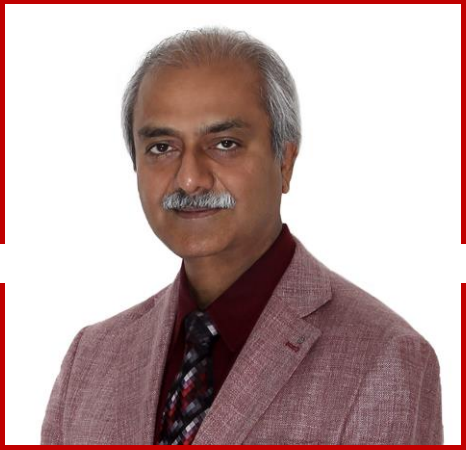
SLEEVE + Sleeve-Jejunal Bypass
SASJ



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UGALE BARIATRICS

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[X]-- I have no potential conflict of interest to report

New Kid on the Block ? – BYPASS group

- RYGB & OAGB → Remnant stomach, no biliary access
- Sleeve Plus grp → SG-DJB, SADI → Duodenal Dissection & No Biliary Access
- Santoro Transit Bipartition & SASI ➔ effective SLEEVE PLUS Bypass procedure→Endoscopic {Including Biliary} access maintained; Gastric region; Revision was much easier
- Higher incidence of serious Nutritional Side-Effects, esp SASI
- Safer and Better Option ➔ SASJ

Nomenclature ?
One Anastomosis Transit Bipartition – PROXIMAL ?

- SASJ → Single Anastomosis Sleeve-Jejunal Bypass
- Sleeve + Sleeve-Jejunal Bypass
- Proximal / Jejunal OATB ?

Technique of Sleeve with Sleeve Jejunal Bypass

Dr Surendra Ugale, Dr Ayushka Ugale, Dr Akshan Ugale, Dr Praveen Reddy, Trilok Ram, Kirloskar hospital, Hyderabad, INDIA

Abstract:

Background: This is a Sleeve Plus procedure, that maintains biliary access by avoiding duodenal transection and no blind area, and is a proximal jejunal bypass as compared to a SASI procedure, to avoid nutritional complications.

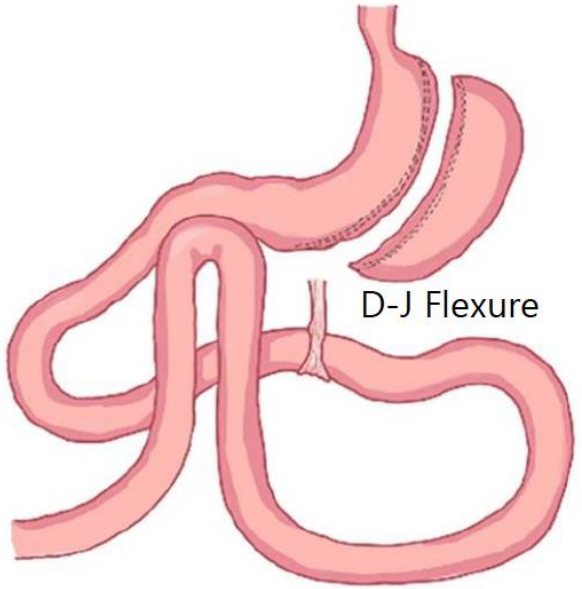
Methods: After performing a regular antrum-resecting sleeve, a Jejunal loop anastomosis is done at 100-150-200 cm from DJ flexure depending on total bowel length using a 45mm cartridge, ensuring a common channel preferably of 400cm or more. Leak test is done with methylene blue and Petersen's space is closed with non-absorbable sutures.

Results: 87 patients underwent this procedure, in last 5yrs, without any intra-operative or immediate post-operative complications and all patients were discharged within 2-3 days.8 patients had complications such as nausea, vomiting, diarrhoea, dumping syndrome, hypoproteinemia and hypoalbuminemia. 3 patients required a partial reversal of the procedure [disconnection of the jejunal bypass while maintaining the sleeve]; others were managed conservatively.

No mortality was seen in this study.

Conclusions: This bypass can be performed safely and easily, as all surgeons are comfortable with sleeve and a single anastomosis loop bypass, with the added advantage of maintaining endoscopic access to the duodenum and bile duct.

