

Pre-operative work-up before bariatric surgery: Should ultrasonography and upper gastrointestinal endoscopy be done routinely?

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Abstract

Aim: The objective of this research was to clarify whether routine upper gastrointestinal endoscopy and abdominal ultrasound examination before bariatric surgery affect the surgical plan in our bariatric center.

Material and Methods: Bariatric surgery was performed in 320 patients between January 2015 and February 2018 in our bariatric center. The files of 185 patients who underwent upper abdominal ultrasonography and upper endoscopy in the preoperative workup period were assessed retrospectively. Collected data; age, gender, BMI before operation, sonographic findings, endoscopic findings, and subsequent follow-up plan. The patients were separated into four groups regarding sonographic and upper endoscopy findings.

Results: The mean age of the participants was 41.01, 65 (35.1%) were female and 120 (63.9%) were male. The mean BMI was 42.2 kg/m². Ultrasound was found normal in 75 participants (40.5%) and one or multiple abnormal findings were detected in 110 patients (59.5%). The procedure was delayed or canceled for patients (2.1%) according to the sonographic findings which required workup and treatment before surgery. Normal endoscopy without findings appeared in 47 participants (25.4%) while one or more abnormal findings was appeared in 138 patients (74.6%). Patients who had serious esophagitis, gastroesophageal reflux disease, grade D esophagitis or wide hiatus hernias were treated on regime change and proton pump inhibitor drugs but these circumstances were contemplated to be an evaluation for gastric bypass and a inappropriate for sleeve gastrectomy.

Conclusions: Ultrasound findings affected the offered surgical timing in 3 (2.1%) of 185 patients reviewed and should be reserved for symptomatic patients only. Depending on the abnormal abnormalities in the gastroscopy, the procedure was canceled, altered or deferred at 48.4%. We suggest that endoscopy should be performed routinely in light of these results.

Keywords: Bariatric Surgery; Ultrasonography; Endoscopy; Work-Up.

INTRODUCTION

In both developed and developing countries, obesity (body mass index > 30 kg / m²) is increasing and currently, there are about 1.7 million people affected by the disease (1). Morbid obesity has been related with various gastrointestinal diseases and hepatobiliary pathologies. It has been conducted that morbid obesity is an significant risk factor for the progression of gastroesophageal reflux disease (GERD), erosive esophagitis, hiatus hernia, gallbladder and liver disease (2). Bariatric surgery has been recognized as a successful treatment for severe, medically complicated and resistant obesity.

The possible advantage of upper endoscopy and abdominal ultrasonography for routine evaluation of morbid obese patients prior to bariatric operation have not been clarified yet. Although there have been controversies about the evaluation of upper gastrointestinal (UGI) endoscopy prior to bariatric surgery, some latest guidelines recommend UGI endoscopy (3). However, other researchers promote a selective attempt for asymptomatic patients. Because the price and invasiveness of UGI, as well as the most lesions discovered on routine UGI, have a relatively poor clinical relationship (4). Routine usage of preoperative abdominal ultrasound in morbid obese

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patients prior to bariatric surgery is controversial. On the other hand, some operating surgeons think it is necessary to detect any intraabdominal pathology with or without organomegaly that may affect the patient. Although some bariatric guidelines (5) have been proposed abdominal ultrasonography only for symptomatic patients and impaired laboratory research, other guidelines (6) yet recommend routine utility for all patients preoperatively.

The purpose of this study was to clarify whether routine UGI endoscopy and abdominal ultrasound examination before bariatric surgery influence the surgical plan in our clinic.

MATERIAL and METHODS

All patients who admitted to our clinic for obesity operation were evaluated by the bariatric unit. Bariatric operation was performed in 320 patients between January 2015 and February 2018 in our clinic.

