

BILIARY LITHIASIS IN PATIENTS WITH GASTRECTOMY

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Rezumat: Litiaza biliară are o incidență crescută la pacienții gastrectomizați, mai ales la cei cu anastomoză Billroth I și vagotomie tronculară.

Abstract: The biliary lithiasis has an increased incidence in patients with gastrectomy, especially those with Billroth I anastomosis and truncal vagotomy.

INTRODUCTION

Most authors consider that the etiology of gallstones after gastrectomy with truncal vagotomy or selective denervation gallbladder is caused by its expansion. The results of different studies are conflicting: some report an increased incidence of gallstones in gastrectomized women (Billroth I and II) versus control sample and no significant differences related to the type of the intervention. Other authors reported similar incidence of gallstones in men and women after truncal vagotomy and pyloroplasty or an higher gallstone incidence in patients with Billroth I gastrectomy than in those with Billroth II.

AIM OF THE STUDY

In the present study we analyzed the incidence and prevalence of gallstones in patients who undergone a gastrectomy with or without a truncal vagotomy with more than five years.

MATERIAL AND METHOD

There were enrolled in the study a number of 144 patients who underwent a gastrectomy with or without vagotomy with more than five years ago. All patients underwent primary surgical interventions and didn't underwent subsequent reinterventions on the upper digestive tract. The average age at the time of the intervention was 51 years age with extreme limits between 29 and 79 years of old. The surgical intervention for each patient consisted in gastrectomy with duodenal bulb resection. Attention was paid in full removal of the pyloric antrum and duodenal bulb, followed by gastroduodenal anastomosis. Vagotomy was performed in 56 patients, mostly young people. A number of 17 patients underwent truncal vagotomy and 39 underwent selective vagotomy

The patients from the sample underwent at least one abdominal ultrasound examination in order to evaluate the gallbladder in the first three years. In order to clarify the role of surgical intervention in the etiology of gallstone lithiasis, the incidence and prevalence of the lithiasis was followed at the moment of the intervention in relation to the age group and compared with gallstone prevalence at 5 years postoperatively in patients in the same age group of age. The prevalence of gallstone lithiasis postantrectomy was 12% (4/39), and after truncal vagotomy was 30% (5/17). Unoperated patients have been compared to those operated with five years ago. (Table 1)

Table no. 1. the prevalence of gallstone lithiasis in men before and at 5 years after antrectomy with or without vagotomy

Age (years)	≤ 45	46-55	≥ 56
Prevalence before (no of cases)	2/50 = 1%	3/35 = 9%	6/59 = 10%
Prevalence after 5 years (no of cases)	3/38 = 8%	7/30 = 24%	19/76 = 25%
P	<0,001	<0,02	<0,02

The statistical significance was interpreted with Chi square test and Fischer test.

RESULTS

Before the antrectomy the prevalence of biliary lithiasis in ulcerous patients was bigger in patients with ulcer and 5 times higher in women than in men. (Tabel no. 2)

Table no. 2. The prevalence of biliary lithiasis related to age and gender of unoperated patients

Gender (years)	≤50	> 50	Percent (%)	No of cases
Men	2	12	6	116
Women	15	41	31	28

During the 5 years of study after Billroth I gastrectomy, with or without vagotomy, 18% of patients with normal gallstone before the intervention developed gallstones after intervention. This percentage is not significantly correlated with patient age or sex (Table no.3).

Table no. 3. The incidence of gallstone lithiasis at 5 years after gastrectomy in patients with normal preoperatively gallbladder

Gender	Men	Women	All patients
Antrectomy	8/46	2/14	17%
Antrectomy și vagotomie	7/40	1/3	19%
Percent	17	18	18

In men, the prevalence increased significantly after gastric resection for each age group (7-15%) (p <0.02). (Table no.3) Apparently the stones were formed early after surgery, because 83% of cases were diagnosed in the first three years of the study 5 (the expected rate of 60%). In men, average preoperative weight (72.5 kg) was identical in patients with or

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CLINICAL ASPECTS

without stones after antrectomy. In men with gallstones after surgery, mean weight change over the 5 years after antrectomy was 1.5 kg vs. + 1.8 kg in those without stones. Only 5 of the 37 patients with postoperative stones over the 5 year study underwent cholecystectomy during this period.