If necessary, disconnecting the GJ anastomosis while preserving the sleeve gastrectomy is a technically simpler reversal compared to MGB-OAGB or RYGB

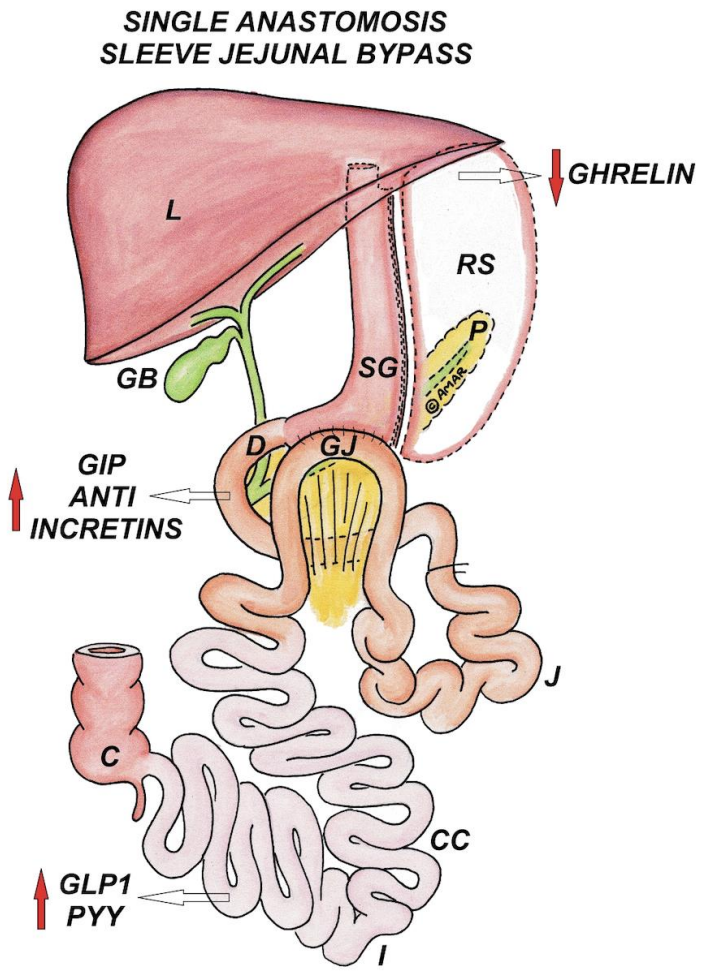


Sleeve + Gastro Jejunal Bypass

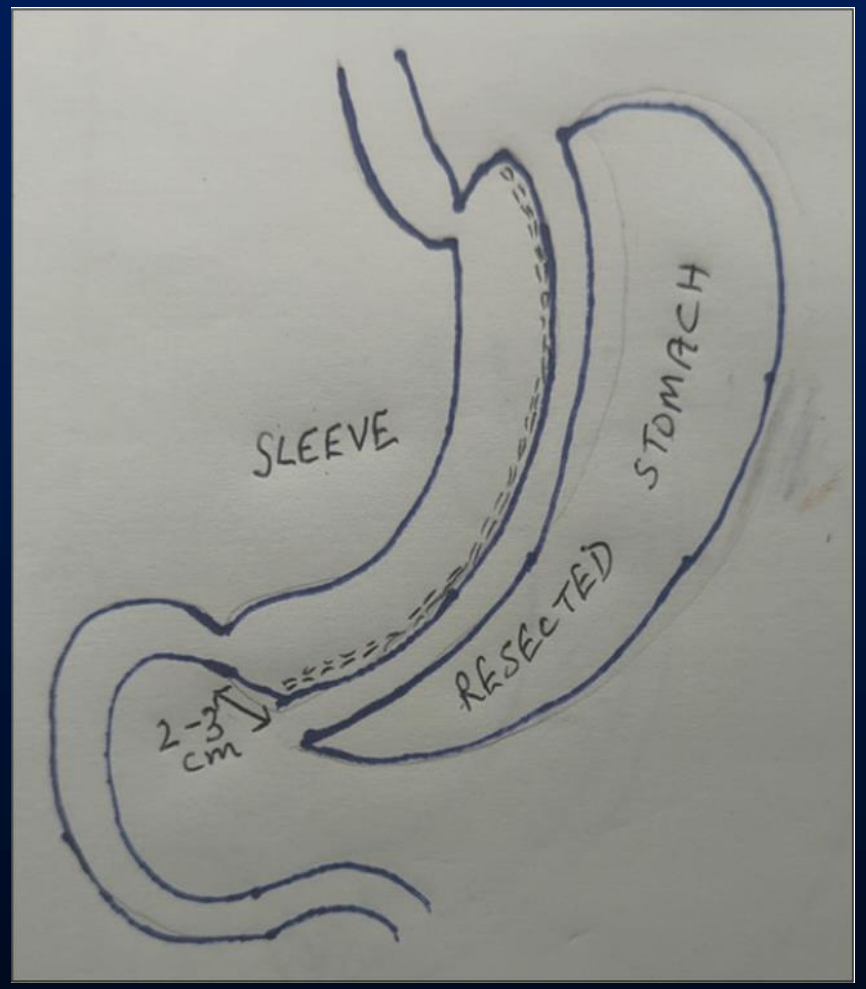
Image courtesy: Yu, H., Qian, L., Yan, Y. *et al.* Analysis of the efficacy of sleeve gastrectomy, one-anastomosis gastric bypass, and single-anastomosis sleeve ileal bypass in the treatment of metabolic syndrome. *Sci Rep* **14**, 5069 (2024). https://doi.org/10.1038/s41598-024-54949-2