The files of 185 patients who underwent upper abdominal ultrasonography and upper endoscopy in the preoperative preparation period were evaluated retrospectively. Bariatric surgery was chosen by the bariatric team who meet the bariatric operation criteria of our hospital (body mass index (BMI) > 35 kg/m² with certain concomitant diseases or BMI patients > 40 kg/m² without certain comorbidities). After reviewing all studies, the type of procedure between the patient type and the bariatric team was discussed and accepted.

In our gastroenterology department, gastroscopy was performed by experienced gastroenterologists whether or not sedation under local spray anesthesia and the findings were entered in our clinic dataset. To detect *H. pylori*, the *Campylobacter*-like organism test (CLO test) was performed in all endoscopic procedures and multiple biopsies were taken in existence of an ulcer or lesion.

Fasting ultrasonography is usually performed in our clinic before any bariatric surgery to evaluate intra-abdominal organs in the organomegaly or evident pathology that may affect the operation.

Collected data; age, gender, BMI before surgery, sonographic findings, endoscopic findings, and subsequent follow-up plan.

The patients were separated into four groups regarding sonographic and upper endoscopy findings: Group 0 consisted of patients with normal sonography and gastroscopy; In Group 1, there were patients with non-significant sonographic and endoscopic findings that did not interfere with the surgical plan. Group 2 consisted of patients with important findings that did not interfere with the procedure but required subsequent follow-up; Group 3 consisted of significant findings and impact on the procedure (the procedure was postponed or canceled or the procedure type was changed).

Statistical analysis

The SPSS 22.0 packet program was used to analyze the

data. Categorical quantifications were summarized as numbers and percentages, and continuous quantifications were summarized as means and standard deviations.

RESULTS

Between January 2015 and February 2018, 320 patients admitted to our clinic for bariatric surgery; Preoperative UGI endoscopy and abdominal ultrasonography were performed in 185 patients. Data from patient files were received and assessed.

The mean age of the participantes was 41.01 (range 23 to 60), 65 (35.1%) were female and 120 (63.9%) were male. The mean BMI was 42.2 (range 40-48) kg/m² (table 1).

Sonographic findings are varied among different participants (Table 2). Ultrasonography was found normal in 75 participants (40.5%) and single or multiple abnormal findings were detected in 110 participants (59.5%).

Table 1. Distribution of demographic parameters

	N	%	Mean(range)
Sex			
Male	120	64.8	
Female	65	35.2	
Age			41.01 (23-60)
BMI			42.2 (40-48)
Co morbidities			
Diabetes	28	15.1	
Hypertension	18	9.7	
Sleep apnee	11	5.9	
COPD	3	1.6	
Coronary artery disease	5	2.7	

Table 2. Distribution of sonographics findings according to the groups

US	Findings	n	%
Group 0			
No findings	Normal	75	40.5
Group 1			
Finding not significant, did not effect the procedure	Fatty liver	96	51.8
	Hepatomegaly	27	14.5
	Simple liver cyst	4	2.1
	Simple kidney cyst	7	3.7
	Splenomegaly	5	3.2
	Hemangioma	9	4.8
Group 2			
Post op follow-up and did not effect the surgical plan	Cholelitiiazis	14	7.5
	Nepfrolitiiazis	10	5.4
	Gallbladder polyp	3	1.6
Group 3			
Significant findings and effect on the procedure	Suspicious liver lesion	3	1.6
	Liver multipl focal nodule	1	0.5

Regarding insignificant sonographic detections, hepatosteatosis and hepatomegaly were present in 96 patients (51.8%), 27 patients (14.5%) respectively, while simple kidney cyst, and liver cyst found in 11 patients (5.8%) and other insignificant findings were detected in fourteen participants (8.0%). However, significant findings including cholelithiasis, nephrolithiasis, and gallbladder

polyps in 14 (87.5%), 10 (15.4%), and 3 (1.6%) patients respectively. Doubtful liver lesions found in three patients (1.6%), liver multiple focal nodular hyperplasia lesion detected in one patient (0.5%).

