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Medical Management of Patients with Modified Intestinal Bypass: A New Promising Procedure for Morbid Obesity

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Conclusion: MIBP surgery (Elbanna operation) solved the medical problem of nutritional deficiency post intestinal bariatric surgeries. Our concept changed from maldigestion and malabsorption to good digestion and selective absorption.

Keywords: bariatric, gastrointestinal, obesity, modified intestinal bypass (MIBP), laparoscopic, elbanna.

I. INTRODUCTION

There are several well-established health hazards associated with obesity e.g.: NASH, type 2 diabetes, heart disease, GERD, GI motility disorders, sexual disorders, depression and others. The risk of development of such complications rises with increasing adiposity, while weight loss can reduce the risk [1]. Weight loss is encouraged in any mean to overcome morbidity and diseases –affecting survival. For patients with BMI ≥ 40 kg/m² who have failed to lose weight with diet, exercise and drug therapy, and those with BMI > 35 kg/m² with obesity-related comorbidities,

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bariatric surgery become the clue, whatever the laparoscopic bariatric approach is preferred over the open approach [2]. Medical management and follow up of patients who have undergone bariatric surgery is a challenge opportunity for a skilled Gastroenterologist, including an assessment and treatment of possible nutritional defects, eating disorders, dysmotility syndrome, elevated liver enzymes and psychosocial problems. Occasionally, patients develop vomiting and nutritional deficiencies as a result of food intolerance and malabsorption respectively after bariatric surgery [3,4]. As well as chronic medical conditions; D.M, Hypertension and Non Alcoholic Steatohepatitis (NASH) improve after bariatric surgery, clinicians should monitor medications' doses after the surgery in an intimate follow up [5, 6]. Gastroenterologist should have much knowledge –related different and recent bariatric procedures to expect further complications and follow up accordingly.

II. PATIENTS AND METHODS

We have experienced 156 patients medical follow up; 122 females (78.2%) and 34 males (21.8%), aged 21 to 52 years old; (39.7 \pm 9.2) mean age, with morbid obesity BMI ≥ 40 kg/m² who have undergone (MIBP) in the period from December 1999 to December 2010. All subjects have undergone a new modified intestinal bypass MIBP surgery (Novel Elbanna bariatric surgery). Subjects were followed up for 3 years after the novel procedure, as well as we evaluated nutritional supplements, eating disorders, vomiting, and other post operative complications. Follow up included EWL and Evaluation of (ca++), albumin, Hg, iron, zinc, B12 and PC levels at the time of operation, 3, 6 and 12 months postoperatively and every year thereafter for 3 years.

We retrospectively reviewed their data, in the Gastroenterology-Bariatric Units of Al Azhar University Hospitals- faculty of Medicine, and other private centers- Arab Republic of Egypt.

All patients presented with comorbidities of DM, Hypertension, Cardiac problem, Respiratory failure Type

I or NASH at the time of presentation, all patients were non-alcoholic due to religious belief. Alcoholic patients were excluded from our study.

The study was conducted with the approval of the Institutional Board committee of Al Azhar University Hospitals Committee-Cairo-Egypt. We received informed written consent form each patient.

III. STATISTICAL STUDY

Statistical analysis was used to determine the association between the BMI and each case group of non-alcoholic patients presented with morbid obesity, Qualitative data of EWL (Excessive weight loss) were expressed as number and percentage.

Data were statistically described in terms of mean \pm standard deviation ($M \pm SD$). Comparison

among different time points was done using one way analysis of variance (ANOVA) test with posthoc multiple 2-group comparisons. p values less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

IV. RESULTS

Significant EWL post operatively after three months (35), six months (57%), one year (71%), two years (80%), three years (84%), followed by nearly a stationary course till the moment.

