

Magnets

The Future of Surgery or Overhyped

Rami Lutfi, MD FACS FASMBS DABOM

Clinical Professor of Surgery; Chicago Medical School

President and CEO Chicago Institute of Advanced Surgery

Disclosures:

- Consultant:
 - Medtronic
 - Johnson & Johnson
 - Gore
- Educational Grant:
 - Medtronic
 - Gore
- Investor & Medical Advisor:
 - GT Metabolic & Carrum Health

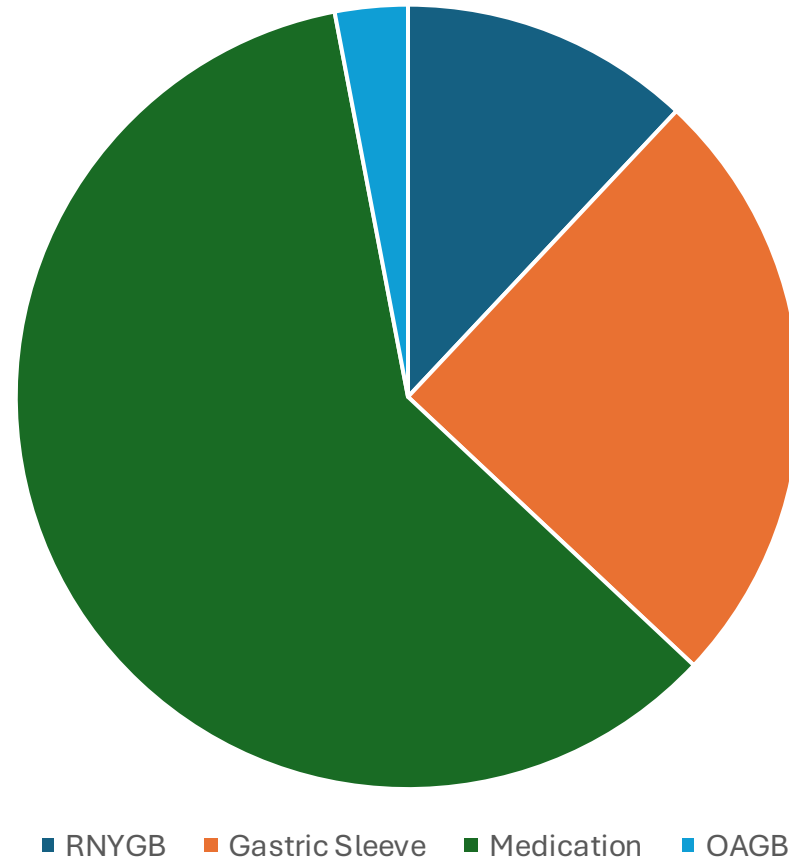
Disclosures:

- Consultant:
 - Medtronic
 - Johnson & Johnson
 - Gore
- Educational Grant:
 - Medtronic
 - Gore
- Investor & Medical Advisor:
 - GT Metabolic & Carrum Health

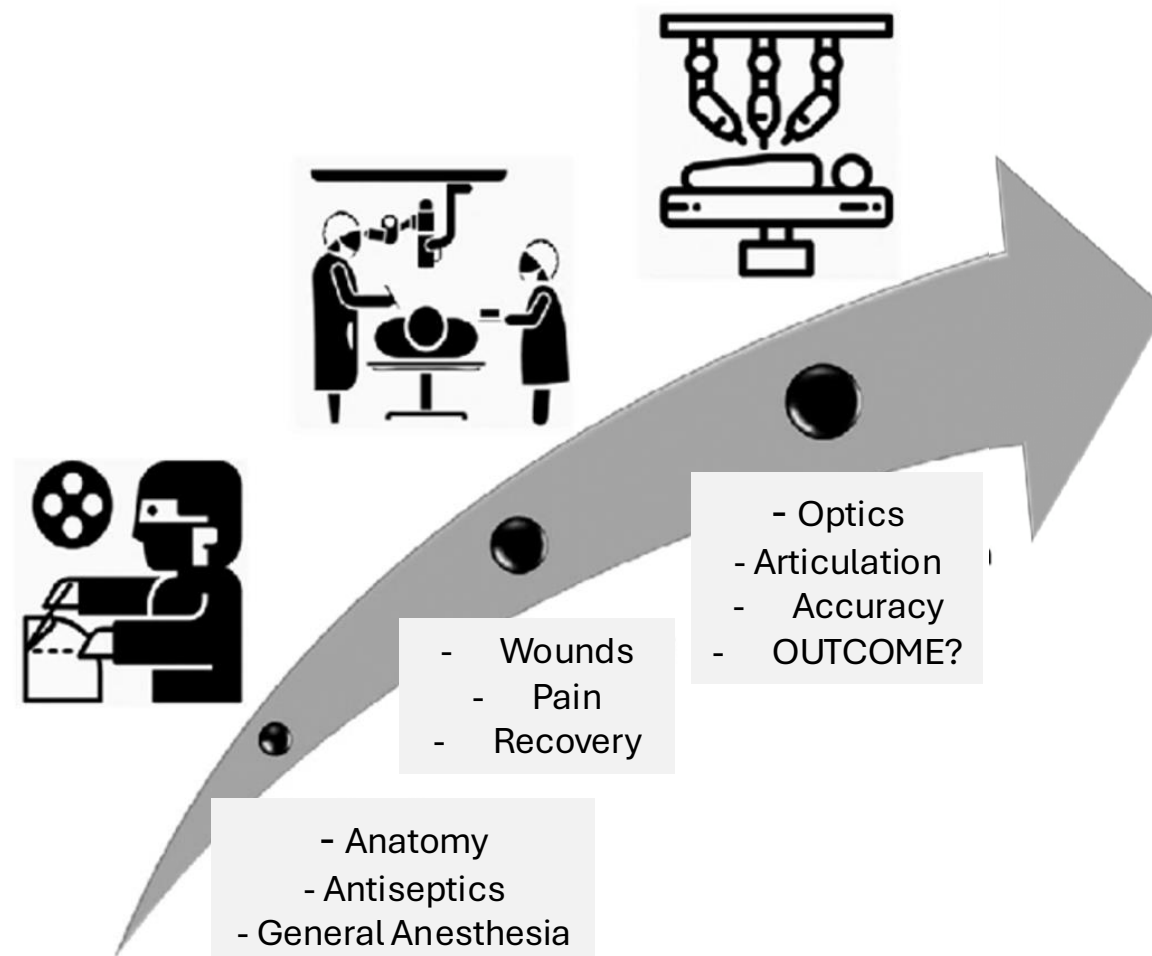
Disclosures:

- Consultant:
 - Medtronic
 - Johnson & Johnson
 - Gore
- Educational Grant:
 - Medtronic
 - Gore
- Investor & Medical Advisor:
 - GT Metabolic & Carrum Health
- Value Based Care:
 - Identifies top performers
 - Insurance Claims Data
- Warranty
 - Surgeon is the convener (unless employed)
 - Surgeon “guarantees” his/her work
 - Stakeholder in the overall cost of care

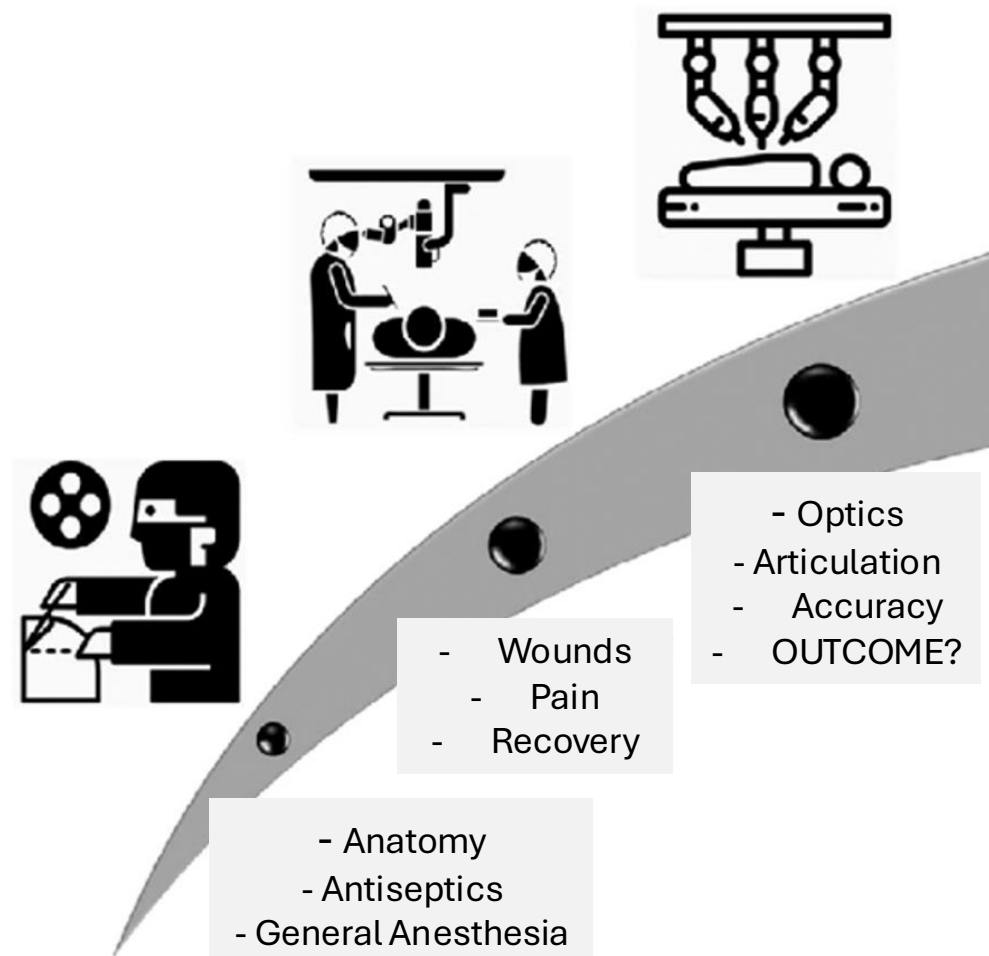
My Practice Today



Evolution & Innovation



Evolution & Innovation



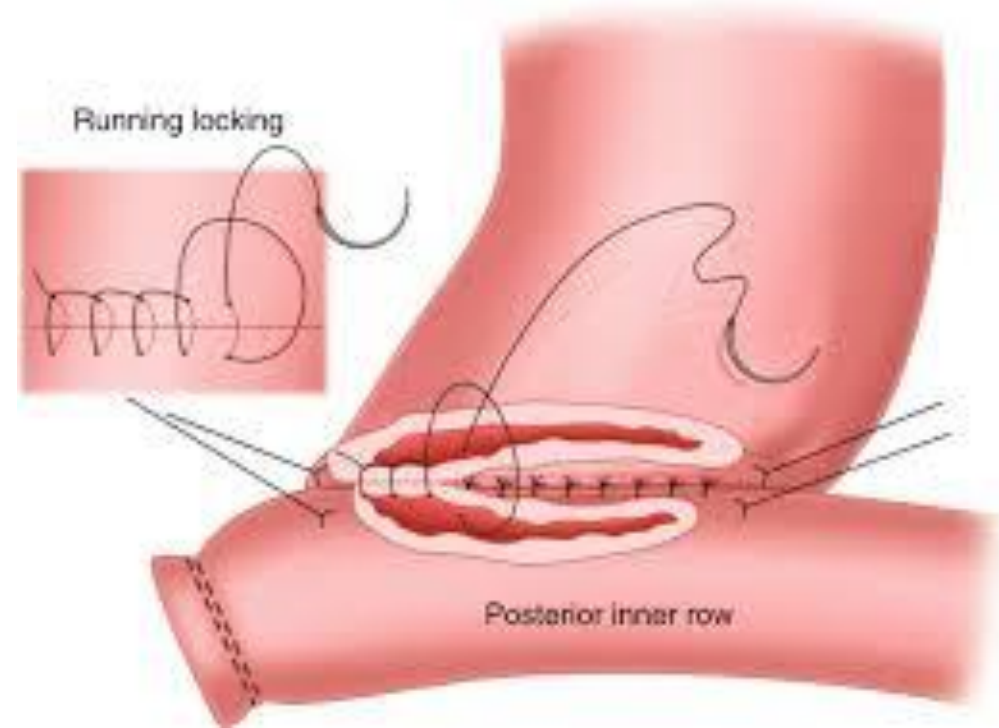
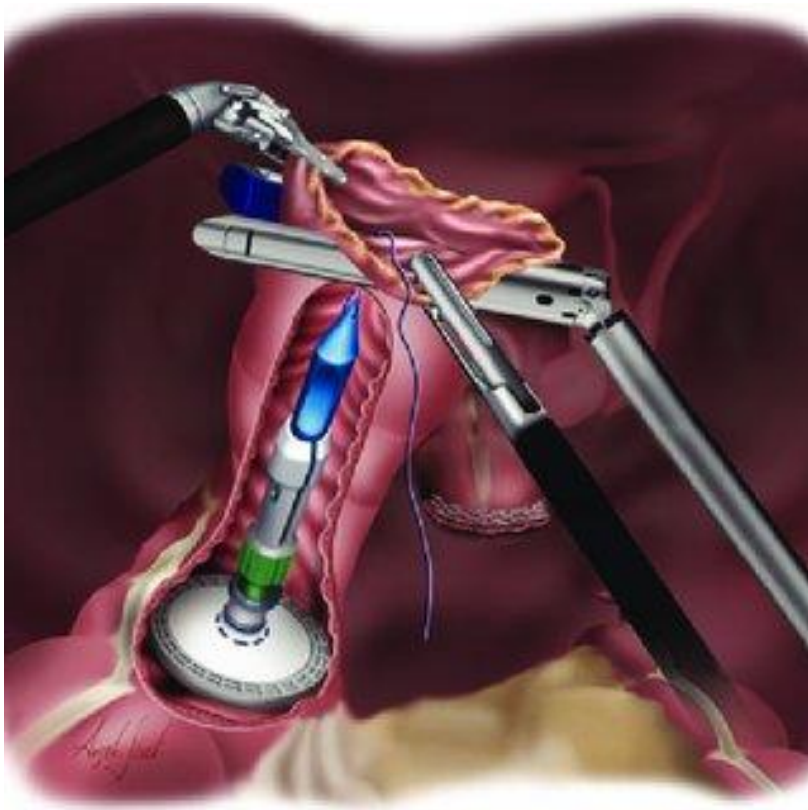
Shark Tank

