Metabolic and Bariatric Surgery for Asian Patients with BMI>50kg/m^2

Evidence for BPD

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I have no potential conflict of interest to report

Nicola Scopinaro, MD, FACS (Hon)
1945–2020

Founding President of IFSO

Angrisani, L. In Memory of Nicola Scopinaro: a Great Friend and Mentor. *OBES SURG* **30**, 4693–4694 (2020).

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< Previous Next >

JOURNAL ARTICLE

Bilio-pancreatic bypass for obesity: II. Initial experience in man

Nicola Scopinaro ✉, Ezio Gianetta, Dario Civalleri, Umberto Bonalumi, Virgilio Bachi

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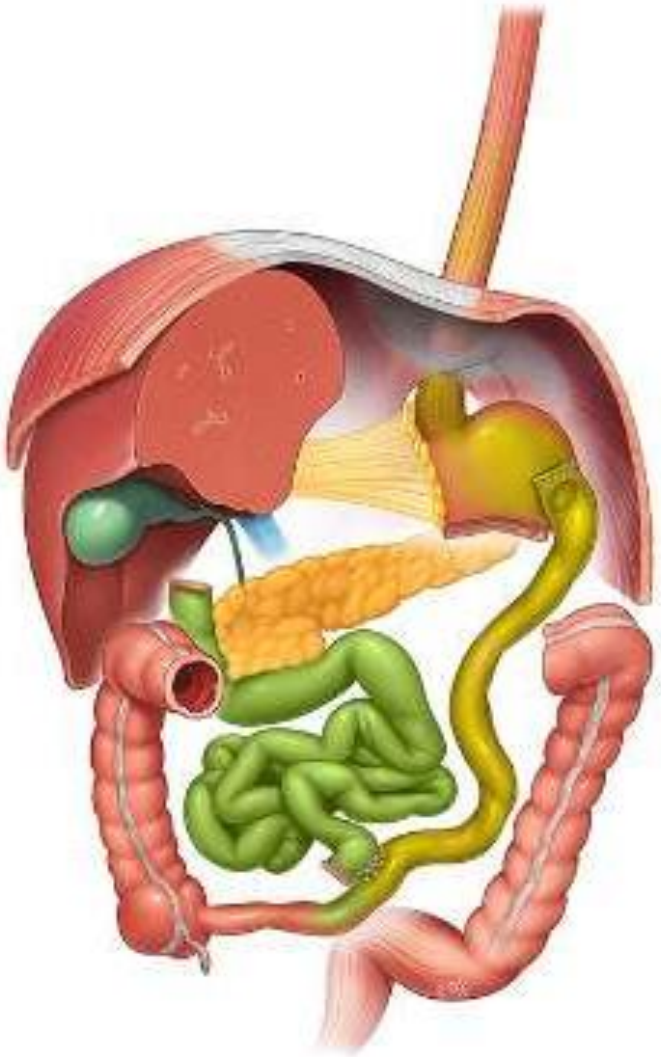

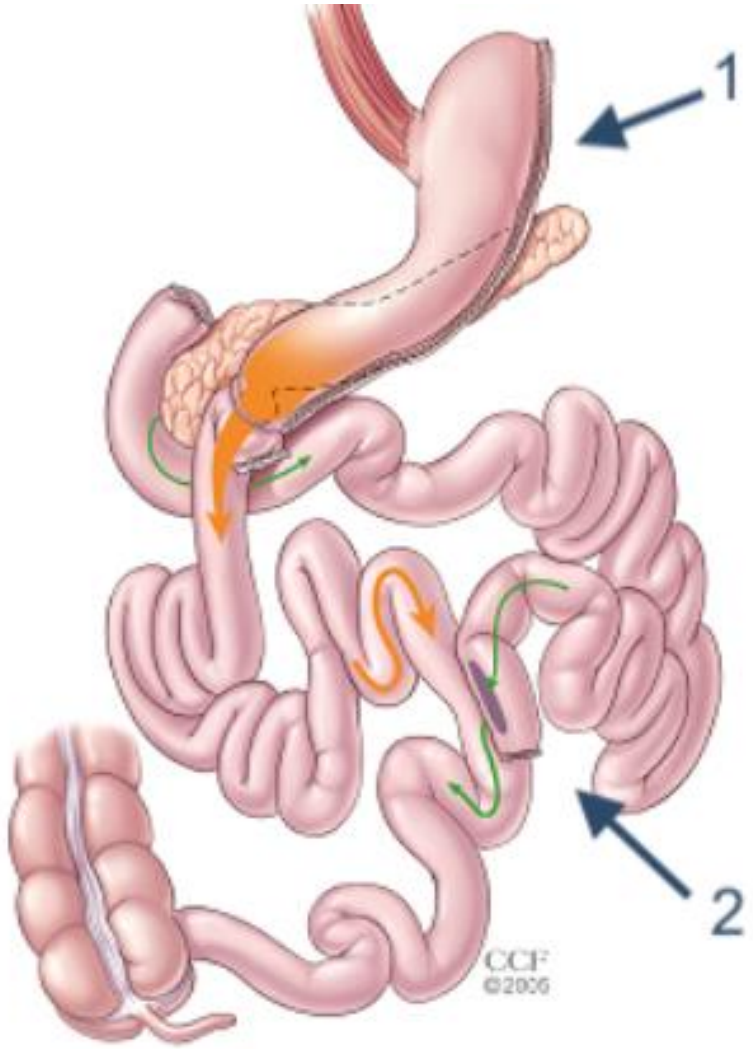
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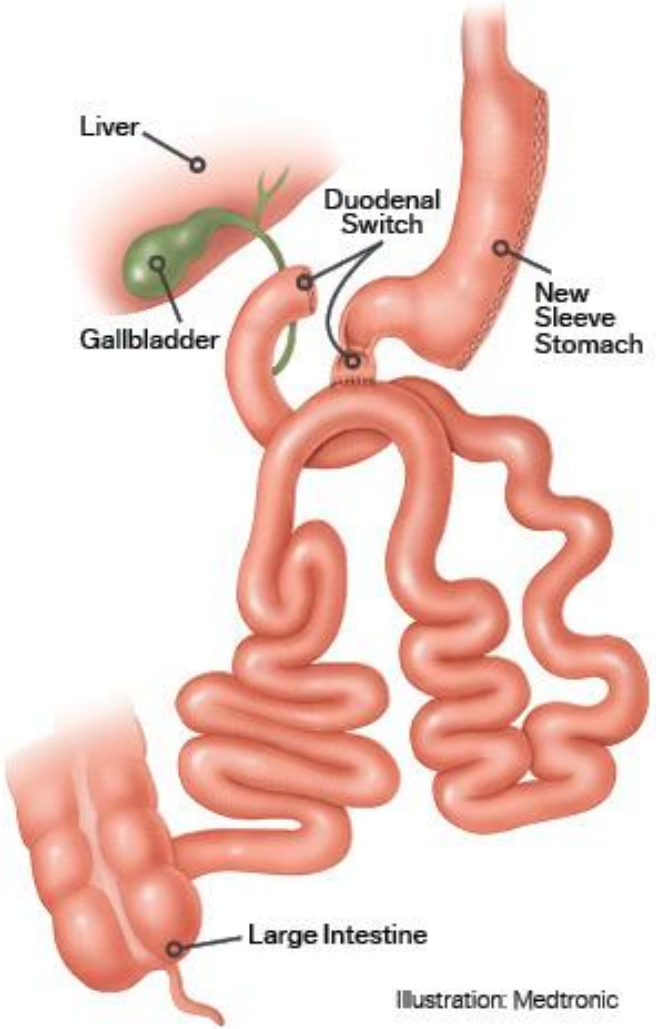
Liver
Duodenal Switch
New Sleeve Stomach
Gallbladder
Large Intestine
Illustration: Medtronic

Surgical Endoscopy (2022) 36:6170–6180
https://doi.org/10.1007/s00464-021-08979-w

The first survey addressing patients with BMI over 50: a survey of 789 bariatric surgeons