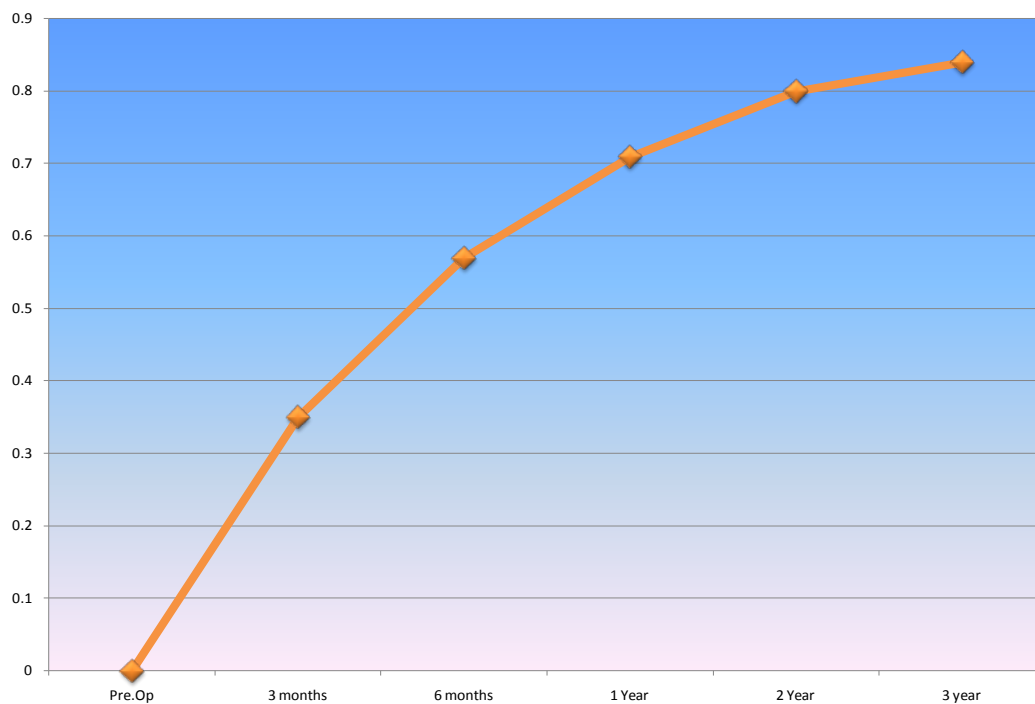
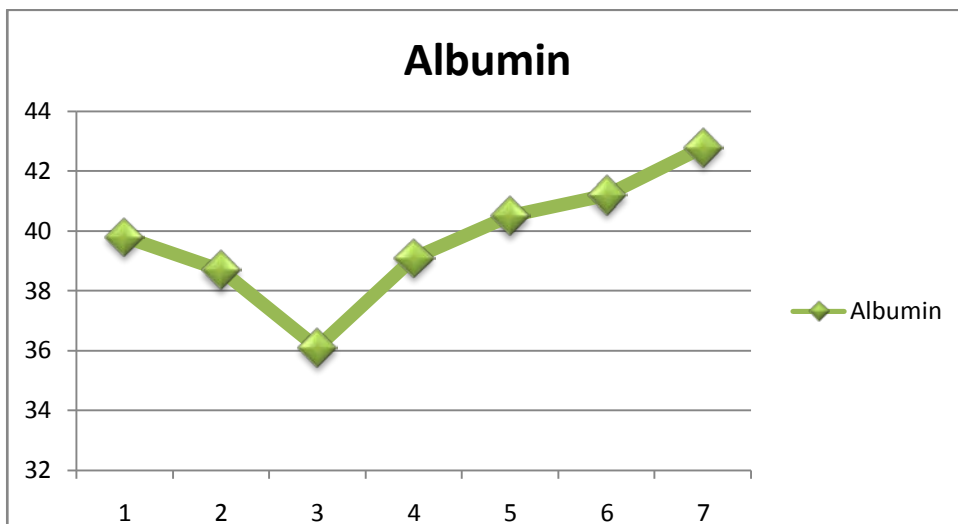
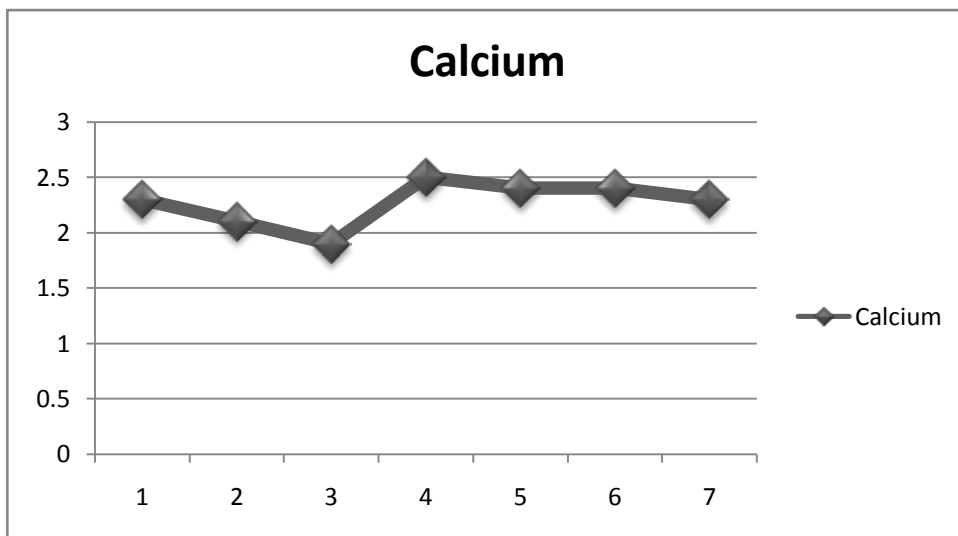


