CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

Title	Laparoscopic sleeve gastrectomy - a prospective follow up of 30 patients
Authors	Toor, Asad Ali;Farooka, Muhammad Waris;Ayyaz, Mahmood;Razzaq, Zeeshan;Malik, Awais Amjad;Nawaz, Allah;Mahmood, Asif;Redmond, H. Paul
Publication date	2017
Original Citation	Toor, A. A., Farooka, M. W., Ayyaz, M., Razzaq, Z., Malik, A. A., Nawaz, A., Mahmood, A. and Redmond, H. P. (2017) 'Laparoscopic sleeve gastrectomy - a prospective follow up of 30 patients', Journal of Ayub Medical College Abbottabad, 29(1), pp. 45-49. Available at: http://jamc.ayubmed.edu.pk/index.php/jamc/article/view/1480/863 (Accessed: 4 June 2019)
Type of publication	Article (peer-reviewed)
Link to publisher's version	http://jamc.ayubmed.edu.pk/index.php/jamc/article/view/1480/863
Rights	© 2017, Journal of Ayub Medical College Abbottabad. All rights reserved.
Download date	2026-10-13 13:07:30
Item downloaded from	https://hdl.handle.net/10468/8011

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

ORIGINAL ARTICLE

LAPAROSCOPIC SLEEVE GASTRECTOMY – A PROSPECTIVE FOLLOW UP OF 30 PATIENTS

Asad Ali Toor, Muhammad Waris Farooka*, Mahmood Ayyaz*, Zeeshan Razzaq, Awais Amjad Malik*, Allah Nawaz*, Asif Mahmood*, Henry Paul Redmond

Department of Surgery, Cork University Hospital, Wilton, County Cork-Republic of Ireland, *Department of General Surgery, National Hospital & Medical Centre, Lahore-Pakistan

Background: Morbid obesity has become a surgically treatable problem. Laparoscopic sleeve gastrectomy is becoming a popular choice both for surgeons and patients due to effectiveness and low complication rates. **Methods:** It was a prospective case series spanning over 6 years. Patient enrolment started from January 2009 and data collection completed in January 2015. Patient with BMI (weight in kilogram/height in meter square) of more than 35 were included in the study. Follow up was at 2 weeks, 1 month, 6 months and 12 months. Success was defined as 25% of excess weight loss at 1 year. Paired *t*-test was used as a test of significance. **Results:** A total of 34 patients were included in the study over a 6-year period, 3 were lost to follow up and one patient died of cardiac arrest. Data of 30 patients is considered for final analysis. Mean age was 39.5±10 years, while mean BMI 45.8±6.3 (range 37.1–62.2). Average weight of the patients pre-operatively was 129.9±20.8 kg while mean excess weight was 70.3±20.8 kg. Average weight loss at two weeks was 8.9±2.9 kg, at one month 14.7±4.6 kg, at 6 months 25.0±7.6 kg and at twelve months was 31.4±6.8 kg. Mean percentage of excess weight loss after 2 weeks was 13.5±4.6%, at one month 22.0±6.1%, at six months 37.6±12.0% and at twelve months 47.3±10.1%. **Conclusion:** Laparoscopic sleeve gastrectomy is an effective weight loss surgery with minimal complications. On average weight loss of about 30 kg at one year was achieved which equals to almost half of excess body weight.

Keywords: Obesity; Weight loss surgery; Sleeve Gastrectomy

J Ayub Med Coll Abbottabad 2017;29(1):45–9

INTRODUCTION

Morbid obesity has become a surgically treatable problem.[1] Recent data showed surgical management for morbid obesity is successful when diet and medical therapy are unsuccessful.[2] Laparoscopy made obesity surgery more safe and acceptable to patients.[3] Metabolic surgery is the name assigned to surgery for treatment of obesity and conditions for which obesity is a cause or contributing factor.[4–6]

A wide range of weight loss surgical procedures are available, most popular procedures include Adjustable Gastric Banding, Sleeve Gastrectomy and Roux-en-Y Gastric Bypass. Roux-en-Y Gastric bypass is a procedure in which calorie absorption in restricted.[7] Adjustable gastric banding and sleeve gastrectomy are restrictive procedures which aim at reducing food intake.[8] Sleeve gastrectomy is an efficient procedure for patients with super obesity (BMI>50 kg/m^2) and super obesity (BMI>60 kg/m^2).[9]