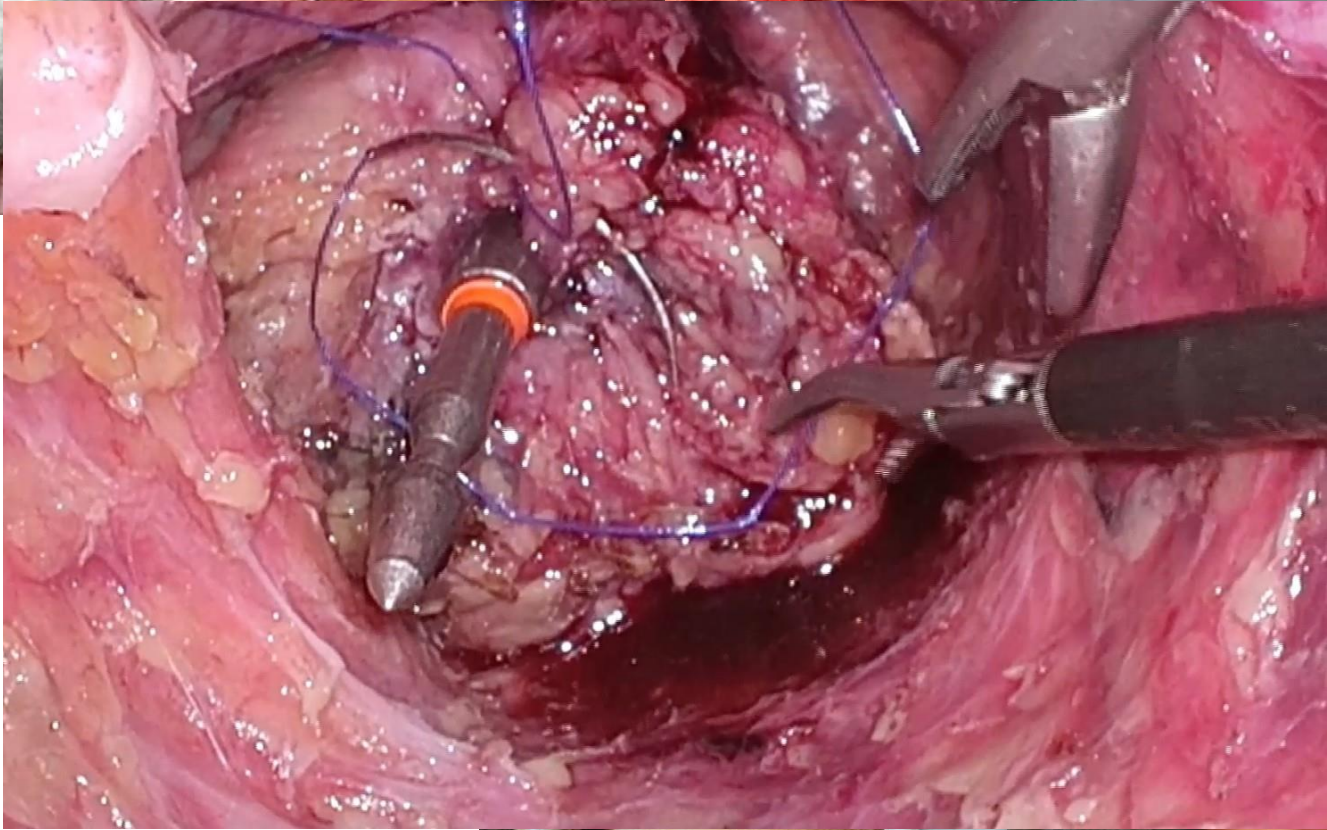
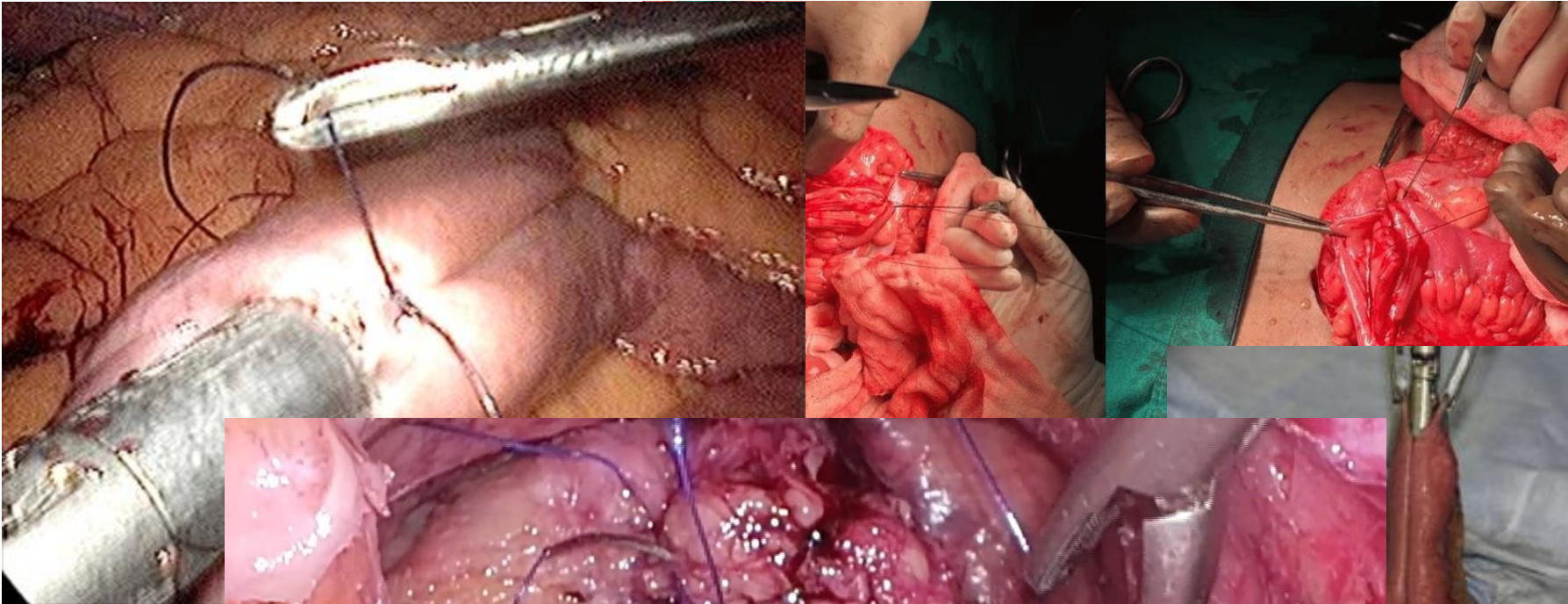


Evolution & Innovation



Anastomosis





Results: Twenty-eight eligible studies comprised a total of 82,155 patients; 9051 robotic bypass surgery (RBS) versus 73,104 laparoscopic bypass surgery (LBS) were included. All included studies compared Roux-en-Y gastric bypass. RBS was noted to have higher reoperation rate within 30 days (4.4% versus 3.4%; odds ratio 1.31 [95% CI, 1.04–1.66]; $P = .027$; $I^2 = 43.5\%$) than LBS. All other endpoints measured (complication rate, anastomotic leak, anastomotic stricture, surgical site infections, hospital readmission, length of stay, operative time, conversion rate and mortality) did not show any difference between RBS and LBS.

Conclusion: This systematic review and meta-analysis showed that there was no significant difference in

a slight
of robotic
and B

Results of meta-analysis in RBS versus LBS

Categorical outcome	Number of studies (sample size)	Effect estimate	95% CI	I^2	P