Procedure

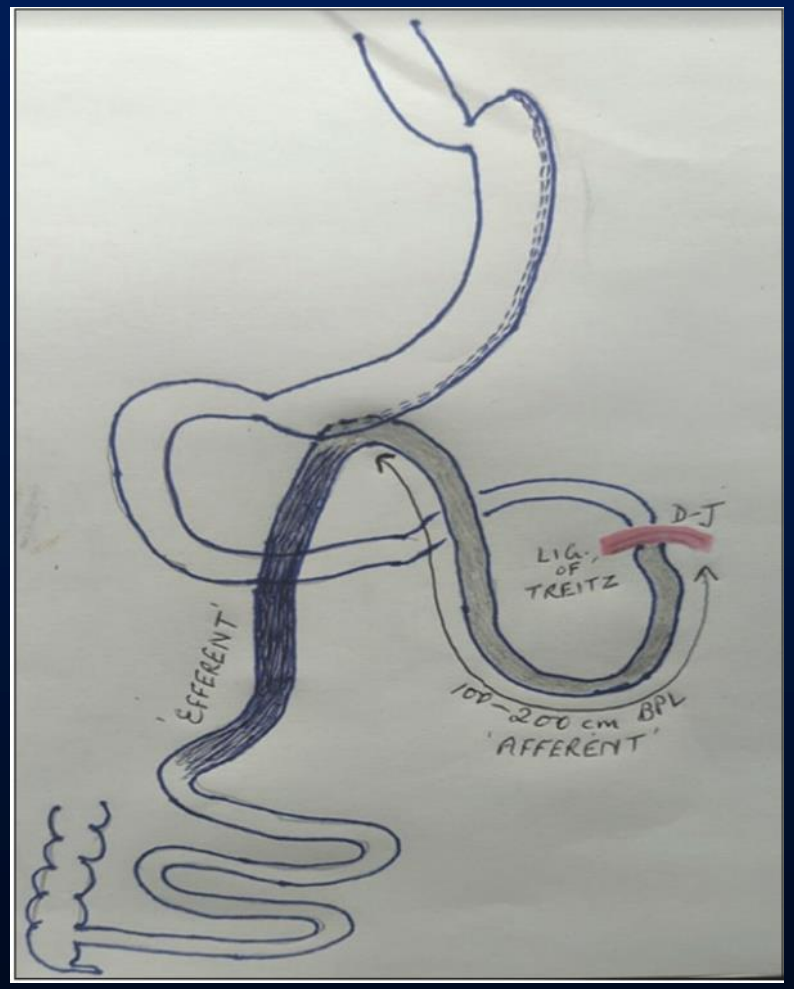
-Laparoscopically, using 6 ports.
-Stapled Sleeve Gastrectomy -36-38 F gastric bougie for calibration.
-Jejunum is measured and marked at 200 cm from the DJ flexure, with a 2-limb suture;
proximal to that with a 1-limb suture to establish the proximal and distal aspects.
-Remaining small bowel is measured proximally from ileo-caecal valve (ICV)
→ evaluate total small bowel length → ensure sufficient common channel remains >300cm; preferably >400cm
-Antecolic stapled anastomosis of marked jejunal loop to antral end the sleeve
→ Blue 45 mm cartridge.
-Enterotomy is closed with 3-0 PDS with intracorporeal suturing.
-Leak test is done with methylene blue
-Petersen's space is closed with continuous 3-0 prolene sutures
→ prevent internal herniation.



