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Short term weight-loss and metabolic results after revisional and primary SADI-S: a single center study

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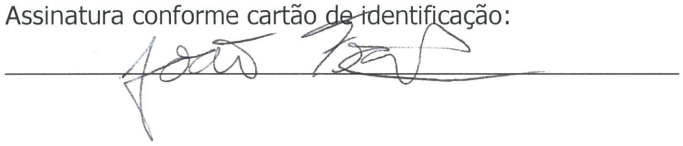

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Short term weight-loss and metabolic results after revisional and primary SADI-S: a single center study

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É AUTORIZADA A REPRODUÇÃO INTEGRAL DESTE TRABALHO APENAS PARA EFEITOS DE INVESTIGAÇÃO, MEDIANTE DECLARAÇÃO ESCRITA DO INTERESSADO, QUE A TAL SE COMPROMETE.	☐
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Short term weight-loss and metabolic results after revisional and primary SADI-S: a single center study

Perda de peso e resultados metabólicos a curto prazo após SADI-S revisional e primário: um estudo de centro único.

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Abstract

Background: The number of obese people has tripled since 1975, reaching 650 million obese, while 1,9 billion people were overweight. Bariatric surgery has been a useful treatment for overweight and obese patients, demonstrating better results than non-surgical treatment, lowering overall mortality and morbidity. Sleeve gastrectomy (SG) rose to prominence in the medical community as an effective technique with good weight loss and reduced complications. This technique presents re-intervention rates of 32%-36%; weight regain, and gastroesophageal reflux disease are not uncommon after SG. Single anastomosis duodenal-ileal bypass with sleeve gastrectomy (SADI-S) is a modified technique which aims to improve weight loss and metabolic outcomes with an acceptable rate of complications.

Objectives: To report our single-center SADI-S short-term weight-loss, metabolic outcomes, and nutritional deficiencies.

Methods: Retrospective analysis of 29 obese patients submitted to primary SADI-S (n=7) and revisional SADI-S (n=22), regarding weight loss, metabolic profile, and nutritional status.

Results: Patients' body mass index (BMI) mean was 51.5±7.0 kg/m^2. Surgery duration mean was 177.0±34.2 minutes and hospital stays lasted 2.0±0.0 days. There were no complications and no mortality during follow-up period. At 12 months follow-up, mean BMI was 33.8±4.4 kg/m^2 and the mean excess weight loss was 66.3±16.4%. Lipidic profile and glucose metabolism parameters were improved. Regarding nutritional deficiencies, protein deficits were present in 31.3% of patients, and vitamin D deficits were present in 43.8% of patients at 12 months.

Conclusion: SADI-S resulted in acceptable weight loss outcomes and improved metabolic profile. Minimal and manageable nutritional deficits were detected.

Keywords: SADI-S; single anastomosis duodeno-ileal bypass with sleeve gastrectomy; obesity; bariatric surgery.

Resumo

Introdução: Desde 1975 o número de obesos triplicou, atingindo 650 milhões, existindo 1,9 mil milhões de pessoas com excesso de peso. A cirurgia bariátrica é um tratamento útil para obesos, mostrando resultados superiores ao tratamento conservador, com melhorias na mortalidade e morbilidade. O sleeve gástrico (SG) é muito popular por ser uma técnica eficaz com boa perda de peso e menores complicações. Apresenta taxas de re-intervenção de 32-36%; reganho de peso e refluxo gastro-esofágico não são incomuns após um SG. O single anastomosis duodenal-ileal bypass with sleeve gastrectomy (SADI-S) é uma técnica modificada que tenta melhorar a perda de peso e os resultados metabólicos com taxa aceitável de complicações.

Objectivos: Reportar a perda de peso, resultados metabólicos e défices nutricionais do SADI-S no nosso centro cirúrgico.

Métodos: Análise retrospectiva de 29 pacientes submetidos a SADI-S primário (n=7) e SADI-S revisional (n=22), analisando perda de peso, perfil metabólico e estado nutricional.

Resultados: O índice de massa corporal (IMC) médio inicial era de 51.5±7.0 kg/m^2. O procedimento cirúrgico durou 177.0±34.2 minutos. O tempo de internamento foi de 2.0±0.0 dias. Não foram reportadas complicações nem mortalidade. Aos 12 meses, o IMC médio era 33,8±4.4 kg/m^2. A perda de excesso de peso era de 66.3±16.4%. O perfil lipídico e o metabolismo de glicose melhoraram. Relativamente aos défices nutricionais, 31.3% dos pacientes apresentaram défice de proteínas, e 43.8% apresentaram défice de vitamina D aos 12 meses.

Conclusão: O SADI-S resultou numa perda de peso aceitável com melhoria do perfil metabólico. Foram detetados défices nutricionais mínimos.

Palavras-chave: SADI-S; single anastomosis duodeno-ileal bypass with sleeve gastrectomy; obesidade; cirurgia bariátrica.

Confidentiality of Data

The authors declare that they have followed the protocols of their work center on the publication of patient data and that all the patients included in the study have received sufficient information and have given their informed consent in writing to participate in that study.

Ethical considerations

This study was approved by the Ethics Committee of the São João University Medical Center/ Faculty of Medicine of the University of Porto. Patients were anonymized with random numeric codes. Information collected does not allow for patient identification.

Introduction

Obesity and overweight are defined by the World Health Organization (WHO) as an abnormal or excess accumulation of adipose tissue that may impair an individual's health. The number of obese people has tripled since 1975, culminating in an astonishing number of 650 million obese, while 1,9 billion people were overweight. Previously considered exclusive of high-income countries, the overweight pandemic has spread to medium and low-income countries, where we can find high overweight and obesity rates in children. Overweight and obesity are responsible for more deaths and disease than underweight and malnutrition all over the world (1).

Bariatric surgery has been a useful treatment for obese patients, demonstrating better results than non-surgical treatment, lowering overall mortality and morbidity. It promotes improved weight loss and higher remission rates of diabetes and other metabolic diseases (2-6).

Biliopancreatic diversion with duodenal switch (BPD-DS) is considered as one of the most effective bariatric surgeries. It comprises 3 major steps: a vertical gastrectomy with excision of the greater curvature to significantly reduce gastric volume capacity and provide restriction (a sleeve gastrectomy); the division of the duodenum between the pyloric valve and the sphincter of Oddi, preserving the normal function of the pylorus and gastric emptying, to avoid dumping syndrome; and bypass of the proximal small bowel that results in decreased absorption of nutrients, and alters intestinal hormonal production (7).