Mohammad Kermansaravi[1,2] · Panagiotis Lainas[3,4] · Shahab Shahabi Shahmiri[5] · Wah Yang[6] · Amirhossein Davarpanah Jazi[7] · Ramon Vilallonga[8,9] · Luciano Antozzi[10] · Chetan Parmar[11,12] · Radwan Kassir[13] · Sonja Chiappetta[14] · Lorea Zubiaga[15] · Antonio Vitiello[16] · Kamal Mahawar[17] · Miguel Carbajo[18] · Mario Musella[16] · Scott Shikora[19]

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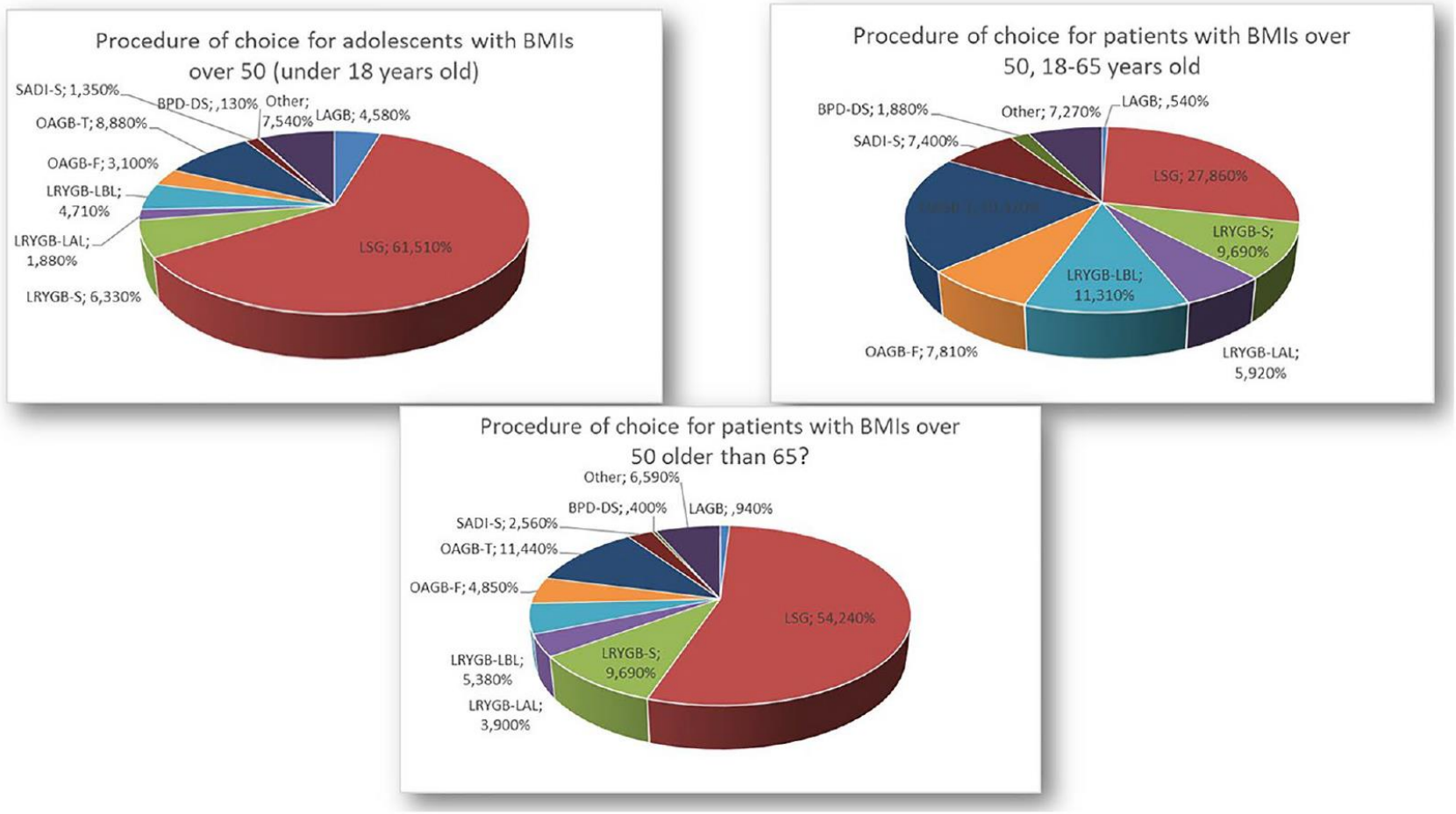
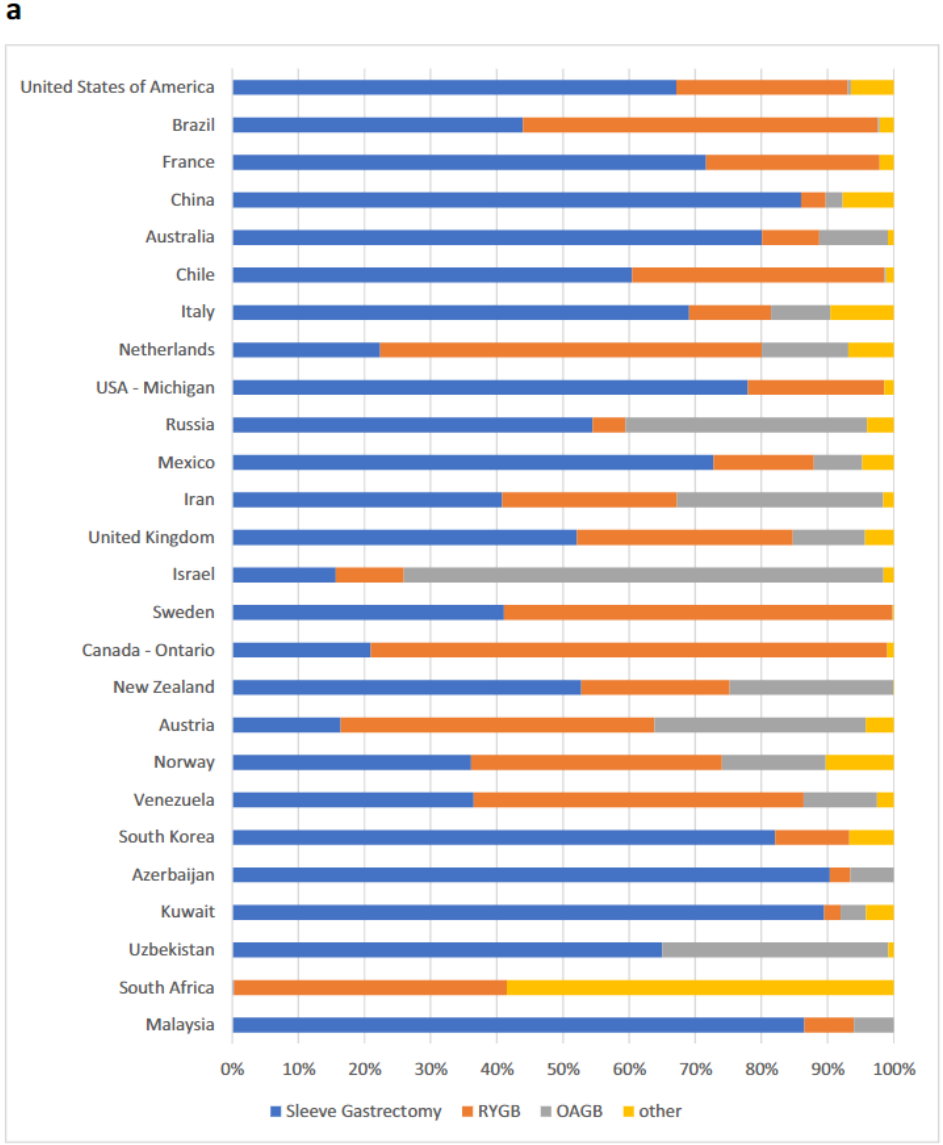
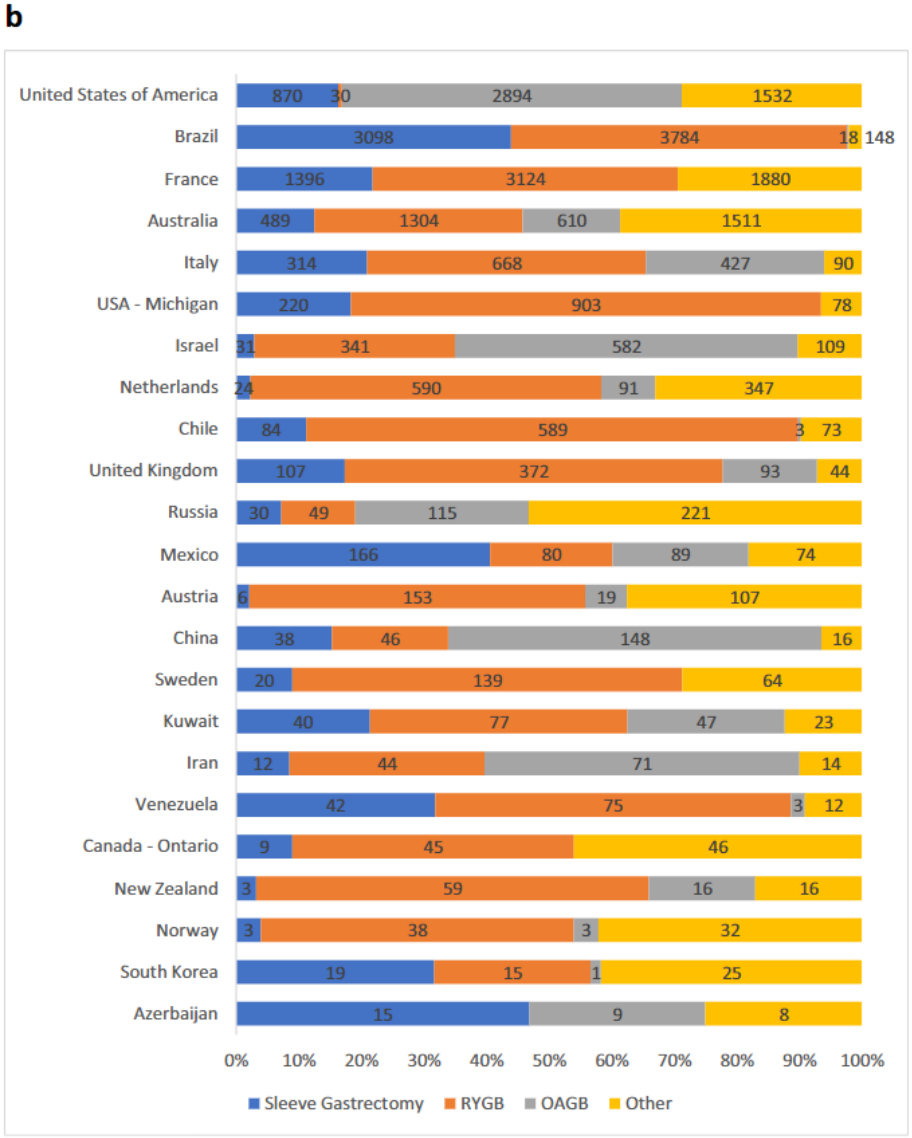


