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Comparative Study between Laparoscopic Gastric Sleeve Resection and Laparoscopic Assisted Gastric Plication ; A Retrospective Study

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Abstract

Morbid obesity is a serious condition that can interfere with basic physical functions such as breathing or walking. The individuals who are beyond husky are at more serious danger for sicknesses including diabetes, hypertension, rest apnea, gastroesophageal reflux infection (GERD), gallstones, osteoarthritis, coronary illness and malignant growth. This work means to look at the utilization of laparoscopic gastric sleeve resection versus laparoscopic helped gastric plication in dismal fat patientsIn our examination, the quantity of patients was 30 which were separated arbitrarily into two groups: Group A: Laparoscopic Gastric Sleeve.Group B: Laparoscopic helped gastric plication. Plication bunch fundamentally had higher overabundance weight reduction and lower cost. With no measurable huge contrasts in regards to post employable complication.Putting into thought that our recorded outcomes are gathered in the initial 6 to a year of the postoperative period, expanded perception of EWL will be our subject in the further examinations. It very well may be reasoned that laparoscopic sleeve gastrectomy and laparoscopic helped gastric plication are viewed as protected and powerful one-stage prohibitive systems to accomplish weight reduction in the beyond husky patients.

Keywords: Laparoscopic gastric sleeve , Laparoscopic gastric plication, Morbied obesity, Bariatric surgery.

1. Introduction

Morbid stoutness is analyzed by deciding Body Mass Index (BMI). BMI is characterized by the proportion of a person's weight in kilograms to their tallness in meters square. Typical BMI goes from 18.5-25. BMI is under 18.5, it falls inside the underweight territory. BMI is 18.5 to <25, it falls inside the ordinary. BMI is 25.0 to <30, it falls inside the overweight territory. BMI is 30.0 or higher, it falls inside the stout reach [1].

Grim stoutness is regularly difficult to treat with diet and exercise alone.On the other hand, bariatric medical procedure has an extraordinary function in weight reduction in horrible fat patients [2].

There are different careful activity accessible for patients wanting medical procedure for weight reduction and to improve comorbidities: LaproscopicGastricSleeve,Laproscopic Asisted Gastric Plication , Laproscopic Gastric Bypass ,Single-Anastomosis Duodeno-Ileal sidestep with Sleeve (SADI-S) ,Duodenal Switch , Gastric Balloon , Gastric Band [3].

The interest for bariatric medical procedure is rising around the world. Expanding consciousness of the genuine heftiness related grimness by the overall population and medical services experts, alongside proceeded with progress in both the security and long haul adequacy of the surgeries and the presentation of laparoscopic careful strategies, have added to the blast in bariatric medical procedure [4].

Two essential methodologies of carefully prompted weight reduction have emerged in the course of recent years: gastric limitation and intestinal malabsorption.The prohibitive techniques cause early satiety by making of a little gastric pocket and drag out satiety by production of a little source to the pocket. Prohibitive methods incorporate numerous assortments of gastroplasty and gastric banding[5].

Laparoscopic gastric sleeve It is a prohibitive careful procedure that includes resection of a critical bit of the stomach by methods for stapling the more prominent shape. This method is quickly picking up ubiquity and acknowledgment as an essential bariatric strategy with great outcomes on weight loss[6].

LaparoscopicAssistedGastricPlicationThis method is called laparoscopic more noteworthy ebb and flow plication, which is like vertical gastric banding, yet without the requirement for gastric resection. The stomach is decreased by dismembering the more noteworthy omentum and short gastric vessels, as in vertical sleeve gastrectomy, at that point the more prominent bend is invaginated utilizing various lines of nonabsorbable stitch over bougie to guarantee a patent lumen [7].

2. Materials and methods

The retrospective study was performed from November 2017 to April 2020.

Approval of Ethics Committee in Faculty of Medicine; Benha University was taken before conduction of the study.

Informed consent was obtained from all participating patients before their inclusion at the outpatient clinic and another consent before undergoing operations.

Patients

This study was completed on30 extremely chubby patients of various age bunches submitted in Benha college clinic and Nasser foundation medical clinic for a bariatric medical procedure All patients had rehashed disappointment of weight decrease after multidisciplinary clinical therapy.