DISCUSSIONS

In this study we demonstrated that the prevalence increases after gastroduodenostomy and antrectomy. The gallstone formation increases after truncal vagotomy rather than the selective intervention. In a study population in Malmö and Prague (11) lithiasis prevalence in women was 1.5-2 times higher than in men, in the Framingham study (1), the prevalence was 3-6 times higher in women. Also, the incidence rate of gallstone disease in women over a period of 10 years was 2-4 times higher than in males (11.2). It was made an association between peptic ulcer and gallstone. In this case, the incidence of lithiasis equal to men and women at five years after antrectomy and gastroduodenostomy (Table 2) suggests that there is a major increase gallstone after this procedure. This increased incidence of gallstones was not associated with increased body mass.

The method of statistical calculation can record errors due to different susceptibility to produce calculi between different age groups. Similar incidence of gallstones after gastrectomy in different age groups contradict this source of error.

Vagotomy, sympathectomy, cholestasis are risk factors for gallstone disease in patients gastrectomized. Studies carried out by Kinoshita et al. have determined that the period between gastrectomy and detection of gallstones was from 1 year to less than 10 years, the vast majority of patients presenting after a long stones. Most stones were pigmented (63.5%) and to a lesser extent mixed, combined and cholesterol, which is explained by a positive bacterial cultures of Gram negative bacilli Ball at 68.4% of patients (4).

Truncal vagotomy and gastro-jejunoanastomosis do not affect gallbladder contractility in the short term but are long-term sludge formation (9). Experiments have shown that in patients with truncal vagotomy and pyloroplasty, plasma cholecystokinin and gallbladder response to intraduodenal fat were significantly delayed compared with normal subjects. Thus, truncal vagotomy with pyloroplasty influence "timing" but not the magnitude of fat stimulated gallbladder contraction and secretion of endogenous cholecystokinin (5).

Vagotomized patients was highlighted increasing molar fraction of vesicular cholesterol in bile, increased total protein concentration of bile and biliary infection rate (8).

Overselective vagotomy, selective vagotomy and antrectomy have shown superiority over selective vagotomy and truncal vagotomy with pyloroplasty or pyloroplasty in preventing biliary stasis related to gallstone postvagotomy (3).

A positive correlation between the risk of stones by vesicular hypomotility was established with total gastrectomy, subtotal gastrectomy and lymph evisceration with Billroth II anastomosis presence (GI jejunoanastomosis - maximum contractile rate was significantly reduced compared to Billroth I - gastro-duodenal anastomosis) the exclusion of the duodenal digestive circuit and relative or absolute excess of endogenous opioids (10). Another cause of high risk for gallstone disease in patients with truncal vagotomy is to increase resistance to flow through the sphincter of Oddi resulting in dilated gallbladder with biliary stasis (6).

CONCLUSIONS

The results of this study demonstrate that the lithiasis disease is a consequence of Billroth I gastric resection that induces a significant increase of approximately 10% over 5 years. Truncal vagotomy further increased by 10% probably by dilating the gallbladder. Added selective vagotomy gastric resection does not increase the incidence of gallstones. Opinions about the effect on lithogenesis by ball vagotomy are contradictory and the mechanism of increased production of gallstones after gastric resection is not fully explained. The study shows that after gastrectomy gallstone disease occurs early (within 3 years) postoperatively, the reason may be transient susceptibility of the patients (7). In conclusion, the risk of gallstone disease in patients with Billroth I grows about three times (Table 3). Additional selective vagotomy does not increase the incidence of gallstones and should be preferred to the truncal vagotomy.

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