Using video-based assessment (VBA) to document fellow improvement in safely completing the jejunojejunostomy (JJ) portion of laparoscopic Roux-en-Y gastric bypass (RYGB) surgery.

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BACKGROUND

- Variation in bariatric surgical outcomes is common, even among surgical centers of excellence.
- The technical skill of bariatric surgeons varies widely and is associated with postoperative outcomes variation, including surgical site infection, readmissions, length-of-stay, and mortality.
- Current evidence supports the value of video-based assessment during surgical training.

OBJECTIVES

- To evaluate changes in surgical skill acquisition and safe completion of 12 tasks required to complete the jejunojejunostomy (JJ) portion of laparoscopic Roux-en-Y gastric bypass (RYGB) surgical procedure by a bariatric surgery fellow.

METHODS

- De-identified videos of the first 17 consecutive RYGB surgeries completed between August 2021 and January 2022 by a single fellow at an academic teaching hospital were assessed by four board-certified, fellowship-trained bariatric surgeons using a novel objective procedure-specific assessment (OPSA RYGB – Table 1).
- Surgeon raters independently completed the Global Operative Assessment of Laparoscopic Skills (GOALS), the General Assessment of Surgical Skill (GASS – Table 1), and the RYGB OPSA for each operative video.
- RYGB OPSA and GASS item scores include: “poor” (score =1, unsafe), “acceptable” (score = 2, safe), or “good” (score =3, safe).
- Outcomes of interest included:
  - Inter-rater reliability measured by total agreement and Gwet’s AC_2. Total agreement is the ratio of raters that agreed on case safety. A score of 100% required each of the four board-certified raters to score identically. Gwet’s AC_2 is a measure of test-retest reliability that adjusts for random agreement between observations.
  - Performance improvement measured by a linear trendline of average scores for each item in the GOALS, GASS, and RYGB OPSA instruments.
  - % of individual RYGB OPSA and GASS items rated as unsafe

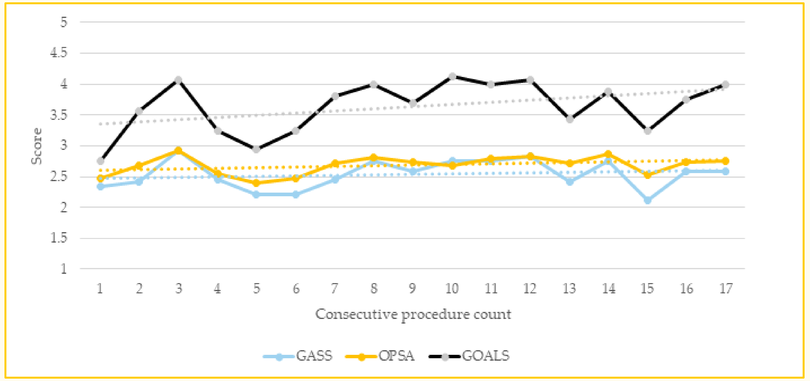
RESULTS

Table 1. Test for Trend across the 17 Consecutive Operative Videos for GOALS and GASS and Item Assessment for the Fellow Surgeon.

Instrument	Item	Mean Score	Trend	*p*-value
GOALS	Bimanual dexterity	3.59	0.008	<0.05
	Depth perception	3.74	0.008	<0.05
	Efficiency	3.46	0.008	<0.01
	Tissue handling	3.76	0.004	N.S.
	Total GOALS	14.54	0.026	<0.05
GASS	Achievement of hemostasis	2.82	-0.003	<0.05
	Appreciating operative anatomy	2.62	0.002	N.S.
	Bimanual dexterity	2.43	0.004	<0.05
	Economy of motion	2.32	0.003	N.S.
	Tissue handling	2.54	0.001	N.S.
	Overall performance	2.49	0.002	N.S.
	Average Score	2.54	0.001	N.S.

N.S. – Not significant

Figure 1. Average Assessment Scores with Linear Trendline for 17 Consecutive Procedures.



NOTE: The trendline for OPSA and for GOALS is statistically significant increase across the 17 procedures.

Table 2. Test for Trend across the 17 Consecutive Operative Videos for OPSA and Item Assessment for the Fellow Surgeon.

Instrument	Item	Mean Score	Trend	*p*-value
OPSA	Adequate reflection of the transverse colon	2.76	-0.001	N.S.
	Apposition of jejunojejunostomy anastomotic site	2.63	0.003	N.S.
	Bleeding control	2.69	-0.002	N.S.
	Clear identification of the ligament of Treitz	2.74	0.001	N.S.
	Common enterotomy closure of the jejunojejunostomy	2.37	0.003	N.S.
	Creation of the jejunojejunostomy	2.54	0.004	<0.05
	Evaluation of integrity of anastomosis	2.94	-0.001	N.S.
	Maintenance of appropriate orientation of biliopancreatic and Roux limb	3	0	N.S.
	Mesentery division	2.71	0.002	N.S.
	Selection of jejunal division point	2.59	0.005	<0.05
	Selection of jejunojejunostomy anastomotic site	2.53	0.001	N.S.
	Stapler use	2.72	0.005	<0.001
	Average Score	2.69	0.002	0.05

N.S. - Not Significant

CONCLUSIONS

- The novel RYGB OPSA instrumented effectively documented improved skill acquisition by a minimally invasive surgery, bariatric surgery fellow in the first six months of fellowship training.
- The RYGB OPSA will continue to be used in fellowship training and in a national surgical collaborative to collect additional validation data.
- The RYGB OPSA can be incorporated into training programs to support graduated independence of practice and is a potential enabler of the American Board of Surgery’s entrustable professional activities.
- Linking OPSA scores to meaningful outcomes can help establish performance benchmarks and support value-based care models.
- This study adds to the literature on video-based assessments by demonstrating the ability of a new OPSA instrument to effectively document trainee improvement in minimally invasive bariatric surgery