Consideration measures

As per the public foundation of wellbeing (NIH) agreement and the set up models for bariatric medical procedure as communicated by the International Federation of Surgery for Obesity (IFSO), to be qualified for bariatric medical procedure an applicant must have a BMI_40, or_35 with or without co-dreariness.

Prohibition models

Corpulence of endocrine birthplace. Patients underneath the age of 18 years or over 65 years. Past mal-absorptive or prohibitive strategies performed for the treatment of stoutness. Ladies of childbearing potential who are pregnant or lactating at the hour of screening or at the hour of medical procedure. Mental infections. High danger patients for sedation (ASA score 4,5 or 6).

Study plan

The 30 patients was partitioned arbitrarily in to two gatherings:

GroupA:. Speaking to 15 patients went through laparoscopic gastric sleeve

GroupB: Representing 15 patients went through laparoscopic helped gastric plication.

The 2 gatherings of patients were dealt with indistinguishably in all perspectives.

During their intraoperative and postoperative development, the predefined result measures were recorded and the discoveries were analyzed between the two gatherings .

Study method

All the patients were exposed to the followings:

Pre-usable assessment

Routinelaboratoryinvestigations;(CBC,KFTs,LFTs, INR,PT,PTT,RBS,HA1C),Pelviabdomintrasonography, ECHO,ECG, Pulmonary capacity test,Thyroid work test,Serum cortisol AM,PM . Preoperative BMI computation in addition to documentation of co-horribleness and anydrug taken routinely. (BMI, determined as weighkilograms separated by tallness in meters squared) Routine day 1 postoperative gastrographin study to neogastric pocket to bar spillage.

Usable technique

All the patients went through essential hernia fix utilizing onlay work implantation method separated randomely into two gatherings:

1- Patient situating and port arrangement: The patient was set in the prostrate situation with open legs. The specialist was remained between the legs and the careful collaborators were stood one on each side of the patient .Camera man on right side and other partner on left side
2- Inferior milestone for part of the significant omentum: The segment was started 5cm away from the pylorus
3- Dissection of the more noteworthy bend.
4- Mobilization of the back divider
5- Superior milestone: The objective is to uncover the cardia and the left crus.
6- Calibrated gastrectomy: A 35 French bougie was utilized to control the measurement of the leftover stomach.
7- Gastric crosscut VS Gastric plication:

In gastric sleeve stomach mechanical stitch was put excessively near the bougie to forestall dying, stenosis and spillage and crosscut of stomach. In gastric plication Small kocher cut in left side 1.5inch underneath costal edge. The cut began underneath xiphoid measure and broadened horizontally about 15cm . This for manual plication of the stomach . Plication began 6 cm from the pylorus to point of his. Gastric plication made by imbrication of the more noteworthy ebb and flow over a 35-Fr bougie applying a column of extramucosal interfered with join of 1-silk stitches . In the last angle, the stomach was molded like a sleeve gastrectomy however somewhat bigger.

8- Methylene blue test and channel addition: A 35Fr orogastric bougie was utilized to present methylene blue toward the fulfillment of medical procedure to play out the HPMB spill test.

Result measures

Postoperative (PO) information included, PO clinic remain, season of refeeding, the measure of channel yield from the start day PO, Permanence of channel, getting back to ordinary exercises, Duration of analgesics utilized postoperatively and intricacies.

Follow-upassessment: Degree and pace of weight reduction at multi month, 3 months and a half year postoperative, Postoperative confusions, including spillage and/or stitch or staple line bleeding.

3. Results

This study included a total of 30 patients with morbied obesity presented for us in outpatient clinic and fulfilling the inclusion criteria in the absence of any of the exclusion criteria. According to the national institute of health (NIH) consensus and the established criteria for bariatric surgery as expressed by the International Federation of Surgery for Obesity (IFSO), to be eligible for bariatric surgery a candidate must have a BMI_40, or_35 with or without co-morbidity.

Regarding demographic and clinical characteristics

No significant differences between the studied groups regarding demographic and clinical characteristics

Table (1) Demographic data.