BPD-DS maintains a longer common channel to reduce the risk of vitamin and protein deficiencies (7). This procedure provides patients with long-lasting and significant weight loss (7, 8). Despite this, it also presents several difficulties in long-term management being hampered by a high reintervention rate (8, 9), as high as 84% according to Strain's et al work (8), gastro-intestinal symptoms and severe nutritional deficiencies (6-9). Patient compliance to diet requirements and supplementation are fundamental for a successful management of post-operative complications (7-9).

Deriving from the first step of the BPD-DS, the vertical gastrectomy, evolved into its own entity, known as sleeve gastrectomy (SG): a subtotal vertical gastrectomy is performed preserving the pylorus, creating a tubular structure along the lesser curvature (10, 11). SG stands presently as the most performed bariatric surgery worldwide, because of its reproducibility, fair weight loss outcomes, low peri-operative complications and reduced nutritional long-term complications (10-13).

However, recent studies stressed that long-term follow-up after SG demonstrated re-intervention rates between 32% and 36% (14), and also a high level of recidivism due to weight regain (15). Gastroesophageal reflux disease can also play an important role in post-surgery management as it can arise *de novo* or worsen and be a cause for re-operation (10, 15).

In 2007 Sanchez-Pernaute et al proposed a modified technique based on the BPD-DS: the single anastomosis duodenal-ileal bypass with sleeve gastrectomy/one anastomosis duodenal switch (SADI-S/OADS). This technique improves the standard SG with a single anastomosis between the duodenum and ileum, preserving a common-limb of 200-300cm (16). After extensive data collection, IFSO and ASMBS has recognized SADI-S as an appropriate metabolic procedure (17).

The objective of this study was to analyze outcomes (weight loss, metabolic improvements, safety profile and nutritional deficiencies) of SADI-S, particularly in the revisional setting after previous SG. We recognize that SG is a widely used and effective bariatric, but there is a need to expand the revisional options after weight regain or inappropriate weight loss. The role of SADI-S as a standalone surgery must also be addressed, namely in the treatment of superobese patients and those with severe metabolic diseases.

Methods

This study included 29 patients, 22 revisional surgeries of previous SG and 7 primary interventions, which compose all SADI-S surgeries performed from July 2019 until July 2021 in a single center. Data was gathered retrospectively from clinical records and relevant outcomes were selected. There were no follow-up losses during this study. The number of patients varies at different follow-up times due to the recency of the technique in our surgical center. The outcomes focused on peri-operatory and post-operatory complications, particularly nutritional deficiencies that might appear.

The patients were followed according to national guidelines, expanded even further by the surgical center, on bariatric surgery candidates before the surgery. Patients were screened extensively through blood testing before and after surgery. Patient orientation was done by a multidisciplinary group including specialists from General Surgery, Endocrinology, Psychiatry and/or Psychology, and Nutrition. Post-surgical dietary protocol includes nutritional supplementation with a standard market all-purpose supplement taken twice a day.

Surgical technique

The SADI-S technique employed by our center utilizes a 54 French bougie for sleeve gastrectomy calibration. The right gastric artery is preserved as a standardized step and the section is started 6 cm proximal to the pylorus. The common limb from the ileo-cecal valve measures 300 cm. Measurement of the small bowel is done utilizing calibrated graspers, starting in the ileocecal valve, and moving proximally, where 2 suture marks are placed at 300 cm. The anastomosis was tested with methylene blue. Abdominal drainage was used in all patients.

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences® (SPSS Inc., Chicago, IL), version 28 for Windows. Normality was assessed using the Kolmogorov-Smirnov test. Descriptive statistics included mean and standard deviation for normally distributed data and median and minimum and maximum range for not normally distributed data.

Results

There were 29 patients, of which 96.6% were females. Mean patient age was 49.2 ± 11.4 years. There were 7 primary SADI-S patients, and 22 revisional SADI-S patients. There were no peri-operative or postoperative complications and no mortality at 90 days. Hospital stays was 2.0 ± 0.0 days. Table 1 presents the demographic data from our patient population and the perioperative features of the SADI-S procedure in our center.

Initial mean body mass index (BMI) was 51.5 ± 7.0 kg/m^2. At 12 months mean BMI was 33.8 ± 4.4 kg/m^2 and percent excess weight loss (%EWL) 66.3 ± 16.4 %. Table 2 presents our results regarding BMI and EWL, which was calculated considering an ideal BMI of 25.

Total cholesterol median had a slight reduction, but patients with abnormal levels dropped from 34.5% at baseline to 18.8% at 12 months. Low-density lipoprotein (LDL) and triglyceride (TG) median levels presented with a fair reduction from baseline, 113 mg/dL for LDL and 107.0 mg/dL for TG, to 12 months, 96 mg/dL for LDL and 79.5 mg/dL for TG. Glycemia and glycated hemoglobin (HbA1C) remained stable throughout the follow-up. Hemoglobin median levels dropped slightly at 12 months, with 12.5% of patients with anemia. Iron, ferritin, transferrin, folic acid, and vitamin B12 median levels rose from baseline and followed by a decrease in patients with abnormal status, except for vitamin B12, in which one case of deficiency appeared. Total protein and albumin levels were decreased at 12 months and there were more patients with deficits, 31.3% and 25% respectively. Magnesium and calcium median values remained stable throughout the follow-up period, but at 12 months we had 31.3% magnesium deficient patients. Vitamin D median levels rose, but abnormal patients rose to 43.8%. Parathyroid hormone (PTH) median levels slightly decreased. Regardless, the percentage of abnormal patients increased to 37.5% at 12 months. Table 3 presents the metabolic outcomes and nutrient analysis of our study.

Discussion

Population characteristics

This article is intended as a preliminary report for the use of SADI-S in our surgical center, laying the groundwork for a more prolonged analysis in the future to analyze SADI-S' safety and efficacy. There were no reported complications and no deaths associated. All patients were discharged from the hospital after 2 days. Table 4 shows a comparison between this study's results and some other works in the field. The mean age is within the 40–50-year-old range that other studies show. The surgical time is the highest of the studies who reported it, which can be explained by the recent nature of the SADI-S procedure in our center, a slower and more cautious approach by the surgeons or different standardized procedures. The previous reasoning might also account for the zero postoperative complications reported, which is the lowest of all studies. Mortality was also zero in all studies, except for one that presented 0.7% (18). Lastly, hospital stay was the 2nd lowest amongst the studies used for comparison, which can be explained by the low rate of complications and standardized procedures in our center.

