Effect of modified jejunoileal bypass surgery on the colon microflora: A case study

Efecto de la cirugía de derivación yeyunoileal modificada sobre la microflora del colon: Estudio de un caso

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Abstract

Introduction & Background: Surgery to prevent weight gain and disease is called bariatric surgery. Weight loss surgery (WLS), mainly because of the failure of non–surgical weight loss methods, is on the growth. This study aims to analyze the impact of modified jejunoileal bypass surgery on the microflora of the colon. Methods: Laboratory tests like liver function tests, blood lipids, coagulation tests, blood sugar, renal function test, CBC, Na$^+$, and K$^+$ were requested for all participants of this study before the operation. Fecal samples of all cases were gathered in anaerobic and aerobic bacteria. Recognition of isolated bacteria was conducted utilizing microscopical examination of stained smear, biochemical tests, and colon characteristics on different specific and selective media and specific identification tests. Results: Patients' ages ranged from 17 to 47. Their mean age was 27.9±8.5 years, seven patients (19.4%) were male, and 29 (80.6%) were female. There was no significant difference between the count of anaerobic bacteria before and after the operation (p=0.414) except for lactobacillus (p=0.0001) and Bifidobacterium (p=0.0001). A significant difference was observed between the count of aerobic bacteria before and after the operation (p=0.005), especially for E. coli (p=0.001), klebsiella, (p=0.0001), Enterobacter (p=0.003) and proteus (p=0.0001). Conclusion: The result demonstrates that lactobacillus and Bifidobacterium were the only bacteria that reduced in number while the remaining isolated bacteria showed no significant difference in number before and after operation regarding aerobic bacteria significant difference was observed between before and post-operation counts, predominantly for E. coli, klebsiella, Enterobacter, and proteus.

Keywords: weight gain, weight loss surgery, Morbid obesity, colon flora, non–surgical methods.

Resumen

Introducción y antecedentes: la cirugía para prevenir el aumento de peso y la enfermedad se llama cirugía bariátrica. La cirugía de pérdida de peso (WLS), particularmente debido al fracaso de los métodos no quirúrgicos de pérdida de peso, está en crecimiento. Este estudio tiene como objetivo analizar el impacto de la cirugía de derivación yeyunoileal modificada en la microflora del colon. Métodos: Se solicitaron pruebas de laboratorio como prueba de función hepática, lípidos en sangre, pruebas de coagulación, azúcar en sangre, prueba de función renal, CBC, Na$^+$ y K$^+$ para todos los participantes de este estudio antes de la operación. Las muestras de heces de todos los casos se recolectaron en bacterias anaerobias y aerobias. El reconocimiento de bacterias aisladas se realizó mediante el examen microscópico de frotis teñidos, pruebas bioquímicas y características del colon en diferentes medios específicos y selectivos y pruebas de identificación específicas. Resultados: La edad de los pacientes osciló entre 17 y 47 años, su edad media fue de 27,9±8,5 años, 7 pacientes (19,4%) eran del sexo masculino y 29 pacientes (80,6%) del sexo femenino. No hubo diferencia significativa entre el conteo de bacterias anaerobias antes y después de la operación (p=0,414) excepto para lactobacillus (p=0,0001) y bifidobacterium (p=0,0001). se observó una diferencia significativa entre el conteo de bacterias aerobias antes y después de la operación (p=0,005) especialmente para E. coli (p=0,001), kelebsiella, (p=0,0001), Enterobacter (p=0,003) y proteus (p= 0,0001). Conclusión: El resultado demuestra que lactobacillus y bifidobacterium fueron las únicas bacterias que se redujeron en número, mientras que las bacterias aisladas restantes no mostraron diferencias significativas en el número antes y después de la operación. Con respecto a las bacterias aeróbicas, se observó una diferencia significativa entre los recuentos antes y después de la operación, predominantemente para E. coli, kelebsiella, enterobacter y proteus.