Variables		Plication (N=15)	Sleeve (N=15)	P-value
Age (years)	Mean±SD	36.7±10.8	33.2±6.7	^0.300
	Range	19.0–51.0	20.0–50.0	
Sex	Male	2 (13.3%)	3 (20.0%)	#0.999
(n, %)	Female	13 (86.7%)	12 (80.0%)	
BMI (kg/m2)	Mean±SD	45.7±5.0	46.5±5.0	^0.643
	Range	37.0–54.0	35.8–53.1	
Weight excess (kg/m2)	Mean±SD	20.7±5.0	21.5±5.0	^0.643
	Range	12.0–29.0	10.8–28.1	
Comorbidities	HTN	3 (20.0%)	2 (13.3%)	#0.999
(n, %)	DM	3 (20.0%)	3 (20.0%)	#0.999
	Sleep apnea	2 (13.3%)	3 (20.0%)	#0.999

^Independent t-test. #Fisher's Exact test. *Significant

Table (2) Comparison between the studied groups regarding operation duration (minutes) **.**

Measures	Plication (N=15)	Sleeve (N=15)	^P-value
Mean±SD	106.6±7.6	77.1±9.4	<0.001*
Range	95.0–120.0	60.0–95.0	
Difference between groups (Plication -Sleeve)			
Items	Mean±SE	95% CI	
Operation duration	29.5±3.1	23.1–35.9	

^Independent t-test SE: Standard error. CI: Confidence interval. *Significant.

Table (3) Comparison between the studied groups regarding postoperative hospital stay (days).

Measures	Plication (N=15)	Sleeve (N=15)	^P-value
Mean±SD	1.9±0.9	1.4±0.6	0.068
Range	1.0–3.0	1.0–3.0	
Difference between groups (Plication -Sleeve)			
Items	Mean±SE	95% CI	
Hospital stay	0.5±0.3	0.0–1.1	

^Independent t-test SE: Standard error. CI: Confidence interval. *Significant.

Table (4) Comparison between the studied groups regarding postoperative complications **.**

Complications	Plication (N=15)	Sleeve (N=15)	^P-value
Nausea& Vomiting	0 (0.0%)	1 (6.7%)	#0.999
Incisional hernia	1 (6.7%)	0 (0.0%)	#0.999

#Fisher's Exact test

Nausea& Vomiting was non-significantly less frequent in Plication group than in Sleeve group. Incisional hernia was non-significantly more frequent in Plication group than in Sleeve group.

Table (5) Comparison between the studied groups regarding excess weight loss (%).

Time	Measures	Plication (N=15)	Sleeve (N=15)	^P-value
Month-1	Mean±SD	10.1±1.4	7.2±1.1	<0.001*
	Range	8.0–12.2	5.8–9.4	
Month-3	Mean±SD	27.3±1.3	19.5±6.5	<0.001*
	Range	24.0–28.7	4.5–23.3	
Month-6	Mean±SD	21.7±2.2	15.8±4.8	<0.001*
	Range	18.3–25.4	1.7–20.2	
Month-12	Mean±SD	8.6±1.2	3.7±1.2	<0.001*
	Range	6.9–11.1	1.6–5.9	
Total	Mean±SD	67.7±5.9	46.2±10.9	<0.001*
	Range	57.2–77.4	17.5–57.4	

Table (5) Continue		
Difference between groups (Plication -Sleeve)		
Time	Mean±SE	95% CI
Month-1	2.9±0.5	2.0–3.9
Month-3	7.8±1.7	4.3–11.3
Month-6	5.9±1.3	3.1–8.7
Month-12	4.8±0.4	3.9–5.7
Total	21.5±3.2	14.9–28.0

^Independent t-test SE: Standard error. CI: Confidence interval. *Significant
Excess weight loss was significantly higher in Plication group than in Sleeve group.

Table (6) Comparison between the studied groups regarding BMI (kg/m2).