1st Step ➔ Standard Sleeve -36Fr bougie



2nd Step➔ SG-Jejunal Anastomosis
{with leak test and closure of Petersen's space}



Sleeve Gastrectomy With Sleeve-Jejunal Bypass

➔maintain biliary access by avoiding duodenal transection

➔creating a functional bypass to achieve weight loss and resolution of the metabolic syndrome.

➔Aimed at making a bypass procedure easier for all Bariatric (including younger) surgeons

[combines the ease of a SG, with the widely accepted OAGB-MGB & benefits of a Bipartition, using a loop anastomosis to create a bypass]

Best of both Worlds !!!

Retrospective multi-center data analysis of 130 patients
3 centres
Follow-up of 1-5 yrs

Demographics

Preop Data	Mean
Age	42
Gender [M/F]	41 Male; 71 Female
Weight	121kg
BMI	45.8kg/m2
Diabetes	73 of 112 = 65%
HbA1c	7.5% [4.9–16%]

Inclusion criteria

-BMI >30kg/m2 ±comorbidities
-At least 12 months follow up
-Underwent this procedure as a primary surgery

Exclusion criteria

-Previous Bariatric surgery
-Those lost to follow up

Outcomes

Primary outcome - Weight loss and Partial Remission of T2DM (Clinically relevant -[HbA1c ≤ 6.5% without medication]
Secondary outcomes - Maintenance of weight and BMI; Nutritional Status and Complications.

FOLLOW-UP %

	Pre Op	1-yr	3-yrs	5-yrs
Total Number of patients	130	120	68	35
Follow-up %		92 %	80 %	68 %

Bowel Lengths Measured during Surgery

	Mean	Range
TSBL	793cm	530 to 1035cm
CC	587cm	330 to 835cm
BP limb	212cm	250cm[32 pts] 200cm [n=74] 180cm [n=3] 150 cm [n=2] 100 cm [n=1]

Weight Loss

	BMI [kg/m2]	TBWL [%]
Pre-OP	45.8	-
1 yr	28.2	37.9
3 yr	27.4	40.7
5 yr	27.3	40.6

Remission of Diabetes

	% in Remission	Mean HbA1c [%]
Pre-OP	—------	7.5
1 yr	95.9	5.2
3 yr	97	5
5 yr	91.7	4.96

Surprisingly, there was no reduction in weight loss efficacy, even with longer common channel lengths

	No. of Patients	%TBWL – 1yr	3yrs	5yrs
CC of 400-500cm	16/112	38.56	40.88	43.3
CC of 500-600cm	27/112	38.97	41.16	39.54
CC of 600-700cm	36/112	39.68	41.92	41.32
CC of 700-800cm	15/112	37.34	37.44	43.8
CC >800cm	5/112	34.8	37.3	43.3

UNCONTROLLED Group ➔ HbA1c >8

Diabetes				
	Pre Op	1-yr	3-yrs	5-yrs
Total Number of patients	28/130	26	18	10
Mean HbA1c %	9.61	5.25	4.89	4.93
Range of A1C	8.1 - 16	4.7 - 6.7	4.8 - 5	4.8 - 5.1
Insulin usage %	59.10%	0%	0%	0%

Nutritional Stability ➔ Duodenal route also available !!!