Weight loss

Regarding the results of BMI and %EWL between groups presented in Table 2, there seems to be little difference between them, even though the low number of patients does not allow for a reliable comparison. Both groups start with similar BMI, 51.7 for primary SADI-S patients, 51.4 for the revisional SADI-S, at the time of the first medical appointment. The pre-SADI-S status presents a more pronounced difference, as expected, due to the revisional group previous status. Over 6 months and 12 months the difference diminished and both groups seem to be trending towards equality. The %EWL also seems to follow the same pattern of convergence, even though starting points are very different. Other studies, presented in table 4, report a mean starting BMI ranging between 44 and 50, with our study presenting a mean of 44.68. %EWL range between 62.4% and 95% at 12 months, with our study reporting 66.32%.

Lipidic profile and glucose metabolism

Lipidic profile and glucose metabolism indicators are shown in Table 3. Lipidic parameters (total cholesterol, LDL, and triglycerides) improved from baseline. The number of patients with abnormal parameters decreased sharply, especially in total cholesterol, reducing from 10 patients to 3 patients. Table 5 shows our results versus other studies. Total cholesterol, LDL, triglycerides, glycemia and HbA1C have improvements in all studies analyzed. Zaveri *et al.* (18) reported their data in n(%) of abnormal patient status and our own results have a similar tendency with the number of patients with an abnormal status diminishing across all parameters during the period of follow-up.

Nutrient deficits

Iron deficiency can be present in up to 45% of patients who undergo bariatric surgery as well as vitamin B12 and folic acid deficiencies in up to 18% and 54% of patients respectively (19, 20). Low levels of hemoglobin can also affect up to 47% of patients (19). As such, these parameters are frequently monitored and are presented in Table 3. Hemoglobin levels remained stable during the follow-up time, showing a slight reduction. There was 1 patient with anemia at baseline and another one that developed it after the procedure. Iron deficiencies showed improvement, with 6 patients at baseline, and only 4 remaining at 12 months of follow-up. Ferritin and transferrin levels had an upward trend during the 12 months of follow-up. Folic acid and vitamin B12 levels showed improvement during the 12 months of follow-up. Comparison with selected literature can be seen on Table 6. There is one study, by Finno *et al*. (21), that has more relevant nutritional deficiencies while all the others show low levels of abnormal values. At the 12 months mark, our patient's

statuses seem to be like other studies. An exception is iron levels, in which our study reports 25% of patients with abnormal levels, above other studies with 4% (22), and 19.1% (21).

Malabsorptive procedures that include a biliopancreatic diversion raise concerns about protein deficiencies (23, 24). There were 2 patients with protein deficiency at baseline and 6 months of follow-up, a number that ascended to 5 at 12 months. Contrarily, albumin deficiency was present in 6 patients at baseline, diminishing to 4 at 12 months. Vitamin D deficiency is present in up to 90% of obese patients (20), and it's influence in bone metabolism justifies monitoring of its levels and calcium and PTH. Magnesium monitoring has not been sufficiently proved by existing evidence but has an important part in the supplementation and resolution of hypocalcemia that's accompanied by hypomagnesaemia (19). Our data, presented in Table 5, shows us that there was only 1 patient with hypocalcemia throughout the 12 months. Vitamin D deficiency was present in 7 patients at baseline and 7 patients at 12 months. Elevated PTH was present in 6 patients at the start and 6 patients at 12 months. Table 6 shows us our patient's performance versus numerous studies. Our percentage of patients with protein deficiency is 31.3%, which falls inside the interval presented by other studies, between 9% (18), and 34% (22). The percentage of patients with hypoalbuminemia rose during the follow-up process, peaking at 25% at 12 months, above other studies that reported at 12 months 11% (25), 12% (22), 13% (18), and 6% (23). The upward trend in percentage of patients with hypoalbuminemia is maintained in both our study and others. Calcium, 6.3% at 12 months, and vitamin D, 43.8% at 12 months, deficient patients rose in percentage as the follow-up progressed, patients with excessive levels of PTH, 37.5% at 12 months, also rose. Most studies have percentages of abnormal patients in the same range as ours. Zavieri *et al.*'s work has a relevant drop in vitamin D deficient patients, from 48.3% at baseline to 23.0% at 12 months, which is the best performance of analyzed studies (18).

Limitations

This study presents a small number of patients, therefore not achieving statistical significance. There was also not a separate comparison between revisional and primary SADI-S patients to assess differences due to the low number of cases. As more procedures are performed, numbers will rise to significance. Follow-up time was low, most patients only had the baseline consult and 6-month follow-up consult. More time is needed to gather data. This study has a retrospective, non-randomized model, which has a limited scope in providing a superior level of scientific evidence.

Conclusion

SADI-S is a relatively recent procedure in our surgical center. Bariatric surgeons feared long-term complications, especially nutritional deficiencies, would make SADI-S an ineffective intervention. The data from this study reveals that our surgical center seems to be equivalent to other studies published as SADI-S resulted in acceptable weight loss outcomes and improved metabolic profile. Minimal and manageable nutritional deficits were detected. There remains work to be done, ours is a small sample that cannot be disregarded due to the promising results which forebode a bright future for SADI-S.

Table 1 - Demographic and perioperative features of SADI-S patients

Variable	
Sex	
Male	1 (3.4)
Female	28 (96.6)
Age (years)	49.2 ± 11.4
Primary SADI-S	7 (24.1)
Revisional SADI-S	22 (75.9)
Surgery duration (minutes)	177 ± 34.2
Peri-operative complications	0 (0.0)
Postoperative complications	0 (0.0)
Mortality	0 (0.0)
Hospital stay (days)	2 ± 0.0

SADI-S – single anastomosis duodeno-ileal bypass with sleeve gastrectomy. Data reported as n (%) or mean (SD).