Fig. 1 Procedure of choice for three age categories of patients with BMIs over 50 kg/m2 as reported by the participants of the survey. **A** Under 18 years old, **B** 18 to 65 years old, **and C** older than 65 years old. *LAGB* laparoscopic adjustable gastric banding, *LSG* laparoscopic sleeve gastrectomy, *LRYGB-S* standard Roux-en-Y gastric bypass, *LRYGB-LAL* Roux-en-Y long alimentary limb > 100 cm gastric bypass, *LRYGB-LBL* Roux-en-Y long biliary limb > 150 cm gastric bypass, *OAGB-F* one anastomosis gastric bypass with fixed limb measures, *OAGB-T* one anastomosis Gastric Bypass with tailored limb measures, *SADI-S* single anastomosis duodeno–ileal bypass with sleeve gastrectomy, *BPD-DS* biliopancreatic diversion with duodenal switch





◀ **Fig. 5** **a** Primary MBS types by country or region ($n = 449{,}815$). **b** Revisional MBS types by country or region ($n = 52{,}335$). Malaysia ($n = 1$), Uzbekistan ($n = 5$), and South Africa ($n = 3$) cannot be graphically displayed. The United States of America reported an additional 21,057 revisional cases labelled "revision/conversion" that are not able to be displayed graphically. This means the breakdown of procedures displayed in this graph may not be representative

Brown WA, Liem R, Al-Sabah S, Anvari M, Boza C, Cohen RV, Ghaferi A, Våge V, Himpens J, Kow L, Morton J, Musella M, Pattou F, Sakran N, Clapp B, Prager G, Shikora S; IFSO Global Registry Collaboration. Metabolic Bariatric Surgery Across the IFSO Chapters: Key Insights on the Baseline Patient Demographics, Procedure Types, and Mortality from the Eighth IFSO Global Registry Report. Obes Surg. 2024 May;34(5):1764-1777.

Obesity Surgery (2019) 29:534–541
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ORIGINAL CONTRIBUTIONS

Bariatric/Metabolic Surgery in the Asia-Pacific Region: APMBSS 2018 Survey

Masayuki Ohta[1] · Yosuke Seki[2] · Simon Ki-Hung Wong[3] · Cunchuan Wang[4] · Chih-Kun Huang[5] · Ahmad Aly[6] · Manish Baijal[7] · Salman Al-Sabah[8] · Suthep Udomsawaengsup[9] · Yoon Seok Heo[10] · Saad Sqer Althuwaini[11] · Alper Celik[12] · Nafad El-Hadidi[13] · Davit Sargsyan[14] · Tikfu Gee[15] · Jaideepraj Rao[16] · Errawan R. Wiradisuria[17] · Edward Oliveros[18] · Seigo Kitano[19] · Kazunori Kasama[2]

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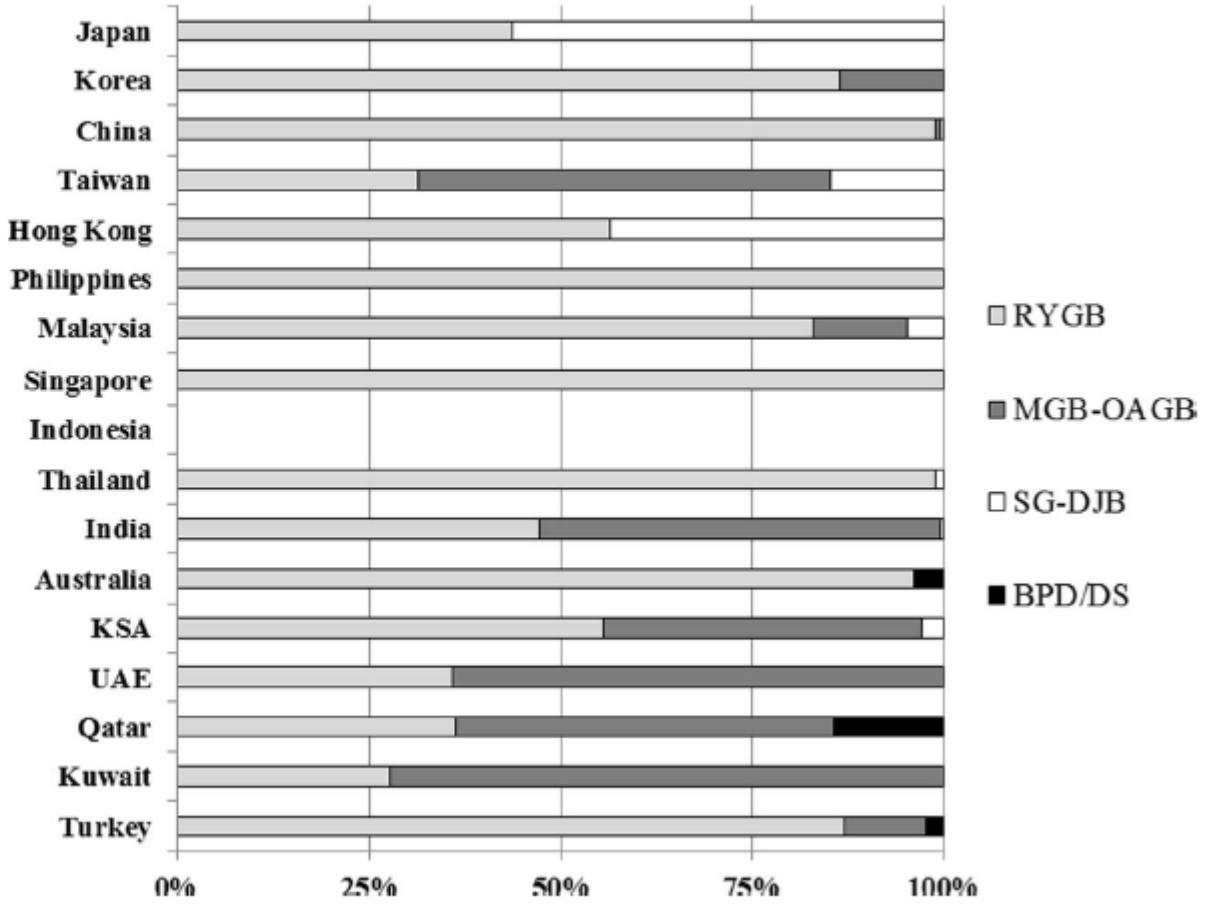

