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XXIX IFSO World Congress

1-4 September 2026 | Toronto, Canada

ROBOTIC METABOLIC BARIATRIC SURGERY IN PATIENTS WITH SEVERE OBESITY

TORONTO2026

The Future of Obesity Management:
From Weight Loss to Health Gain

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DISCLOSURE SLIDE

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	No, nothing to disclose
X	Yes, please specify

Company Name	Honoraria / Expenses	Consulting / Advisory Board	Funded Research	Royalties / Patent	Ownership / Equity Position	Employee	Other
Sysmex		x					
Johnson & Johnson		x					

SEVERE OBESITY CHANGES THE MECHANICS OF LAPAROSCOPY

In patients with severe obesity, the abdominal wall becomes a mechanical constraint at the trocar, not just an access problem.

1

Thicker abdominal wall

Longer tissue tunnel and a more restrictive fulcrum for laparoscopic instruments.
Difficult to insert and reposition instruments

2

More force / Less feel

Mechanical modeling links increased wall thickness with reduced tactile sensitivity and higher force required to move the instrument tip.

3

Trocar geometry / Insertion angle

Port location and angle become critical
In bariatric cases, xiphoid-based placement avoids relying on a variable umbilicus.

Robotic platforms may mitigate abdominal-wall–related instrument torque while providing surgeon-controlled visualization, wristed instrumentation, and greater dexterity in patients with difficult body habitus.

Robinson et al., 1998; Vilallonga et al., 2013; Scerbo et al., 2020; Bevilacqua et al., 2024.

HOW ROBOTICS OVERCOMES CHALLENGES

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Eliminating Abdominal Wall Torque

- Remote Center of Motion (RCM): a fixed pivot set precisely at the muscular abdominal wall
- Rigid arms absorb the fat tissue's weight and counter-forces, so the surgeon operates without fighting the patient's body mass

Overcoming the Thick Fatty Liver

- Locked-in mechanical retractors lift the enlarged liver clear of the sleeve area
- Zero drift: perfectly still, continuous retraction for hours keeps the surgical window fully open

Precise Dissection & Stapling

- Wristed tips rotate up to 540° to reach behind thick fat; tremor filtering and motion scaling refine every move
- Smart staplers sense tissue thickness in real time for a uniform, leak-resistant seam

Maximizing Visual Detail

- 3D high-definition, magnified console view replaces the flat 2D monitor
- Reveals fine vessels and tissue planes hidden deep within thick adipose tissue

ROBOTIC BARIATRIC SURGERY

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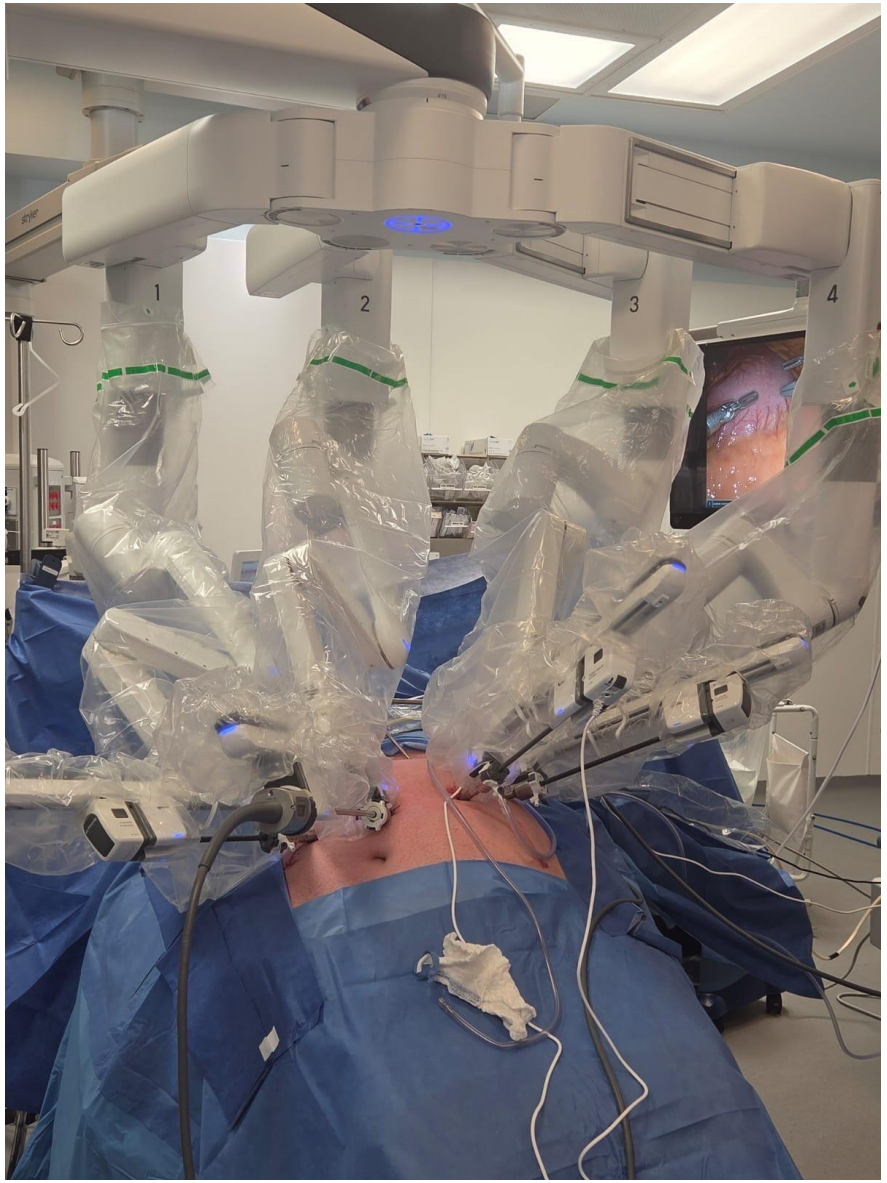
- Standard approach in USA
- Sleeve, Gastric Bypass, revisional surgery, DS
- In Canada, laparoscopic approach is still the gold standard but there may be role for use of robot in Extreme obesity (BMI>60 kg/m²)

