

Facteurs prédictifs de survenue des troubles de la vidange gastrique après gastroentéro anastomose (GEA) pour ulcère sténosant.

Predictive factors of gastrointestinal motility dysfunction after gastrojejunostomy for peptic ulcer stenosis

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R É S U M É

Prérequis: Malgré le développement des traitements antiulcéreux et l'éradication de l'*Helicobacter pylori* dans le traitement de la maladie ulcéreuse duodénale, la sténose ulcéreuse du bulbe demeure encore fréquente en Tunisie. Son traitement essentiellement chirurgical, qu'il soit conservateur ou radical, expose à une morbidité chirurgicale importante. Les troubles de la vidange gastrique constituent la complication la plus fréquente surtout après un traitement conservateur.

But : Le but de ce travail est de dégager les facteurs prédictifs de troubles de la vidange gastrique après gastroentéro anastomose (GEA).

Méthodes : Il s'agit d'une étude rétrospective consécutive ayant colligé 116 malades opérés pour une sténose ulcéreuse du bulbe sur une période de 9 ans. Tous les patients ont bénéficié d'une bi vagotomie+ gastroentéro anastomose (GEA). Différentes variables préopératoires démographiques, cliniques, biologiques et radiologiques ont été analysées.

Résultats : Les patients se répartissent en 18 femmes (15.1%) et 98 hommes (84.5%). L'âge moyen est de 47.85 ans (extrêmes : 19-92 ans). 33 malades étaient abordés par voie laparoscopique soit dans 29 % des cas. Les troubles de la vidange gastrique étaient observés chez 12 patients (10.3%). A l'issue de l'étude univariée ; il ressort que le diabète (0.010), la cachexie (0.049) et la classification ASA (0.05) étaient des facteurs statistiquement significatifs. L'analyse multivariée avait conclu que la cachexie (0.009) et la classe ASA (0.02) étaient les seuls facteurs statistiquement liés à la survenue de troubles de la vidange gastrique.

Conclusion : Les troubles de la vidange gastrique constituent la principale complication après gastro-entéro-anastomose pour ulcère sténosant. La Chirurgie doit être précédée par une bonne préparation médicale. Les complications sont plus susceptibles de se produire chez les patients avec une classe ASA 2. Chez ce type de patient, on devrait privilégier d'autres options thérapeutiques tel que la dilatation endoscopique.

Mots-clés

Gastrojejunostomie; Sténose ulcéreuse; Complications chirurgicales.

S U M M A R Y

Background: Despite the establishment of effective medical therapies in peptic ulcer disease, gastric outlet obstruction remains one of the most common health problem in Tunisia. Various operations have been attempted, which may lead to postoperative morbidity. Gastrointestinal (GI) motility dysfunction is the most common complications.

Aim : to determine the predictive factor of gastrointestinal motility dysfunction after gastrojejunostomy for peptic ulcer stenosis.

Methods: We carried out a retrospective study to evaluate the postoperative recovery of the motility of the upper gastrointestinal tract after gastrojejunostomy for peptic ulcer stenosis. During the 9-year study, 138 patients underwent operations for ulcer peptic stenosis. Among the patients, 116 (84.1%) were treated with gastrojejunostomy. Descriptive statistics, univariate and multivariate analyses were performed.

Results: The mean age of patients was 47.85 years (range: 19-92 years) and most were male (84, 5 %). Ninety two (79.3%) patients had a documented history of peptic ulcer disease. The duration of symptoms ranged from 10 to 372 days (mean: 135.86 days). Eighty two (71%) patients were operated on through laparotomy. Laparoscopic procedure was performed in 29% of the patients. There was no operative mortality. Perioperative morbidity occurred in 12.4% (14 patients). Gastrointestinal motility dysfunction occurred in 12 patients (10.3%). It was treated by nasogastric aspiration and prokinetics. By univariate analysis; diabetes (0,010), cachexia (0,049), ASA class (0.05) were all statistically associated with gastrointestinal motility dysfunction in this series. Multivariate logistic regression analysis (table 2) showed that the cachexia (0,009), ASA class (0.02) were the main predictors of gastrointestinal motility dysfunction after gastrojejunostomy for peptic ulcer stenosis in the followed patients.

Conclusion: Gastrointestinal motility dysfunction is the most common complications after gastrojejunostomy for pyloric adult stenosis. Surgery must be preceded by careful medical preparation. It is more likely to occur in patients with an ASA class 2 or greater. Those patients should be considered for other treatment options, such as endoscopic balloon dilation.

Key- words

Gastrojejunostomy; Peptic ulcer stenosis; Surgery complication.

Despite the establishment of effective medical therapies in peptic ulcer disease, gastric outlet obstruction remains one of the most common health problem in Tunisia. Various operations have been attempted leading to significant rate of postoperative morbidity. Gastrojejunostomy has undoubtedly been the most widely used method and gastrointestinal (GI) motility dysfunction is the most common complication.