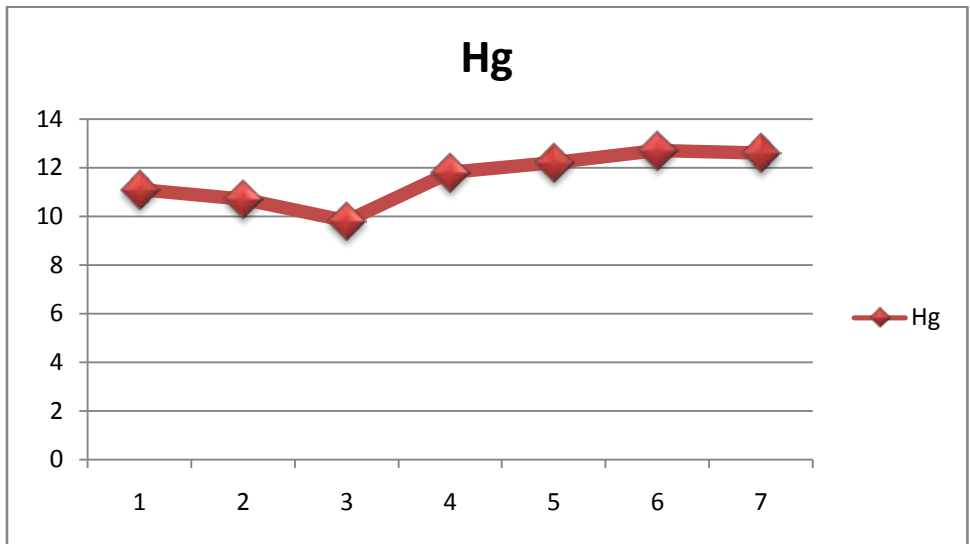
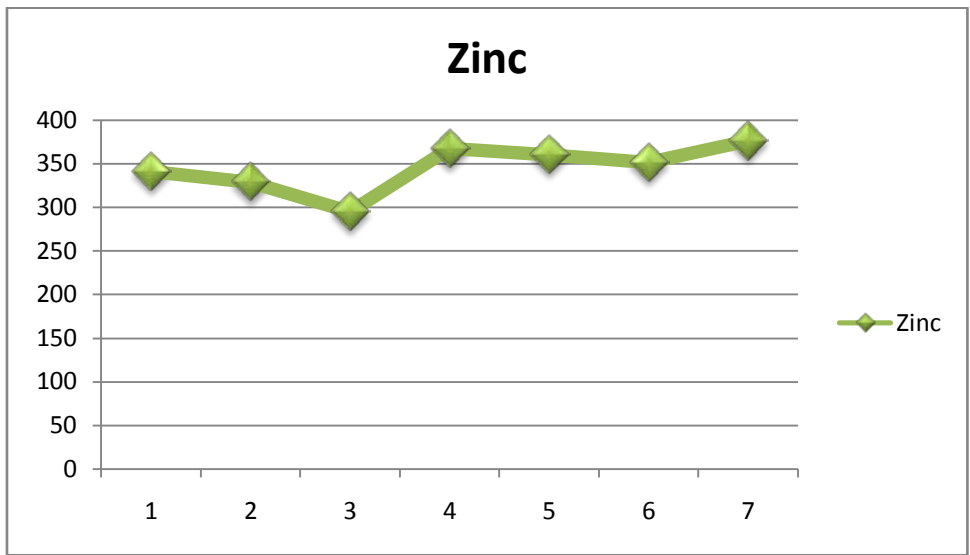
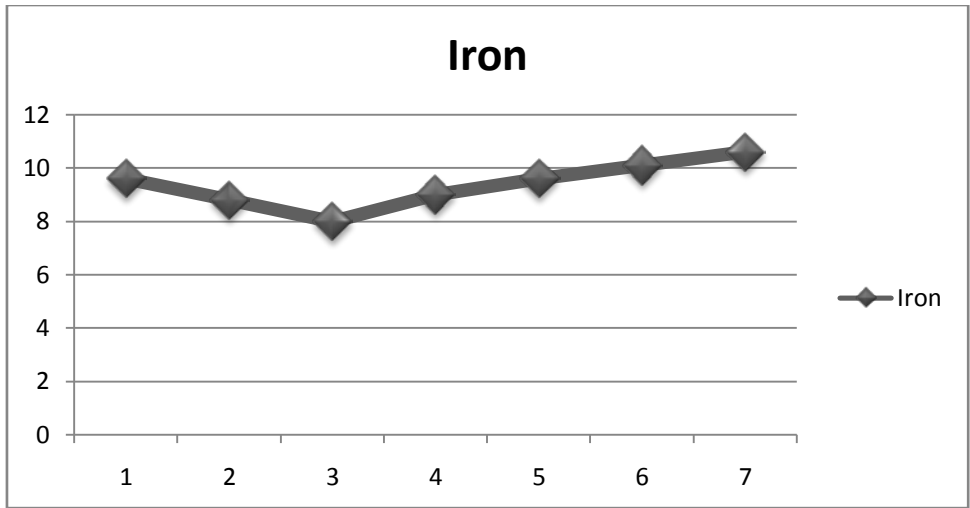
Figure 1: showing EWL through 3 years post operative

Zinc and hemoglobin decreased at 3, 6 months post operatively. For B_{12} , significant decrease occurred at 6th month followed by significant increase in the 1st year and thereafter. Albumin decreased only between 3rd and 6th month otherwise became normal all over the study. Iron shows significant decrease at 3, 6 months and 1st year post-operative followed by significant increase to normal levels the rest of follow up period. Prothrombin concentrations showed no changes. Table (1) & Diagram (1).