Fig. 1 Percentages of bypass procedures in the category of bypass surgery in the 17 Asia-Pacific countries. KSA, Kingdom of Saudi Arabia; UAE, United Arab Emirates; RYGB, Roux-en-Y gastric bypass; MGB-OAGB, mini gastric bypass–one anastomosis gastric bypass; SG-DJB, sleeve gastrectomy with duodenojejunal bypass; BPD/DS, biliopancreatic diversion/ duodenal switch

Table 3 Number and frequency of bariatric/metabolic surgery in 2017 and percentages of procedure categories

Country	Bariatric/metabolic surgery in 2017			Percentages of procedure categories		
	Total	F/TP	F/OP	SG	Bypass surgery	Others
East Asia	12,808 (13.5%)					
Japan	471	0.0004%	0.0103%	89.8%	6.4%	3.8%
Korea	438 (2016)*	0.0009%	0.0225%	43.6%	13.5%	42.9%
China	8850	0.0006%	0.0131%	61.3%	20.8%	17.9%
Taiwan	2834	0.0120%	0.1803%	65.1%	12.2%	22.7%
Hong Kong	215	0.0029%	0.0930%	77.5%	11.2%	11.2%
Southeast Asia	1741 (1.8%)					
Philippines	55	0.00005%	0.0014%	63.6%	16.4%	20.0%
Malaysia	625	0.0020%	0.0188%	67.5%	23.5%	9.0%
Singapore	428	0.0075%	0.1548%	68.2%	25.7%	6.1%
Indonesia	62	0.00002%	0.0005%	98.4%	0%	1.6%
Thailand	571	0.0008%	0.0108%	56.4%	40.5%	3.1%
South Asia						
India	14,543 (15.3%)	0.0011%	0.0436%	55.0%	41.2%	3.8%
Oceania						
Australia	24,237 (25.5%)	0.0991%	0.4492%	65.9%	10.4%	23.7%
West Asia	41,796 (43.9%)					
KSA	17,000	0.0516%	0.2147%	72.4%	21.2%	6.4%
UAE	6342 (2016)*	0.0675%	0.2586%	70.0%	20.6%	9.4%
Qatar	1454	0.0551%	0.1649%	79.9%	16.6%	3.5%
Kuwait	5000	0.1209%	0.4241%	82.4%#	12.2%#	5.3%#
Turkey	12,000	0.0149%	0.0814%	82.5%	9.3%	8.3%
Total	95,125	0.0027%	0.0571%	68.0%	19.5%	12.5%

F/TP, frequency in total population; *F/OP*, frequency in obese population; *SG*, sleeve gastrectomy

*In Korea and UAE, the data of 2017 were not available, and the data of 2016 were used

In Kuwait, percentages of procedure categories were calculated using 654 patients who received operation in the government hospitals

Obesity Surgery (2022) 32:2994–3004
https://doi.org/10.1007/s11695-022-06182-x

ORIGINAL CONTRIBUTIONS

Ten Years of Change in Bariatric/Metabolic Surgery in the Asia–Pacific Region with COVID-19 Pandemic: IFSO-APC National Reports 2021

Masayuki Ohta[1,2] · Soo Min Ahn[3] · Yosuke Seki[4] · Wah Yang[5] · Simon Kin-Hung Wong[6] · Suthep Udomsawaengsup[7] · Jeffrey M. Hamdorf[8] · Manish Khaitan[9] · Nik Ritza Kosai[10] · Weu Wang[11,12] · June Lee[13] · Reno Rudiman[14] · Thejana Wijeratne[15] · Edward Oliveros[16] · Cunchuan Wang[5] · Kazunori Kasama[4]

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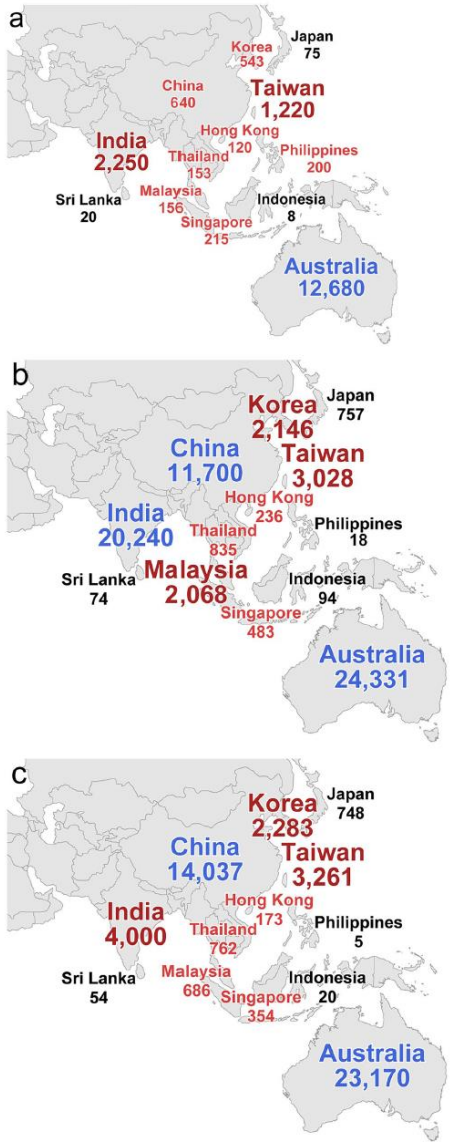

Fig. 3 Changes in the numbers of bariatric/metabolic surgery in 2010 (**a**), 2019 (**b**), and 2020 (**c**)