The detections were assessed among different groups regarding to their clinical importance; and in case of several findings, the most clinically important finding was evaluated for assay. Patients who had normal abdominal ultrasonography (group 0) and patients with nonsignificant findings (group 1) were operated promptly; the patients in the second group continued the operation with the findings requiring further follow-up and they were followed up with outpatient surgery related to sonographic findings. The operation was delayed or canceled for patients in group 3 (n= 4.2.1%) with sonographic findings which required workup and treatment prior to surgery.

Endoscopic findings varied between different participants (Table 3).

Endoscopy with normal findings appeared in 47 patients (25.4%) while one or more abnormal findings was appeared in 138 participants (74.6%). Among insignificant findings, pure gastritis (erythema or erosion of the gastric mucosa without bleeding) was found in 48 patients (37.7%) and simple duodenitis in 12 patients (8.7%), five patients (3.6%) had a small hiatal hernia (<2 cm). However, important findings were more frequent and consisted of: in 67 participants (48.4%) esophagitis / GERD (degrees A, B, and C), in 3 patients (2.1%) Grade D esophagitis, wide hiatus hernia (> 2) cm in 13 participants(7.0%), erosive gastritis (injury or erosions of gastric mucosa leading to easy bleeding), 50 patients with duodenitis (36.2%), 62 patients (44.9%) positive CLO test, gastric ulcer in 4 patients (2.8%) (Table 3).

Table 3. Distrubition of endoscopic findings according to the groups

	Findings	n	%
Group 0			
No findings	Normal	47	25.4
Group 1			
Finding not significant, did not effect the procedure	Non erosive Gastritis	48	34.7
	Duodenitis	12	8.7
	Helicobacter pylori	62	44.9
	Hiatal hernia (<2 cm)	5	3.6
Group 2			
Post op follow-up and did not effect the surgical plan	Erosive Gastritis	50	36.2
	Gastric ulcer	4	2.8
Group 3			
Significant findings and effect on the procedure	Esophagitis / GERD		
	Grade A esophagitis	34	24.6
	Grade B esophagitis	27	19.5
	Grade C esophagitis	6	4.3
	Grade D esophagitis	3	2.1
	Hiatal hernia (>2 cm)	13	7.0

Patients underwent direct bariatric surgery with normal endoscopy. Patients with non-complex gastritis and duodenitis initiated with oral proton pump inhibitors and regime change and then underwent operation. Patients with minor hiatus hernia progressed straight to operation without any manifestations and the hernia was evaluated peroperatively. Patients with serious esophagitis, GERD, Grade D esophagitis or wide hiatus hernias were treated on regime change and proton pump inhibitors however these circumstances were contemplated to be an indicator for gastric bypass and a contraindicator for sleeve gastrectomy.

For patients who had a positive CLO test, bariatric surgery was delayed until a complete treatment process (triple therapy as recommended by the gastroenterology team) was obtained (approximately 2 weeks).

Procedures for patients with important findings like erosive gastritis and/or duodenitis or peptic ulcers (gastric or duodenal) were delayed until patients admitted prompt therapy.

If redo gastroscopy and CLO test after 6-8 weeks indicated the healing of ulcers or erosions and elimination of H. pylori, they then underwent to operation.

All participants were treated by proton pump inhibitors daily for 3-5 months following bariatric operation.

DISCUSSION

Obesity is a general health problem with increasing number and prevalence. Obesity is becoming more and more noticeable with the consequences of general health.

The literature explaining the benefits of bariatric surgery is increasing. Routine usage of abdominal ultrasound in preoperative studies of all obese patients who applied for bariatric surgery is a contradiction between surgeons and different bariatric centers.

In its current guidelines, the American Association for Metabolism and Bariatric Surgery recommends the separation of abdominal ultrasound for patients with hepato-biliary disease symptoms and deranged liver function tests (5).