SIZE OF PATIENTS LESS OF AN ISSUE WITH ROBOTIC USE



SLEEVE GASTRECTOMY: FIRST STAGE IN A TWO STAGED DUODENAL SWITCH

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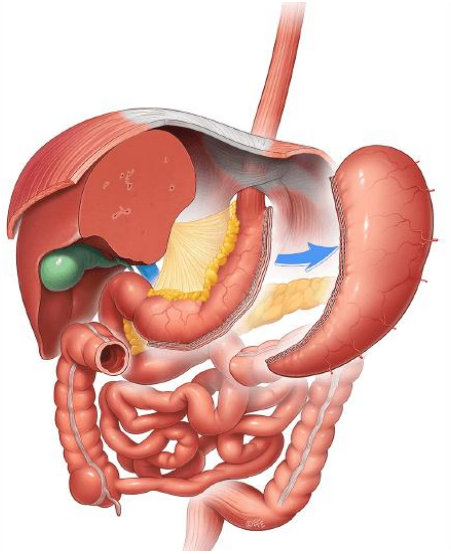
Pathophysiology & Mechanism of Action

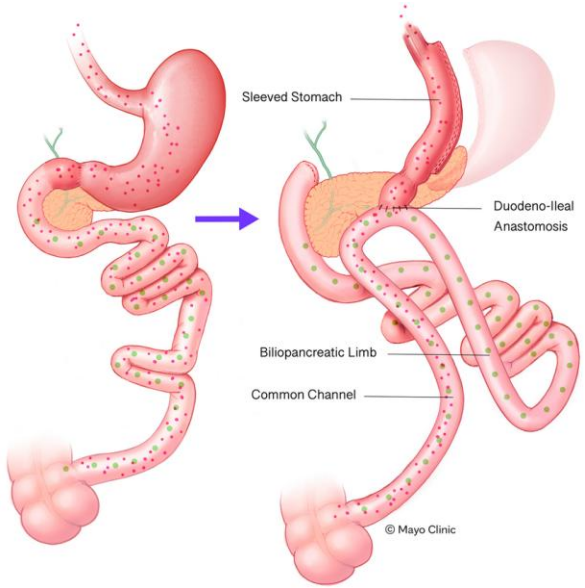


Restrictive Component

- Removal of ~75–80% of the stomach along the greater curvature
- Reduced gastric reservoir → early satiety

Hormonal & Metabolic Effects

- Decreased ghrelin production (fundus resection)
- Improved insulin sensitivity
- Enhanced GLP-1 and PYY response
- Rapid improvement in T2DM, often before significant weight loss