Obesity is associated with development of type 2 diabetes mellitus, hyperlipidaemia, coronary artery disease, sleep apnoea, osteoarthritis and increased risk of some cancers.[10] All obesity related co-morbidities put people at increased risk of morbidity and mortality. Almost 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7–41% of certain cancers are attributed to overweight and obesity.[11]

Weight loss surgery is performed as a single procedure or a succession of procedures. Usually sleeve gastrectomy is first step in high risk patient where initial weight reduction is achieved to perform more complex Roux-en-Y Gastric Bypass surgery.[12] Both procedures are safe and effective in loosing excess body weight.[13,14] But later studies showed that both Sleeve gastrectomy and Roux-en-Y Gastric Bypass surgery are equally effective.[15] This led to the idea of sleeve gastrectomy as a standalone procedure for treatment of morbid obesity.[16] Sleeve gastrectomy results in excess weight loss and remission of co-morbidities comparable with other procedures.[9,17]

This study was designed to measure weight loss after sleeve gastrectomy at 1 year in Pakistani population.

MATERIAL AND METHODS

It was a prospective case series spanning over 6 years. Patient enrolment started from January 2009 and data collection completed in January 2015. All consecutive patients who were admitted for laparoscopic sleeve gastrectomy were included in this study. This study was conducted at National Hospital & Medical Centre, Lahore, Pakistan. Patients were with BMI (weight in kilogram (kg) /(m^2) height in

meter square) of more than 35 who wanted to reduce weight by surgery were included in this study. Patients were operated after getting fitness for anaesthesia was by a consultant anaesthetist. Patients were given all details of the procedure, procedure was explained by diagrams and possible complications explained. Informed consent was obtained from the patients and ethical approval obtained from hospital ethical review committee. All data of the patients was recorded on pre-designed Performa during admission, on each visit in outpatient up to 1 year after surgery. Pre-operatively all patients had baseline investigations including complete blood count, blood urea, coagulation profile, serum Creatinine, random blood sugar levels in case of known diabetic patients HbA_{1c} levels, liver enzymes levels, fasting lipid profile, thyroid function tests, chest radiograph, ultrasound of abdomen and pulmonary function tests where indicated. All patients were assessed by consultant Endocrinologist for diabetes mellitus, hypertension and thyroid abnormalities and treatment initiated. All patients were assessed by nutritionist for diet control pre-operatively. All patients received written instruction on restarting diet after surgical procedure. Post-operatively all patients were kept for 24 hours in recovery for monitoring and pain control. Deep venous thrombosis prophylaxis was started within 24 hours after surgery.

Pneumoperitoneum was created by opti view port, 2 inches above and one inch left to umbilicus. Mostly 15-18mmHg of intra-abdominal pressure was maintained during procedure. Two 12 mm working ports introduced in both mid-clavicular lines 1 inch above opti view port. One 5mm port for liver retraction in epigastric region and another 5mm assistant port in anterior axillary line on left side, as shown in figure-1.

Laparoscope was introduced through supra-umbilical port and thorough abdominal assessment was conducted before introducing other ports. Window was developed in gastro-colic ligament close to greater curvature. Greater omentum was released proximally and distally 5 cm proximal to pylorus with the help of harmonic scalpel. 1st endo-stapler with green reload is applied and fired at distal stomach apposite crow's foot. Orogastric tube of 32 F passed into the stomach. Rest of the stomach divided by keeping tube as a guide for 30–50 ml of stomach pouch. Stapler line was reinforced with sutures (vicryl 2/0). Orogastric tube was slightly withdrawn and blue dye was injected in stomach lumen to ensure continuity of staple line. Specimen withdrawn by dilating one of the 12 mm port. Patients were allowed liquids on 1st post-operative day and were discharged within 72 hours post-operatively.

Weight related calculation include BMI (body weight [kg] / height [m^2]).

Excess BMI (preoperative BMI – Ideal BMI [85^{th} percentile for gender and age specific healthy weight]).