Time	Measures	Plication (N=15)	Sleeve (N=15)	^P-value
Baseline	Mean±SD	45.7±5.0	46.5±5.0	0.643
	Range	37.0–54.0	35.8–53.1	
Month-1	Mean±SD	43.6±4.4	44.9±4.5	0.399
	Range	35.9–50.5	35.1–51.2	
Month-3	Mean±SD	37.9±3.0	40.8±4.1	0.035*
	Range	32.7–42.4	32.7–47.5	
Month-6	Mean±SD	33.4±2.0	37.5±4.2	0.002*
	Range	30.2–36.1	30.8–47.0	
Month-12	Mean±SD	31.6±1.7	36.7±4.1	<0.001*
	Range	29.0–34.5	30.4–46.6	
Difference between groups (Plication -Sleeve)				
Time		Mean±SE	95% CI	
Baseline		-0.9±1.8	-4.6–2.9	
Month-1		-1.4±1.6	-4.7–1.9	
Month-3		-2.9±1.3	-5.6–-0.2	
Month-6		-4.1±1.2	-6.5–-1.7	
Month-12		-5.1±1.2	-7.4–-2.7	

^Independent t-test SE: Standard error. CI: Confidence interval. *Significant
show that:No significant differences between the studied groups regarding baseline BMI. Postoperative BMI was lower in Plication group than in Sleeve group at all follow up times but the differences were significant at all follow up times except month-1.

Table (7) Comparison between the studied groups regarding arrest of weight loss.

Arrest	Plication (N=15)	Sleeve (N=15)	#P-value
Occurred	0 (0.0%)	1 (6.7%)	0.999
Not occurred	15 (100.0%)	14 (93.3%)	

#Fisher's Exact test
Arrest of weight loss was non-significantly less frequent in Plication group than in Sleeve group.

Table (8) Follow up the improvement of comorbidities (HTN,DM).

Time	Time	Plication			Sleeve		
MBP	N		3			2	
(mmHg)	Baseline	141	145	146	148		145
	Month-1	137	141	135	140		143
	Month-3	133	135	128	137		138
	Month-6	128	127	123	128		133
	Month-12	117	120	113	120		131
HbA1c	N		3			3	
%	Baseline	8.5	8.1	9.2	8.4	9.4	8.6
	Month-1	7.5	7.8	8.6	7.9	8.8	8.5
	Month-3	6.3	6.9	7.2	7.1	7.9	8.1
	Month-6	5.8	5.5	6.3	6.8	6.6	7.9
	Month-12	5.5	5.4	5.8	5.8	5.7	7.8

Table (9) Comparison between the studied groups regarding improvement of comorbidities.

Comorbidities	Findings	Plication	Sleeve	#P-value
HTN	Total	3	2	0.400
	Improved	3 (100.0%)	1 (50.0%)	
	Not improved	0 (0.0%)	1 (50.0%)	
DM	Total	3	3	0.999
	Improved	3 (100.0%)	2 (66.7%)	
	Not improved	0 (0.0%)	1 (33.3%)	
Sleep apnea	Total	2	3	0.400
	Improved	2 (100.0%)	1 (33.3%)	
	Not improved	0 (0.0%)	2 (66.7%)	

Improvement of comorbidities were non -significantly more frequent in Plication group than in Sleeve group.

Table (10) Comparison between the studied groups regarding cost (Egyptian pounds).

Items	Measures	Plication (N=15)	Sleeve (N=15)	^P-value
Crude cost (pounds)	**Mean±SD**	17600±1844	57600±2385	<0.001*
	Range	15000–20000	55000–65000	
Relative cost (pounds/ 1% excess loss	**Mean±SD**	261.2±30.1	1371.6±609.1	<0.001*
	Range	204.1–314.7	993.0–3371.4	
Difference between groups (Plication -Sleeve)				
Items		Mean±SE	95% CI	
Crude cost		-40000±778	-41594–-38406	
Relative cost		-1110.3±157.5	-1432.9–-787.8	

^Independent t-test SE: Standard error. CI: Confidence interval. *Significant.
Crude and relative costs were significantly lower in Plication group than in Sleeve group.

4. Discussion

This review study was led on 30 patients 15ptn on each gathering. The age of the patients in bunch A (gatric sleeve) went somewhere in the range of 19 and 55 years comparing to 3 guys and 12 females with Preoperative BMI ran between35 to 55.

The age of the patients in bunch B (helped gastric plication) went somewhere in the range of 19 and 55 years relating to 2 guys and 13 females with Preoperative BMI ran between35 to 55.