ROBOTIC SLEEVE GASTRECTOMY IN BMI ≥60 kg/m²

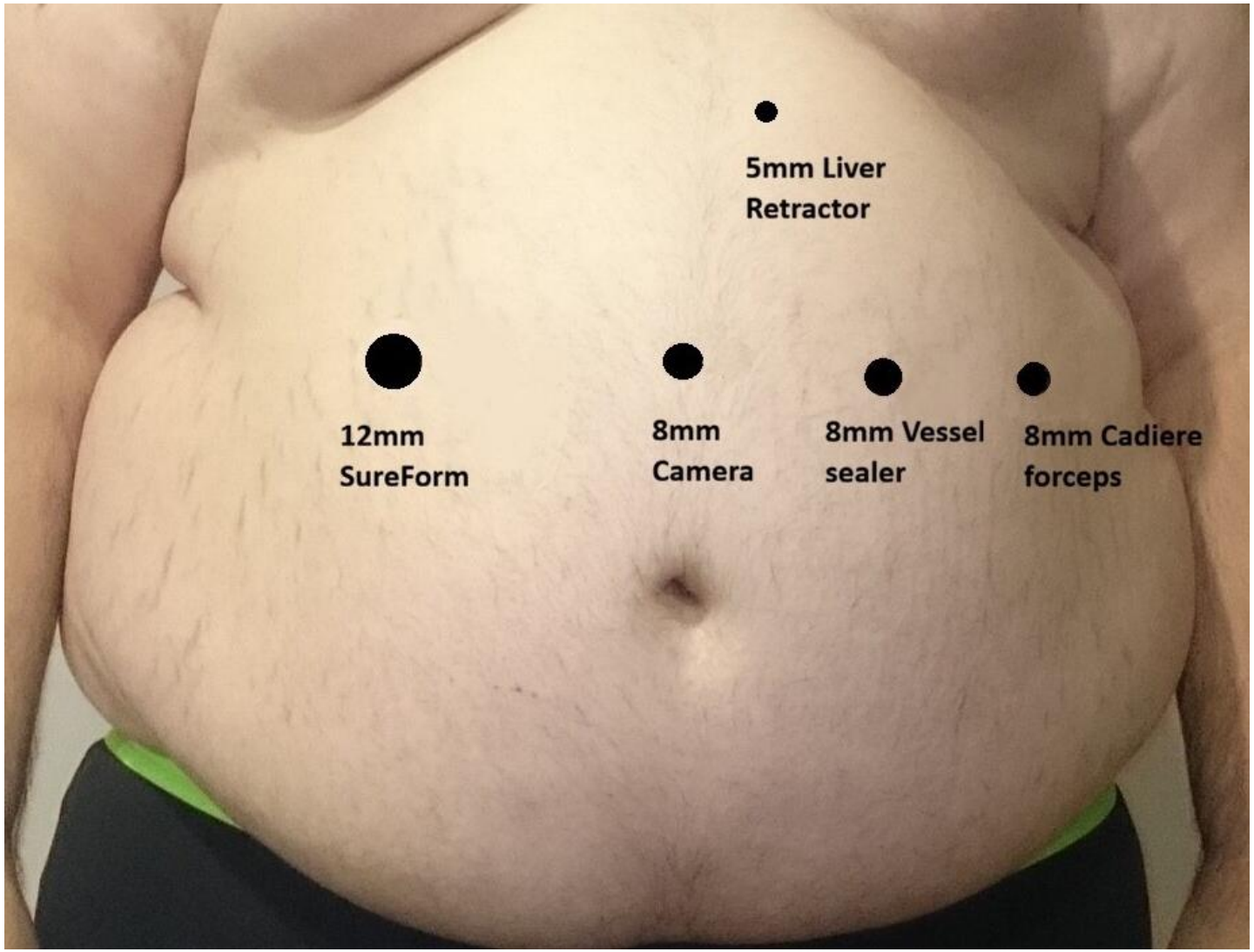
Propensity-matched analysis: 4,370 patients