Percentage excess BMI loss (% EBL) = (preoperative BMI – BMI at follow-up / [excess BMI] × 100)

Excess weight =preoperative weight –ideal body weight (85^{th} percentile for gender and age specific healthy weight]).

Percentage excess weight loss (% EWL) = (preoperative weight – follow-up weight [preoperative weight – weight corresponding to the 85th percentile of BMI for the patient's age, gender and height] x 100)

Success was defined as achieving more than 25% EWL. Follow up was at 2weeks, 1, 6 and 12 months. Paired t-test was used as a test of significance. Statistical analysis was performed with SPSS-21.0.

RESULTS

A total of 34 patients were included in the study over a 6-year period. Among these patients 1 patient died of sudden cardiac arrest 3 months after surgery. Three patients were lost to follow up. Data of 30 patients who completed follow up is presented here. Females were more common, comprising about 24 (80%, n=30), males 6 (20%) of study population. Mean age was 39.5±10 (n=30) years. In our study participant's minimum BMI was 37.1 while maximum BMI was 62.2. There were 8 (24%, n=30) patients who fell in the category of Superobese (BMI >50). Mean BMI was 45.9±6.5 (n=30) at baseline and after 12 months mean BMI was 36.1±6.3 (p<0.010). Average weight of the patients pre-operatively was 129.9±20.8 kg at base line while average excess weight was 70.3±20.8 kg.

In bariatric surgery weight loss is measured in terms of percentage of excess weight loss. This simply means weight above ideal body weight for patient's height, weight and gender. Mean percentage of excess weight loss after 2 weeks was 13.5±4.6, at one month 22.0±6.1, at six months 37.6±12.0 and at twelve months 47.3±10.1 as shown in Ttable-1 & figure-2. At twelve month, minimum patients lost minimum 34.4% EWL and maximum 66.3% EWL%.

For simple understanding of weight loss, it was calculated in terms of kilograms. Average weight loss at two weeks was 8.9±2.9 kg, at one month 14.7±4.6 kg, at 6 months 25.0±7.6 kg and at twelve months was 31.4±6.8 kg as shown in figure-3.