Table 2 – BMI and excess weight loss values

Variable	Baseline weight	T0	T6	T12
Primary SADI-S BMI (kg/m^2)	51.7 ± 3.5 (n=7)	51.7 ± 3.5 (n=7)	38.8 ± 3.9 (n=7)	33.3 ± 3.5 (n=3)
Primary SADI-S %EWL (%)	-	-	48.7 ± 9.6 (n=7)	71.3 ± 11.9 (n=3)
Revision SADI-S BMI (kg/m^2)	51.4 ± 7.9 (n=22)	42.6 ± 4.9 (n=22)	34.9 ± 3.9 (n=22)	34.0 ± 4.7 (n=14)
Revisional SADI-S %EWL (%)	-	31.4 ± 17.2 (n=22)	61.5 ± 13.4 (n=22)	65.2 ± 17.3 (n=14)
Overall BMI (kg/m^2)	51.5 ± 7.0 (n=29)	44.68 ± 6.1 (n=29)	35.9 ± 4.2 (n=29)	33.8 ± 4.4 (n=17)
Overall %EWL (%)	-	-	58.4 ± 15.6 (n=29)	66.3 ± 16.4 (n=17)

BMI – body mass index; %EWL – percentage excess weight loss; T0 – status before SADI-S; T6 – status 6 months after SADI-S; T12 - status 12 months after SADI-S. Data reported as mean (SD).

Table 3 – Metabolic profile and nutrient analysis

	Total cholesterol (mg/dL)	HDL (mg/dL)	LDL (mg/dL)	Triglycerides (mg/dL)	Glycemia (mg/dL)	HbA1C (%)	Hemoglobin (g/dL)	Iron (µg/mL)	Ferritin (ng/mL)
T0 (n=29)	190 (112-277)	55 (34-105)	113 (28-199)	107.0 (34.0-216.0)	91 (75-141)	5.5 (5.0-7.5)	13.4 (10.8-15.7)	69 (18-116)	51.6 (10.8-328.6)
T12 (n=16)	182 (124-253)	53 (39-79)	95 (67-174)	79.5 (54.0-207.0)	95 (70-163)	5.3 (5.0-6.2)	12.9 (9.6-15.6)	74 (28-131)	83.5 (10.8-249.0)
Abnormal T0 (n)	10 (34.5)	22 (75.8)	7 (24.1)	5 (17.2)	3 (10.3)	4 (13.8)	1 (3.4)	6 (20.7)	3 (10.3)
Abnormal T12 (n)	3 (18.8)	9 (56.3)	2 (12.5)	2 (12.5)	5 (31.3)	2 (12.5)	2 (12.5)	4 (25.0)	1 (6.3)
	Transferrin (ng/mL)	**Folic acid (ng/mL)**	**Vitamin B12 (pg/mL)**	**Total protein (g/L)**	**Albumin (g/L)**	**Magnesium (mEq/L)**	**Calcium (mEq/L)**	**Vitamin D (ng/mL)**	**PTH (pg/mL)**
T0 (n=29)	285 (221-404)	5.1 (2.6-19.4)	310 (204-1537)	68.7 (62.9-78.2)	39.6 (34.8-47.0)	1.6 (1.2-1.9)	4.7 (2.4-5.4)	21.0 (10.0-37.0)	50 (20-117)
T12 (n=16)	292 (191-388)	5.8 (2.4-12.0)	413 (180-1669)	67.9 (62.8-75.7)	39.0 (34.4-45.0)	1.6 (1.3-1.9)	4.6 (3.5-5.0)	20.5 (7.0-47.0)	49 (32-104)
Abnormal T0 (n)	5 (17.2)	0 (0.0)	0 (0.0)	2 (6.9)	6 (20.7)	4 (13.8)	1 (3.4)	22 (8-48)	6 (20.7)
Abnormal T12 (n)	4 (25.0)	0 (0.0)	1 (6.3)	5 (31.3)	4 (25.0)	5 (31.3)	1 (6.3)	7 (43.8)	6 (37.5)

T0 – status before SADI-S; T12 - status 12 months after SADI-S; HDL – high-density lipoprotein; LDL – low-density lipoprotein; HbA1C – glycated hemoglobin; PTH – parathyroid hormone. Data reported as median (min/max) or n (%).

Table 4 – Data comparison of demographic and perioperative features

	Patients	Age (years)	Surgery duration (minutes)	Postoperative complications	Mortality	Hospital stay (days)	BMI (kg/m2) T0	BMI (kg/m2) T12	%EWL (%) T12
Present study	29	49.2 ± 11.4	177.0 ± 34.2	0 (0.0)	0 (0.0)	2 ± 0.0	44.68 ± 6.05	33,8 ± 4.44	66.32 ± 16.35
Dijkhorst et al (2018) (26)	66	43.3 ± 11.0	102.0 ± 39.8	11 (16.7)	0 (0.0)	2.8 ±1.8	45.6 ± 6.9	-	-
Gebelli et al. (2016) (27)	67	44.0 ± 5.8	115.0 ± 25	6 (9.0)	0 (0.0)	2.5 ± 6.0	53.5 ± 3.4	-	-
Moon et al. (2018) (25)	140	41.2 ±9.6	-	11 (7.6)	0 (0.0)	4.1 ± 2.7	57.3 ± 9.2	-	62.4
Sanchez-Pernaute et al	97	50.0 ± 8.3	114.0 ± 28.8	3 (3.1)	0 (0.0)	5.0 ± 1.0	44.3 ± 5.7	-	86
Zaveri et al (2018) (18)	437	46.6 ± 13.2	67.9 ± 16.8	82 (18.8)	3 (0.7)	1.6 ± 0.9	49.8 ± 8.8	31.9	77.7 ± 20.9
Sanchez-Pernaute et al	100	47 (22-71)	-	5 (5.0)	0 (0.0)	-	44.6		95
Finno et al (2020) (21)	181	50.8 ± 9.3	-	32 (17.7)	0 (0.0)	2.67 ± 1.81	50.9 ± 6.3	30.4	79.6
Pereira et al (2021) (28)	83	41.95 ±1.34	132.7 ± 7.2	12 (14.5)	0 (0.0)	4.35 ± 0.70	50.6 ± 0.5	-	-

BMI – body mass index; %EWL – excess weight loss; T0 – status before SADI-S; T12 - status 12 months after SADI-S. Data reported as mean (SD) or n (%).