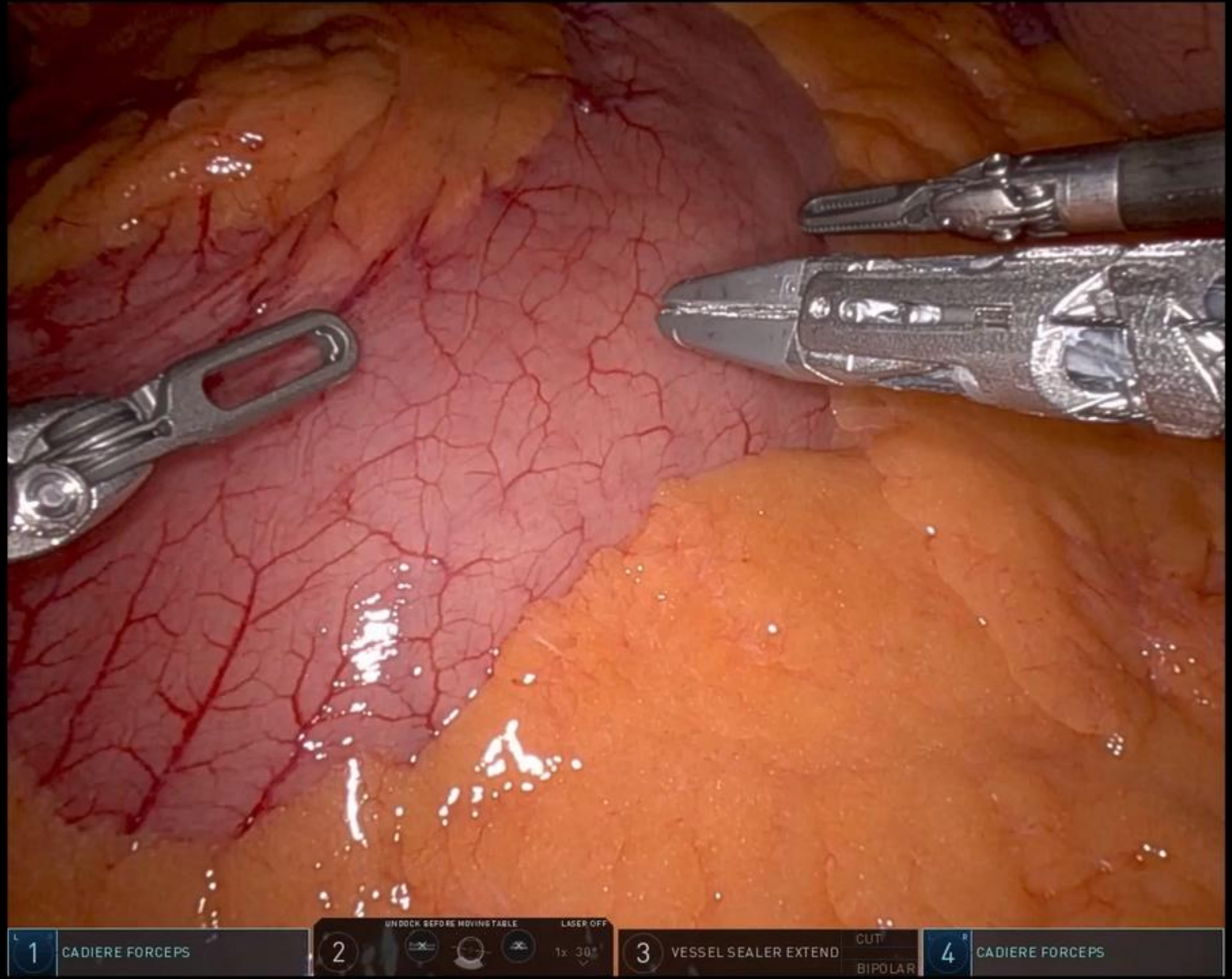
30-day outcome	Robotic SG	Laparoscopic SG	p-value
Readmission	**2.9%**	3.7%	**0.037**
Staple-line leak	**0.1%**	0.3%	**0.029**
Postoperative bleeding	**0.1%**	0.3%	**0.045**
Operative time	92.7 ± 38.7 min	**71.7 ± 37.5 min**	**<0.001**

In patients with BMI ≥60 kg/m², robotic SG may offer a perioperative safety advantage over laparoscopic SG, with fewer leaks, bleeding events, and readmissions, but longer operative time.

Zevallos A, Cornejo J, Brown J, et al. *A superior approach? The role of robotic sleeve gastrectomy in patients with super super obesity using the 2019–2022 MBSAQIP database.* Surgical Endoscopy. 2024;38(8):4594–4603

PORT PLACEMENT




UNDOCK BEFORE MOVING TABLE
LASER OFF
1x 30°
L
1
CADIERE FORCEPS
2
3
VESSEL SEALER EXTEND
CUT
BIPOLAR
R
4
CADIERE FORCEPS

FIRST CASES OF ROBOTIC SLEEVE GASTRECTOMY at ST. JOSEPH'S HEALTHCARE HAMILTON

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Baseline characteristics

Characteristic	Overall (N = 52)
Demographics and anthropometrics	
Age, years	39.2 ± 12.4
Sex, n (%)	
Male	15 (28.8)
Female	37 (71.2)
Height, cm	166.9 ± 9.9
Weight, kg	185.7 ± 27.8
BMI, kg/m²	66.4 ± 6.3

Data are presented as mean ± standard deviation or n (%).