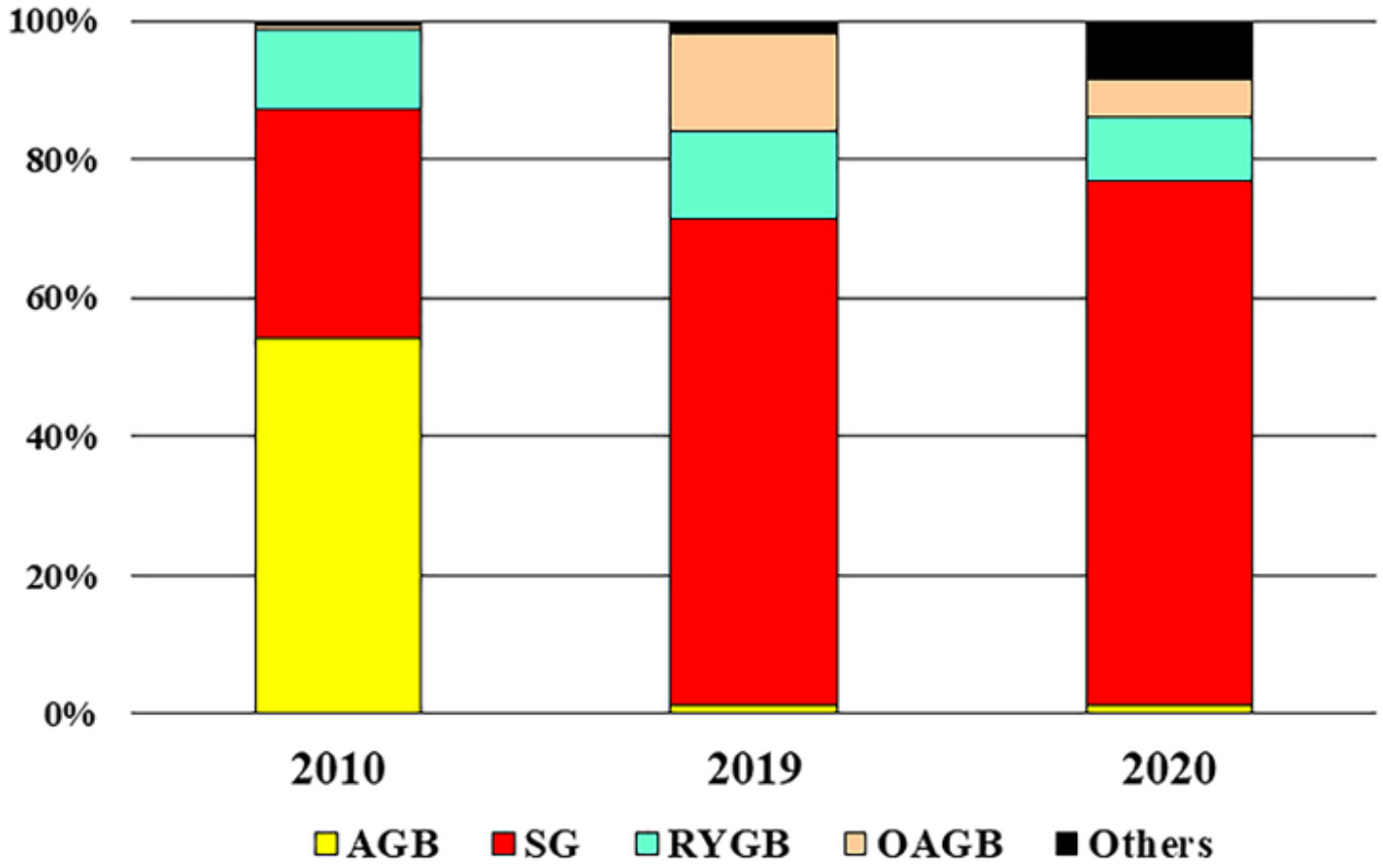

Fig. 4 Percentages of each bariatric/metabolic procedure in 2010, 2019, and 2020. The 2010 data did not include the data of Indonesia and Sri Lanka, and the 2020 data did not include the data of India. AGB, adjustable gastric banding; SG, sleeve gastrectomy; RYGB, Roux-en-Y gastric bypass; OAGB, one anastomosis gastric bypass

Updates in Surgery (2020) 72:743–749
https://doi.org/10.1007/s13304-020-00774-x

ORIGINAL ARTICLE

Trends and progress of bariatric and metabolic surgery in India

Aparna Govil Bhasker[1,2] · Arun Prasad[3] · P. Praveen Raj[4] · Randeep Wadhawan[5] · Manish Khaitan[6] · Abhay Jugal Agrawal[7,8,9,10,11] · Om Tantia[12] · Sarfaraz J. Baig[13] · Raj Palaniappan[14] · H. V. Shivaram[15] · Sumeet Shah[16] · Vandana Soni[17] · Mohit Bhandari[18] · Rakesh Shivhare[19] · Shrihari Dhorepatil[20] · Pradeep Chowbey[21] · Mahendra Narwaria[22] · Shashank Shah[23,24] · Rajesh Khullar[25] · on behalf of the Obesity and Metabolic Surgery Society of India (OSSI)

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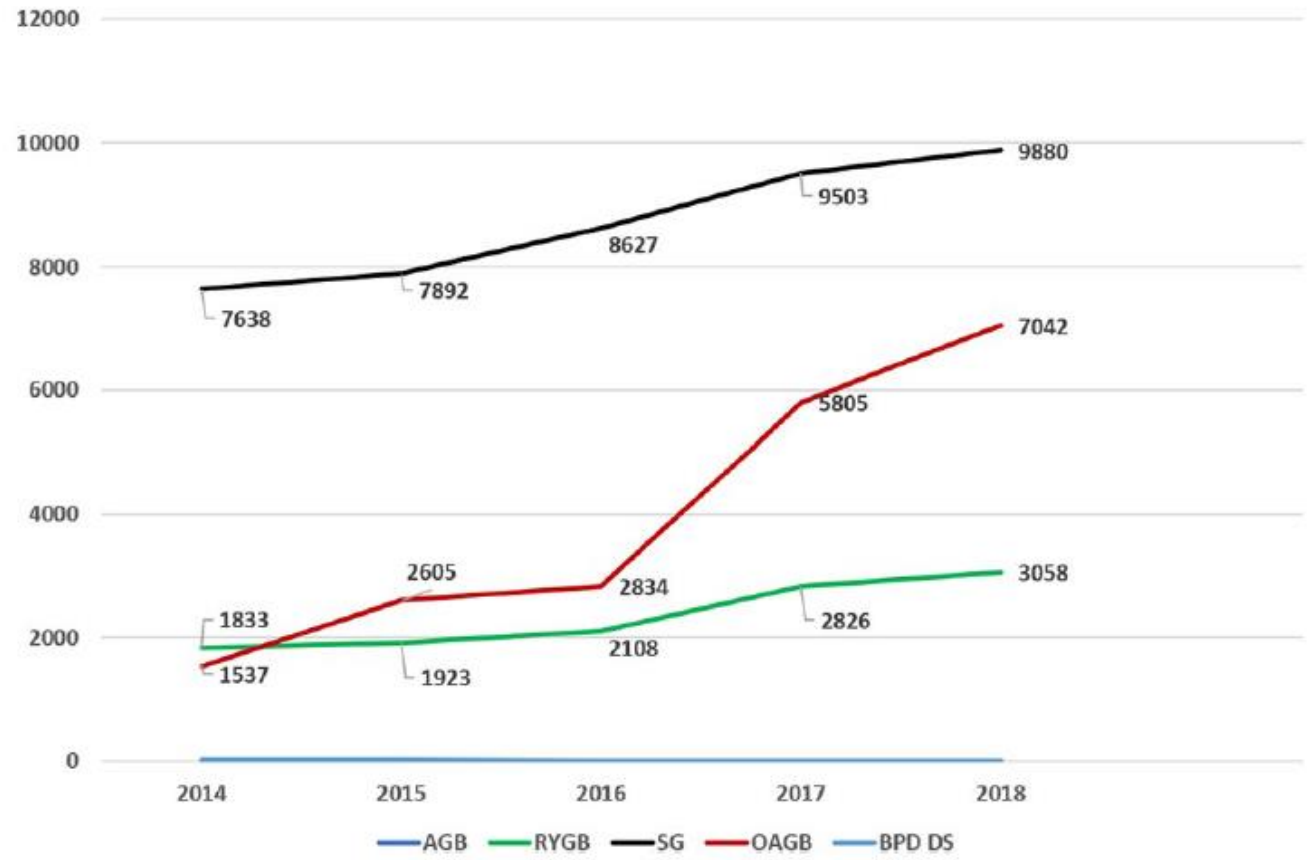

Fig. 2 Number of individual procedures in the last 5 years

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Original article

Bariatric surgery trends and progress in Taiwan: 2010–2021

Kuo-Feng Hsu [a,*,1], Hsin-Mei Pan [a,1], Po-Chih Chang [b,1], Chih-Kun Huang [c], Weu Wang [d], Wei-Jei Lee [e], Tien-Chou Soong [f], Ming-Hsien Lee [g], Po-Jen Yang [h], Ming-Che Hsin [c], Chien-Hua Lin [a,i], Guo-Shiou Liao [a]

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Table 2
Types of primary bariatric surgery procedures in Taiwan (2010–2021).