Introduction
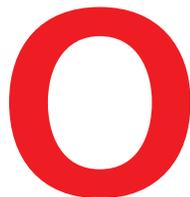
Obesity is a severe health problem, and its incidence is increasing rapidly in the world

,and Iran is not an excption[1]. The decline in life expectancy and obesity is well documented. Some of the associated conditions include coronary disease, high blood pressure, ulcers, feet, gallbladder disease, diabetes, osteoarthritis, endometrium cancer, psychological problems, and severe problems in hospital admissions creates[2]. Today, obesity is considered a chronic inflammatory disease[3]. In Epidemiology, 25% of the population is obese and 60 % overweight. In the United States from 2000 to 2010, the prevalence of obesity with BMI> 40 kg/m² increased by 70%[4]. Drug treatment for chronic obesity is associated with limited success and short-term. The probability that a person with chronic obesity through diet can only stay at BMI below 35 is less than about 3%[5], and a subsequent risk factor for eating disorders, particularly colon cancer, is the major cause[6].

Bariatric Surgery is a surgical procedure to prevent weight gain that occurs in the form of an unusual disease. This type of surgery reduces complications of obesity and modifies cardiometabolic risk factors[7]. It should be noted that after the surgery, lifestyle changes, exercise, and diet are still necessary therapy[5].

The selection of patients for weight loss surgery is according to NIH guidelines. All patients under 60 years with a BMI of ≥ 40 kg/m² or a BMI of > 35 kg/m² with obesity-related comorbidities that have not managed to reduce their weight are candidates for bariatric surgery[5].

Bariatric surgery can be divided into two types: 1) limiting the volume and 2) reducing the level of absorption. The combination of these two methods is commonly used.

Limiting methods are more accessible, but not they do not show enough continuity and effectiveness. Absorption levels reduction methods are more effective, but it has crucial effects[8]. One method of lowering the absorption method is the classic Jejune Ileal Bypass (JIB), in which the proximal jejunum and the proximal end to the distal ileum anastomosis are cut out. The long segment of the jejunal bypasses a non-functional element and creates motivation cecum (blind loop) called stasis, which leads to uncontrolled bacteria growth. Alternative methods have changed a lot of classical methods that have fewer side effects and eliminate the blind and the non-performance loop[8]. Some of the adverse effects include malnutrition and bone demineralization, and complications such as electrolyte disturbances -diarrhea- ~~expected and~~ liver disease, enteropathy, and arthritis. The intestinal microflora etiologic agent seems autogenous for some of these complications[8]. It has been shown following the increase in the inflammatory bowel flora, impaired absorption of vitamin D[9], and the impact on wound healing in experimental animals[10,11].

The gastrointestinal tract is sterile at birth but organisms with food through the digestive system. Gastric acidity on the minimum number of micro-organisms (10^5-10^3) Keeps bacteria Unless pyloric obstruction bacilli and gram-positive cocci increase. The more alkaline pH contents of the intestinal flora of further gain. Per gram of the contents of the duodenum adults (10^5-10^3) bacteria in the jejunum and ileum (10^8-10^5) bacteria per gram and at the cecum and transverse colon (10^{10}-10^8) bacteria per gram of contents there. Lactobacilli and enterococci in the upper part of the small intestine are more common. But at the end of the cecum and fecal flora can be seen. In the sigmoid colon and rectum, about 10^{11} bacteria per gram of contents are there[12].

96-99% flora fecal anaerobic bacteria, including species Bacteroides especially Bacteroides fragile species Geobacter, lactobacilli, and anaerobes such as Bifidobacterium, Clostridium and (Clostridium perfringens) and gram-positive cocci anaerobic (peptostreptococci type) is. Intestinal bacteria synthesize vitamin K, bile pigments, and bile acids. The absorption of nutrients, decomposition products, deal with disease-causing microbes are essential. But the ecosystem can change the anatomical, functional, and environmental conditions subject to change[12].

In bypass of the small intestine, the result is evaluated as well as:

1) Is satisfied, with more than 25% weight loss before surgery to reduce weight.