Baseline comorbidities	
Musculoskeletal pain	11 (21.2)
Angina, heart failure, or myocardial infarction	3 (5.8)
Hypertension	22 (42.3)
Hyperlipidemia	11 (21.2)
Stroke or transient ischemic attack	1 (1.9)
Deep vein thrombosis or pulmonary embolism	4 (7.7)
Gastroesophageal reflux disease	16 (30.8)
Chronic lung disease	16 (31.4)
Renal disease	0 (0.0)
Obstructive sleep apnea	25 (48.1)
CPAP/BPAP use among patients with OSA*	18/25 (72.0)
Diabetes mellitus	11 (21.2)
Diabetes type, n (%)	
No diabetes	41 (78.8)
Type 1 diabetes	2 (3.8)
Type 2 diabetes	9 (17.3)
HbA1c, %	6.3 ± 1.2

**CPAP/BiPAP use is reported among patients with obstructive sleep apnea.*

LENGTH OF STAY AND 30-DAY OUTCOMES

Outcome	Result
Length of stay, days, mean ± SD	1.2 ± 0.3
Length of stay, days, median [IQR]	1.2 [1.1–1.3]
Any adverse event	0/52 (0.0)
Conversion to open / lap	0/52 (0.0)
Leak	0/52 (0.0)
Bleeding	0/52 (0.0)
Readmission	0/52 (0.0)
Reoperation	0/52 (0.0)
Mortality	0/52 (0.0)

Thirty-day outcomes demonstrated no morbidity, leaks, readmissions, reoperations, or mortality.

*Continuous data are presented as mean ± standard deviation (SD) or median [interquartile range (IQR)]; categorical outcomes presented as n/N (%). *Adverse event was due to emergency department visit for postoperative pain, with negative workup.*

TOTAL WEIGHT LOSS AT 1 MONTH POSTOPERATIVELY

Outcome	Baseline	1 month	Change	p-value
Weight, kg	178.5	159.6	-22.0	**<0.001**
BMI, kg/m²	64.7	57.2	-7.4	**<0.001**

Percent total weight loss (%TWL) is presented as median [interquartile range]. p-values reflect paired baseline-to-1-month comparisons. Two-sided $p < 0.05$ was considered statistically significant.

