INTRODUCTION

Laparoscopic Sleeve gastrectomy has become the first option in treating the morbid obesity world wide. The first open sleeve gastrectomy was done as a part of more complex operation known as duodenal switch, was done by Doug Hess in Bowling Green Ohio, in the year 1988. Lawrance L Tretbar described the concept of tubularised stomach of stomach surgery in the year 1988. Lawrance L Tretbar described the concept of tubularised stomach of stomach surgery. The surgery evolved from two step procedure of biliopancreatic bypass/duodenal switch. The procedure is safe and associated with symptoms of gastroesophageal reflux, food intolerance and vomiting. These symptoms are attributed to the improper sleeve position and deformity, due to the loss of natural attachments of the stomach. We here by present a case with morbid obesity in which we did sleeve gastrectomy with sleeve fixation. Post operatively patient had benefit from complications which are previously attributed due to sleeve rotation. Our patient was 51 year old male with the history of morbid obesity since 10 years with the BMI of 44.20. Patient has the history of Smoking, hypertension, Obstructive sleep apnea, Diabetes Mellitus with renal failure. After preoperative workup and anaesthetic check up patient was taken up for surgery and sleeve gastrectomy procedure with sleeve fixation was done. Gastrograffin study done on post op day 1 was normal and Patient was started orally liquids on day 1 and discharged on day 2. On follow up patient was doing fine, lost 36 kg weight in 8 months. There was no problem of gastroesophageal reflux, heart burn, food intolerance and vomiting.

Aim - To devise the gastric sleeve fixation for the laparoscopic sleeve gastrectomy.

Technique - The gastric tube is fixed along the new greater curvature with the gastrocolic omentum using the PDS 3-0 in continuous fashion. The interrupted suture is used to fix at the lower part of the tube with the transverse mesocolon near the lower edge of pancreas.

Conclusion - the gastric fixation strategy is safe and easy. It can reduce the problems arising from the improper gastric tube position, reducing the incidence of food intolerance and gastroesophageal disease.

SLEEVE FIXATION IN LAPAROSCOPIC SLEEVE GASTRECTOMY FOR MORBID OBESITY - TECHNIQUE AND BENEFITS

Ankit Raikhy, Annu Babu*, Partha Sarathi Nayak, Homagni ghosh, Abhishek Bhartia and Bhartia V. K

Department of Minimal Access and Bariatric Surgery, CMRI, Kolkata

DOI: http://dx.doi.org/10.24327/IJRSR.2017.0803.0040

ABSTRACT

Sleeve gastrectomy is one of the most commonly performed procedure for treatment of morbid obesity. The surgery evolved from two step procedure of biliopancreatic bypass/duodenal switch. The procedure is safe and associated with symptoms of gastroesophageal reflux, food intolerance and vomiting. These symptoms are attributed to the improper sleeve position and deformity, due to the loss of natural attachments of the stomach. We here by present a case with morbid obesity in which we did sleeve gastrectomy with sleeve fixation. Post operatively patient had benefit from complications which are previously attributed due to sleeve rotation. Our patient was 51 year old male with the history of morbid obesity since 10 years with the BMI of 44.20. Patient has the history of Smoking, hypertension, Obstructive sleep apnea, Diabetes Mellitus with renal failure. After preoperative workup and anaesthetic check up patient was taken up for surgery and sleeve gastrectomy procedure with sleeve fixation was done. Gastrograffin study done on post op day 1 was normal and Patient was started orally liquids on day 1 and discharged on day 2. On follow up patient was doing fine, lost 36 kg weight in 8 months. There was no problem of gastroesophageal reflux, heart burn, food intolerance and vomiting.

Aim - To devise the gastric sleeve fixation for the laparoscopic sleeve gastrectomy.

Technique - The gastric tube is fixed along the new greater curvature with the gastrocolic omentum using the PDS 3-0 in continuous fashion. The interrupted suture is used to fix at the lower part of the tube with the transverse mesocolon near the lower edge of pancreas.

Conclusion - the gastric fixation strategy is safe and easy. It can reduce the problems arising from the improper gastric tube position, reducing the incidence of food intolerance and gastroesophageal disease.

Copyright © Ankit Raikhy et al, 2017. this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.
are uncommon as the stomach tube is calibrated using the bougie. Gastro esophageal reflux has been the most common postoperative complication. (Carter P R et al 2011, Chiu S et al 2011, Howard D D et al 2011)

In view of the current studies this technique helps in the fixation of the stomach tube and prevents the improper position and twist of the stomach tube. Also the procedure provides the better anatomic and physiologic fixation of the stomach bringing it to the natural habitat.