Nutritional Factors	Pre-Op	1-yr	3-yrs	5-yrs
Hb	12.3	12.3	11.1	11.4
T Protein	7.3	7.3	7.4	7.6
Albumin	4.2	4.2	4.3	4.5
Calcium	9.2	8.9	8.2	--
Vit D3	25.2	30.5	28.3	29.2
Vit B-12	379.5	364	348	335
Iron	85.7	84.3	82.2	93.6

Complications

 # No mortality was seen in this study.

 # Minor Complications --4 patients (3.6 %) → nausea, vomiting and diarrhoea; managed conservatively.

 # Major Complications -- 2 patients (1.79 %) → dumping syndrome, hypoproteinemia and hypoalbuminemia → reduced quality of life
→ did not improve with medication
→ ➔ Required a partial reversal → Disconnection of the jejunal loop was done by a single stapler firing across the anastomosis

SAFETY & EFFICACY of SASJ {SLEEVE + SLEEVE-JEJUNAL BYPASS} – 5 yr DATA MultiCenter

SURENDRA UGALE, RAJ PALANIAPPAN, M. BHARUCHA – Kirloskar – Apollo- Hinduja Hospitals

JOURNAL OF BARIATRIC SURGERY
Official Publication of the Obesity Surgery Society of India (OSSI)

Original Article

Safety and Efficacy of Sleeve Gastrectomy with Sleeve Jejunal Bypass: An Advantage over Other Bypass Procedures – Multicenter 3 and 5 year Data

Surendra Ugale, Rajkumar Palaniappan[1], Manoj Bharucha[2], Ayushka Ugale, Nikhilesh Krishna[1], Akshan Ugale, Trilok Ram

Kirloskar and Virinchi Hospitals, Hyderabad, Telangana, [1]Institute of Bariatrics, Apollo Hospitals, Chennai, Tamil Nadu, [2]Lilavati and Criticare Asia Hospitals, Mumbai, Maharashtra, India

Comparison with Sleeve Gastrectomy

TWL [%]	Sleeve	SG + Jejunal Bypass
1 yr	26 to 35.7	37.9
3 yr	37.5	40.7
5 yr	26 to 35	40.6

% DM Remission	Sleeve	SG + Jejunal Bypass
1 yr	38.3	95.9
3 yr	24.5	97
5 yr	46.3; 27.5; 42.6	91.7

@ Magdalena M, Michał W, Katarzyna B;Type 2 Diabetes Remission 5 Years After Laparoscopic Sleeve Gastrectomy: Multicenter Cohort Study; OBES SURG (2021) 31:980–986.

@ Soong, T., Lee, M., Lee, W., Almalki, O.M., Chen, J., Wu, C., & Chen, S. (2021). Long-Term Efficacy of Bariatric Surgery for the Treatment of Super-Obesity: Comparison of SG, RYGB, and OAGB. *Obesity Surgery, 31*, 3391 - 3399.}

@Sharples AJ, Mahawar K. Systematic Review and Meta-Analysis of Randomised Controlled Trials Comparing Long-Term Outcomes of Roux-En-Y Gastric Bypass and Sleeve Gastrectomy. Obes Surg. 2020 Feb;30(2):664-672. doi: 10.1007/s11695-019-04235-2. PMID: 31724116.]

@Peterli R, Wölnerhanssen BK, Bueter M. et al - Effect of Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass on Weight Loss in Patients With Morbid Obesity: The SM-BOSS Randomized Clinical Trial. JAMA. 2018 Jan 16;319(3):255-265. doi: 10.1001/jama.2017.20897.

Literature search – MGB v/s SASJ 200 pts

MGB had →shorter operating time

→Better weight loss

→Better comorbidity resolution

The Egyptian Journal of Hospital Medicine (October 2022) Vol. 89, Page 5186- 5191

Laparoscopic Single Anastomosis Sleeve-Jejunal Bypass vs Laparoscopic Mini-Gastric Bypass in Morbid Obese Patients and Resolution of Diabetes Mellitus, A Single Centre Experience

