Obesity Surgery (2020) 30:4684–4686
https://doi.org/10.1007/s11695-020-04847-z

MULTIMEDIA ARTICLE

Laparoscopic Single Anastomosis Duodeno-Ileal Bypass with Sleeve Gastrectomy: Surgical Technique

Amit Surve[1] · Ravi Rao[2] · Daniel Cottam[1]

Received: 9 June 2020 / Revised: 1 July 2020 / Accepted: 6 July 2020 / Published online: 13 July 2020

Abstract

This video shows a case of a 57-year-old female patient with morbid obesity who underwent a laparoscopic single-anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S).

Keywords SADI-S · Laparoscopic · Surgical technique · Australia · Loop duodenal switch · Bariatric

The major steps involved when performing a laparoscopic SADI-S procedure include walking of the small bowel, tacking of the small bowel, dissection of the greater curvature of the stomach, duodenal dissection, sleeve creation, duodenal transection, creation of the DI, and the leak test [video].

The single anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S) procedure is a modification of the traditional duodenal switch procedure [1, 2]. The procedure has shown to be effective in patients with morbid obesity [3]. There have been only a few reports on the surgical technique of laparoscopic primary SADI-S procedure and its associated complications [4–9].

Purpose

In this video report, we have presented a step-by-step surgical technique of laparoscopic primary SADI-S procedure [video].

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s11695-020-04847-z) contains supplementary material, which is available to authorized users.

✉ Ravi Rao
drravi@outlook.com

[1] Bariatric Medicine Institute, 1046 East 100 South, Salt Lake City, UT 84102, USA

[2] Perth Surgical & Bariatrics, 30 Churchill Avenue, Subiaco, WA 6008, Australia

Materials and Methods

This is a case of a 57-year-old female patient with a body mass index (BMI) of 49.5 kg/m^2 with obesity-related comorbidities like type 2 diabetes (T2D), hypertension (HTN), and obstructive sleep apnea (OSA). We decided to perform a laparoscopic SADI-S procedure.

Surgical Technique

Our surgical technique has been described previously [1]. Laparoscopic SADI-S surgery was performed with a standard five-port technique. Initial access was through a 5-mm Applied Medical Kii Fios first entry port at Palmer's point using a 0° scope. Palmer's point is at a range of 3 cm below the left subcostal in the midclavicular line [video]. Pneumoperitoneum was established to a pressure of 15-mmHg with CO_2 gas. A 5-mm 45° laparoscopic camera was used. Next, a 15-mm port was introduced through the umbilicus. Two 5-mm ports were then introduced two finger breadths beneath the right and left subcostal margins. The last 5-mm port was placed in the right lumbar quadrant in the mid-clavicular line at a variable point based on the patient's body habitus.

A Snowden Pencer Liver retraction system was used with the retractor introduced through the right subcostal port. The surgeon (standing on the right side of the patient) operated through the right midclavicular line lumbar and the umbilical port. The assistant surgeon (standing on the left side) assisted through the left subcostal port.

The first step was to locate the ileocecal valve. The small bowel was counted 300 cm proximal to the ileocecal valve. Locating the ileocecal valve and counting out the small bowel was done by the operating surgeon by moving to the patient's left side. The two bowel graspers used to walk the bowel had markings at 10 cm with a steri-strip that ensured accurate measurement of the small bowel. The antimesenteric border of the bowel at this point was attached loosely to the omentum just below the pyloric valve to mark the site for anastomosis. This suture was later cut prior to the duodeno-ileostomy being performed.

The greater omentum of the stomach was resected similar to the technique used in sleeve gastrectomy (SG), with the Ligasure device (Medtronic). Hiatal hernia was routinely checked for and, if present, repaired posteriorly and anteriorly with 2-0 Surgidac suture using the Endo Stitch™ Suturing Device (Medtronic). The dissection was then carried medially to the second and third portions of the duodenum (4). Retrogastric and retroduodenal adhesions were taken down with the Ligasure device. The limit of this dissection was determined by the gastroduodenal artery embedded in the pancreas. This way, we had at least 3 to 4 cm of duodenum dissected beyond the pylorus. It is our preference not to take down the right gastric artery routinely, as in almost all cases, there was enough space created by this dissection method to introduce the stapler safely without any blunt dissection. Once we were sure that the duodenal transection would be possible safely, we then moved on to do the SG portion first. This was done using a 36-French bougie for sizing. The gastric resection began 4 to 6 cm away from the pylorus hugging loose on the bougie and ended 1 to 2 cm off the angle of His. The first two stapler firings were with 45-mm black Endo GIA™ reinforced Tri-Staples™. The next firings were with 60-mm black Endo GIA™ reinforced Tri-Staples™.The duodenum was then transected at least 2–3 cm beyond the pylorus with a 60-mm purple Endo GIA™ reinforced Tri-Staples™.