Table 5 - Data comparison of lipidic profile and glucose metabolism

	Total cholesterol (mg/dL)		HDL (mg/dL)		LDL (mg/dL)		Triglycerides (mg/dL)		Glycemia (mg/dL)		HbA1C (%)	
Time	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12
Present study	190 (112-277)	182 (124-253)	55 (34-105)	53 (39-79)	113 (28-199)	95 (67-174)	107.0 (34.0-216.0)	79.5 (54.0-207.0)	91 (75-141)	95 (70-163)	5.5 (5.0-7.5)	5,3 (5.0-6.2)
Moon et al. (2018) (25)	-	-	44.86 ± 11.2	45.6 ±10.0	106.3 ± 28.6	74.2 ± 20.5	155 ± 110	99 ± 40	-	-	6.6 ± 1.5	5.3 ± 0.5
Sanchez-Pernaute et al (2015) (22)	185	138	46.6	45.7	73.9	45.7	205	103	167.6	93	7.6	5.1
Sanchez-Pernaute et al (2013) (23)	-	136.2 ± 32.2	-	46.8 ± 11.5	-	63.7 ± 25.1	-	108.9 ± 49.7	-	-	-	-
Pereira et al (2021) (28)	187.90 ± 4.00	164.50 ± 4.85	50.8 ± 1.85	54.00 ± 2.87	-	-	128.70 ± 7.01	75.18 ± 4.61	106.40 ± 3.72	82.50 ± 1.47	5.87 ± 0.13	5.10 ± 0.11
Variable	**Total cholesterol (n of abnormal)**		**HDL (n of abnormal)**		**LDL (n of abnormal)**		**Triglycerides (n of abnormal)**		**Glycemia (n of abnormal)**		**HbA1C (n of abnormal)**	
Present study	10 (34.5)	3 (18.8)	22 (75.8)	9 (56.3)	7 (24.1)	2 (12.5)	5 (17.2)	2 (12.5)	3 (10.3)	5 (31.3)	4 (13.8)	2 (12.5)
Zaveri et al (2018) (18)	113 (27.9)	11 (7.5)	-	-	-	-	205 (50.6)	19 (13.0)	214 (51.3)	27 (11.8)	210 (53.7)	12 (5.7)

T0 – status before SADI-S; T12 - status 12 months after SADI-S; HDL – high-density lipoprotein; LDL – low-density lipoprotein; HbA1C – glycated hemoglobin. Data reported as median (min/max), mean (SD) or n (%).

Table 6 - Data comparison of nutrient deficient patients

	Hemoglobin		Iron		Ferritin		Folic acid		Vitamin B_{12}		Total protein		Albumin		Calcium		Vitamin D		PTH	
Time	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12	T0	T12
Present study	1 (3.4)	2 (12.5)	6 (20.7)	4 (25.0)	3 (10.3)	1 (6.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (6.3)	2 (6.9)	5 (31.3)	6 (20.7)	4 (25.0)	1 (3.4)	1 (6.3)	7 (24.1)	7 (43.8)	6 (20.7)	6 (37.5)
Dijkhorst (2018) (26)	-	16 (34.0)	-	-	-	6 (14.0)	-	10 (31.0)	-	0 (0.0)	-	-	-	-	-	3 (7.0)	-	13 (28.0)	-	3 (7.0)
Moon (2018) (25)	17 (13.7)	17 (24.6)	-	-	-	8 (12.5)	-	-	-	-	0 (0.0)	8 (11.8)	16 (12.9)	11 (16.2)	5 (4.1)	5 (7.3)	-	28 (42.2)	-	21 (32.4)
Sanchez-Pernaute(2015) (22)	-	-	-	-	-	-	-	7 (8.0)	-	7 (8.0)	-	29 (34.0)	-	12 (13.7)	-	-	-	43 (50.0)	-	21 (24)
Zaveri (2018) (18)		-	-	-	17 (4.6)	12 (5.7)	-	-	8 (2.1)	1 (0.5)	4 (1.3)	20 (9.0)	3 (1.0)	13 (5.8)	15 (3.6)	19 (8.4)	185 (48.3)	49 (23.0)	22 (28.6)	54 (36.5)
Sanchez-Pernaute(2013) (23)	-	7 (16.0)	-	2 (4.0)	-	10 (22.0)	-	5 (10.0)	-	9 (20.0)	-	7 (16.0)	-	3 (6.0)	-	0 (0.0)	-	21 (46.0)	-	19 (42.0)
Finno (2020) (21)	-	-	-	34 (19.1)	-	-	-	35 (19.7)	-	4 (2.2)	-	-	-	-	-	-	-	65 (36.5)	-	-

T0 – status before SADI-S; T12 - status 12 months after SADI-S; PTH – parathyroid hormone. Data reported as n (%).

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Confidentiality of Data. The authors declare that they have followed the protocols of their work center on the publication of patient data and that all the patients included in the study have received sufficient information and have given their informed consent in writing to participate in that study.

or

Confidentiality of Data. The authors declare that no patient data appears in this article.

RIGHT TO PRIVACY AND INFORMED CONSENT:

Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects mentioned in the article. The author for correspondence is in possession of this document.

or

Right to privacy and informed consent. The authors declare that no patient data appears in this article

Text

Original Articles

Original articles are fully documented reports of original clinical or basic research that must describe full sets of interesting, original experiments in current research. Original articles should include the following sections: Introduction, Materials and Methods, Results, Discussion and Conclusions, Acknowledgements (if applicable), References, Tables and Figures.

Original articles should not exceed 4 000 words, excluding up to 6 tables or figures and up to 60 references. Structured abstract up to 350 words.

Article structure

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Review Articles

Review Articles are comprehensive papers that synthesize older ideas and suggest new ones. They cover broad areas. They may be clinical, investigational, or basic science in nature. Although usually commissioned, we do occasionally accept unsolicited review articles on important and topical subjects with a particular focus on recent advances. Before submitting a review, we ask that you send the editors a brief outline (no more than 500 words) indicating the importance and novelty of the subject, and why you are qualified to write it. An invitation to submit does not guarantee acceptance.

Review articles should not exceed 4 000 words, excluding up to 6 tables or figures and up to 100 references. Unstructured abstract up to 350 words.

Systematic Reviews

Systematic Reviews can be presented in the Introduction, Methods, Results, Discussion format. The subject must be clearly defined. The objective of a systematic review should be to produce an evidence-based conclusion. The Methods should give a clear indication of the literature search strategy, data extraction, grading of evidence and analysis. We strongly encourage authors to comply with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Systematic review articles should not exceed 4 000 words, excluding up to 6 tables or figures and up to 100 references. Structured abstract up to 350 words.