Table 1 : showing the significant different changes in (Mean) Laboratory parameters and EWL through 3 years duration post operative

<i>Time of Follow Up</i>	<i>Pre.Op</i>	<i>3 months</i>	<i>6 months</i>	<i>1 year</i>	<i>18 months</i>	<i>2 Years</i>	<i>3 Years</i>
EWL %	0	35	57	71	78	80	84
Calcium (mmol/L)	2.3	2.1	1.9	2.5	2.4	2.4	2.3
Albumin (g/L)	39.8	38.7	36.1	39.1	40.5	41.2	42.8
Iron (umol/L)	9.6	8.8	8.0	9.0	9.6	10.1	10.6
Zinc (umol/L)	11.1	10.7	9.8	11.8	12.2	12.7	12.6
Hg (g/L)	121.2	116.9	119.2	122.8	121.6	120.4	123.8
Vit.B12 (Pmol/L)	341.3	328.8	295.2	367.5	360.6	351.3	376.4
Proth.Con. %	92.3	90.6	92.7	91.0	92.5	93.9	92.6





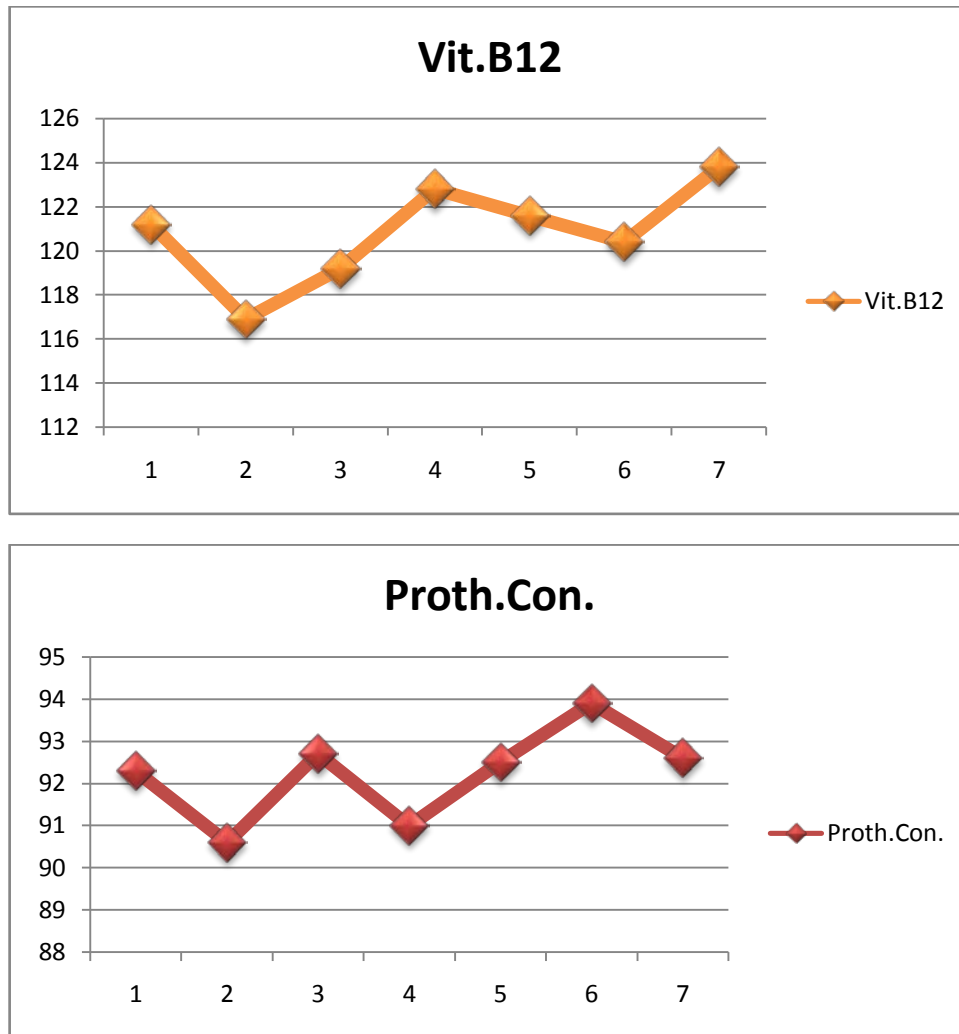


Diagram 1 : showing post Elbanna operative follow up

Aim of Good digestion and selective absorption, was the target without vital deficiency.

Most of the element deficiencies in our study occurred in the period of maximum weight loss.

No vitamins or minerals supplementations were reported, only dietary intake rich in vitamins, proteins and iron was encouraged.

No significant difference between male and female outcome.

Post operative complications were reported as follow:

Bleeding: (3.1%); 5 patients.

Leak at the site of anastomosis: (2.5 %) ; 4 patients.

Infection: (13.3 %); 21 patients.

Mortality (0.6 %); 1 Patient.

Internal Hernia :(0.6 %); 1 patient.

Incisional Hernia : (1.3%) ; 2 patients

Abdominal distension: (31.2 %); 49 patients.