The aim of this study is to determine the predictive factor of gastrointestinal motility dysfunction after gastrojejunostomy for peptic ulcer stenosis.

PATIENTS AND METHODS

We carried out a retrospective study to evaluate the postoperative recovery of the motility of the upper gastrointestinal tract after gastrojejunostomy for peptic ulcer stenosis.

The medical records of all patients admitted at the Department of Surgery A, at the Rabta university Hospital with a diagnosis of peptic ulcer stenosis between January 2000 and December 2009 were studied. The peptic ulcer stenosis was confirmed by endoscopy. During the 9-year study, 138 patients underwent operations for ulcer peptic stenosis. Among the patients, 116 (84,1%) were treated with gastrojejunostomy.

The inclusion criteria for this study were: all the patients having bivaotomy and gastrojejunostomy for peptic ulcer stenosis during this period of nine years by laparotomy or laparoscopy. We exclude gastrojejunostomy for other causes of gastric outlet obstruction.

The data included in the analysis were the demographic, clinical, biological and radiological characteristics, surgical procedure and postoperative course. The mean outcome measure evaluated was postoperative recovery of the motility. Visick classification was obtained from the medical records. GI dysfunction was considered as digestive symptoms, such as nausea, vomiting, epigastric pain occurring in the post operative course with a high nasogastric outputs (greater than 500 to 1000 mL per 24 hours).

All statistical analyses were performed using the Statistical Package for Social Science (SPSS) version 11 (SPSS Inc., Chicago, IL, USA). Results were reported as mean $\pm$ standard deviation (SD) for quantitative variables and percentages for categorical variables.

Descriptive statistics, univariate and multivariate analyses were performed. Student's t-test was used for continuous variables and the chi-square test or Fisher's exact test for discrete variables. The accepted level of significance was $p < 0.05$.

Surgery

Nasogastric tubes were placed pre-operatively during 3 days. During this time, malnutrition is ameliorated by total parenteral nutrition and electrolyte abnormalities are corrected.

The operative procedure of gastrojejunostomy proceeded as follows. A midline incision is made from the xiphoid process just above the umbilicus. First, bilateral truncal vagotomy is performed. Then, we create an opening in the transverse mesocolon. A loop of jejunum approximately 15 cm from the ligament of Treitz is pulled up without tension in the prepyloric region of the stomach. The stomach and the adjacent jejunum are opened. An iso-peristaltic gastrojejunostomy was performed by a handsewn technique using 3-0 vicryl for the posterior

layer of seromuscular, then for the inner one. Finally, the transverse mesocolon is closed around the anastomosis to avoid herniation. The operative procedure of laparoscopic gastrojejunostomy proceeded similarly to that of open surgery. Two 10-mm and two or three 5-mm trocars were used. After Bilateral truncal vagotomy, the anastomosis is performed in a fashion similar to the laparotomic procedure. In one case, we have performed a stapled anastomosis using a GIA-60 stapling device by creating an incision in the stomach and jejunum. Then the linear stapler is placed into the lumen of each organ. The stapler is closed and fired. After removing the instrument, the staple line is inspected for homeostasis.

We remove the nasogastric tube on the third postoperative day, as long as the output has not been excessive (greater than 500 to 1000 mL per 24 hours)

In the presence of Gastrointestinal motility dysfunction, naso gastric aspiration has been maintained and the patients were put under prokinetics (Erythromycine: 1g/24h). In case of medical treatment failure or technical defect, patients underwent revisional surgery; a new gastrojejunostomy will be made.

RESULTS

The main age of patients was between 47 and 85 years (range: 19-92years) and most were male (84,5%). All patients of them had peptic ulcer stenosis confirmed by upper endoscopy. The majority of the patients had multiple risk factors for peptic ulcer disease. In fact, chronic alcohol consumption and tobacco use were noted in 27 (23,3%) and 71 (61,2%) patients, respectively. The mean American Society of Anesthesiologists (ASA) class of patients undergoing operation was ASA1 (96,6%), and 3,4% of them were ASA 2 (two diabetic patients). Ninety two (79.3%) patients had a documented history of peptic ulcer disease. The duration of symptoms ranged from 10 to 372 days (median: 191 days). The most common symptoms were vomiting (113: 97.4%) and abdominal pain (88: 75.9%). Weight loss was noted in 83 (71.6%) patients. Abdominal exam showed a Splashing Sound in 89 cases (76.7%) and cachexia (Marked weight loss) in 15 cases (12.9%). Demographic characteristics and preoperative clinical data are illustrated in Table 1.