2) There is a metabolic disorder.

Clinical signs caused by the overgrowth of bacteria, such as bloating, migratory arthritis, and skin rash, are not present. But if the patient is to have at least one of these cases, the result is poor:

1) significant weight loss below the ideal weight.

2) insufficient weight reduction following 25% by weight before surgery

3) renal failure

4) liver failure

5) clinical symptoms caused by an overgrowth of bacteria

The mechanism by which bacteria overgrowth can cause gastrointestinal side effects is not entirely clear[12]. The creation of circulating immune complexes appears to be a factor in diseases such as skin lesions, cellulite, arthritis,

and kidney and even the brain associated with autoimmunity[13].

Some studies have shown that intestinal anaerobic bacteria multiply, causing the production to be hepatotoxic bile acids, such as morphological or functional changes in the liver that can cause[14]. The new hypothesis, genomic alterations in gut flora bacterial infections in chronic inflammation, has been suggested[15].

Due to the fixed role of intestinal bacteria in complications after bypass surgery classic, today, various methods are numerous in the study that the bypass Biliopancreatic and gastric bypass can be named by minimizing changes in intestinal flora to reduce complications associated with it. In this study (Jejunoileal bypass modified) used in the surgical procedure, looped non-performance is not created since the techniques are varied and there are many restrictions in the diagnosis and development of Normal flora and pathogenic gut microbes there[16].

Materials and methods

This study is deemed as an intervention type.

Target population:

All patients with obesity in military hospitals in Tehran were undergoing intestinal bypass surgery.

The study population:

All obese patients to treat and prevent complications of obesity in hospitals Imam Reza's Military Medical University and Shahriar Bariatric surgery has been cooperated to conduct this study.

Exclusion criteria: Patients older than 55 and younger than 15 years, patients with hypothyroidism and insulin-dependent diabetes for more than 1 year of treatment with insulin, and patients with a history of any action on the stomach, intestines, colon (except appendectomy) were involved or other pathologies in the digestive tract or are suffering from psychological problems and those that corticosteroid use, alcohol.

Inclusion criteria:

- BMI> 40 kg/m² or 40> BMI> 35 kg/m² with complications of obesity

- the willingness of the patient to undergo this type of surgical technique

- the lack of the previous cholecystectomy

Exclusion criteria:

-After the surgery, patients who did not wish to pursue.

-Previous history of cholecystectomy

-History of liver disease or elevated liver enzymes

Sample size: To determine the total number of aerobic bacteria in a sample of 10 patients before and after surgery in a pilot study and the sample size was calculated according to the following formula:

The number of colonies in Blood Agar dilution is 10^8

• The average number of colonies in culture before the operation: 4.17

• The average number of colonies in culture after surgery: 4.78

• The average difference between samples before and after surgery: 0.62

• variance difference in the number of colonies before and after surgery Blood Agar dilution 1.10^8(S): 1.112 is a significant difference in the number of colonies (d): 0.56

$S = 1.112 \qquad d=0.56$

Sample size: 40

Methods: All patients before surgery tests recommended laboratory tests to check the status of enzymes in the liver, lipid profile of blood, serum protein, coagulation tests, blood sugar tests for kidney function, CBC, and the amount of sodium and potassium and from patient stool samples were taken to assess aerobic and anaerobic bacteria after checking lab results and Preparation and Dressing, with a vertical incision in the midline of the abdomen between the navel and epigastric opens. After abdominal exploration of the possibility of any pathology, the jejunum about 20 cm of the Treitz ligament cut and the proximal end to side to the terminal ileum at 35-30 cm from the ileocecal valve is anastomosis. Then the distal jejunum, after the preparation of the fundus of the gallbladder anastomosis, is just a retro colic pass.

