

Robotic SADI-S: how to do it and early experience.

C. Codony Bassols¹, M. Pujadas De Palol¹, E. García Moriana¹, G. Ferret Granés¹, J.I. Rodríguez Hermosa^{1,2}, A. Codina Cazador^{1,2}.

¹ Hospital Universitari Dr Josep Trueta Girona. Unidad de Cirugía Bariátrica, Servicio de Cirugía General y del Aparato Digestivo

² Universitat de Girona, Facultat de Medicina.

E-mail: clcodony@gmail.com

Received (first version): November 2021

Accepted: December 2021

Published online: December 2021

Abstract:

Single Anastomosis Duodeno-Ileal bypass with Sleeve gastrectomy (SADI-S) is a rising technique recommended for patients with obesity grade V or more. In 2020 we performed the first robotic SADI-S. We present a video showing the surgery step by step assisted with the DaVinci Xi Surgical System®. In our early experience, since we started the robotic program, all SADI-S were performed in a robotic approach. We observe that robotic SADI-S is a safe technique and shows no differences between complications compared to the laparoscopic approach.

Keywords:

- SADI-S
- Metabolic surgery
- Robotic surgery
- Super-obesity

Introduction

Following international societies recommendations, SADI-S is one of the recommended techniques for patients with obesity grade V or more since it achieves better weight loss and metabolic results(1).

The laparoscopic SADI-S was firstly described by Sánchez-Pernaute in 2007(3). It is a suitable and raising technique because it can be performed in a two-step surgery(2).

In our center, the bariatric surgical program with DaVinci Xi Surgical System® was started in January 2019. In January 2020 we performed the first robotic SADI-S. In January 2020 we performed the first robotic SADI-S.

The aim of this study is to evaluate the surgical steps to perform a robotic SADI-S and to analyze our initial experience with this surgical approach.

Material and methods

a) VIDEO: robotic SADI-S. Patient position, material and staff position, robotic instruments used, steps of the surgery.

B) EARLY EXPERIENCE with robotic SADI-S: we analyzed the series of patients operated with SADI-S in our center (June 2018-June 2021). We divided the patients into two groups: laparoscopic (n = 6) and robotic approach (n = 16). We surveyed demographic, surgical and postoperative data.

Continuous variables are expressed as median and interquartile range (IQR). Categorical variables are defined with absolute frequency and relative frequency. The Mann-Whitney U and Chi square tests are used to compare results. Values of p < 0.05 are considered significant. The analysis is carried out with the SPSS v. 20.0 (SPSS Inc, Chicago, IL, USA).

Results

a) VIDEO: robotic SADI-S procedure.

General anesthesia. Patient position: supine with open arms. Assistant surgeon / nurse on the right side of the patient. The robotic tower is on the right side of the patient. The robotic cart is placed at the left and the robotic arms should enter from the head of the patient. The console is in the operating room. Pneumoperitoneum is performed with a Veress needle (10-12mmHg). Trocars: robotic trocars are aligned along the supraumbilical space or in a diagonal line from the left upper quadrant to the right iliac fossa. From left to right: arm 1 - 12 mm (with 8 mm reducer), 8 mm Airseal trocar (assistant), arm 2 - 8 mm (30° robotic camera), arm 3 - 12 mm (with 8 mm reducer) mm), arm 4 - 8 mm. Laparoscopic 5 mm epigastric trocar (Nathanson liver retractor) (Figure 1). Docking is shown in figure 2. Targeting: diaphragmatic hiatus or gallbladder.



Figure 1. Trocar placing

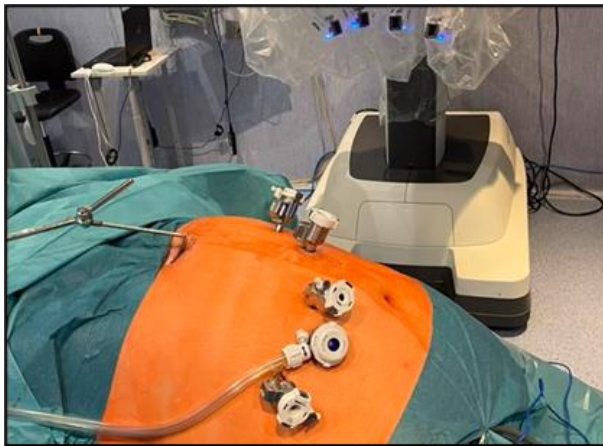


Figure 2. Starting docking

Robotic instruments used to perform a robotic SADI-S are described in table 1.

Material	Use	Trocar
Tip-up grasper® (2)	manipulating bowel	1 and 3
Bipolar grasper® (1)	dissection with coagulation and assisting to suture	1
Cadière grasper® (1)	dissection, grasping other structures than bowel	4
Vessel Sealer® (1)	dissection with coagulation (greater curvature vessels)	3
Monopolar hook® (1)	fine dissection with coagulation	3
Endowrist Stapler 45mm® (1)	cutting and stapling stomach and bowel (green, blue and white reloads)	1 and 3
Large suturecut needle driver® (1)	suturing and cutting sutures	3

Table 1 - Robotic instruments

Table 1 - Robotic instruments.