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
AGB		163	75	45	37	31	19	22	8	2	0	0	0	402 (1.45 %)
OAGB		41	54	120	110	194	217	219	186	213	216	317	548	2435 (8.80 %)
RYGB		612	476	350	170	186	105	91	109	119	119	133	115	2585 (9.34 %)
DS		0	0	0	0	0	0	0	0	0	0	0	0	0
BPD		0	1	0	0	0	1	0	0	0	0	0	0	2
SG		351	522	881	1320	1762	1740	1500	1844	1980	2049	1818	1688	17,455 (63.05%)
SG plus	**SG-DJB**	N/A	14	63	76	101	50	50	62	69	26	8	10	1226 (4.43 %)
	SG-PJB	N/A	N/A	N/A	N/A	N/A	80	60	83	97	100	100	158	
	SASI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19	
GC	**GC only**	N/A	N/A	14	12	2	2	0	4	0	5	1	1	3092 (11.17 %)
	GC-PJB	N/A	N/A	37	422	462	515	434	384	259	215	168	155	
Total Case Number of Primary Bariatric Surgery in Taiwan (2010–2021)												27,684 (100 %)		

AGB = Adjustable Gastric Band; OAGB = One Anastomosis Gastric Bypass; RYGB = Roux-en-Y Gastric Bypass; DS = Duodenal Switch; BPD = Biliopancreatic Diversion; SG = Sleeve Gastrectomy; SG-DJB = Sleeve Gastrectomy with Duodeno-Jejunal Bypass; SG-PJB = Sleeve Gastrectomy with Proximal Jejunal Bypass; GC = Gastric Clipping; GC-PJB = Gastric Clipping with Proximal Jejunal bypass.

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First study on the outcomes of biliopancreatic diversion with duodenal switch in Chinese patients with obesity

Lun Wang, Zheng Zhang, Zeyu Wang and Tao Jiang*

Department of Bariatric and Metabolic Surgery, China-Japan Union Hospital of Jilin University, Changchun, China

TABLE 1 Patient demographics.

Factor	All patients ($n = 12$)
Gender (male/female)	8/4
Mean age (years)	34.00 ± 9.92
Preoperative body weight (kg)	134.92 ± 22.90
Preoperative BMI (kg/m^2)	44.93 ± 9.33
Previous upper abdominal surgery	0
Obesity-related comorbidity	
Type 2 diabetes	7 (58.3%)
Hypertension	12 (100%)
Hyperuricemia	8 (66.7%)

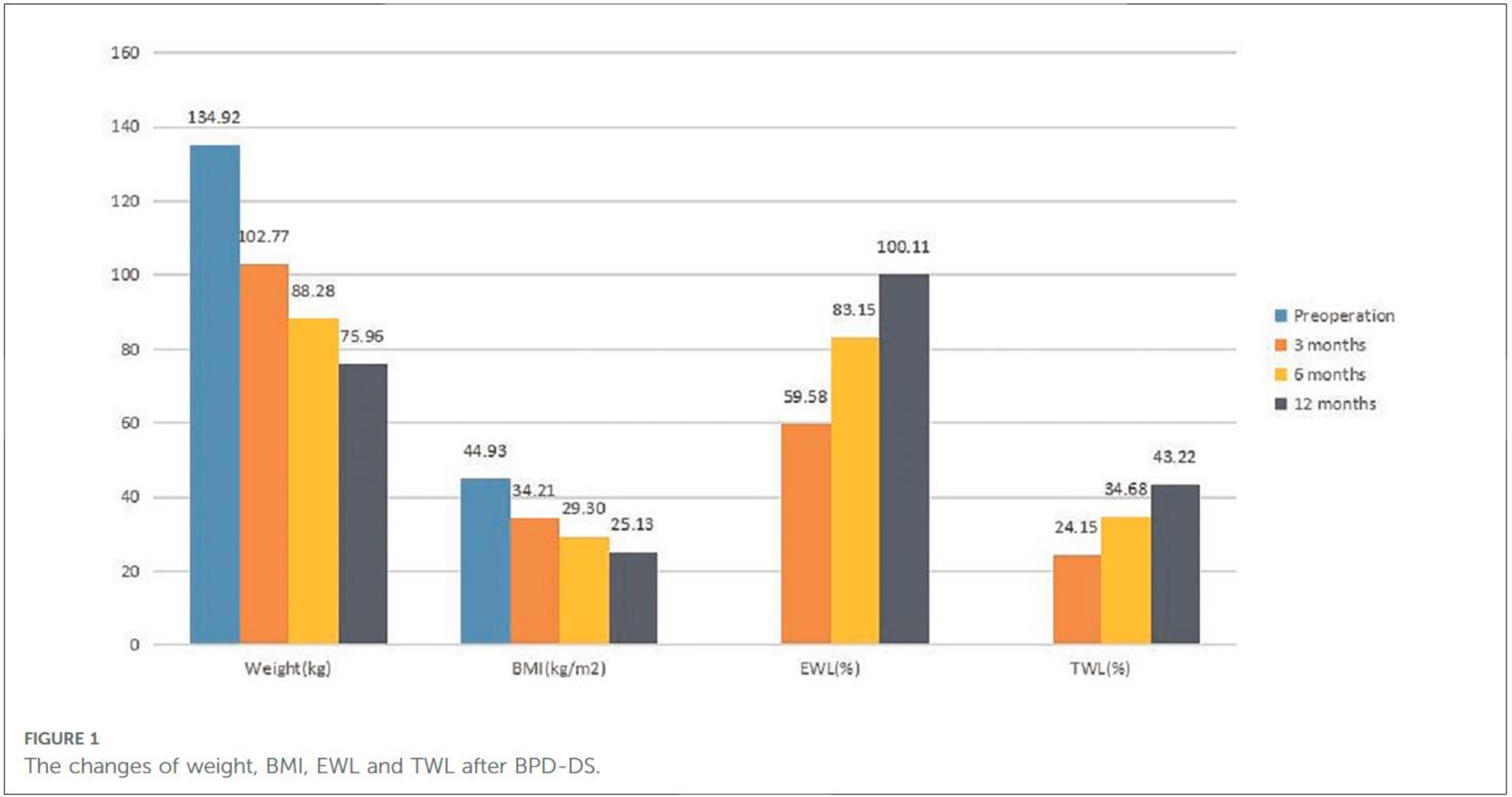

FIGURE 1
The changes of weight, BMI, EWL and TWL after BPD-DS.

TABLE 2 Changes of nutrients' serum levels at 1 year after BPD-DS ($n = 12$).

	Normal range	Nutrients level		Deficiency (n)		P1	P2
		Baseline	1 year	Baseline	1 year		
Total protein (g/L)	62–83	72.40 ± 6.00	67.70 ± 6.54	1	2	0.058	1.000
Prealbumin (mg/L)	180–390	254.97 ± 38.54	213.15 ± 63.87	0	3	**0.049**	0.217
Albumin (g/L)	35–52	42.19 ± 2.55	39.67 ± 4.37	0	2	0.133	0.478
Hemoglobin (g/L)	110–150	151.35 ± 17.50	133.09 ± 14.70	0	1	**0.008**	1.000
Hematocrit (L/L)	0.37–0.48	44.47 ± 3.74	39.86 ± 4.04	0	2	**0.009**	0.478
Vitamin A (μg/ml)	0.38–0.98	0.46 ± 0.14	0.28 ± 0.12	3	7	**0.001**	0.107
Vitamin B12 (pg/ml)	180–916	400.86 ± 204.93	509.71 ± 303.58	0	2	0.345	0.478
Vitamin D (ng/ml)	3–29	12.43 ± 5.15	9.95 ± 5.76	0	0	0.256	—
Vitamin E (μg/ml)	5.7–19.9	12.23 ± 4.34	7.16 ± 2.57	0	6	**0.008**	**0.014**
Folic acid (ng/ml)	≥3.2	17.43 ± 8.33	8.77 ± 4.49	0	1	**0.003**	1.000
Sodium (mmol/L)	136–145	137.58 ± 3.06	140.34 ± 2.89	3	1	**0.021**	0.590
Kalium (mmol/L)	3.5–5.2	4.04 ± 0.38	3.98 ± 0.48	1	1	0.677	1.000
Calcium (mmol/L)	2.1–2.65	2.31 ± 0.15	2.34 ± 0.12	0	1	0.493	1.000
Chloride (mmol/L)	96–108	100.75 ± 3.92	105.79 ± 4.39	1	1	**0.001**	1.000
Phosphorus (μmol/L)	0.81–1.45	1.10 ± 0.23	1.21 ± 0.18	2	0	0.239	0.478
Magnesium (mmol/L)	0.8–1.00	0.82 ± 0.05	0.87 ± 0.10	2	3	0.124	1.000
Iron (μmol/L)	8.9–32.3	16.74 ± 4.09	13.12 ± 3.85	0	2	**0.021**	0.478
Zinc (μmol/L)	11.1–19.5	13.57 ± 1.53	11.17 ± 1.90	0	6	**0.009**	**0.014**