Vomiting: (41.4 %); 65 patients.

Motility disorders (41.4%); 65 patients.

Hypoglycemia; Early: (5.09 %); 8 patients, late: (1.9%) 3 patients.

Cholilithiasis: (0.6 %); 1 patient.

Renal stones: (0.6 %); 1 patient.

Failure to lose weight; (0.6 %); 1 patient.

Failure to regain weight: (1.3 %); 2 patients.

Table (2).

Table 2 : showing reported complications of (MIBP); Elbanna Novel Operation

Serial	Reported Complication	Number & percentage of patients
1	Bleeding	(3.1%); 5 patients
2	Leak	(2.5 %) ; 4 patients
3	Infection	(0.6 %); 1 patient
4	Internal Hernia	(0.6 %); 1 patient
5	Incisional hernia	(1.3%) ; 2 patients
6	Abdominal Distension	(31.2 %) ; 49 patients
7	Vomiting	(41.4 %) ; 65 patients
8	Motility disorders	(41.4%) ; 65 patients
9	Hypoglycemia (Early)	(5.09 %) ; 8 patients
10	Hypoglycemia (Late)	(1.9%) 3 patients
11	Cholilithiasis	(0.6 %) ; 1 patient
12	Renal Stone	(0.6 %) ; 1 patient
13	Failure to lose weight	(0.6 %) ; 1 patient
14	Failure to gain weight	(1.3%) ; 2 patients
15	Pulmonary embolism	-
16	Mortality	1

V. DISCUSSION

Obesity is a chronic disease that is increasing in prevalence worldwide. In 2010 the prevalence of obesity was 35.5 and 35.8 percent among adult American men and women, respectively. In Canada more than 27 percent of men and 23 percent of women are obese. Reported prevalence rates of obesity include 23 percent of men and women in the UK (2009), 24 percent of men and 34 percent of women in Mexico (2006) and 9 percent of men and 27 percent of women in South Africa (2003). [7,8,9]. These data and those from other countries are indicative of a major international epidemic, a steady and distressing increase worldwide.

The medical rationale for weight loss in obese subjects is that obesity is associated with a significant increase in mortality and many health risks affecting quality of life including type 2 diabetes mellitus, hypertension, dyslipidemia, stroke, NASH and coronary heart disease.

Large epidemiologic studies have evaluated the relationship between obesity and mortality, in order to monitor patients, especially those with NASH [10]. In general, greater BMI is associated with increased rate of death from all causes and from cardiovascular disease (CVD) and NASH-induced decompensated cirrhosis. This is particularly true for those with severe obesity. Being overweight also appears to be associated with decreased survival in some studies [11, 12, 13]. Unfortunately obesity became a worldwide stigma,

currently obese subjects are often exposed to public disapproval because of their fatness affecting significantly their psychosocial behavior. All patients who are obese (BMI ≥ 30 kg/m²) should receive counseling on diet, lifestyle, and goals for weight management. Individuals with BMI ≥ 40 kg/m² and those with BMI > 35 kg/m² with obesity-related comorbidities who have failed diet, exercise, and drug therapy, bariatric surgery should be considered.

Bariatric surgery is one of the fastest growing operative procedures performed worldwide, with an estimated $> 340,000$ operations performed in 2011. While the absolute growth rate of bariatric surgery in Asia was 449 percent between 2005 and 2009, the number of procedures performed in the United States have plateaued at approximately 200,000 operations per year [14, 15]. All bariatric operations concerned with restrictive and / or malabsorption maneuvers; less food intake and malabsorption concept. The most common operations performed worldwide are Roux-en-Y gastric bypass (RYGB), the laparoscopic adjustable gastric band (GB), and the sleeve gastrectomy (SG). Unfortunately many complications reported following bariatric procedure, vary based upon the procedure performed and can be as high as 40 percent. The overall 30-day mortality for bariatric surgical procedures worldwide is less than 1 percent, this compares favorably with the hospital mortality of other frequently performed major surgical procedures Medical follow up following intestinal bypass bariatric surgery is important

to evaluate each post operative step individually. Early periodic hypoglycemia, vomiting, marginal ulceration, chollithiasis, metabolic and nutritional derangements, renal disorders, electrolyte imbalance and liver cirrhosis are challenging medical problems should be concerned and evaluated by an expert Gastroenterologist. The most common causes of early mortality are pulmonary emboli and complications related to leaks, furthermore, Gastroenterologist should have much knowledge – related different intestinal bariatric procedures to expect further complications accordingly.

A new trend of bariatric operation; Modified Intestinal Bypass (MIBP) with or without fundal resection; (Elbanna Technique), Figure (1) has been evaluated in 156 patients; 122 females (78.2%) and 34

males (21.8%), presented with morbid obesity, the technique was presented as a new promising bariatric surgical technique in the 18th World Congress of the International Federation for the Surgery of Obesity & Metabolic Disorders (IFSO) 2013 [16], by which we can avoid vitamins and trace elements deficiency obtained following other surgical bariatric diversion techniques, e.g.; BPD/DS (biliopancreatic diversion with or without duodenal switch), Roux en Y, MGB (Mini Gastric Bypass), and sleeve bypass Figure (2), and to preserve biliopancreatic secretions, in addition to preserve anatomical external biliary pathway, by which ERCP can be performed if surgical obstructive jaundice develops early or late after the bariatric procedure.