After recovery, the patient was transferred to ICU and placed in a semi-upright position at 30 degrees. Heparin subcutaneous injection to prevent DVT before surgery and continued until discharge. Urinating every 1 hour was checked, and Tests CBC, K, Na, Cr, and BUN were done daily on the first day after surgery the patient's bed was turned down, and walks the examination will be performed daily duties and if no problem, transferred to the surgical ward. On the third day after surgery, oral feeding begins.

Stool samples of patients after bypass surgery six months after surgery were used to assess the fecal flora. That stool sample in a sterile plastic container and lid Cary Blair medium for evaluation of aerobic bacteria and in a sterile

plastic container and lid containing Thioglycollate anaerobic bacteria were collected for study within a maximum of half an hour in the lab Imam Reza and Golestan army was transferred under cultivation.

To count different clones of a gram of feces from a dilution tube row were thus the first in aerobic and anaerobic using the loop standard (internal diameter of 2 mm). The sterile weight of 1 gram of feces was also affected by balance weighing and separated 0.0001 gram. Then, the test tube containing mL of saline varies from 0/85 percent (in anaerobic conditions, different thinners). The tube contains the dilution of 10^{-3} are we then add 1 mL of the tube to the tube containing 9 mL of saline to the dilution. This action is up to 10 pipes will continue to represent a dilution of 10^{-14}.

6 pipe end, a rate of 1 mL is poured and spread on the surface of a solid foundation to wet the surfaceThen the Petri dishes were incubated and counted, and the total number of clones and certain types of colonies were grown in specific media and differential to identify them.

The study of aerobic fecal microflora:

Gram-positive cocci aerobic gram-positive cocci in the Gram stain on discipline (streptococcus) or a bunch of grapes (staph) are seen

Staphylococcus:
These bacteria are often without cylinders, inert, non-spore-forming, catalase positive, and oxidase negative. Staphylococcus epidermidis to identify and differentiate the three species (S.epidermidis), (S. aureus), (S. saprophyticus) viewing pigment, mannitol fermentation, coagulase test, and DNAase test was used. Staphylococcus cultures on solid golden pigment, lemon, and white makeup.

Streptococcus:
 They are round or oval-shaped bacteria micrometers in diameter that resembles a chain following each other. Gram-positive bacteria, immobile, non-spore-forming, and catalase-negative. For environments Blood Agar (Merck) and see hemolysis, allergic to Bacitracin disk, disk Optochin, test and catalase test using camp

Anaerobic gram-negative bacilli:
According to the study, this family sampling, transport, and culture of stool samples for a laboratory run by the Ministry of Health (2011) took place

Enterobacteriaceae spp.:
Family Enterobacteriaceae gram-negative bacilli non-spore-forming, oxidase negative, positive glucose, and nitrate are also restored. Some are animated, and some with capsules.

bacilli who studied are as follows:

1. (E. coli)

2. (Pseudomonas aeruginosa)

3. (Enterobacter)

4. (Shigella)

5. (Salmonella paratyphi)

6. (Proteus)

7. (Klebsiella)

8. (Salmonella typhi)

Isolation of Salmonella and Shigella from fecal samples from enrichment media Selenite f broth (Merck) we used Because the environment has increased the growth of Salmonella and Shigella bacteria growth and prevents the normal intestinal flora. After incubation of 48-24 hours, the environment and the atmosphere is Clooney picked by our selective and differential culture.

Shigella: red colonies on medium Xylose lysine deoxycholate agar (Merck) and colorless colonies and the Mac environment provide Cancan.

Salmonella Typhimurium and paratyphi: red colonies with black centers on XLD and colorless environment on the Mac environment provides Cancan

Then Triple sugar iron agar (Merck) is used, and colonies grow on the slope and depth of our environment TSI incubated for 24 hours, we will create a gap and produce H2S gas production change is black.

Then check on the IMViC: Indole, Methyl red, Voges-Proskauer, Citrate (Merck) occurred.

Indole:
Some bacteria produce an enzyme with an amino acid tryptophan to indole convert cultured in peptone water medium after incubation for 24 hours by adding reagent alcohol called Para dimethyl amino benzaldehyde in the presence of indole. The complex red color is created. If a red circle on top of the broth was created and tested positive, indole was created, and if the yellow ring, the indole test was negative.