**Technique**

The newly created greater curvature is utilized for the fixation of the gastric tube with gastrocolic omentum. The suturing is started near the gastroesophageal junction invaginating the gastric suture line at the level of gastroesophageal junction and the proceeding distally as continuous suture. We use absorbable suture PDS 3-0. On the gastrocolic omentum side the suture must contain enough of the omentum to prevent cut through by suture. The lower part of the gastric tube is fixed to transverse mesocolon at the inferior part of pancreas using interrupted suture with PDS 2-0. Care is taken that it does not involve the vessels.

![Figure 1](image1.png) Invaginating of the gastroesophageal junction with PDS 3-0.

![Figure 2](image2.png) Continuous running suture with PDS 3-0 on the new greater curvature with the gastrocolic omentum.

![Figure 3 and Figure 4](image3.png) Interrupted suture with PDS 2-0 suturing the distal stomach tube with lower margin of pancreas and root of transverse mesocolon.

![Figure 5](image5.png) Retrogastric space utilized for the inferior fixation of the stomach with pancreas.

![Figure 6](image6.png) The stomach is shown by square, star shows the pancreas and the horizontal arrow shows the root of transverse mesocolon. Interrupted suture with absorbable suture like PDS 2-0 is taken with the stomach and root of transverse mesocolon.

![Figure 7](image7.png) Day 1 gastrograffin study. In Laparoscopic sleeve gastrectomy without fixation, shows twist in the stomach tube.
DISCUSSION

The fixation to the gastric tube has been proposed, aimed to reduce the improper position of the gastric tube, symptoms of food intolerance and gastroesophageal reflux. The procedure keeps the stomach in more functional and anatomical position. The correct mechanism is still under the study, the symptoms may emerge in the postoperative cases which may cause worsening of daily life of the patient and may require the treatment. (Braghetto I et al 2010) The proposed causes according to the studies include loss of gastric complacency, hiatal hernia, impairment of the lower sphincter function, and mechanical and functional obstruction along the gastric tube. (Braghetto I et al 2010, Kuper M A et al 2009) The studies have shown that the loss of natural stomach fixation results in the rotation of the gastric sleeve whenever there is food in the pouch, this causes persistent food intolerance and reflux. (Lazoura O et al 2011) Cases of gastric volvulus and twisting have also been reported postoperatively after sleeve gastrectomy, patient was treated by antrectomy and gastroileal bypass.

There are severe changes in the gastric emptying due to compromised peristaltic activity. (Melissas J et al 2007, Baumann T et al 2011, Carbone S F et al 2011) Areas of functional stenosis, mainly at the level angular incisura, proximal dilation are associated with the emptying difficulties and result in postoperative food intolerance and gastroesophageal reflux. (Keidar A et al 2010, Goitein D et al 2009) There is growing evidence that improper position of the gastric tube leads to the these symptoms. Parikh et al. studied the role of functional stenosis associated with twisting of gastric tube. On endoscopy in these patients there was no anatomical deformity and the endoscope passed easily. (Parikh A et al 2012)

The stomach is normally fixed to the gastrohepatic, gastroplenic, and gastrocolic ligaments. These are natural attachment of the stomach. (Askew A R et al 1978) The distention caused by presence of food in the stomach causes rotation of the stomach tube due to loss of the natural attachment. (Wastell C et al 1971, Sevcik W E et al 1999) In a study by Santoro et al. loss of natural fixation of stomach along the greater curvature caused altered shape and placement of the stomach tube, this leads to the emptying disorders. There is tendency of gastric tube to coil which can be prevented by using suturing with greater omentum. (Santoro S et al 2007) The greater omentum does not provide the sufficient fixation to the gastric tube. The fixation to greater curvature with gastrocolic omentum with gastroepiploic vessels in the suture provides better fixation and greater stability. In another study, has shown the gastric tube migration in 36% patient shown in CECT abdomen. (Baumann T et al 2011)

CONCLUSION

The stomach fixation strategy is safe and seem to provide suitable and reliable refixation. This may reduce the occurrence of reflux and intolerance related to improper positioning of the gastric tube.