P1 means the comparison of nutrients level at baseline and 1 year after BPD-DS; P2 means the comparison for the rate of nutrients deficiency at baseline and 1 year after BPD-DS.

Bold italic values indicate $P < 0.05$.

scientific reports

OPEN

Analysis of the 1-year efficacy of four different surgical methods for treating Chinese super obese (BMI ≥ 50 kg/m^2) patients

Zheng Zhang, Lun Wang, Zhiqiang Wei, Zhenhua Zhang, Liang Cui & Tao Jiang✉

Factor	RYGB(n = 10)	SG(n = 22)	BPD/DS(n = 14)	SADI-S(n = 14)	F/χ^2	P
Gender (male/female), n	5/5	14/8	9/5	6/8	2.034	0.565
Mean age (years)	34.20 ± 10.16	31.55 ± 8.66	33.07 ± 7.07	27.07 ± 5.88	1.967	0.129
Preoperative body weight (kg)	161.75 ± 18.8	162.16 ± 16.78	161.3 ± 16.41	159.61 ± 17.21	0.066	0.978
Preoperative BMI (kg/m^2)	55.20 ± 3.42	52.87 ± 2.63	54.76 ± 3.61	53.34 ± 3.36	1.792	0.159
HbA1c (%)	7.16 ± 1.86	6.66 ± 1.88	6.94 ± 1.08	6.24 ± 1.30	0.681	0.568
Systolic blood pressure (mmHg)	160.00 ± 29.20	153.77 ± 18.24	154.86 ± 36.55	149.50 ± 13.94	0.354	0.787
Diastolic blood pressure (mmHg)	90.30 ± 22.29	90.45 ± 13.02	90.79 ± 17.03	89.64 ± 15.53	0.012	0.998
Uric acid (μmol/L)	457.70 ± 109.17	460.24 ± 99.19	506.60 ± 157.42	531.51 ± 106.98	1.171	0.331
Triglyceride (mmol/L)	2.47 ± 1.57	2.23 ± 1.62	2.03 ± 0.58	1.69 ± 0.61	0.804	0.497
Total cholesterol (mmol/L)	4.73 ± 1.22	4.91 ± 0.90	5.65 ± 0.96	5.51 ± 1.56	2.096	0.112
With type 2 diabetes, n	5 (10)	5 (17)	7 (13)	4 (13)	2.716	0.437
With hypertension, n	6 (10)	17 (22)	9 (14)	11 (14)	1.822*	0.680
With hyperuricemia, n	7 (10)	15 (21)	8 (12)	11 (12)	2.610*	0.497
With hyperlipidemia, n	6 (10)	12 (22)	10 (14)	4 (12)	3.908	0.272
With hypercholesterolemia, n	2 (10)	3 (22)	6 (14)	3 (12)	3.923*	0.275

Table 1. Patient characteristics before surgery. *Fisher's precision probability test used wherever appropriate.

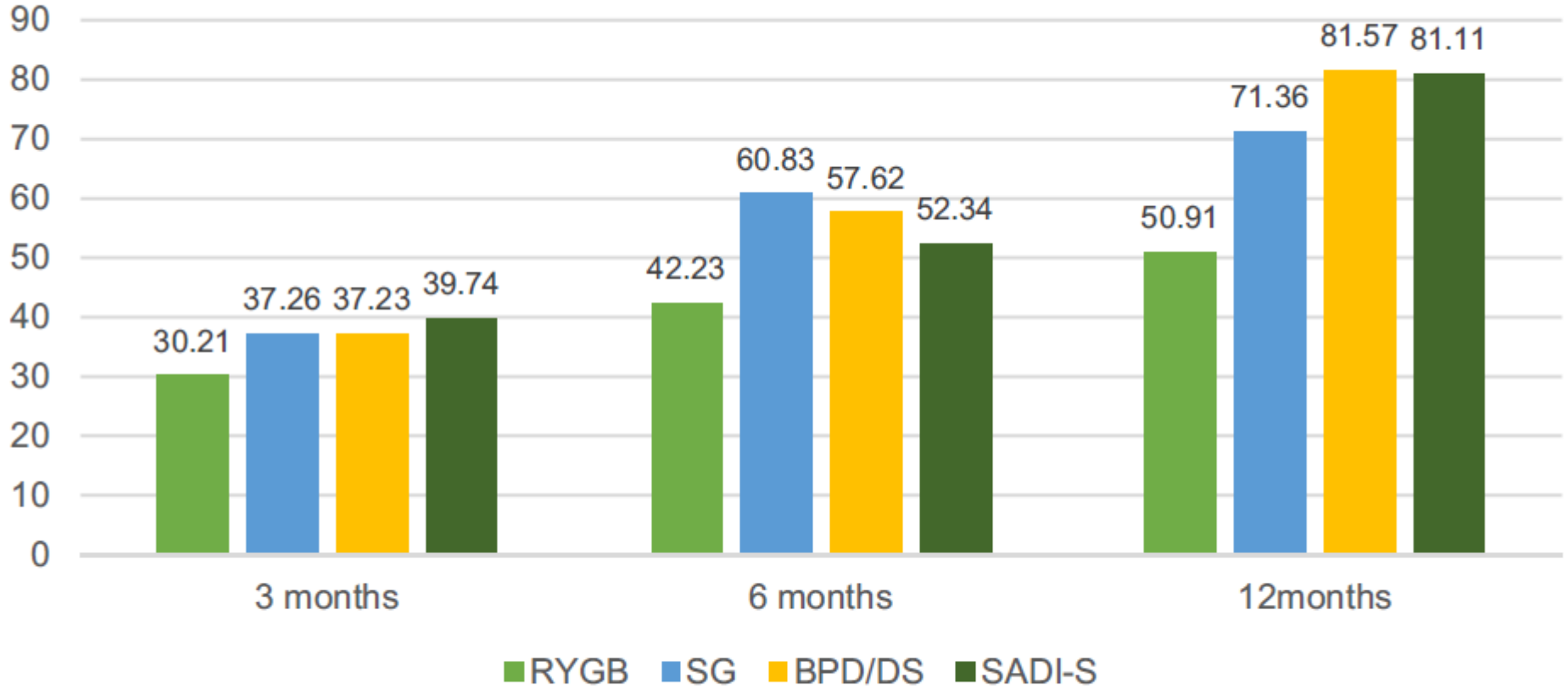

Figure 1. Changes in %EWL at 3, 6, and 12 months in different surgical groups.

Factor	RYGB (n = 10)	SG (n = 22)	BPD/DS (n = 14)	SADI-S (n = 14)	F	P
Operation time (min)	202.22 ± 47.97	133.44 ± 35.15	283.07 ± 45.06	206.08 ± 25.60	37.590	0.000
Length of hospital stay (day)	10.67 ± 5.87	10.81 ± 4.31	8.00 ± 3.49	8.38 ± 2.99	1.702	0.179
Complications, n	2	0	1	0	–	–
Complication rate (%)	20	0	7.14	0	–	–

Table 2. Perioperative parameters of RYGB, SG, BPD/DS, and SADI-S.