Table 1 : Demographic characteristics and preoperative clinical data

Characteristic	N or %
Age (y)	85 years
Mean	47,85
Range	19-92years
Gender	
Male	98 (84,5%)
Female	18 (15,1%)
ASA status	
Class I	96,6%
Class II	3,4%
Tobacco use	71 (61,2)
Alcohol use	27 (23,3%)
History of PUD	92 (79,3%)
Duration of symptoms	10 to 372 days (median: 191)
Vomiting	113 (97.4%)
Abdominal pain	88 (75.9%)
Weight loss	83 (71.6%)

Eighty two (71%) patients were operated on through laparotomy. Laparoscopic procedure was performed in 29% of the patients. The conversion was necessary for 5 patients. Gastrojejunostomy was trans-mesocolic in 113 patients (97.4%). There was no operative mortality. Perioperative morbidity occurred in 12.4% (14 patients). Gastrointestinal motility dysfunction occurred in 12 patients (10.3%) who were treated by nasogastric aspiration and prokinetics. The further three patients underwent revisional surgery. They recovered well after their second operation. The median length of hospital stay was 9 days. By univariate analysis; diabetes (0,010), cachexia (0,049), ASA 2 class (0.05) were all statistically associated with gastrointestinal motility dysfunction in this series. Multivariate logistic regression analysis (table 2) showed that the cachexia (0,009), ASA 2 class (0.02) were the mean predictors of gastrointestinal motility dysfunction after gastrojejunostomy for peptic ulcer stenosis in the followed patients.

Table 2 : Analysis for predictive factor of gastrointestinal motility dysfunction

	« p »	OR	IC 95 %	
ASA II	,020	12,500	1,487	105,088
CACHEXIE	,009	7,143	1,620	31,486

DISCUSSION

Despite the recent advances in operative techniques and improvements in perioperative management, GI dysfunction remains one of the most frequent problems after gastrojejunostomy for GOO. It occurs in approximately 1% to 30% after gastric surgery. [1]

In the present study, 116 patients (84,1%) were treated with gastrojejunostomy and only 10.3% of them experienced gastrointestinal motility dysfunction. There was no uniformed criterion for defining GI malfunction. It is summarized as digestive symptoms, such as nausea, vomiting, epigastric pain occurring in the post operative course with a high nasogastric outputs (greater than 500 to 1000 mL per 24 hours). This complication was treated by nasogastric aspiration and prokinetics which may prolong the hospital stay and impairs the quality of life. Several possible pathogeneses for this gastric impairment have been postulated; however, the precise mechanism remains unclear. It is known that vagotomy can prolong the recovery of postprandial gastric emptying. [2]

However, this is not the mean reason for the early gastric stasis, but only one of the factors that lead to an impairment of gastric function. Our review of the experience with gastrojejunostomy for GOO revealed a few unexpected findings and confirmed earlier observations. The statistic analysis suggested that higher ASA class, diabetes (0,010) and cachexia were significantly associated with an

increased rate of gastrointestinal motility dysfunction. Our first 2 risk factors: ASA class, diabetes are not surprising and agree with previous findings. These patients often present autonomic nervous dysfunction due to their disease. In fact, diabetes is known to be the most common etiology for gastroparesis.[3]

The mechanism is believed to be a neuropathic process, with autonomic dysfunction leading to a gastric neuropathy. Those patients with high-risk for surgery should be referred to other treatment options, such as endoscopic dilation therapy. In the past, peptic pyloric stenosis was formerly an absolute indication for surgery leading to a higher rate of postoperative complications. [4] But now, medical and endoscopic pyloric dilation are so efficacious that surgical therapy plays only a minor role.[5] In a study by Griffin SM and AI, endoscopic balloon dilation of APS has been shown to be an effective treatment in high-risk patients for surgery with good short-term results.[6] However, repeated dilations will probably be necessary as it was noted in the study of Hewitt PM and AI [7] and within 2 years of dilation, over 50% of patients will require ulcer surgery.[8]

Our finding that cachexia (Marked weight loss) decreases the risk of surgical mortality has not been previously reported. We believe that it may be due to the edema in gastroenteric anastomoses. Such edema is related to plasma colloidal oncotic pressure. Whereas, in a study by Chauncey and AI, no relationship was found between delayed gastric emptying and postoperative serum protein values or colloidal osmotic pressure. [9] Although extreme forms of hypoproteinemia may be associated with anastomotic edema. In those patients, malnutrition should be ameliorated by total parenteral nutrition in order to decrease gastrointestinal motility dysfunction. Our review of the experience with gastrojejunostomy for GOO revealed a few unexpected findings. Surprisingly, we found that although laparoscopy is associated with less GMD than open procedure, this difference was not statistically significant. It can be concluded that gastrointestinal motility dysfunction is the most common complications after gastrojejunostomy for pyloric adult stenosis. It is clear that a randomized, prospective study is needed to clarify the exact predictive factors of GOO. In the absence of such, and in order to reduce this morbidity, perioperative parenteral nutrition in cachectic patients should be considered.

Surgery must be preceded by careful medical preparation which aims to decompress the dilated stomach and to restore its normal peristalsis, to correct the electrolyte balance and to improve the patient's general condition. Additionally, the GID was more likely to occur in patients with an ASA class 2 or greater. Those patients should be considered for other treatment options, such as endoscopic balloon dilation.

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