We then created an end-to-side (duodenum-to-ileum) anastomosis. The antimesenteric border of the bowel at the marked point was attached to the end of the proximal duodenum staple line using a continuous 2-0 polysorb suture using an Endostitch device (Medtronic). The loop was set up so that the efferent limb was descending on the patient's right, and the afferent limb was ascending coming up from the left [10]. A duodenotomy and enterotomy was made which was approximately 2 cm. We initially used diathermy to create the enterotomy; however, after we had one patient who bled through the duodenal cut edge requiring a transfusion, we subsequently started using the Ligasure device to make these cuts, which resulted in a bloodless field for suturing. The enterotomy was closed with a running posterior layer and a running anterior layer using 2-0 polysorb sutures with the Endostitch device (Medtronic).

Results

The skin-to-skin operative time, including endoscopy, was 87 min. No intraoperative complication was noted. The length of stay was 1 day. At 6 months, the patient achieved 50% excess weight loss (%EWL) with no complaints.

Conclusion

The laparoscopic SADI-S procedure is a safe and feasible option for patients with morbid obesity.

Author Contributions Amit Surve provided video making and medical writing assistance. Ravi Rao is the corresponding author and the operating surgeon in this video report. Daniel Cottam has reviewed the manuscript.

Compliance with Ethical Standards

Conflict of Interest Amit Surve has no conflict of interest to disclose with respect to this video report. Ravi Rao, the corresponding author, is a teaching consultant for Ethicon. Daniel Cottam reports personal fees and other from Medtronic and GI Windows, outside the submitted work.

Ethical Approval For this type of study, formal consent is not required.

Informed Consent Does not apply.

References

1. Surve A, Rao R, Cottam D, et al. Early outcomes of primary SADI-S: an Australian experience. Obes Surg. 2020;30(4):1429–36. https://doi.org/10.1007/s11695-019-04312-6.
2. Surve A, Zaveri H, Cottam D, et al. A retrospective comparison of biliopancreatic diversion with duodenal switch with single anastomosis duodenal switch (SIPS-stomach intestinal pylorus sparing surgery) at a single institution with two year follow-up. Surg Obes Relat Dis. 2017;13(3):415–22. https://doi.org/10.1016/j.soard.2016.11.020.
3. Sánchez-Pernaute A, Rubio MÁ, Cabrerizo L, et al. Single-anastomosis duodenoileal bypass with sleeve gastrectomy (SADI-S) for obese diabetic patients. Surg Obes Relat Dis. 2015;11(5):1092–8. https://doi.org/10.1016/j.soard.2015.01.024.
4. Surve A, Zaveri H, Cottam D. A safer and simpler technique of duodenal dissection and transection of the duodenal bulb for duodenal switch. Surg Obes Relat Dis. 2016;12(4):923–4. https://doi.org/10.1016/j.soard.2016.02.022.
5. Surve A, Zaveri H, Cottam D. A video case report of stomach intestinal pylorus sparing surgery with laparoscopic fundoplication: a surgical procedure to treat gastrointestinal reflux disease in the

setting of morbid obesity. Surg Obes Relat Dis. 2016;12(5):1133–5. https://doi.org/10.1016/j.soard.2016.04.001.
6. Surve A, Zaveri H, Cottam D, et al. Laparoscopic stomach intestinal pylorus sparing surgery in a patient with morbid obesity and situs inversus: first video case report. Surg Obes Relat Dis. 2017;13(1):122–4. https://doi.org/10.1016/j.soard.2016.08.503.
7. Surve A, Cottam D, Horsley B. Internal hernia following primary laparoscopic SADI-S: the first reported case. Obes Surg. 2020;30(5):2066–8. https://doi.org/10.1007/s11695-020-04444-0.
8. Surve A, Zaveri H, Cottam D. A step-by-step surgical technique video with two reported cases of common channel lengthening in patients with previous stomach intestinal pylorus sparing surgery to treat chronic diarrhea. Surg Obes Relat Dis. 2017;13(4):706–9. https://doi.org/10.1016/j.soard.2016.10.012.
9. Heneghan HM, Kerrigan DD. Laparoscopic SADI-S as a salvage procedure for failed gastric bypass and sleeve gastrectomy: how I do it. Surg Obes Relat Dis. 2018;14(5):715–8. https://doi.org/10.1016/j.soard.2018.01.043.
10. Surve A, Zaveri H, Cottam D. Retrograde filling of the afferent limb as a cause of chronic nausea after single anastomosis loop duodenal switch. Surg Obes Relat Dis. 2016;12(4):e39–42. https://doi.org/10.1016/j.soard.2016.01.018.