Overall complication rate	26 (82,006)	OR .92	.82–1.03	39.2%	.149
Intra-operative complication rate	10 (2175)	OR 1.50	.84–2.68	11.9%	.218
Anastomotic leak	24 (9790)	OR 1.33	.91–1.94	33.7%	.167
Anastomotic stricture	17 (7675)	OR 1.34	.96–1.86	0%	.097
Surgical site infection	19 (40,097)	OR .80	.52–1.22	0%	.344
Reoperation rate with 30 d	16 (7613)	OR 1.31	1.04–1.66	43.5%	.027*
Mortality	26 (81,626)	OR 1.12	.64–1.96	0%	.804
Conversion rate	16 (3314)	OR .85	.50–1.42	12%	.617
Readmission rate	11 (78,369)	OR .89	.74–1.06	66.3%	.229
Hospital length of stay	19	SMD –0.06	–.23 to .10	96.6%	.452
Operative time	17	SMD .33	–.07 to .73	98.1%	.106

ence in key outcome measures in robotic versus laparoscopic gastric bypass. RBS was associated with a slightly higher reoperation rate and there was no reduction in overall complication rate with the use of robotic platform. (Surg Obes Relat Dis 2024;20:62–71.) © 2024 American Society for Metabolic and Bariatric Surgery. Published by Elsevier Inc. All rights reserved.