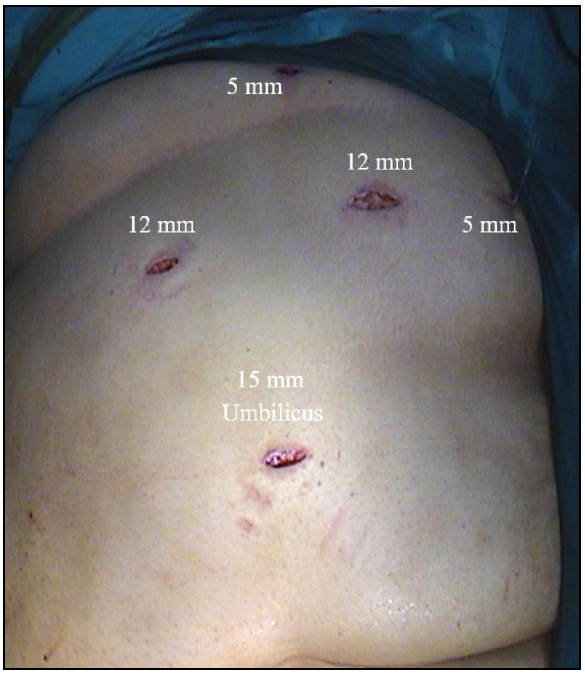

Figure-1: Port position on the patient

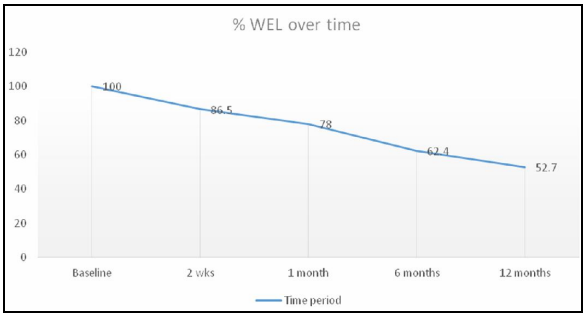

Figure-2: A line chart showing %age of excess weight loss during 1 year period

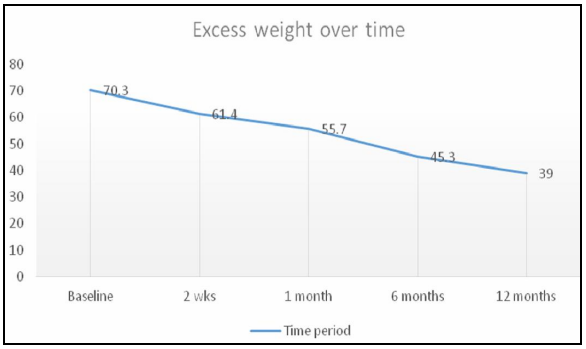

Figure-3: A line chart showing weight loss in Kg over time

Table-1: Weight loss after surgery

Time Period since surgery	Mean Weight loss (Kg)	Mean Percentage of Excess Weight loss (% EWL)
2 weeks	8.9±2.9	13.5±4.6
1 month	14.7±4.6	22.0±6.1
6 months	25.0±7.6	37.6±12.0
12 months	31.4±6.8	47.3±10.1

DISCUSSION

In our study females were about 80% of participants. Recent studies suggest morbid obesity in on rise in women.[18] Another reason for larger number of female participants could be a desire to attain slim figure for personal, social or professional reasons. In women, bariatric surgery improves body aches and pains, physical function, mental and general health.[19] A study showed, negative feelings in females may be responsible for emotional eating leading to morbid obesity.[20] Mean age in our study was 39.5±10 years while mean BMI was 45.8±6.3 kg. Contreras showed that patients below age of 45 years lose more weight after bariatric surgery than older people.[21] A study showed that younger women lose more weight as compare to elder women after bariatric surgery. A study of 489 patients showed younger patient lose significant and prolonged BMI decrease over time.[22]

In our study patient loss on average 47.3% of excess weight at one year follow up. Bobowicz reported 43.6% of excess weight loss 1 year after sleeve gastrectomy which is comparable to our results.[23] A study of 263 patients showed a median percentage of excess weight loss of about 65.7% which is much higher than our results.[24] This difference could be due to inclusion of patient who underwent re-sleeve gastrectomy. There are two studies which showed percentage of excess weight loss of 76.1% and 83.3%.[25,26]

Al Zabadi reported a mean weight loss of 50 kg at one year follow up which is more than seen in our study.[11] Another study in India showed that patients' body weight decreased significantly from a pre-operative of 131.2 to a post-operative of 99.4 which is similar to our results 129.9–98.57 kg at one year follow up.[27]

A recently published study showed that at one year follow up, %age of excess weight loss is higher after sleeve gastrectomy than Roux-en-Y gastric bypass.[28] A study of 240 patients comparing sleeve gastrectomy and Roux-en-Y gastric bypass reported that there is no significant difference in weight loss and resolution of co-morbidities at 6 months follow up.[29] Previously it was thought that gastric bypass surgery produce more dramatic weight loss than sleeve gastrectomy. Sleeve gastrectomy offer additional advantages of short learning curve while providing persistent weight loss.[30,31]

Bariatric surgery improves cardiovascular risk factors, cardiac structure and function, and the clinical course of established cardiovascular disease.[32] Diabetes is well controlled with bariatric

surgery than medical therapy alone at one year and three years.[33] Bariatric surgery not only reduces severity of hyperglycaemia but also reduce medication requirement for good glycaemic control.[34]

This is first study in Pakistan on Bariatric Surgery and was first experience of the researcher to perform independently laparoscopic sleeve gastrectomy. This study also has short follow up duration.

CONCLUSION

Laparoscopic sleeve gastrectomy is an effective weight loss surgery with minimal complications. On average weight loss of about 30 kg at one year was achieved which equals to almost half of excess body weight.

AUTHORS' CONTRIBUTION

AAT, WF, MA: Guarantor. AAM, AN, AM: Data collection, surgical procedure, data analysis, preparation of manuscript. ZR, PR: Preparation of manuscript, significant contribution to final draft.