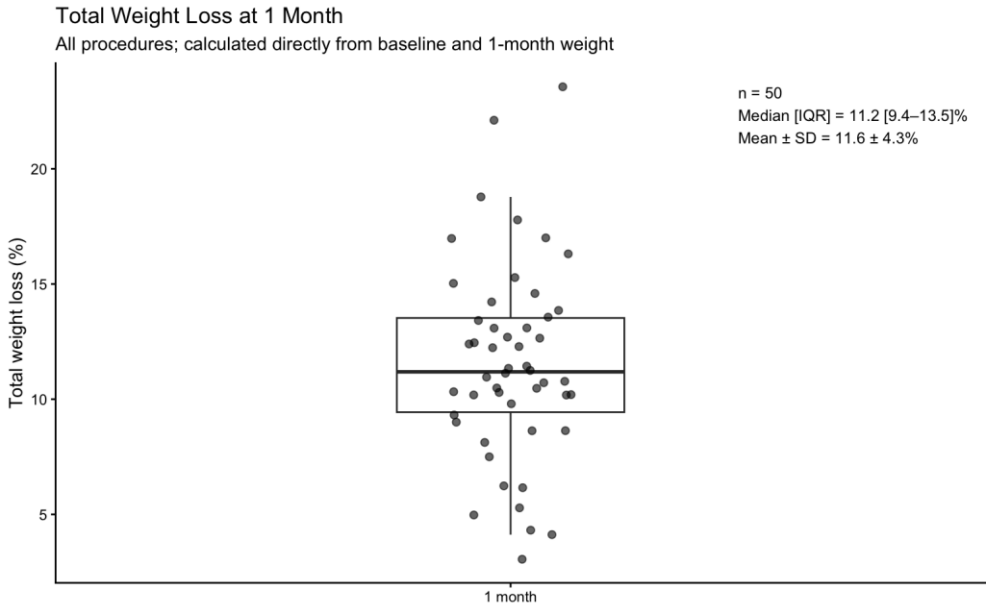


Figure 1. Distribution of % Total weight loss at 1 month

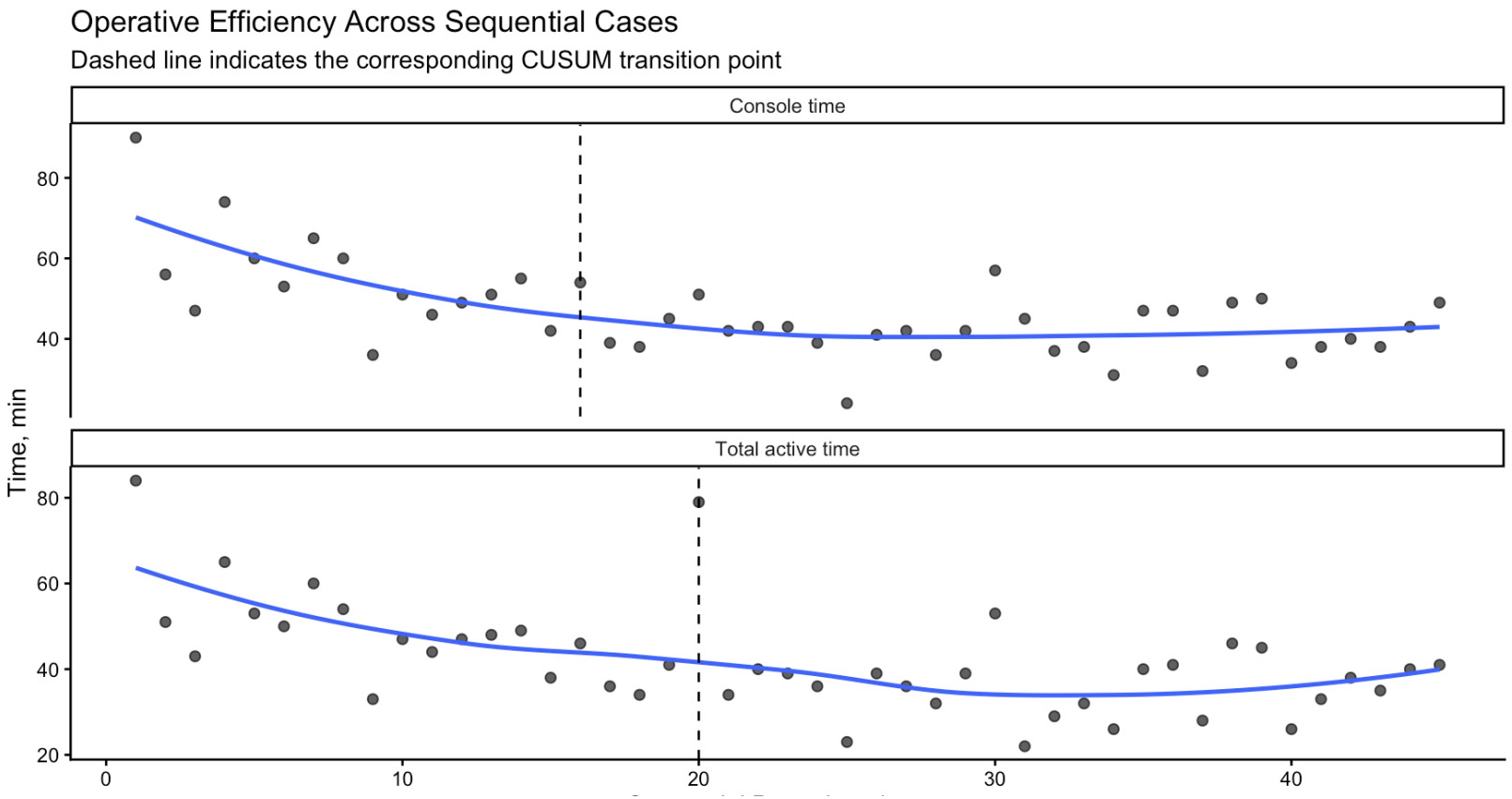
- Mean total weight loss: 11.0%
- Median total weight loss of 11.2%