Staplers:

- Cumbersome
 - Needs the correct angle (trocar size, placement, angle)
 - Articulation
 - Cartridge choice
- Operator dependent
 - Surgeon experience
 - Surgeon skills
- Invasive
 - Instantaneous mechanical tissue trauma
 - micro-hematomas
- Persistent foreign-body (titanium)
 - micro-leakage
 - focal ischemia
 - stricture formation during healing

FDA NEWS RELEASE

FDA takes steps to help reduce risks associated with surgical staplers and implantable staples

The agency has [issued](#) previous communications about the risks involved with surgical staplers and implantable staples and has been conducting an ongoing assessment of medical device reports (MDRs) filed with the agency. The agency's analysis shows that from January 1, 2011 to March 31, 2018, the FDA received more than 41,000 individual MDRs for surgical staplers and staples for internal use, including 366 deaths, more than 9,000 serious injuries, and more than 32,000 malfunctions. The FDA continues to evaluate the MDRs for these devices.

The most commonly reported problems in these adverse event reports include an opening of the staple line or malformation of staples, misfiring, difficulty in firing, failure of the stapler to fire the staple, and misapplied staples (e.g., user applying staples to the wrong tissue or applying staples of the wrong size to the tissue). Stapler and/or staple malfunctions or misuse may result in prolonged surgical procedures or unplanned, additional surgical interventions, which may lead to other complications such as bleeding, sepsis, tearing of internal tissues and organs, increased risk of cancer recurrence, and death.

SPECIAL ARTICLE

Surgical Skill and Complication Rates
after Bariatric Surgery

D. Birkmeyer, M.D., Jonathan F. Finks, M.D., Amanda O'Reilly, R.N., M.S.,
Mary Oerline, M.S., Arthur M. Carlin, M.D., Andre R. Nunn, M.D.,
Justin Dimick, M.D., M.P.H., Mousumi Banerjee, Ph.D.,
and Nancy J.O. Birkmeyer, Ph.D., for the Michigan Bariatric Surgery Collaborative

ABSTRACT

BACKGROUND

Postoperative outcomes after many complex surgical procedures vary widely across hospitals and surgeons. Although it has been assumed that the proficiency of the operating surgeon is an important factor underlying such variation, empirical data on the relationships between technical skill and postoperative outcomes.

DESIGN

We conducted a study involving 20 bariatric surgeons in Michigan who participated in a statewide collaborative improvement program. Each surgeon submitted a single representative videotape of himself or herself performing a laparoscopic gastric bypass. Each videotape was rated in various domains of technical skill on a scale of 1 to 5 (with higher scores indicating more advanced skill) by at least 10 peer surgeons who were unaware of the identity of the operating surgeon. We then examined relationships between these skill ratings and risk-adjusted complication rates using data from a prospective, externally audited, clinical-outcomes registry involving 10,343 patients.

Summary ratings of technical skill ranged from 2.6 to 4.8 across the 20 surgeons. The bottom quartile of surgical skill, as compared with the top quartile, was associated with higher complication rates (14.5% vs. 5.2%, $P<0.001$) and higher mortality (0.26% vs. 0.05%, $P=0.01$). The lowest quartile of skill was also associated with longer operations (137 minutes vs. 98 minutes, $P<0.001$) and higher rates of reoperation (3.4% vs. 1.6%, $P=0.01$) and readmission (6.3% vs. 2.7%) ($P<0.001$).

CONCLUSIONS

Technical skill of practicing bariatric surgeons varied widely, and greater skill was associated with fewer postoperative complications and lower rates of reoperation, readmission, and visits to the emergency department. Although these findings are preliminary, they suggest that peer rating of operative skill may be an effective strategy for assessing a surgeon's proficiency.