Methyl red_Voges-Proskauer:

The Enterobacteriaceae family of bacilli is metabolically divided into two groups:

a) Mixed acid fermenter

b) utandiol fermenter

In the first group, large amounts of acids, lactic, formic, acetic, and succinic, provide a second group, such as Klebsiella and Enterobacter, small amounts of organic acids and plenty of product-neutral be created to differentiate these two environments used from above in red represents the methyl red indicator the group first.

VP tests methyl carbine specifies the presence of acetoin or stainless steel, and positive and negative red or copper are colorless.

Citrate test for the detection of gram-negative bacilli bacteria based on the ability to use citrate as sole carbon source, the setting called Simmons' Citrate Agar (Merck) Used.

This environment is Bromothymol blue in the presence of Citratase. From green to dark blue color will change.

Urease test: This test is based on the ability of urea hydrolysis, aerobic and anaerobic bacteria are used in the diagnosis. In this environment, there are Urea and Phenol red indicators. In the presence of urease, the environment is purple.

Proteus urease positive and negative E. coli.

Culture in Motion: To move the bacteria from the environment Motility Agar stab (Mlab) was used. Loop to dart in and pick up the bacteria and to the environment as a direct line to our culture.

After incubation, the turbidity in the vicinity of the plant indicates the bacteria.

E. coli is still moving, and Shigella.

Decarboxylase Test:

It tests the ability of bacteria in the decarboxylation of amino acids (lysine, ornithine, and arginine). Measures the test in Moeller (Merck) was used in this environment by fermentation of glucose initially acidic and purple is then the decarboxylation acidity decreases, and after 24 hours incubation is yellow.

Study of anaerobic bacteria:

For anaerobic bacteria, a tube dilution method was used in the anaerobic cabinet.

The difference is that here the liquid diluent contains substances that reduce the amount of oxygen to increase the survival of anaerobic bacteria. Thus, the loop containing 1 gram of feces stirred under anaerobic conditions in the test tube containing 10 mL of the composition Peptone C & S 1% potassium phosphate 0.1%, glucose 0.1%, with two drops of cystine, and 1 drop of sodium bicarbonate solution we do. The tube then amounts to 10^{-3} of aerobic, explained to dilution to our ten tubes. Then 0.1 cc of each of the tubes 6 to 10 in 3 Petri medium Thioglycollate broth (Merck) shed and selective environments are added to the samples in anaerobic jars for 48-72 hours put And then according to the morphology of colonies and staining and the environment determines the differential nature of our colonies.

According to the standard procedure for identifying anaerobic bacteria Great Britain (UK Standards for Microbiology Investigations 2012) practices.

Details of how to view/control and data collection:

In this study, 40 patients with obesity candidates for bypass surgery were selected, and after the notification of the study and if the patient admission, stool samples to study the microbial flora of the colon before the procedure in surgery trained nurses collected in special circumstances concerning anaerobic bacteria within 40-30 minutes was transferred to the laboratory for examination

Four patients were excluded because of a lack of cooperation after the operation

Stool samples to study the microbial flora of the colon after surgery at 6 months after surgery were collected in the foregoing condition and after examining the patient information entered on the form provided and collected, then were analyzed in the study.

How to describe and analyze the data: Statistical analysis was performed using SPSS software. The central tendency, such as the mean and standard deviation was used to analyze the data as well as statistical tests were used X^2 paired T-Test.

Ethical considerations:
Based on Helsinki patients' rights were respected. How the study was explained to patients, and consent forms were completed.

Results

This study aimed to evaluate changes in the microbial flora of the colon after surgery, intestinal bypass procedure Modified JIB in obese operation in Imam Reza and Shahriar hospital in 91-90 was carried out, 36 patients studied they got.

The mean age of the patients was 27.9 years with a standard deviation of 5.8 years in the range of 17 to 47 years old.