OPERATIVE TIME CHARACTERISTICS

Procedure	Cases, n	Total active time		Console time		
		n	Mean ± SD, min	Median [IQR], min	n	Mean ± SD, min	Median [IQR], min
Overall	**52**	**52**	**43.4 ± 13.6**	**40.5 [35.0–48.2]**	**52**	**48.2 ± 13.5**	**45.5 [39.0–53.0]**
RSG	45	45	42.1 ± 12.7	40.0 [34.0–47.0]	45	46.4 ± 11.5	45.0 [39.0–51.0]
RSG + Hiatal Hernia Repair	2	2	59.0 ± 4.2	59.0 [57.5–60.5]	2	69.0 ± 7.1	69.0 [66.5–71.5]
RSG + Lysis of Adhesions	5	5	49.0 ± 20.5	41.0 [38.0–46.0]	5	55.4 ± 22.9	49.0 [41.0–53.0]

Robotic Sleeve Gastrectomy (RSG). Values are presented as mean ± standard deviation (SD) and median [interquartile range (IQR)].

LEARNING CURVE



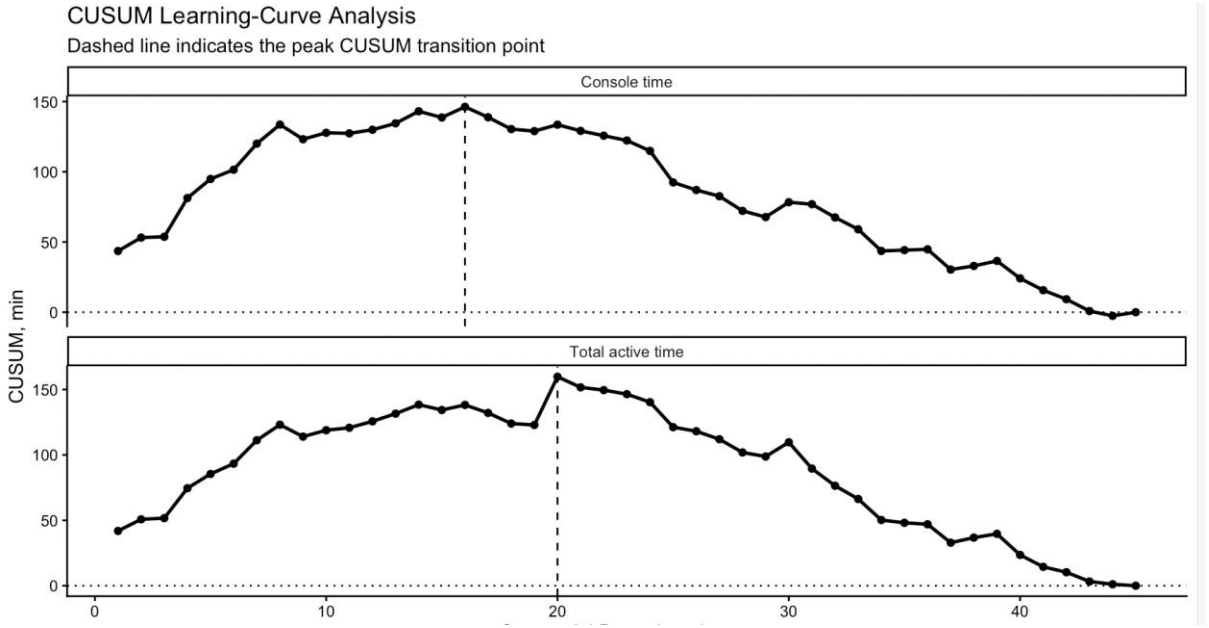
Total active time and console time are plotted against sequential case number.

Both measures demonstrated a downward trend across successive cases.

Learning curve analysis was restricted to 45 patients undergoing robotic sleeve gastrectomy and were ordered chronologically by date and time of surgery. Patients that underwent robotic sleeve gastrectomy with hiatal hernia repair or lysis of adhesions were excluded.