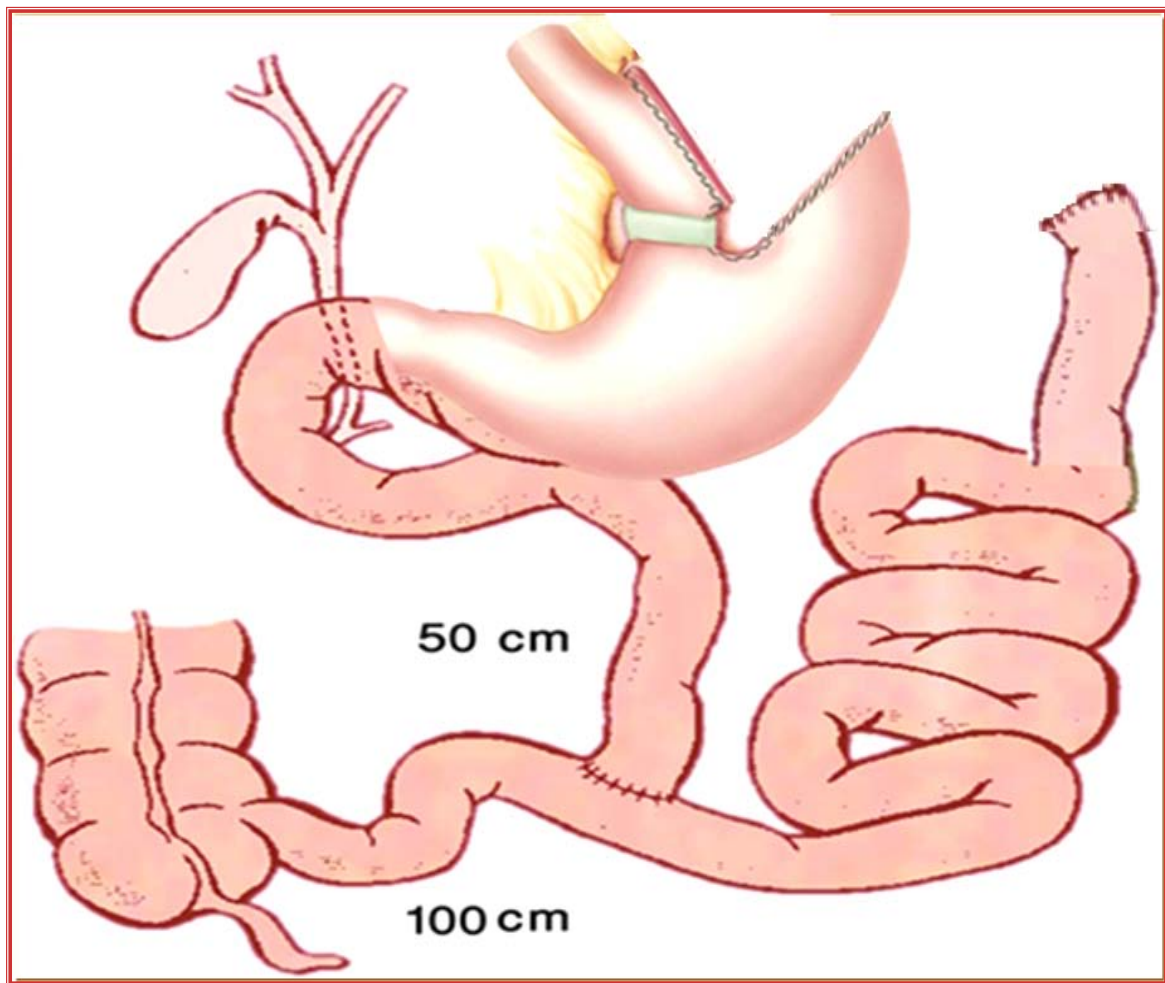


Figure 2 : (Novel Elbanna Procedure) at 50 cm from the duodenojejunal flecture we transect the jejunum. Reanastomosis is performed between the proximal jejunum and the terminal ileum 100 cm from the ileocaecal valve. Duodenum, Proximal 50 cm of jejunum and 100 cm of terminal help the physiological absorption. Preservation of the anatomical biliary drainage and enterohepatic circulation are the most procedural advantage. Fundal resection performed to get maximum effect on appetite and satiety.

Anatomical, surgical and physiological idea behind the novel Elbanna procedure is to preserve the gastrointestinal anatomy as far as we can, where most of the digestive enzymes, HCl, hormones and intrinsic

factors are secreted. Absorption of digested amino acids & biliopancreatic enzymes essential for digestion of protein and fats to extract vitamins, vitamins and minerals occur in the preserved segments. Following

Elbanna procedure, preservation of the duodenum, proximal 50 cm of the jejunum and the distal 100 cm of the ileum helps absorption of calcium, iron, phosphorus, magnesium, fat-soluble vitamins, minerals, thiamine and Vitamin B12. The novel procedure maintains the physiological entero-hepatic circulation.

