Pylori infection have all greatly contributed to the successful non-operative treatment of patients with peptic ulcer disease.[8] The risk of life-threatening ulcer complications in long-term NSAID use ranges from 1% to 4%.[9] 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 the risk factors for mortality in such a situation Smoking is a well known risk factor for uncomplicated ulcer disease and patients with ulcer bleeding have increased death rates from smoking related disorders.

In our study smoking as a major risk factor was seen in 79% of patients, which is comparable to other international studies.[10] An epidemiological study has shown an increase in digestive disturbance during the first week of Ramadan. Further, there has been a debate whether the patients with active duodenal ulcer should fast during Ramadan.[11] Incidence of duodenal ulcer perforation is relatively high in Ramadan among the people who are fasting. History of dyspepsia is an important predisposing factor for duodenal ulcer perforation in patients who are fasting. Patients with dyspepsia should be evaluated for peptic ulcer disease and if diagnosed should be treated before Ramadan fasting. However, those without any dyspeptic symptoms may fast during Ramadan. In our study 13 patients presented during Ramadan as reported in other studies.[12] All these patients had a history of dyspepsia or NSAID intake.

The age frequency of perforated duodenal ulcer remains to be on the younger side in our region as compared to other parts of the world. In our study 18 patients (51%) were below 30 years of age. Other studies reported most of the patients with perforated duodenal ulcer in 3rd decade of life.[13]

Immediate confirmatory investigation consists of radiological examination of the abdomen and chest in erect position. Maynard and Prigot found that the ordinary upright antero-posterior chest film revealed subphrenic free gas better than abdominal scout films. We also found free gas under the diaphragm in 78 % of our patients which is comparable to the reported literature.[14]

Treatment for perforated ulcer ranges from conservative treatment (Taylor's approach) to radical surgery (vagotomy, gastrectomy). However, with the use of powerful acid suppressing medication and the eradication of Helicobacter pylori, the need for radical surgery in emergencies has sharply declined. The surgical technique most often used is closure of the perforation combined with thorough peritoneal lavage. Repair of duodenal perforation by Graham patch plication represents an excellent alternative approach.

Conventional surgery for perforated peptic ulcer requires laparotomy with closure of the perforation. Routine addition of truncular or selective vagotomy is probably not necessary in most patients. In our study we performed omentopexy in patients with duodenal ulcers and repair of perforation with omental patch in one and Billroth I gastrectomy in another patient with gastric perforation.

Peptic ulcer is the most common cause of acute hemorrhage in the upper gastrointestinal tract, accounting for about 50 percent of cases.[15] Hemorrhage occurs in 25% patients with peptic ulcer at the age of over 50 years, and in 15-29% is the first sign of the disease. In patients with signs and symptoms of massive upper gastrointestinal bleeding intensive anti-shock treatment must be urgently administered. Endoscopic treatment of bleeding peptic ulcer is currently the method of choice. It is regarded as cost-effective, technically feasible, well

tolerated and relatively safe.[16]

Despite improvements in nonsurgical modalities such as proton pump inhibitors and therapeutic endoscopy, operation for peptic ulcer bleeding has remained constant; such operations are performed on 10% to 20% of all patients hospitalized for upper gastrointestinal tract hemorrhage.[17,18]

A further study at the University of California at Irvine noted that 19% of patients undergoing therapeutic endoscopy for ulcer bleeding required surgery.[19] Importantly, surgery was necessary on an emergent or urgent basis. Surgery is most often necessary in the acute setting, typically within 48 hours of initial bleeding. Just over 10 percent of patients require urgent surgery for bleeding despite endoscopic therapy.[20]

Eight patients underwent surgery following failure of endoscopic therapy in our study which is comparable with international data. Median blood transfusion in this final group was 4 pints, suggesting significant hemorrhage. Of the 12 patients randomized to repeat endoscopy, 8 patients underwent a failed endoscopy and required emergency surgical intervention. The overall complication rate was 35%. Patients with bleeding usually die not from exsanguination but from decompensation due to other disease. In our study 2 patients died, one developed post operative pneumonia and the other with history of bronchial asthma had a burst abdomen.

Benign gastric outlet obstruction secondary to peptic ulcer disease remains prevalent and represents approximately 5% to 8% of ulcer-related complications. Obstruction necessitates operation in about 2000 patients per year in the United States.[21] The morphologic and functional changes of the gastric outlet obstruction caused by peptic lesions may depend partly on the effect of the ulcer and partly on its impact on the underlying pyloric musculature.[22] Traditionally, the treatment for gastric outlet obstruction has been surgical, mainly vagotomy plus pyloroplasty or antectomy and later proximal gastric vagotomy and gastroduodenostomy. Scott contended that in the early stages of gastric outlet obstruction due to peptic ulcer disease, transient episodes of pyloroduodenal obstruction may occur and that this may respond well to acid suppressant treatment.[23] Pelot pointed out that for patients whose acute obstruction is completely relieved by a medical regimen, a decision regarding elective surgery should depend on the previous behaviour of the underlying ulcer disease. Most recently, therapy for gastric outlet obstruction primarily focused on 2 approaches, operative and non-operative. Surgical intervention directed at a formal acid-reducing procedure, has historically been the mainstay of therapy with repeatedly good results with low associated morbidity and mortality.[24] Non-operative management includes pneumatic dilation with or without treatment directed at H Pylori infection. In many instances, pneumatic dilation is used primarily, and frequently repeatedly, before consideration for surgical referral.[25]

Surgery for benign gastric outlet obstruction remains an important treatment modality either as initial therapy or following unsuccessful pyloric dilation. Options for treatment include highly selective vagotomy with some form of pyloroplasty, truncal vagotomy with gastroenterostomy, or truncal vagotomy with antrectomy. All have been reported with good results.[25] While vagotomy and antrectomy may offer the lowest rate of ulcer recurrence, other modalities remain important, especially in those with significant duodenal scarring. In our study 2 patients underwent antrectomy and vagotomy while one had pyloroplasty and vagotomy.

CONCLUSIONS

Modern medical and endoscopic therapy has caused a decline in complications of peptic ulcer disease but they are still prevalent in developing world. Smoking is one of the most common and important risk factors. Endoscopic balloon dilation or surgery should be performed only after failure of conservative treatment. Omentopexy is a simple and safe procedure and should be combined with drug therapy and should be chosen instead of an acid reducing operation. H. pylori eradication and anti-secretory treatment is a safe and effective therapy for peptic stenosis. Addition of proton pump inhibitors with NSAIDS or Cox2 inhibitors can lead to further reduction in such catastrophic complications.

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