Micro-organisms studied to handle aerobic (or anaerobic) and anaerobic were divided and their results are as follows (Table 1) and (Table 2):

Table 1. Compare anaerobic fecal microflora before and after intestinal bypass surgery			
Name anaerobic bacteria	The number of colonies per gram of feces after surgery	The number of colonies per gram of feces before surgery	P-value
Bacteroides fragilis	$3 \pm 1.7 \times 10^{10.3}$	$2.8 \pm 1.5 \times 10^{10.2}$	0.414
bifidobacterium	$4.6 \pm 1.3 \times 10^9$	$5.1 \pm 1.2 \times 10^{9.6}$	0.0001
eubacterium	$3 \pm 0.66 \times 10^{9.9}$	$2.1 \pm 0.68 \times 10^{9.8}$	0.690
Clostridium	$3.8 \pm 1.2 \times 10^{10}$	$3.4 \pm 1.6 \times 10^{9.9}$	0.058
lacto bacillus	$2 \pm 0.51 \times 10^{9.2}$	$2 \pm 0.6 \times 10^{10.25}$	0.0001
peptostreptococcus	$4.4 \pm 1.8 \times 10^{8.4}$	$4.5 \pm 1.6 \times 10^{8.3}$	0.083
Fusobacteria	$2.15 \pm 0.46 \times 10^{10}$	$2.08 \pm 0.67 \times 10^{10.05}$	0.157

Anaerobic:

1) The number of colonies of micro-organisms Bacteroides fragilis before surgery was $2.8 \pm 1.5 \times 10^{10.2}$ after surgery, the amount to $3 \pm 1.7 \times 10^{10.3}$ showed a non-statistically significant change (P = 0.414).

2) The number of colonies of micro-organisms Bifidobacterium before surgery was $5.1 \pm 1.2 \times 10^{9.6}$ after surgery, the amount to $4.6 \pm 1.3 \times 10^{9\ 3}$ showed a statistically significant change (P=0.001).

3) The number of colonies of micro-organisms eubacterium before surgery was $2.1 \pm 0.68 \times 109.8$ after surgery, amounting to $3 \pm 0.66 \times 109.9$, was changed to the change was not statistically significant (P= 0.690).

4) The number of colonies of micro-organisms Clostridium before surgery was $3.4 \pm 1.6 \times 10^{9.9}$ after surgery, amounts to $3.8 \pm 1.2 \times 10^{10}$ was changed to the change was not statistically significant (P =0.058).

5) The number of colonies of micro-organisms Lacto bacillus before surgery $2 \pm 0.6 \times 10^{10.25}$ after surgery amount to $2 \pm 0.51 \times 10^{9.2}$ was changed to the change was statistically significant (P=0.001).

6) The number of colonies of micro-organisms peptostreptococcus before surgery was $4.5 \pm 1.6 \times 10^{8.3}$ after surgery the amount to $4.4 \pm 1.8 \times 10^{8.4}$ was changed to the change was not statistically significant (P=0.083).

7) The number of colonies of micro-organisms Fusobacteria before surgery was $2.08 \pm 0.67 \times 10^{10.05}$ after surgery, amounts to $2.15 \pm 0.46 \times 10^{10}$ was changed to the change was not statistically significant (P = 0.157).