Clinical Case Studies/Case Reports

Clinical Case Reports should include the following sections: Introduction, Clinical Case, and Discussion. Clinical case studies should not exceed 2 000 words excluding up 25 references.
We strongly encourage authors to comply with the CARE guidelines.
Unstructured abstract up to 150 words.

Editorials

Editorials are normally written at the invitation of the Editor and consist of commentary on articles published in the journal or on subjects of particular relevance. Editorials should not exceed 1 500 words and 20 references and may include 1 table and 1 figure. Abstract is not required.

Letters to the Editor

Letter to the Editor should consist of critical comments on an article published in the Journal or a short note on a particular topic or clinical case. Letters to the Editor should not exceed 600 words and 10 references and may contain one figure or table. Abstract is not required.

Images in Endocrinology

This section is intended for the publication of clinical, radiological, histological, and surgical images related to endocrinology, diabetes or metabolism cases.
Title should be no more than eight words. Authors should be no more than four. Images should be of high quality and educational value. Up to four figures will be published. Captions should be brief and informative. Arrows or other symbols should be included as needed to facilitate understanding of the images. The text should not exceed 500 words, up to five references, and should include a short clinical history and relevant data from the physical examination, laboratory tests, and clinical progression as appropriate. Abstract is not required.

Current Perspective

This is the type of manuscript that is submitted upon invitation by the Editorial Board. It may cover a broad diversity of themes focusing on endocrinology, diabetes, metabolism and healthcare: current or emergent problems, management and health policies, history of medicine, society issues and epidemiology, among others. An Author that wishes to propose a manuscript in this section is requested to send an abstract to the Editor-in-Chief including the title and Author list for evaluation. The text should not exceed 1200 words, up to 10 references, two tables or two figures are allowed. Abstract is not required.

Guidelines

In general, published statements intended to guide clinical care (e.g. guidelines, practice parameters, recommendations, consensus statements and position papers) should describe:

- The clinical problem to be addressed,
- The mechanism by which the statement was generated,
- A review of the evidence for the statement (if available),

- The statement on practice itself.

To minimize confusion and to enhance transparency, such statements should begin with the following bulleted phrases, followed by brief comments addressing each phrase:

- What other guideline statements are available on this topic?
- Why was this guideline developed?
- How does this statement differ from existing guidelines?
- Why does this statement differ from existing guidelines?

Guidelines should not exceed 4 000 words, excluding up to 6 tables or figures and up to 100 references. Abstract up to 350 words.

Article type	**Abstract**	**Keywords**	**Main text structure**	**Max. words**	**Tables/figures**	**References**
Original Article	Max. 350 words; structured (Introduction and Objectives, Methods, Results and Conclusion(s)) Portuguese and English	Up to 6 Portuguese and English	Introduction; Methods; Results; Discussion; Conclusion(s); Acknowledgments, if any; References; and figure legends, if any	4000	Total up to 6	Up to 60
Review Article	Max. 350 words; unstructured Portuguese and English	Up to 6 Portuguese and English	Introduction; thematic sections at the discretion of the authors; Conclusion(s); Acknowledgments, if any; References; and	4000	Total up to 6	Up to 100

			figure legends, if any			
Systematic Review	Max. 350 words; structured Portuguese and English	Up to 6 Portuguese and English	PRISMA	4000	Total up to 6	Up to 100
Case Report	Max. 150 words; unstructured Portuguese and English	Up to 6 Portuguese and English	Introduction; Case report; Discussion; Conclusion(s) (optional); References; and figure legends, if any	2000	Total up to 4	Up to 25
Images in Endocrinology	None	Up to 6 Portuguese and English	Unstructured	500	Total up to 4	Up to 5
Editorial	None	None	Unstructured	1500	Total up to 2	Up to 20
Letter to the Editor	None	Up to 6 Portuguese and English	Unstructured	600	Total up to 1	Up to 10
Current Perspectives	None	Up to 6 Portuguese and English	Unstructured	1200	Total up to 2	Up to 10

Guidelines	Max. 350 words; unstructured Portuguese and English	Up to 6 Portuguese and English	Introduction; thematic sections at the discretion of the authors; Conclusion(s); Acknowledgments, if any; References; and figure legends, if any	4000	Total up to 6	Up to 100

References

- **Citation in text**

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). The references should be listed using Arabic numerals in the order in which they are cited in the text.
References to personal communications and unpublished data should be made directly in the text and should not be numbered. Citation of a reference as 'in press' implies that the item has been accepted for publication. Journal names should be abbreviated according to Medline style.
References to articles published in journals should include the first author's name (surname and given name) followed by the names of the remaining authors, the article title, the journal name, and the publication year, volume, and pages.
Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. Please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors.
The references list should be added as part of the regular text, never as a footnote. Specific codes from reference-management software are not acceptable.

- **Format**

A detailed description of the formats of different reference types can be found in the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (http://www.nlm.nih.gov/bsd/uniform_requirements.html).
Selected examples are given below.
List all authors if there are six or fewer; et al. should be added if there are more than six authors. Article title, journal name, year, volume, and pages.
Reference Management Software: The use of EndNote is recommended to facilitate formatting of citations and reference lists. The journal output style can be downloaded from http://endnote.com/downloads/styles.

- **Reference style**

Text: Indicate references by number(s) in superscript in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.
List: Number the references in the list in the order in which they appear in the text.

Examples:

Reference to a journal publication:

- Isidori AM, Sbardella E, Zatelli MC, Boschetti M, Vitale G, Colao A, et al. Conventional and nuclear medicine imaging in ectopic Cushing's syndrome: a systematic review. J Clin Endocrinol Metab. 2015;100:3231-44.

Reference to a book:

- Ware JE, Kosinski M, Dewey JE. How to score version 2 of the SF-36 Health Survey (standard & acute forms. Lincoln: Quality Metric Incorporated; 2000.

Reference to a book chapter:

- Castellano Barca G, Hidalgo Vicario M, Ortega Molina M. Transtorno del comportamento alimentário. In: Castellano Barca G, Hidalgo Vicario M, Redondo Romero A, editores. Medicina de la adolescência – atención integral. 1ª ed. Madrid: Ergon; 2004. p.415-29.

Web references:

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (author names, dates, reference to a source publication, etc.), should also be given.

Note shortened form for last page number. e.g., 51–9, and that for more than 6 authors the first 6 should be listed followed by 'et al.' For further details you are referred to 'Uniform Requirements for Manuscripts submitted to Biomedical Journals'.