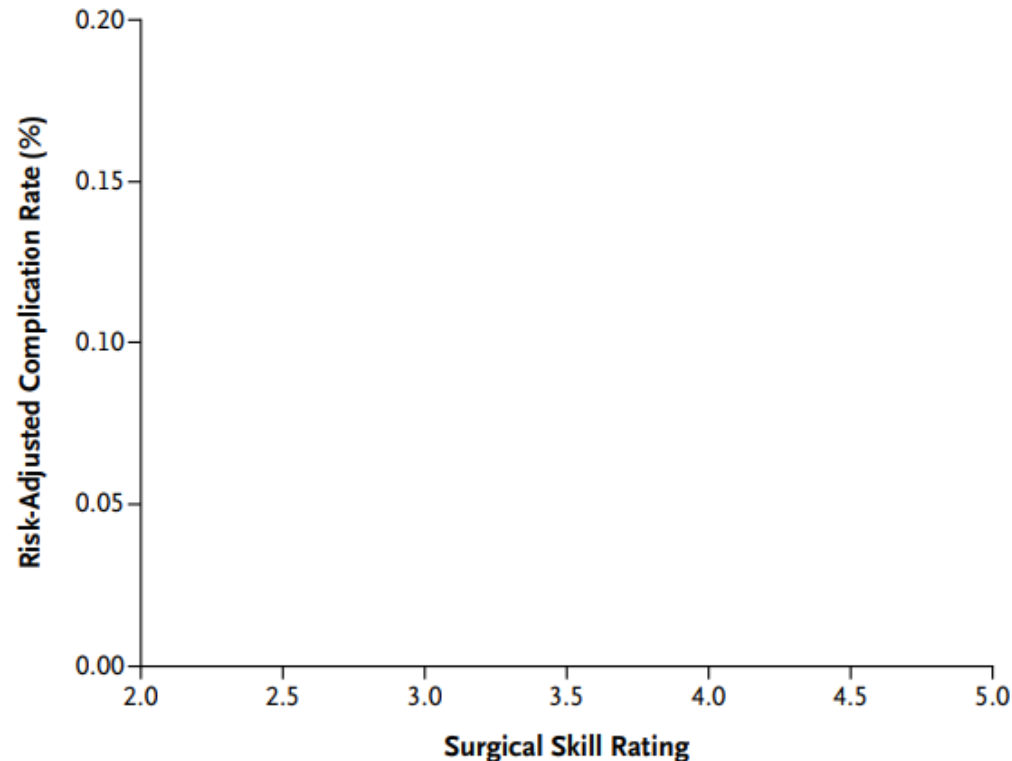


Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass.
Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

SPECIAL ARTICLE

Surgical Skill and Complication Rates
after Bariatric Surgery

D. Birkmeyer, M.D., Jonathan F. Finks, M.D., Amanda O'Reilly, R.N., M.S.,
Mary Oerline, M.S., Arthur M. Carlin, M.D., Andre R. Nunn, M.D.,
Justin Dimick, M.D., M.P.H., Mousumi Banerjee, Ph.D.,
and Nancy J.O. Birkmeyer, Ph.D., for the Michigan Bariatric Surgery Collaborative

ABSTRACT

BACKGROUND

Postoperative outcomes after many complex surgical procedures vary widely across hospitals and surgeons. Although it has been assumed that the proficiency of the operating surgeon is an important factor underlying such variation, empirical data on the relationships between technical skill and postoperative outcomes.

DESIGN

We conducted a study involving 20 bariatric surgeons in Michigan who participated in a statewide collaborative improvement program. Each surgeon submitted a single representative videotape of himself or herself performing a laparoscopic gastric bypass. Each videotape was rated in various domains of technical skill on a scale of 1 to 5 (with higher scores indicating more advanced skill) by at least 10 peer reviewers who were unaware of the identity of the operating surgeon. We then examined relationships between these skill ratings and risk-adjusted complication rates using data from a prospective, externally audited, clinical-outcomes registry involving 10,343 patients.

Summary ratings of technical skill ranged from 2.6 to 4.8 across the 20 surgeons. The bottom quartile of surgical skill, as compared with the top quartile, was associated with higher complication rates (14.5% vs. 5.2%, $P<0.001$) and higher mortality (0.26% vs. 0.05%, $P=0.01$). The lowest quartile of skill was also associated with longer operations (137 minutes vs. 98 minutes, $P<0.001$) and higher rates of reoperation (3.4% vs. 1.6%, $P=0.01$) and readmission (6.3% vs. 2.7%) ($P<0.001$).

CONCLUSIONS

Technical skill of practicing bariatric surgeons varied widely, and greater skill was associated with fewer postoperative complications and lower rates of reoperation, readmission, and visits to the emergency department. Although these findings are preliminary, they suggest that peer rating of operative skill may be an effective strategy for assessing a surgeon's proficiency.

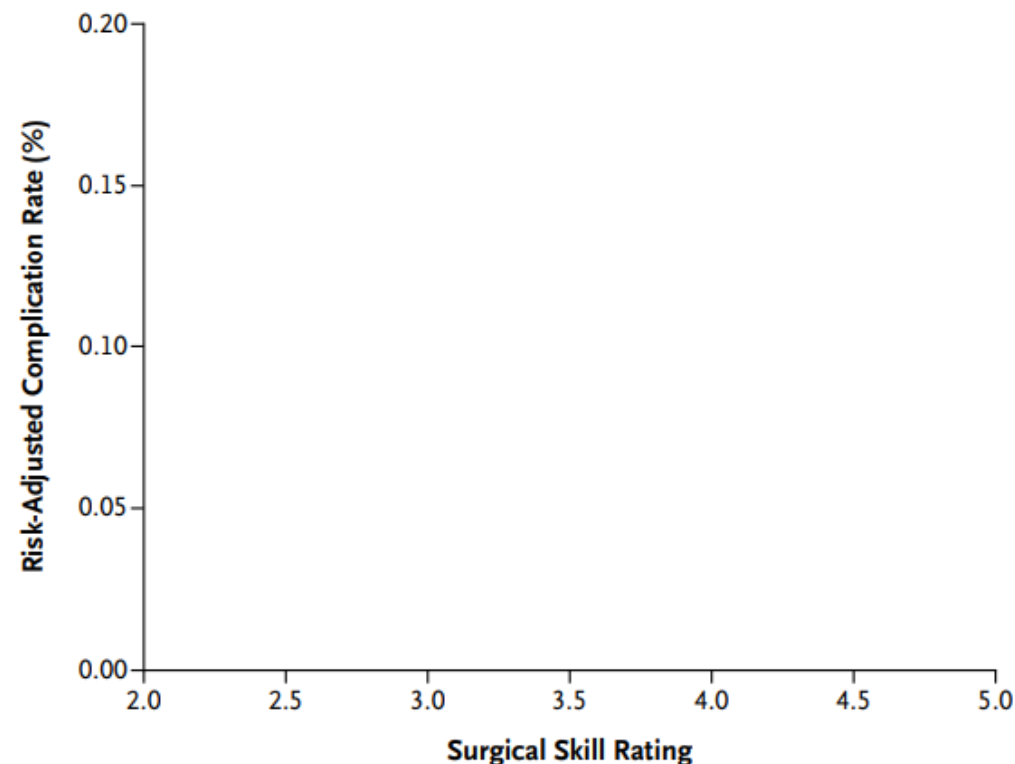


Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass.
Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