REFERENCES

1. Garb J, Welch G, Zagarins S, Kuhn J, Romanelli J. Bariatric surgery for the treatment of morbid obesity: a meta-analysis of weight loss outcomes for laparoscopic adjustable gastric banding and laparoscopic gastric bypass. Obes Surg 2009;19(10):1447–55.
2. Buchwald H, Avidor Y, Braunwald E, Jensen MD, Pories W, Fahrbach K, *et al*. Bariatric surgery: a systematic review and meta-analysis. JAMA 2004;292(14):1724–37.
3. Reoch J, Mottillo S, Shimony A, Filion KB, Christou NV, Joseph L, *et al*. Safety of laparoscopic vs open bariatric surgery: a systematic review and meta-analysis. Arch Surg 2011;146(11):1314–22.
4. Reis CE, Alvarez-Leite JI, Bressan J, Alfenas RC. Role of bariatric-metabolic surgery in the treatment of obese type 2 diabetes with body mass index <35 kg/m2: a literature review. Diabetes Technol Ther 2012;14(4):365–72.
5. Valenta I, Dilsizian V, Quercioli A, Jungling FD, Ambrosio G, Wahl R, *et al*. Impact of obesity and bariatric surgery on metabolism and coronary circulatory function. Curr Cardiol Rep 2014;16(1):433.
6. Polymeris A, Karoutsou E, Michalakis K. The impact of bariatric surgery procedures on type 2 diabetes, hyperlipidemia and hypertension. Hellenic J Cardiol 2013;54(3):212–7.
7. Scopinaro N. A rational look at the apparent mess of bariatric surgery procedures and indications. Ann Ital Chir 2007;78(6):463–7.
8. Schouten R, Wiryasaputra DC, van Dielen FM, van Gemert WG, Greve JW. Long-term results of bariatric restrictive procedures: a prospective study. Obes Surg 2010;20(12):1617–26.
9. Catheline JM, Fysekidis M, Dbouk R, Boschetto A, Bihan H, Reach G, *et al*. Weight loss after sleeve gastrectomy in super superobesity. J Obes 2012;2012:959260.
10. Kopelman PG. Obesity as a medical problem. Nature 2000;404(6778):635–43.
11. Al Zabadi H, Daqour A, Hawari A, Hasouni J. Short-term outcomes of laparoscopic sleeve gastrectomy among obesity patients in the Northern West Bank: a retrospective records review. BMC Res Notes 2014;7:85.
12. Paluszkiewicz R, Kalinowski P, Wroblewski T, Bartoszewicz Z, Bialobrzeska-Paluszkiewicz J, Ziarkiewicz-Wroblewska B, *et al*. Prospective randomized clinical trial of laparoscopic sleeve gastrectomy versus open Roux-en-Y gastric bypass for the management of patients with morbid obesity. Wideochir Inne Tech Maloinwazyjne 2012;7(4):225–32.
13. Kim JH, Wolfe B. Bariatric/metabolic surgery: short- and long-term safety. Curr Atheroscler Rep 2012;14(6):597–605.
14. Wolf AM, Beisiegel U. The effect of loss of excess weight on the metabolic risk factors after bariatric surgery in morbidly and super-obese patients. Obes Surg 2007;17(7):910–9.
15. Lim DM, Taller J, Bertucci W, Riffenburgh RH, O'Leary J, Wisbach G. Comparison of laparoscopic sleeve gastrectomy to laparoscopic Roux-en-Y gastric bypass for morbid obesity in a military institution. Surg Obes Relat Dis 2014;10(2):269–76.
16. McGuire MM, Nadler EP, Qureshi FG. Laparoscopic vertical sleeve gastrectomy for adolescents with morbid obesity. Semin Pediatr Surg 2014;23(1):21–3.
17. Magee CJ, Barry J, Arumugasamy M, Javed S, Macadam R, Kerrigan DD. Laparoscopic sleeve gastrectomy for high-risk patients: weight loss and comorbidity improvement--short-term results. Obes Surg 2011;21(5):547–50.
18. Pasco JA, Brennan SL, Kotowicz MA. Morbid obesity in women on the rise: an observational, population-based study. BMC Public Health 2013;13:290.
19. Frezza EE, Shebani KO, Wachtel MS. Laparoscopic gastric bypass for morbid obesity decreases bodily pain, improves physical functioning, and mental and general health in women. J Laparoendosc Adv Surg Tech A 2007;17(4):440–7.
20. Zijlstra H, van Middendorp H, Devaere L, Larsen JK, van Ramshorst B, Geenen R. Emotion processing and regulation in women with morbid obesity who apply for bariatric surgery. Psychol Health 2012;27(12):1375–87.
21. Contreras JE, Santander C, Court I, Bravo J. Correlation between age and weight loss after bariatric surgery. Obes Surg 2013;23(8):1286–9.
22. Scozzari G, Passera R, Benvenga R, Toppino M, Morino M. Age as a long-term prognostic factor in bariatric surgery. Ann Surg 2012;256(5):724–9.
23. Bobowicz M, Lehmann A, Orlowski M, Lech P, Michalik M. Preliminary outcomes 1 year after laparoscopic sleeve gastrectomy based on Bariatric Analysis and Reporting Outcome System (BAROS). Obes Surg 2011;21(12):1843–8.
24. Menenakos E, Stamou KM, Albanopoulos K, Papailiou J, Theodorou D, Leandros E. Laparoscopic sleeve gastrectomy performed with intent to treat morbid obesity: a prospective single-center study of 261 patients with a median follow-up of 1 year. Obes Surg 2010;20(3):276–82.
25. Lakdawala MA, Bhasker A, Mulchandani D, Goel S, Jain S. Comparison between the results of laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y gastric bypass in the Indian population: a retrospective 1 year study. Obes Surg 2010;20(1):1–6.
26. Moon Han S, Kim WW, Oh JH. Results of laparoscopic sleeve gastrectomy (LSG) at 1 year in morbidly obese Korean patients. Obes Surg 2005;15(10):1469–75.
27. Sampalis JS, Sampalis F, Christou N. Impact of bariatric surgery on cardiovascular and musculoskeletal morbidity. Surg Obes Relat Dis 2006;2(6):587–91.