Name aerobic bacteria	The number of colonies per gram of feces after surgery	The number of colonies per gram of feces before surgery	P-value
Aerobic total count of	$4.58 \pm 1.59 \times 10^{10}$	$4.17 \pm 1.68 \times 10^{9.6}$	0.005
E. coli	$4.69 \pm 1.07 \times 10^{8}$	$2.98 \pm 1.49 \times 10^{7.1}$	0.0001
Klebsiella oxytoca	$3.93 \pm 1.55 \times 10^{7.7}$	$4.4 \pm 1.48 \times 10^{7.08}$	0.0001
Proteus Vulgaris	$4.13 \pm 1.64 \times 10^{6.38}$	$4.7 \pm 1.53 \times 10^{5.58}$	0.0001
Enterobacter aerogenes	$2.17 \pm 0.51 \times 10^{7}$	$3 \pm 1.47 \times 10^{6.4}$	0.003
Providencia	$3.36 \pm 1.38 \times 10^{5.41}$	$3.8 \pm 1.48 \times 10^{5.3}$	0.157
Staphylococcus epidermidis	$4.5 \pm 1.52 \times 10^{7.13}$	$4.37 \pm 1.46 \times 10^{7}$	0.096
Citrobacter	$2.45 \pm 0.97 \times 10^{5.02}$	$2.32 \pm 0.78 \times 10^{4.97}$	0.581
Salmonella	Not Found	Not Found	
Shigella	Not Found	Not Found	
Yersinia	Not Found	Not Found	
Campylobacter	Not Found	Not Found	

Aerobic:

1) the number of colonies of micro-organisms Enterobacter before surgery was $4.17 \pm 1.68 \times 10^{9.6}$ after surgery amounting to $4.58 \pm 1.59 \times 10^{10}$ was changed to the change of was statistically significant (P=0.005)

2) the number of colonies of micro-organisms E.coli before surgery was $2.98 \pm 1.49 \times 10^{7.1}$ after surgery, amounts to $4.69 \pm 1.07 \times 10^{8}$ was changed to the change was statistically significant (P=0.0001)

3) the number of colonies of micro-organisms Klebsiella oxytoca before surgery was $4.4 \pm 1.48 \times 10^{7.08}$ after surgery the amount to $3.93 \pm 1.55 \times 10^{7.7}$ was changed to the change was statistically significant (P=0.0001).

4) The number of colonies of micro-organisms Proteus Vulgaris before surgery $4.7 \pm 1.53 \times 10^{5.58}$ after surgery, amounts to $4.13 \pm 1.64 \times 10^{6.38}$ was changed to the change was statistically significant (P=0.0001).

5) The number of colonies of micro-organisms Enterobacter aerogenes before surgery was $3 \pm 1.47 \times 10^{6.4}$. After surgery, the amount to $2.17 \pm 0.51 \times 10^{7}$ was changed to the change was statistically significant (P=0.0001).

6) The number of colonies of micro-organisms Providencia before surgery was $3.8 \pm 1.48 \times 10^{5.3}$ after surgery amounts $3.36 \pm 1.38 \times 10^{5.41}$ was changed to the change was not statistically significant (P=0.157).

7) the number of colonies of micro-organisms Staphylococcus epidermidis before surgery was $4.37 \pm 1.46 \times 10^{7}$ after surgery the amount $4.5 \pm 1.52 \times 10^{7.13}$ was changed to the change was not statistically significant (P=0.096).

8) The number of colonies of micro-organisms Citrobacter before surgery was $2.32 \pm 0.78 \times 10^{4.97}$ after surgery amounts to $2.45 \pm 0.97 \times 10^{5.02}$ was changed to the change was not statistically significant (P=0.581).

In this group of micro-organisms, culture 4 Results Salmonella, Shigella, Campylobacter, and Yersinia both before and after surgery was negative.

Discussion

Surgery for weight loss history is filled with pitch. Start with weight loss surgical procedures that decades ago were unclear and unacceptably high risk and long-term consequences were unknown. Extreme Weight Gain in different communities with the development of surgical techniques and different methods of treatment is not unlikely that soon, surgery, and weight loss, as the first choice for the treatment of obesity and its complications such as diabetes and sleep apnea applied[17,18].

In a multi-center collaborative study on 4776 obese patients, weight loss surgery in deaths and serious complications within 30 days of 0.03 in 1.4% of patients were similar to other major surgical procedures. From 1998 to 2004, with an eight percent increase, weight loss surgery practice increased to 121500 and the following year, reached 171000[19].