The objective in our examination was to look at between laparoscopic helped gastric plication and laparoscopic gastric sleeve , and it was discovered that :

Season of the activity: it was more in the laparoscopic gastric plication because of time taken in plication of stomach in concurrence with the report of Kourkoulos M., Giorgakis E., Kokkinos C., et al.2012 [9].

Postoperative clinic remain was non-altogether higher in Plication bunch than in Sleeve bunch in concurrence with the report of Zacharoulis D., Sioka E., Papamargaritis D., et al. Corpulence Surgery. 2012.[10]

Slow pace of weight reduction was recorded in one LSG (case 3 sleeve) and was clarified by the terrible dietary propensities (high caloric food) and was attempted to be remedied with dietary guidelines to the patient yet following a half year gastrographin study was rehashed and it was discovered that the excess pyloric pocket was enormous and this may clarify the moderate pace of weight reduction so it was a significant point in the remainder of cases to begin sleeve gastrectomy at 5 cm proximal to the pyloric ring not more.

Post-employable confusions: capture of weight reduction was recorded on the off chance that 3 sleeve and was clarified by the huge pyloric pocket saw in the gastrographin study. Sickness and spewing was recorded in the event that 5 sleeve and was treated by PPI and prokinetic . Incisional hernia was recorded on the off chance that 7 gastric plication. No employable or post-usable mortalities were recognized. No spillage happened from the staple line in any of the cases.

Level of overabundance weight reduction: the normal abundance weight reduction was more in the plication cases in the initial a half year post-operatively exceptionally in the initial 3 months in concurrence with the report of Talebpour M., Motamedi S. M. K [11].

The general misfortune in the principal year was more in the plication cases and was explaind by the new careful method in plication of the stomach and great limitation of the size of the stomach that give ideal body weight reduction . However, long haul information over1year was as yet muddled, so patients will remain under perception with standard chronicle for any new information focusing on long haul correlation in our next investigations.

Cost were fundamentally lower in Plication bunch than in Sleeve bunch in concurrence with the report of Ye M., Huang R., Min Z et al.2012 [12].

Different variables to be mulled over are the hormonal changes following the activity and its conceivable impact on gastric motility, which we didn't be able to gauge and assess when the activity, as our examination is review study, yet we were taken the aftereffects of different investigations that help our investigation and helped us in look at between the two activity.

The hormonal impact of ghrelin is by all accounts a significant factor for instigating weight reduction after LSG Silecchia et al [13]

Then again, there are contemplates that show there is a decline in the degree of ghrelin hormone after LGCP as in concurrence with the report of Bradnova, Olga [13].

Anathor study was applied by Casajoana, Anna, et al.2017 .(92) As there was no distinction seen in fasting estimations of PYY and ghrelin hormone among SG and GCP bunches post-operative[14]

There,s study found that weight reduction after LGCP in extremely chubby patients prompted diminishes in levels of leptin and coursing

invulnerable cells contrasted with their preoperative values[15]

The conduct change of the individual patient occurring when the activity may likewise be of significance in accomplishing a drawn out effective outcome[16].

satiety in LAGP stomach was imbricated and became like gastric ballon make the patient consistently feels full stomach and decline craving and advance weight lose.

Due to the general specialized simplicity of execution contrasted with other bariatric techniques, adequate employable time, low intricacy rate, ease of plication cases and reports of normal abundance weight reduction of rang57.2–77.4 from the start year with progress in comorbidity, we can consider Laparoscopic helped gastric plication as a solitary stage prohibitive methodology as other prohibitive bariatric procedure.

5. Conclusion

The misfortune (Percentage of overabundance weight reduction) in the initial a half year post-employable was higher and quicker in the plication cases and marginally higher than the general misfortune in the main year post-usable in the sleeve cases.

Post-employable emergency clinic remain was more in the plication gathering (it statically critical P value=0.068).

Extra-cost of medical procedure was more in the sleeve gathering (it statically exceptionally critical P value=0.001).

At last, point is to present acceptable answer for bleak heftiness in our nation , to evaluate the reaction of stoutness to medical procedure , to improve way of life of these patients and to ease their forgiving mentally and truly and accomplishing their fantasies for a solid life.

Irreconcilable circumstance: None of the contributers proclaimed any contention of interest.

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