28. Yaghoubian A, Tolan A, Stabile BE, Kaji AH, Belzberg G, Mun E, *et al*. Laparoscopic Roux-en-Y gastric bypass and sleeve gastrectomy achieve comparable weight loss at 1 year. Am Surg 2012;78(12):1325–8.
29. Helmio M, Victorzon M, Ovaska J, Leivonen M, Juuti A, Peromaa-Haavisto P, *et al*. Comparison of short-term outcome of laparoscopic sleeve gastrectomy and gastric bypass in the treatment of morbid obesity: A prospective randomized controlled multicenter SLEEVEPASS study with 6-month follow-up. Scand J Surg 2014;103(3):175–81.
30. Prevot F, Verhaeghe P, Pequignot A, Rebibo L, Cosse C, Dhahri A, *et al*. Two lessons from a 5-year follow-up study of laparoscopic sleeve gastrectomy: persistent, relevant weight loss and a short surgical learning curve. Surgery 2014;155(2):292–9.
31. Zacharoulis D, Sioka E, Papamargaritis D, Lazoura O, Rountas C, Zachari E, *et al*. Influence of the learning curve on safety and efficiency of laparoscopic sleeve gastrectomy. Obes Surg 2012;22(3):411–5.
32. Mathier MA, Ramanathan RC. Impact of obesity and bariatric surgery on cardiovascular disease. Med Clin North Am 2007;91(3):415–31.
33. Schauer PR, Bhatt DL, Kashyap SR. Bariatric surgery versus intensive medical therapy for diabetes. N Engl J Med 2014;371(7):682.
34. Schauer PR, Kashyap SR, Wolski K, Brethauer SA, Kirwan JP, Pothier CE, *et al*. Bariatric surgery versus intensive medical therapy in obese patients with diabetes. N Engl J Med 2012;366(17):1567–76.

Received: 6 August, 2016	*Revised: 5 September, 2016*	*Accepted: 25 September, 2016*

Address for Correspondence:

Zeeshan Razzaq, Apartment 18, The Yarlington, Orchard Gardens, Dennehy's Cross, Cork City, County Cork-Republic of Ireland
Tel: +353 89 4137415
Email: drzrazzaq@gmail.com