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Surgical techniques for the treatment of obesity over the years to achieve the best results in the reduction of postoperative complications have evolved and constantly changing microbial flora of the gastrointestinal tract as a factor in postoperative complications were discussed.

In a clinical trial on 18 patients after surgery, gastric bypass surgery, and 7 patients after intestinal bypass surgery by jejune-ileostomyend to side classics were changing flora for increasing the anaerobic bacteria test breathe hydrogen, in all patients undergoing intestinal bypass surgery and gastric bypass surgery in half of the patients had evidence but did not specify the type and species of bacteria[20].

In a study Moor & Holdman, fecal flora in healthy subjects (n = 33) for aerobic and anaerobic bacteria culture was studied at different times. The number of colonies of anaerobic bacteria in samples that were studied under 1 hour on average $10^{11} \times 6$ colonies per gram of feces, Faeces and in samples that were studied after 2 hours was $2.6\ 10^{11}$ ×colonies per gram of feces which suggests that the bacteria in the shortest period of time from sampling to be done In this study, we also maintain anaerobic bacteria samples collected in 30 minutes was determined[20].

Poxton flora in the colon mucosa in 12 patients with ulcerative colitis and healthy controls Avlstratyv biopsies of the colon, stained specimens were studied in this study, a significant difference in the number of anaerobic bacteria between the 2 groups And Bacteroides fragilis by counting the mucous $10^{8,5} \times 1,6$ colonies per sample in each group was most anaerobic bacteria. But bifidobacteria and lactobacilli with a $1.9\ 10^7$ ×colonies per sample and the number of colonies per sample $10^{7,7} \times 3$ in patients with ulcerative colitis were significantly lower than in healthy individuals. This study shows that lactobacilli and bifidobacteria in the process of inflammation are reduced the number of bacteria. In our study, the bacteria declined due to lower bacteria counts in this study is to investigate the microbial flora of the colon mucosa While we study examined fecal flora[22].

Another study of 82 patients after bypass surgery to classic disease of anorectal in 41 patients after Proctoscopy and sigmoidoscopy and rectal biopsy shows 57% of the disease after a course of metronidazole of bothersome symptoms such as painful bowel movements. Anal sphincter incompetence and proctitis were saved. This study suggests that many anorectal symptoms of inflammation due to increased anaerobic bacteria can be resolved by taking metronidazole[5].

In a study by Noutons on 97 patients who underwent surgery for intestinal bypass, the classical approach with anastomosis End to side anastomosis with the distal transverse colon was looped blind After reading in 80% of patients count of anaerobic bacteria was increased in patients with symptoms such as lack of vitamin B12 and polyarthritis was more common this study suggests that lack of vita-

mins and arthritis enhance the growth of aerobic bacteria These are creating a hotspot inflammatory loop is blind. At the same time, studies on patients undergoing bypass surgery using modified these symptoms was observed[23,24].

In this study, we aimed to investigate the changes in the microbial flora of the colon after surgery, intestinal bypass procedure modified JIB in obese were performed, and 36 patients with obesity who underwent intestinal bypass surgery were enrolled. The total number of anaerobic bacteria in the samples before and after surgery did not significantly change. However, the count of bacteria, lactobacilli anaerobic Bifidobacterium has decreased and the total count of aerobic bacteria, especially E. coli, Proteus Vulgaris, and Klebsiella oxytoca with increased was associated with.

Conclusions

This study showed that after bypass surgery small intestine using modified flora of the colon had been changed to significantly reduce the number of bacteria Lactobacillus anaerobic Bifidobacterium and significantly increased the total count of aerobic bacteria, Escherichia coli, Proteus Vulgaris, Klebsiella oxytoca, and Enterobacter aerogenes.

Suggestions
It should be noted that achieving more accurate results required to study methods for reliable detection, such as molecular diagnostics specimens collected at different times after surgery and assessing changes in the bacterial flora of the colon on postoperative complications, is to be the resulting outcome is to be used routinely.

Conflict of Interests
The authors declared no conflict of interest.

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