Many physicians implicate that it is necessary to display all patients prior to bariatric surgery to prevent probable biliary disease after operation (7). In the 2008 outlines by the American Gastrointestinal and Endoscopic Surgeons Association, a probable benefit of preoperative transabdominal ultrasonography for gallstone and liver disease is recommended for the clinical application of laparoscopic bariatric surgery (6). Papasavas P et al. (8) found no important distinction in the ratio of cholecystectomy between asymptomatic patients who were displayed and patients who were not displayed in a research evaluating gallbladder screening prior to surgery in patients undergoing laparoscopic bariatric surgery (9).

Abou Hussein BM et al. concluded that the usage of ultrasound does not have a direct effect on the operational

scheme for morbid obese patients who underwent obesity operation (9). In our study, the preoperative routine ultrasonography was untrustworthy and presented a very low prognostic value; the authors suggest that ultrasonography should be reserved for symptomatic patients.

The application of routine gastroscopy in preoperative preparations of all morbid obese patients who applied for bariatric operation stays one of the most arguable issues between surgeons and various bariatric centers. Patients arranged for restrictive operations like laparoscopic sleeve gastrectomy or an adjustable gastric band might be at more risk for aggravating GERD, Barrett's esophagus, and further complications (10,11). These patients should require more preferable guidance and a suitable bariatric operation.

Guidelines for gastroscopic screening prior to surgery are unclear. The American Gastrointestinal Endoscopy Association (12) does not suggest blanket screening but recommends individualization of the judgment to the patient. However, the European Society of Endoscopic Surgery (13) suggests gastroscopy prior to surgery but ensures limited supportive proof.

As yet, the American Society for Metabolic and Bariatric Surgery suggests gastroscopic assessment for clinically symptomatic patients (5).

The currency of abnormal endoscopic detections in morbid obese patients ranges from 30% to 89.7%. The most frequently recorded abnormal findings were gastritis (13.6 - 28.7%), hiatus hernia (9 - 40%), and esophagitis (9.2% - 17%) (2).

Frigg A et al. recommended routine endoscopy prior to bariatric surgery due to the high incidence of upper gastrointestinal abnormal findings (14). Sharaf RN et al. reported clinically significant findings in 61.5% of patients with routine endoscopy prior to surgery (15). In a study of 1278 patients by Abou Hussein BM et al. (16) concluded that 89.4% of the participants there was a single or multiple abnormal finding that they had undergone preoperative endoscopy. The patients were arranged in to the three groups: Group 0 with normal gastroscopy consisted of 10.6% of patients (n = 135), Group 1 with insignificant findings that did not influence the schedule or kind of planned procedure consisted of 25.6% of patients (n = 327), while the greater part of patients (63.8%, n = 816) were designate for Group 2 with important findings that required postponing the surgery (for roughly 10 ± 2 weeks), modification of the surgery or even abandoning it. In our study significant findings were present in 67 patients (48.4%) that required postponing or cancelling the surgery.

A systematic review and meta-analysis by Bennett S et al. (17) conducted that preoperative gastroscopy, asymptomatic bariatric surgery patients at an average risk, should be considered as optional because of the low rate of endoscopes leading to significant changes in management.

Clarification for the highly variable outcome of the important findings between various researches is that various surgeons cope with gastroscopic findings at different extents of consideration without a prompt definition of clinically relevant findings and scheduled operation. This has proposed various guidelines in the handling of endoscopic findings (18,19).

CONCLUSION

In the present study, ultrasound findings affected the planned surgical plan in 3 (2.1%) of 185 patients reviewed. Ultrasonography should be optional and reserved for symptomatic patients only. Although some surgeons are still unwilling to carry out routine upper gastroscopy prior to bariatric operations; In doing so, we had high clinical importance. Depending on the abnormal abnormalities in the gastroscopy, the procedure was canceled, altered or postponed at 48.4%. In addition, after some operations, endoscopic procedures are difficult or impossible to perform later. We suggest that endoscopy should be performed routinely in light of these results. Because our study is a retrospective study, we think that a larger number of single or multicentric prospective, randomized follow up studies may provide better results.

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