Footnotes

Footnotes should be avoided. When essential, they should be numbered consecutively and appear at the foot of the appropriate page.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Abbreviations

Abbreviations (with the exception of those clearly well-established in the field) should be explained when they are first used.

Define all abbreviations except those approved by the International System of Units for length, mass, time, temperature, amount of substance, etc. Do not create new abbreviations for drugs, procedures, experimental groups, etc.

Abbreviations or acronyms should not be used in the title and abstract, but only in the text and in a limited way. Abbreviations should be defined at first use, in full, followed by the abbreviation in parentheses. Excessive and unnecessary use of acronyms and abbreviations should be avoided. ((All this is checked by our copy editors))

Units of measurement

Follow internationally accepted rules and conventions: use the international system of units (SI).

Temperatures should be given in degrees Celsius (°C) and blood pressure in millimeters of mercury (mm Hg).

Drug names

Use generic names of drugs (first letter: lowercase) whenever possible. Registered trade names (first letter: uppercase) should be marked with the superscript registration symbol ® or ™ when they are first mentioned.

Tables and illustrations

Tables and figures must be numbered (e.g. Figure 1, Figure 2, Table 1) and submitted as separate files.
Captions should be numbered using Arabic numerals in the order in which they appear in the text (e.g., Table 1, Figure 1) and must provide sufficient information to enable their interpretation without consulting the text.
Ensure that each illustration and table has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.
Color illustrations are reproduced free of charge.

General points:

• Make sure you use uniform lettering and sizing of your original artwork.
• Embed the used fonts if the application provides that option.
• Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the published version.
• Submit each illustration as a separate file.

Formats:

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.
Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):
EPS (or PDF): Vector drawings, embed all used fonts.
TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 500 dpi.
TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules.

Multimedia files

Multimedia files should be submitted in a separate file with the original manuscript and with all subsequent submissions. Multimedia material must meet production quality standards for publication without the need for any modification or editing. Acceptable files are MPEG, AVI or QuickTime formats.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Submission checklist

The following list will be useful during the final checking of an article prior to sending it to the journal for review.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

• E-mail address

• Full postal address

All necessary files have been uploaded, and contain:

• Keywords

• All figure captions

• All tables (including title, description, footnotes)

Further considerations

• Manuscript has been 'spell-checked' and 'grammar-checked'

• References are in the correct format for this journal

• All references mentioned in the Reference list are cited in the text, and vice versa

• Permission has been obtained for use of copyrighted material from other sources (including the Internet)

Style and Usage

SPEDM J follows the American Medical Association Manual of Style1 (10th ed) in matters of editorial style and usage. All accepted manuscripts are subject to copyediting for conciseness, clarity, grammar, spelling, and GE style. The corresponding author will receive page proofs to review before publication. If requests for changes are made after the authors have returned corrected proofs. Care should be exercised in this stage of review so as to avoid publication of errata or retractions.

Last revision 10 December 2016

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PROCESS 2020 Checklist			
Topic	**Item**	**Checklist Item Description**	**Page Number**
Title	**1**	- The phrase ‘case series’ and the area of focus should appear in the title (e.g. patient population, diagnosis, intervention or outcome).	1 “Short term weight-loss and metabolic results after revisional and primary SADI-S: a single center study “
Key Words	**2**	- Include three to six keywords that identify what is covered in the case series (e.g. patient population, diagnosis, intervention or outcome). - Include ‘case series’ as one of the keywords.	1 “SADI-S; Single anastomosis duodeno-ileal bypass with sleeve gastrectomy; Obesity; Bariatric surgery”
Abstract	**3a**	Introduction and Importance - Describe what is unique or educational. - What is the overarching theme of the case series?	2 “The number (…) rate of complications .”
	3b	Methods - Describe what was done, how and when was it done and by whom.	2 “Retrospective analysis (…) nutritional status.”
	3c	Outcomes - Describe the outcomes of the intervention and management strategy.	2 “Patients’ body mass (…) of patients at 12 months were detected.”
	3d	Conclusion - Describe the take home message(s), including what has been learnt? - How will this impact future clinical practice?	2 “SADI-S resulted (…) were detected.”

Introduction	**4**	- Describe the background of the case series and specify the overarching theme (e.g. common disease, intervention, or outcome). - The introduction should explain what is unique or educational about the case series. - Relevant scientific literature should be referenced. - Introduction should be 1-2 paragraphs in length.	5 "Obesity and overweight (…) severe metabolic diseases."
Methods	**5a**	Registration - State the research registry number in accordance with the Declaration of Helsinki - "Every research study involving human subjects must be registered in a publicly accessible database". This can be obtained from, for example, ResearchRegistry.com, ClinicalTrials.gov, or ISRCTN. - If a protocol already exists, state the corresponding registration number and access directions (e.g. website or journal, and include a hyperlink that is publicly accessible). It must be written in the English language.	N/A
	5b	Study Design - State that the study is a case series. - State whether the case series is: (1) prospective/ retrospective, (2) single/multi-centre, and if (3) cases are consecutive/non-consecutive.	6 "This study (…) outcomes were selected."
	5c	Settings and Time-Frames - Describe the setting(s) in which the patient was managed (e.g. research institution, teaching/district general hospital, community, or private practice). - Document any relevant dates (e.g. recruitment, intervention, follow-up, and data collection time-frames).	6 "This study (…) in our surgical center."

	5d	Participants - Describe the relevant characteristics (e.g. demographics, comorbidities, tumour staging, smoking status) and if relevant, exposure(s) of the participants. - Describe the method of participant recruitment, if relevant. - State any subsequent inclusion or exclusion criteria, and how the participants were selected. - Methods used to ensure the de-identification of patient information.	6 “This study (…) in a single center”.
	5e	Pre-Intervention Patient Optimisation - Lifestyle (e.g. weight loss). - Medication review (e.g. anticoagulation, oral hypoglycemics/insulin). - Pre-surgical stabilisation/preparation (e.g. treating hypothermia/hypovolemia/hypotension, ICU care for sepsis, nil by mouth, or enema). - Other (e.g. psychological support).	6 “The patients were (…) taken twice a day.”
	5f	Interventions - Describe the type(s) of intervention(s) used (e.g. pharmacological, surgical, physiotherapy, psychological, preventative). - Describe any concurrent treatments (e.g. antibiotics, analgesia, antiemetics, venous thromboembolism prophylaxis).	6 “This study (…) in a single center.”
	5g	Intervention Details - Describe the rationale behind the treatment offered, how it was performed and time to intervention. - For pharmacological therapies, include information on the formulation, dosage, strength, route, and duration. - For surgery, include details such as anaesthesia, patient position, preparation used, use of other relevant equipment, sutures, devices, and surgical stage. - The degree of novelty for a surgical technique/device should be mentioned (e.g. 'first in human' or 'first in this context').	6 Surgical technique section