SPECIAL ARTICLE

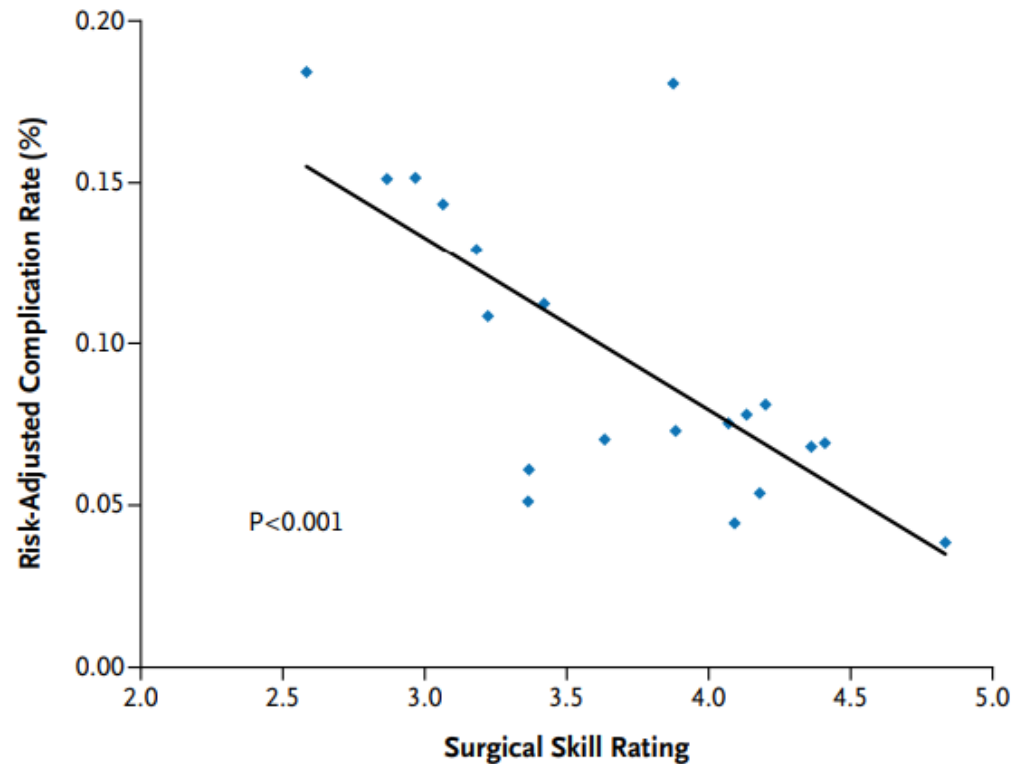
Surgical Skill and Complication Rates
after Bariatric Surgery

Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass. Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

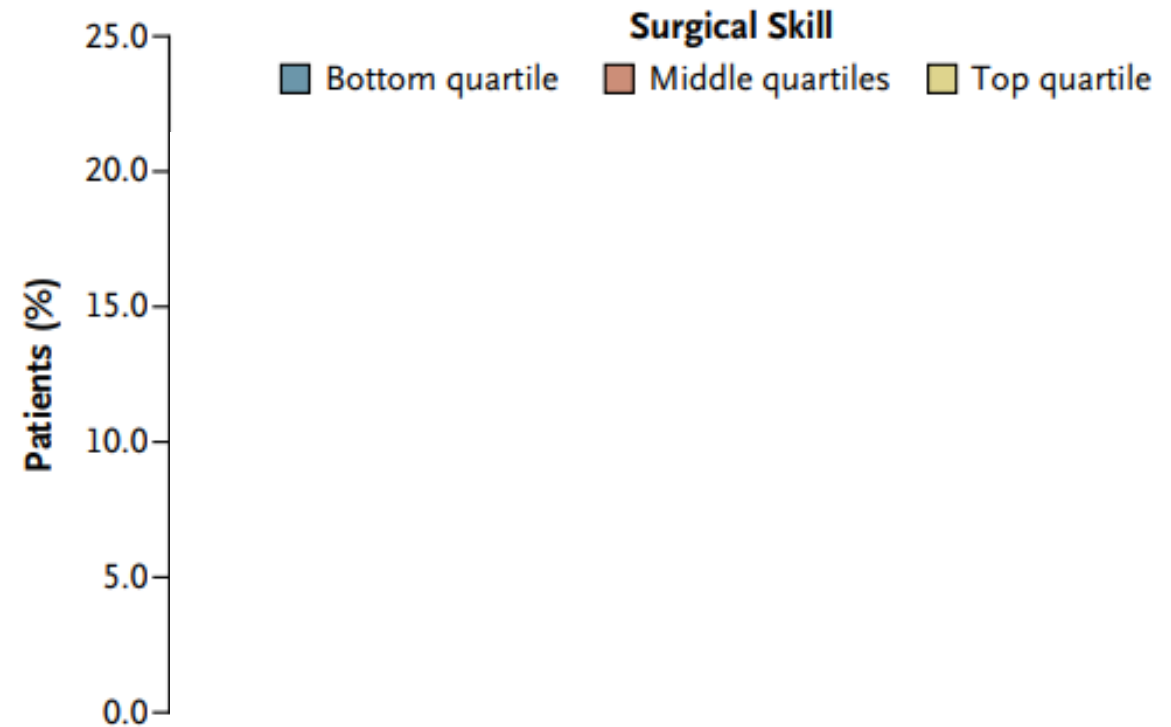


Figure 2. Risk-Adjusted Complication Rates with Laparoscopic Gastric Bypass, According to Quartile of Surgical Skill.