Ramy Helmy, Mostafa Nagy*, Amr H. Afifi

Department of General Surgery, Faculty of Medicine, Ain Shams University, Egypt

Comparison of 60 pts

➔Both groups had comparative results and safety

➔SASJ had better weight loss

➔MGB had better DM resolution

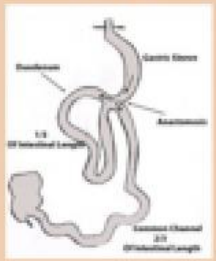
ABDELZAHER, M., Ali, M., Mahran, K., Kamel, M. Comparative study between Laparoscopic mini-gastric bypass versus laparoscopic single anastomosis sleeve jejunal bypass for treatment of morbidly obese patients. *Minia Journal of Medical Research*, 2023; (): -. doi: 10.21608/mjmr.2023.227151.1488

Effective as a Revisional Procedure also

Single-Anastomosis Sleeve Jejunal (SAS-J) Bypass as Revisional Surgery After Primary Restrictive Bariatric Procedures

METHODS

SAS-J



- A prospective cohort study
- 43 patients underwent revisional surgery
- Follow-up at least one year

RESULTS

DM — 100%

HPN — 80%

HLP — 83.3%

OSAS — 100%

GERD — 86.7%

BMI: 46 → 29

CONCLUSIONS

SAS-JB is

Effective as a salvage surgery after failed restrictive bariatric procedures, but long-term follow-up is needed.

IFSO

Alaa M. Sewefy, Ahmed M. Atyia, Taha H.Kayed, Hosam M. Hamza[4]

OBESITY SURGERY
The Journal of Metabolic Surgery and Allied Care

Comparison with other Procedures

***Weight loss at 3 years in this study (40.7%) was better than sleeve alone (37.5%), RYGB (28.9%–37.4%), and DJB (30.32%); while it was comparable to OAGB (27.7%–42.8%).**

***Diabetes remission of 97% at 3 years was better than sleeve alone (24.5%); RYGB (37%–76.2%); OAGB (77.8%); and Jejunal Ileal Interposition {J-IISG} (73.3%)** *[Ugale S, Ugale A, Ugale A, Ram T. 10 year data on efficacy of diabetes and weight control by ileal interposition with sleeve – Sleeve plus procedure without any bowel exclusion. EC Endocrinol Metab Res 2020;5:11]*

Group-matched Study of Sleeve, One Anastomosis Gastric Bypass, SASI Bypass and SASJ Bypass - 3 yr Data

Dr Surendra Ugale, Dr Ayushka Ugale, Dr Akshan Ugale, Dr Praveen Reddy, Trilok Ram, Kirloskar hospital, Hyderabad, INDIA

Abstract:

Background: To study the efficacy, safety, nutritional stability and complications data of these 4 procedures.

Methods: 41 patients in each group were matched with similar ages, BMI, percentage with diabetes and HbA1c and their mean bowel length, and data was compared over 3 yrs. Bypassed limbs of 100-200cm were used, depending on total bowel length; loop anastomosis done using a 45mm cartridge, leak test is done with methylene blue and Petersen's space is closed with non-absorbable sutures.

Results: All 164 procedures were completed safely without any intra-operative or immediate post-operative complications; all patients were discharged within 2-3 days. The percentage total body weight loss (%TBWL) was surprisingly better with SASI and SASJ at 3 years, as compared with OAGB and SG groups, though mean BMI values and glycated hemoglobin (HbA1c) at 1 and 3yrs showed no significant difference; diabetes remission was 84% (SG), 87% (OAGB), 90% (SASI) and 100% with SASJ at 3yrs.

At 3 years, there was good control of fasting and post-prandial glucose (FBS, PPBS) and also with cholesterol and triglycerides; SASJ having the best PPBS control.

Nutritional factors of protein, albumin, calcium, vitamin D and B-12 were well maintained and similar in all groups; hemoglobin (Hb) and iron levels were similar, but reduces at 3 yrs in all groups.

SG hand no complications; 6 patients (SASJ) had nausea, vomiting, diarrhoea, dumping syndrome, hypoproteinaemia and hypoalbuminemia, of which 2 required a partial reversal of the procedure [disconnection of the jejunal bypass while maintaining the sleeve]; the other 4 were managed conservatively. In OAGB group, 1 patient worsened to CKD dialysis, one developed severe anemia and one expired with coronary disease at 3yrs. SASI had greater nutritional problems with 2 needing partial reversal; 2 developed nutritional cirrhosis and 4 expired from coronary disease. No mortality was caused by any procedure in this study.