In 156 patients who have experienced the technique we followed them clinically, sonographically and, laboratory; CBC, (Ca++), albumin, iron, zinc, Vitamin B12 and Prothrombin Concentration (PC) were measured at 3 months, six and twelve months postop-

eratively and every year thereafter for 3 successive years. Diagram (1).

Patients showed significant EWL Figure (1), in addition no significant decrease in minerals, vitamins or proteins were reported Table (1, 3). Patients did not need vitamins or albumin supplementation, whatever the clinical outcome related – GI motility disorders did not difference than other bariatric procedures Figure (3). Patients appeared in better contour 1 year after the procedure Figure (4 & 5).

Malabsorptive Procedures

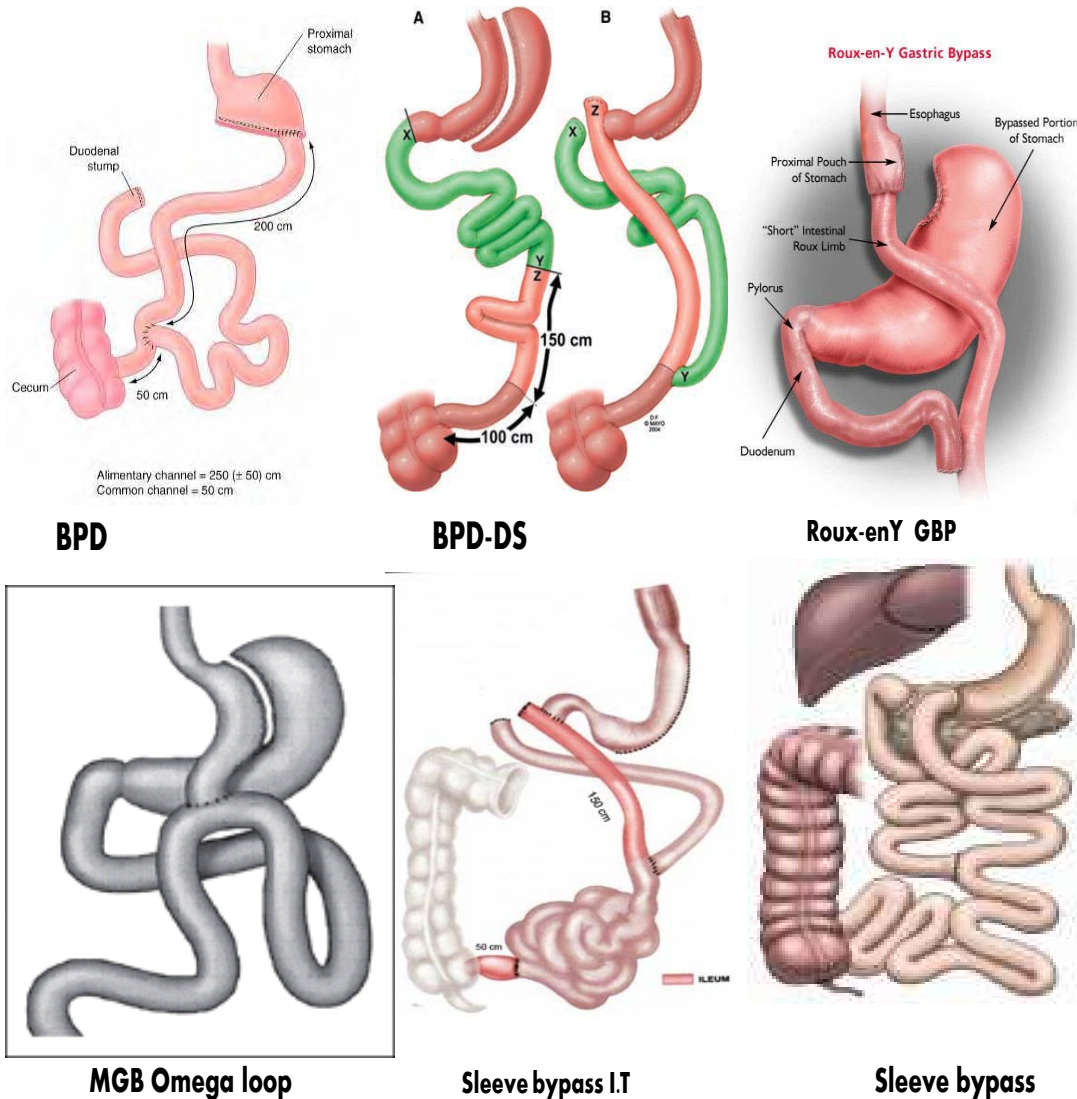


Figure 3 : diabetic



Male Patient 24 Years Old;
1-The Day of operation; 225 Kg, BMI was 71
2-8 months after operation; 95Kg;BMI is 30

Figure 4





Figure 5

We reported only one case mortality due to cardiogenic shock. However, we reported many complications as listed in results. Patients who underwent this procedure did not show significant complications, including arthritis, protein malnutrition, vitamin deficiencies, cirrhosis, neurological complications or renal failure. The most common causes of early rehospitalization are nausea, vomiting, abdominal pain, abdominal distension, dehydration, early hypoglycemia and wound problems.