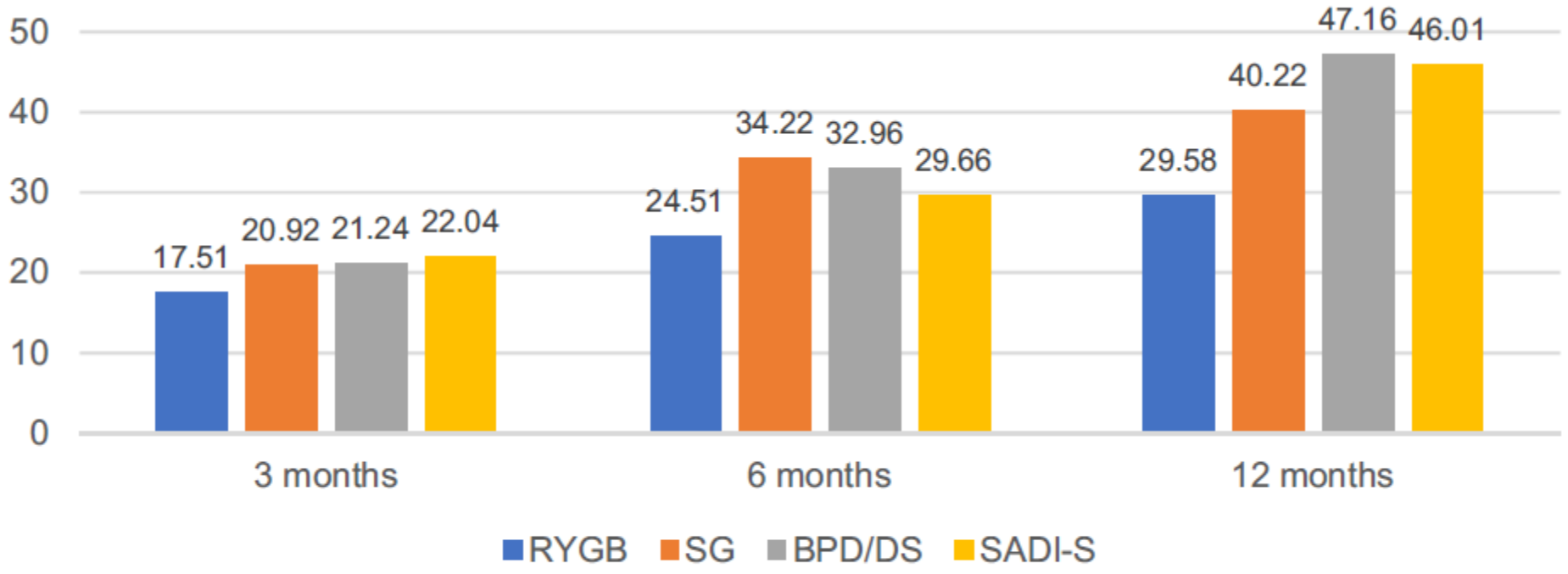

Figure 2. Changes in %TWL at 3, 6, and 12 months in different surgical groups.

Factor	RYGB			SG			BPD/DS			SADI-S		
	12 months	t	P	12 months	t	P	12 months	t	P	12 months	t	P
HbA1c (%)	5.53 ± 0.41	1.699	0.115	5.14 ± 0.29	1.766	0.093	4.64 ± 0.26	7.484	0.000	4.833 ± 0.40	1.944	0.072
SBP (mmHg)	129.00 ± 19.44	1.934	0.077	127.29 ± 12.58	2.195	0.035	120.00 ± 17.88	2.649	0.015	109.85 ± 14.78	6.025	0.000
DBP (mmHg)	75.25 ± 8.22	1.289	0.222	81.29 ± 10.79	4.751	0.000	73.33 ± 11.93	2.672	0.014	64.43 ± 9.55	3.911	0.001
Uric acid (μmol/L)	389.40 ± 61.79	1.545	0.147	379.80 ± 93.26	2.628	0.013	352.81 ± 72.23	2.591	0.020	373.68 ± 76.06	3.760	0.001
Triglyceride (mmol/L)	1.28 ± 0.41	1.469	0.168	1.03 ± 0.38	3..310	0.003	1.19 ± 0.36	3.882	0.001	1.04 ± 0.75	2.166	0.043
Total cholesterol (mmol/L)	4.17 ± 0.58	0.858	0.408	4.92 ± 0.84	− 0.053	0.958	3.50 ± 0.23	8.050	0.000	3.66 ± 0.79	3.543	0.02

Table 4. Comparison of remission of metabolic diseases related to SG, RYGB, BPD, and SADI at 12 months after and before the operation.

	Total protein (g/L)	Albumin (g/L)	Hemoglobin (g/L)	Folate (ng/mL)	Vitamin B12 (pmol/L)	Calcium (mmol/L)	Iron (μmol/L)	Zinc (μmol/L)
Normal range	62–83	35–52	110–150	> 3.2	180–916	2.10–2.55	8.9–32.3	11.1–19.5
RYGB								
Baseline	74.00 ± 5.87	42.50 ± 3.03	143.50 ± 25.16	20.14 ± 12.66	280.11 ± 73.34	2.28 ± 0.10	14.56 ± 7.74	13.59 ± 3.89
12 months	72.20 ± 1.30	42.14 ± 1.28	140.20 ± 15.94	30.20 ± 13.30	219.22 ± 81.59	2.30 ± 0.06	20.20 ± 8.63	13.44 ± 2.94
t	0.925	0.251	0.265	−1.070	1.433	− 3.65	− 0.858	0.060
P	0.375	0.806	0.795	0.326	0.177	0.722	0.517	0.953
SG								
Baseline	71.14 ± 3.43	42.21 ± 2.38	152.70 ± 17.03	15.78 ± 8.68	370.18 ± 119.37	2.26 ± 0.08	13.86 ± 5.56	14.11 ± 2.20
12 months	70.24 ± 4.79	41.01 ± 2.37	141.00 ± 17.13	15.30 ± 8.92	251.20 ± 107.15	2.31 ± 0.11	22.27 ± 6.14	13.42 ± 1.38
t	0.648	1.442	1.967	0.157	2.980	− 1.638	− 3.810	0.913
P	0.522	0.159	0.058	0.876	0.005	0.111	0.001	0.369
BPD/DS								
Baseline	72.17 ± 5.13	41.70 ± 3.43	150.00 ± 11.39	9.16 ± 4.06	311.37 ± 105.80	2.33 ± 0.15	17.01 ± 4.67	14.72 ± 1.86
12 months	67.32 ± 8.80	37.74 ± 8.87	130.70 ± 23.73	8.76 ± 4.94	414.56 ± 432.66	2.29 ± 0.20	11.92 ± 4.82	10.63 ± 3.01
t	1.554	1.336	2.370	0.214	− 0.737	0.454	2.556	4.017
P	0.143	0.208	0.035	0.833	0.478	0.655	0.018	0.001
SADI-S								
Baseline	73.79 ± 6.31	40.08 ± 4.05	143.69 ± 17.90	13.87 ± 8.01	349.89 ± 146.16	2.38 ± 0.14	18.31 ± 10.37	15.10 ± 3.21
12 months	68.37 ± 7.49	38.92 ± 5.66	135.78 ± 16.36	7.39 ± 6.73	577.48 ± 385.64	2.35 ± 0.11	13.39 ± 4.59	11.24 ± 1.43
t	1.711	0.520	1.016	1.897	− 1.737	0.502	1.308	3.321
P	0.105	0.610	0.323	0.075	0.100	0.622	0.208	0.004

Table 5. Comparison of the nutritional indicators of SG, RYGB, SADI, and BPD-DS at 1 year after and before the operation.

Conclusion

- Limited evidence on BPD for Asian Patients with BMI>50kg/m2
- BPD improved Weight Loss and Metabolic conditions
- Nutrtional deficiencies are more common in BPD in Asian patients

Thank You.