		- Medical devices should have manufacturer and model specifically mentioned.	
	5h	Operator Details - Where applicable, include operator experience and position on the learning curve, any relevant training, and specialisation (e.g. 'junior trainee with three years of surgical specialty training in Plastic Surgery and seven similar cases completed previously under direct supervision').	N/A
	5i	Quality Control - What measures were taken to reduce inter- or intra-operator/operation variation, to ensure quality, and to maintain consistency between cases (e.g. independent observers, lymph node counts, standard surgical technique). - State any specific disparities between cases.	6 Surgical technique section
	5j	Follow-Up - When (e.g. how long after discharge, frequency, maximum follow-up length at the time of submission). - Where (e.g. home via video consultation, primary care, secondary care). - How (e.g. telephone consultation, clinical examination, blood tests, imaging). - Any specific long-term surveillance requirements (e.g. imaging surveillance of endovascular aneurysm repair or clinical exam/ultrasound of regional lymph nodes for skin cancer). - Any specific post-operative instructions (e.g. post-operative medications, targeted physiotherapy, psychological therapy). - State if any participants were lost to follow-up and why.	6 "This study (…) taken twice a day"

Results	**6a**	Participants - Please state the number of patients involved, the patient characteristics (e.g. demographics, comorbidities, smoking status, and if applicable, tumour staging (e.g. TNM)).	7 "There were 29 (…) procedure in our center"
	6b	Deviation from the Initial Management Plan - State if there were any changes in the planned intervention(s) (e.g. what was changed and why). - Please include a suitable schematic diagram if appropriate.	N/A
	6c	Outcomes and Follow-Up - Expected versus attained clinical outcome as assessed by the clinician. Reference literature used to inform expected outcomes. - When appropriate, include patient-reported measures (e.g. questionnaires including quality-of-life scales). - Describe and explain the percentage of patients lost to follow-up.	7 "Initial mean body mass (…) analysis of our study"
	6d	Intervention Adherence and Compliance - Where relevant, detail how well the patient adhered to and tolerated the advice provided (e.g. avoiding heavy lifting for abdominal surgery, or tolerance of chemotherapy and pharmacological agents). - Explain how adherence and tolerance were measured.	N/A

	6e	Complications and Adverse Events - Precautionary measures taken to prevent complications (e.g. antibiotic or venous thromboembolism prophylaxis). - All complications and adverse or unanticipated events should be described in detail and ideally categorised in accordance with the Clavien-Dindo Classification (e.g. blood loss, length of operative time, wound complications, re-exploration or revision surgery, impact on length of stay). - If relevant, was the complication reported to the relevant national agency or pharmaceutical company. - Specify the duration of time between completion of the intervention and discharge, and whether this was within the expected timeframe (if not, why not). - Where applicable, the 30-day post-operative and long-term morbidity/mortality may need to be specified. - State if there were no complications or adverse outcomes.	7 "There were no (…) 2.0 ± 0.0"
Discussion	**7a**	- Summarise the key results.	8 Population characteristics, Weight loss, Lipidic profile and glucose metabolism, and Nutrient deficits sections
	7b	Relevant Literature and Placing the Results in Context - Include a discussion of the relevant literature and, if appropriate, similar published studies. - Describe the implications for clinical practice guidelines (e.g. NICE) and any relevant hypotheses generated.	8 Population characteristics, Weight loss, Lipidic profile and glucose metabolism, and Nutrient deficits sections
	7c	Strengths - Describe the relevant strengths of the study. - Detail any multidisciplinary or cross-speciality relevance. Weaknesses and Limitations	9 Limitations section

		- Describe the relevant weaknesses or limitations of the study. - For novel techniques or devices, outline any contraindications and alternatives, potential risks and possible complications if applied to a larger population.	
	7d	Directions for Future Research - State how the methodology and findings discussed can impact future research and clinical practice. Describe the questions that have arisen as a result of this study. - State the alternative study design(s) best suited to address these questions.	9 "As more procedures (…) scientific evidence"
Conclusions	**8a**	Key Conclusions - Outline the key conclusions from this study.	9 "SADI-S resulted in acceptable (…) nutritional deficits were detected."
	8b	Rationale - Ensure that any of the conclusions made are supported by a strong rationale.	9 "The data from (…) deficits were detected.
	8c	Future Work - Briefly discuss any questions arisen from this study and any differences in approach to patient diagnosis or management which the authors might adopt in future similar studies.	9 "There remains work (…) future for SADI-S.
Patient Perspective	**9**	- Where appropriate, the patients should be given the opportunity to share their perspective on the intervention(s) they received (e.g. sharing quotes from a consented, anonymised interview, or questionnaire).	N/A
Informed Consent	**10**	- The authors must provide evidence of consent, where applicable, and if requested by the journal. - State the method of consent at the end of the article (e.g. verbal or written).	N/A

		- If not provided by the patients, explain why (e.g. death of patient and consent provided by next of kin). If the patients or family members were untraceable then document the tracing efforts undertaken.	
Additional Information	**11a**	- State any conflicts of interest.	1
	11b	- State any sources of funding.	1
	11c	Other Relevant Disclosures - Please state any author contributions, acknowledgments, and where required, institutional review board and ethical committee approval. - Disclose whether the case has been presented at a conference or regional meeting.	N/A
Clinical Images and Videos	**12**	- Where relevant and available, include clinical images to help demonstrate the cases pre-, peri-, and post-intervention (e.g. radiological, histopathological, patient photographs, intraoperative images). - Where relevant and available, include a link (e.g. Google Drive, YouTube) to the narrated operative video to highlight specific techniques or operative findings. - Ensure all media files are appropriately captioned and indicate points of interest to allow for easy interpretation.	N/A
Referencing the Checklist	**13**	- Include reference to the PROCESS 2020 publication by stating: 'This case series has been reported in line with the PROCESS Guideline' at the end of the methods section (and include citation in the references section).	N/A