Surgical steps:

- 1- Ileum measurement (300 cm of common channel, starting from the ileocecal valve). We suture the ileum to the great omentum with two sutures: one to fix the bowel and another one to reference the distal part.
- 2- Sleeve gastrectomy: dissection of the greater curvature and gastrectomy with 36Fr Foucher catheter. We use Seamguard ® staple reinforcement in this part and also in the duodenum section.
- 3- Pylorus and first part of the duodenum dissection: we coagulate the right gastroepiploic artery and dissect a retroduodenal tunnel preserving the right pyloric artery. We staple the duodenum.
4. Duodeno-ileal anastomosis: performed manually, end-to-side, in a posterior two layer and anterior one single layer suture with V-loc TM90 ® 3/0.

B) EARLY EXPERIENCE with robotic SADI-S:

From June 2018 to June 2021, we performed 22 SADI-S in our center: 6 in a laparoscopic approach and 16 in robotic approach. Demographic and surgical variables are shown in table 2.

Variable	Laparoscopic n = 6	Robotic n = 16	Total n = 22	p value
Sex				
Female	2 (33.3%)	11 (68.8%)	13 (59.1%)	0.178
Male	4 (66.7%)	5 (31.2%)	9 (40.9%)	
BMI (median, IQR)	50 (45.5-51.5)	50 (48-53.3)	50 (48-53.3)	0.384
≥ 54	0 (0%)	5 (31.2%)	5 (22.7%)	0.266
< 54	6 (100%)	11 (68.8%)	<17 (77.3%)	
Age (median, IQR)	49.5 (38.5-54.8)	48.5 (38.8-53)	48.5 (40-53)	0.677
Surgical time (median, IQR)	133 (112.5-152.8)	180 (167-205)	180 (133-195)	0.030
Right pyloric artery preservation				
No	4 (66.7%)	0 (0%)	4 (18.2%)	<0.001
Yes	2 (33.3%)	16 (100%)	18 (41.2%)	
Complications				
No	6 (100%)	15 (93.8%)	21 (95.5%)	1.000
Yes	0 (0%)	1 (6.2%)	1 (4.5%)	

Table 2. Distribution of patients according to mouth opening and Cormack Lehane grade.

No differences were observed in demographic variables except a trend for a higher BMI in the robotic group. In the robotic group, we preserved the right pyloric artery in all cases (100 vs 33.3%, $p < 0.001$) and the surgical time had a higher statistical trend. There were no differences regarding surgical complications (a minor bleeding complication in the robotic group).

Discussion

SADI-S is a procedure to consider in patients with super-obesity. We performed the first robotic SADI-S in January 2020. This approach is described in 2020 (4), (5). In our experience, although the operative time tends to be higher in the robotic group, the quality of the surgery increases. We observed a higher right gastric artery preservation rate in the robotic group. When preserved, duodenum-ileal anastomosis is technically more difficult because antrum and proximal duodenum remain in their anatomical position. This could lead to an optimal vascular supply of the anastomosis and a better function of the pylorus (6). In our series there were no differences in terms of anastomotic leak. We observed that the robotic SADI-S is a safe technique and does not present differences in complications compared to laparoscopy in our initial experience. We observed a trend towards a higher BMI in the robotic group. More studies are needed regarding the results of weight loss and resolution of comorbidities.

Conclusions

Robotic SADI-S is a feasible and safe technique in our initial experience.

Conflicts of interest

None.

Bibliography

1. Angrisani L, Santonicola A, Iovino P et al. IFSO Worldwide Survey 2016: Primary, Endoluminal, and Revisional Procedures. *Obes Surg.* 2018 Dec;28(12):3783-3794. doi: 10.1007/s11695-018-3450-2. PMID: 30121858.
2. Yashkov Y, Bordan N, Torres A, Malykhina A, Bekuzarov D. SADI-S 250 vs Roux-en-Y Duodenal Switch (RY-DS): Results of 5-Year Observational Study. *Obes Surg.* 2020 Oct 12. doi: 10.1007/s11695-020-05031-z. Epub ahead of print. PMID: 33047290.
3. Sánchez-Pernaute A, Rubio Herrera MA, Pérez-Aguirre E et al. Proximal duodenal-ileal end-to-side bypass with sleeve gastrectomy: proposed technique. *Obes Surg.* 2007;17:1614-8.
4. Tarascó J, Caballero A, Sánchez E, Herrero C, Moreno P. Really Totally Robotic SADI-S in a Patient with Extreme Morbid Obesity and Non-Reducible Umbilical Hernia: Case Report. *Obes Surg.* 2020 Oct;30(10):4171-4173. doi: 10.1007/s11695-020-04802-y. Epub 2020 Jul 2.
5. Tat C, Diaz G, Klinger M, Corcelles R. How I Do It: Robotic Single-Anastomosis Duodeno-Ileal Bypass with Sleeve Gastrectomy (SADIS). *J Gastrointest Surg.* 2020 Oct 9. doi: 10.1007/s11605-020-04789-y.
6. Gagnière J, Le Roy B, Veziant B et al. Pancreaticoduodenectomy with right gastric vessels preservation: impact on intraoperative and postoperative outcomes. *ANZ J Surg.* 2019 Apr;89(4):E147-E152. doi: 10.1111/ans.14956.

© 2021 seco- seedo. Published by bmi-journal. All rights reserved.