Conclusions: All techniques of bypass and the SG can be performed safely with good results; SASJ has the added advantage of maintaining biliary access and the option of partial reversal, while maintaining the sleeve.

Group-matched study of OAGB vs SASJ - 3 year data in a single unit.

Dr. Ayushka Ugale, Dr. Surendra Ugale, Kirloskar Hospital, Hyderabad, India.

Nutritional Factors	OAGB			SASJ		
	Pre-Op	1 yr	3yr	Pre-Op	1yr	3yr
Hb	12.39	12.87	11.3	12.89	12.57	10.95
T. Protein	7.1	6.8	6.9	7.04	6.86	6.95
S. Albumin	3.9	3.9	3.9	3.95	3.9	3.84
Calcium	8.2	8.8	8.2	9.2	8.93	8.31
Vitamin D3	20	28	21.7	24.3	30.71	24.38
Vitamin B12	374	466	475	498	461	372
Iron	62.8	52.3	51.2	76.75	53.31	47.22

	OAGB		SASJ	
	1 yr	3yr	1yr	3yr
HbA1c < 6.5	36	36	41	18
HbA1c ≥ 6.5	5	5	0	0
Remission (%)	**87.8**	**87.8**	**100**	**100**

	OAGB		SASJ	
	BMI (kg/m^2)	TBWL (%)	BMI (kg/m^2)	TBWL (%)
Preop	44		49.05	
1 yr	30.74	29.3	31.37	35.96
3 yr	29.87	**31**	28.85	**38.59**

- **Both techniques of bypass can be performed safely**
- **and easily, with good results**

- **SASJ has the added advantage of maintaining biliary access and the option of partial reversal, while maintaining the sleeve.**

Other Published Studies (SASJ)

- **Most studies evaluating this procedure (SASJ/SG + SJ bypass) have shown similar results at 1 year, except the 2022 publication by Elrefai *et al*. which showed 56.86% TWL, which seems exceptional.**

- ***Pazouki A, Kermansaravi M. Single anastomosis sleeve-jejunal bypass: A new method of bariatric/metabolic surgery. Obes Surg 2019;29:3769-70.***
- ***Sayadishahraki M, Rezaei MT, Mahmoudieh M, Keleydari B, Shahabi S, Allami M. Single-anastomosis sleeve jejunal bypass, a novel bariatric surgery, versus other familiar methods: Results of a 6-month follow-up-a comparative study. Obes Surg 2020;30:769-76.***
- ***Sewefy AM, Saleh A. The outcomes of single anastomosis sleeve jejunal bypass as a treatment for morbid obesity (two-year follow-up). Surg Endosc 2021;35:5698-704.***
- ***Abdelzaher MA, Tony MN, Atya AM, Zaghloul NM. Laparoscopic single anastomosis sleeve-jejunal bypass for the treatment of morbidly obese patients: 1-year follow-up. Egypt J Surg 2023;42:171-7***
- ***Elrefai M, Ibrahim A, Zeid MA, Ezzat H , Abdelgawad M , ElGeidie A. Comparative study between single anastomosis sleeve jejunal A prospective randomized trial. Research Square; 2022***

What are you looking for ???

- Good Weight loss ? YES → Maintaining 40% TBWL at 5 yrs
- Good Glycemic control / Remission of DM ? YES → >90 %
- Endoscopic Access to all parts ? YES
- Easy Revision / Reversibility ? YES → Leaving a SLEEVE in place

Advantages & *CONCLUSION*

1. Maintains endoscopic access to the biliary tree
2. There is no excluded remnant stomach → important in countries with high incidence of gastric cancer.
3. No blind end - avoids bacterial overgrowth and blind loop syndrome.
4. Easy to perform - sleeve with a single anastomosis
5. If necessary, Partial Reversal can be done in a simpler manner compared to other bypass procedures [leaving a Sleeve in place]
6. Nutritional stability even at 5 years → both routes from stomach are open
7. Could be positioned as the main bypass procedure in Bariatric and Metabolic surgery

THANK YOU

THANK YOU