References

1. Trelles NG, Michel. Updated Review of Sleeve Gastrectomy. The Open Gastroenterology Journal. 2008; 2:41-9.
2. Campanile FC, Boru CE, Rizzello M, Puzziello A, Copaescu C, Cavallaro G, et al. Acute complications after laparoscopic bariatric procedures: update for the general surgeon. Langenbecks Arch Surg. 2013; 398(5):669-86. Epub 2013/03/23.
3. Lalor PF, Tucker ON, Szomstein S, Rosenthal RJ. Complications after laparoscopic sleeve gastrectomy. Surg Obes Relat Dis. 2008; 4(1):33-8. Epub 2007/11/06.
4. Carter PR, LeBlanc KA, Hausmann MG, Kleinpete KP, deBarros SN, Jones SM. Association between gastroesophageal reflux disease and laparoscopic sleeve gastrectomy. Surg Obes Relat Dis. 2011; 7(5):569-72. Epub 2011/03/25. PubMed PMID: 21429818.
5. Chiu S, Birch DW, Shi X, Sharma AM, Karmali S. Effect of sleeve gastrectomy on gastroesophageal reflux disease: a systematic review. Surg Obes Relat Dis. 2011; 7(4):510-5. Epub 2010/12/07.
6. Howard DD, Caban AM, Cendan JC, Ben-David K. Gastroesophageal reflux after sleeve gastrectomy in morbidly obese patients. Surg Obes Relat Dis. 2011; 7(6):709-13. Epub 2011/10/01.
7. Braghetto I, Csendes A, Korn O, Valladares H, Gonzalez P, Henriquez A. Gastroesophageal reflux disease after sleeve gastrectomy. Surgical laparoscopy, endoscopy & percutaneous techniques. 2010; 20(3):148-53. Epub 2010/06/17.
8. Kuper MA, Kramer KM, Kirschnian A, Zdichavsky M, Schneider JH, Stucker D, et al. Dysfunction of the lower esophageal sphincter and dysmotility of the tubular
esophagus in morbidly obese patients. Obes Surg. 2009; 19(8):1143-9. Epub 2009/06/11.

9. Lazoura O, Zacharoulis D, Triantafilellis G, Fanariotis M, Sioka E, Papamargaritis D, et al. Symptoms of gastroesophageal reflux following laparoscopic sleeve gastrectomy are related to the final shape of the sleeve as depicted by radiology. Obes Surg. 2011; 21(3):295-9. Epub 2010/12/18.

10. Melissas J, Koukouraki S, Askoxylakis J, Stathaki M, Daskalakis M, Perisinakis K, et al. Sleeve gastrectomy: a restrictive procedure? Obes Surg. 2007; 17(1):57-62. Epub 2007/03/16.

11. Baumann T, Kuesters S, Grueneberger J, Marjanovic G, Zimmermann L, Schaefer AO, et al. Time-resolved MRI after ingestion of liquids reveals motility changes after laparoscopic sleeve gastrectomy—preliminary results. Obes Surg. 2011; 21(1):95-101. Epub 2010/11/23.

12. Carbone SF, Di Cosmo L, Tirone A, Bancheri A, Vuolo G, Volterrani L. Evaluation of motility changes after laparoscopic sleeve gastrectomy using magnetic resonance imaging. Obes Surg. 2011; 21(11):1806-7; author reply 8-9. Epub 2011/07/26.

13. Keidar A, Appelbaum L, Schweiger C, Elazary R, Baltasar A. Dilated upper sleeve can be associated with severe postoperative gastroesophageal dysmotility and reflux. Obes Surg. 2010; 20(2):140-7. Epub 2009/12/02.

14. Goitein D, Goitein O, Feigin A, Zippel D, Papa M. Sleeve gastrectomy: radiologic patterns after surgery. Surg Endosc. 2009; 23(7):1559-63. Epub 2009/02/28.

15. Parikh A, Alley JB, Peterson RM, Harnisch MC, Pfluke JM, Tapper DM, et al. Management options for symptomatic stenosis after laparoscopic vertical sleeve gastrectomy in the morbidly obese. Surg Endosc. 2012; 26(3):738-46. Epub 2011/11/03.

16. Askew AR. Treatment of acute and chronic gastric volvulus. Ann R Coll Surg Engl. 1978; 60(4):326-8. Epub 1978/07/01. PubMed PMID: 666240; PubMed Central PMCID: PMC2492115.

17. Wastell C, Ellis H. Volvulus of the stomach. A review with a report of 8 cases. Br J Surg. 1971; 58(8):557-62. Epub 1971/08/01.

18. Sevcik WE, Steiner IP. Acute gastric volvulus: case report and review of the literature. Cjem. 1999; 1(3):200-3. Epub 2007/07/31.

19. Santoro S. Technical aspects in sleeve gastrectomy. Obes Surg. 2007; 17(11):1534-5. Epub 2008/01/26.

*******

How to cite this article:
Ankit Raikhy et al. 2017, Sleeve Fixation In Laparoscopic Sleeve Gastrectomy For Morbid Obesity -Technique And Benefits. Int J Recent Sci Res. 8(3), pp. 15948-15951.