CUSUM LEARNING-CURVE ANALYSIS

Operative metric	Cases analyzed, n	CUSUM reference value, min	Transition case
Console time	45	46.4	16
Total active time	45	42.1	20

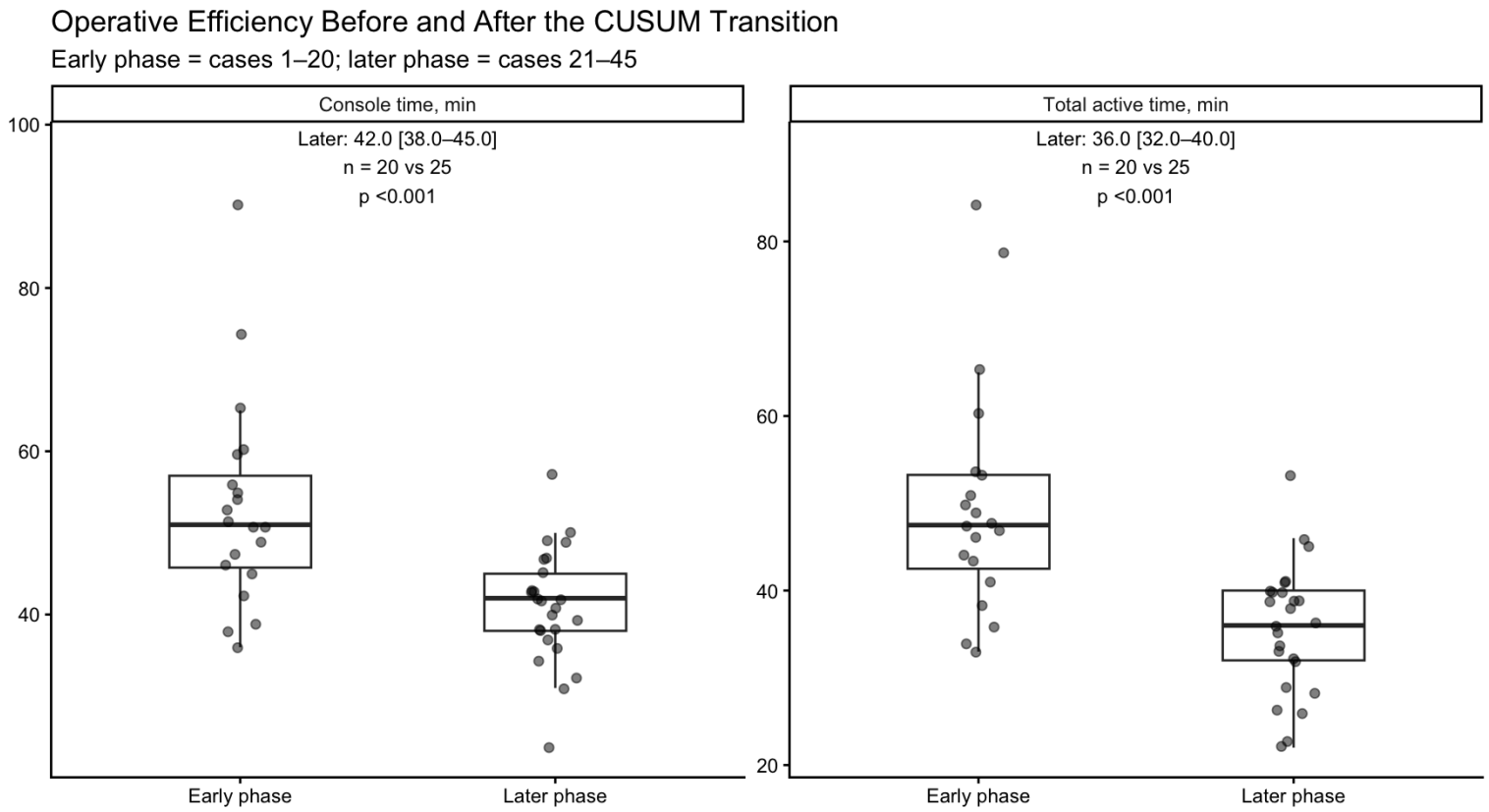


The CUSUM curve maximum:

- Case 16 for console time
- Case 20 for total active time

Total active time was used as the primary learning-curve endpoint and defined cases 1–20 as the early phase and cases 21–45 as the later phase.

OPERATIVE EFFICIENCY BEFORE AND AFTER CUSUM-DEFINED TRANSITION



Between-phase comparisons were performed using the Wilcoxon rank-sum test. Two-sided $p < 0.05$ was considered statistically significant.

Median console time decreased from 51.0 to 42.0 minutes (p<0.001).

Median total active time from 47.5 to 36.0 minutes in the later phase (p<0.001)

Summary

- Patients with BMI ≥60 kg/m²: robotic approach overcomes technical limitations
- Provides safe, fast and effective method for surgical approach in super obese patients
- Teaching institutions: dual-console enables proctored training without compromising safety

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24-27 August 2027

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