Patients with eating disorders, distension or motility disorders should be evaluated clinically; prescription of triple therapy of prokinetic drug, natural

anti-spasmodic and PPI was very effective especially in early post operative period in all patients. Lifestyle changes are important component of managing motility disorders includes smoking cessation, head of bed elevation, and avoidance of chocolate, caffeine, spicy foods, alcohol, beverages, fatty meal and other foods that exacerbate GI symptoms. Also lifestyle changes are very important as initial approach for those presented with mild or infrequent symptoms of vomiting and or GERD. The problematic fatty accumulation (Fatty Liver) was reported due to rapid loss of weight which recovered clinically and disappeared sonographically after 1 year of the procedure, ultimately we recommend

gradual loss of weight with a maximum 7-8 Kg/month loss of weight. All patients presented with comorbidities of DM, hypertension, cardiac problem, respiratory failure, NASH, sexual life disorders and / or psychosocial intolerance showed significant improvement either clinically or by U/S,CT, Respiratory tests or echocardiography investigation modalities. We always stress the importance of eating all meals, particularly breakfast. Adolescents have undergone bariatric surgery should be informed that skipping meals does not help with weight control, unfortunately may promote weight gain and nutritional deficiencies.

We recommend early therapy with IV Pantoprazole and prokinetic medications if marginal ulceration detected endoscopically.

In a Conclusion, now bariatric surgery passes through a plateau phase, medical management and follow up of patients who have undergone bariatric surgery which is a challenge opportunity, accordingly the novel (MIBP) El Banna operation concept is to change maldigestion and malabsorption concept of bariatric procedures to good digestion and selective absorption.

VI. LIMITATION OF THE STUDY

Our methods of research, clinical and even surgical skills played the major role in all information mentioned in the study, hence we encourage other researches from different countries may show more significant results according to different environments, dietary habits and cultures.

VII. FUTURE RECOMMENDATION

Whatever obesity is a worldwide epidemic, affecting also children, we have to innovate techniques in pediatric bariatric surgeries, accordingly to save our children from pre-mature morbidities and mortalities, El banna pediatric modified technique ; New Bariatric surgical technique in pediatric obesity, could be a new innovation in coming days !

REFERENCES RÉFÉRENCES REFERENCIAS

1. American Gastroenterological Association. American Gastroenterological Association medical position statement on Obesity. *Gastroenterology* 2002; 123:879.
2. Klein S, Wadden T, Sugerman HJ. AGA technical review on obesity. *Gastroenterology* 2002; 123:882.
3. Snow V, Barry P, Fitterman N, et al. Pharmacologic and surgical management of obesity in primary care: a clinical practice guideline from the American College of Physicians. *Ann Intern Med* 2005; 142:525.
4. Tucker ON, Szomstein S, Rosenthal RJ. Nutritional consequences of weight-loss surgery. *Med Clin North Am* 2007; 91:499.

5. Gong K, Gagner M, Pomp A, et al. Micronutrient deficiencies after laparoscopic gastric bypass: recommendations. *Obes Surg* 2008; 18:1062.
6. Dalcanale L, Oliveira CP, Faintuch J, et al. Long-term nutritional outcome after gastric bypass. *Obes Surg* 2010; 20:181.
7. Flegal KM, Carroll MD, Kit BK, Ogden CL. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *JAMA* 2012; 307:491.
8. Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults, 1999-2008. *JAMA* 2010; 303:235.
9. Finucane MM, Stevens GA, Cowan MJ, et al. National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants. *Lancet* 2011; 377:557.
10. Flegal KM, Graubard BI, Williamson DF, Gail MH. Cause-specific excess deaths associated with underweight, overweight, and obesity. *JAMA* 2007; 298:2028.
11. Yan LL, Daviglius ML, Liu K, et al. Midlife body mass index and hospitalization and mortality in older age. *JAMA* 2006; 295:190.
12. Gu D, He J, Duan X, et al. Body weight and mortality among men and women in China. *JAMA* 2006; 295:776.
13. Adams KF, Schatzkin A, Harris TB, et al. Overweight, obesity, and mortality in a large prospective cohort of persons 50 to 71 years old. *N Engl J Med* 2006; 355:763.
14. American Society for Metabolic and Bariatric Surgery (2009) Fact Sheet: Metabolic & Bariatric Surgery. Available online at: www.asbs.org/Newsite07/media/asbs_presskit.htm (Accessed on January 28, 2009).
15. Nguyen NT, Masoomi H, Magno CP, et al. Trends in use of bariatric surgery, 2003-2008. *J Am Coll Surg* 2011; 213:261.
16. Obesity Surgery 2013; Volume 23; (8); 1214. <http://link.springer.com/article/10.1007/s11695-013-0986-z>.