SPECIAL ARTICLE

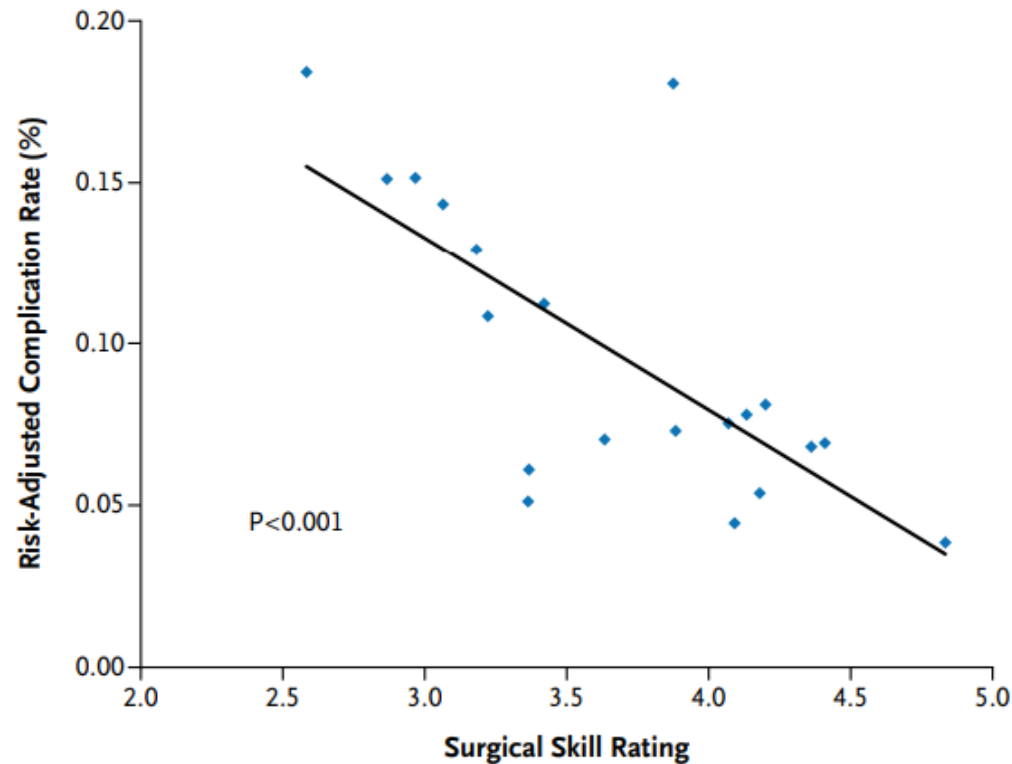
Surgical Skill and Complication Rates
after Bariatric Surgery

Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass. Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

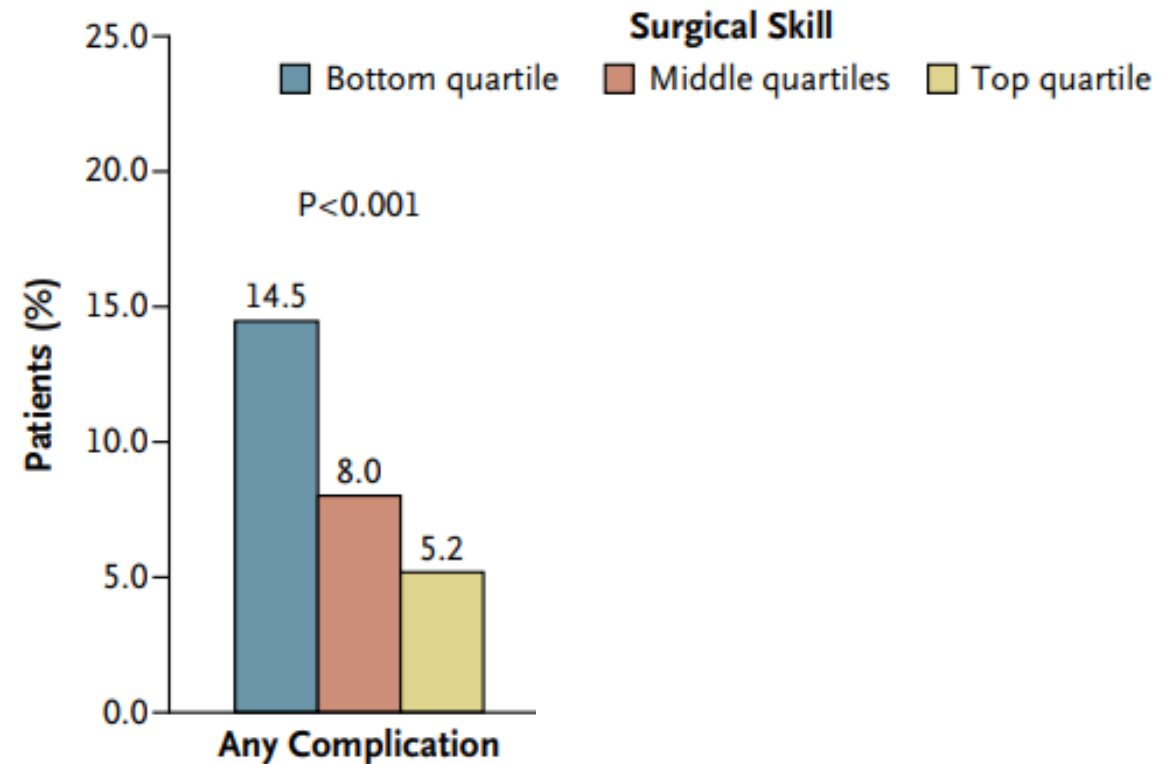


Figure 2. Risk-Adjusted Complication Rates with Laparoscopic Gastric Bypass, According to Quartile of Surgical Skill.

Surgical Skill and Complication Rates after Bariatric Surgery

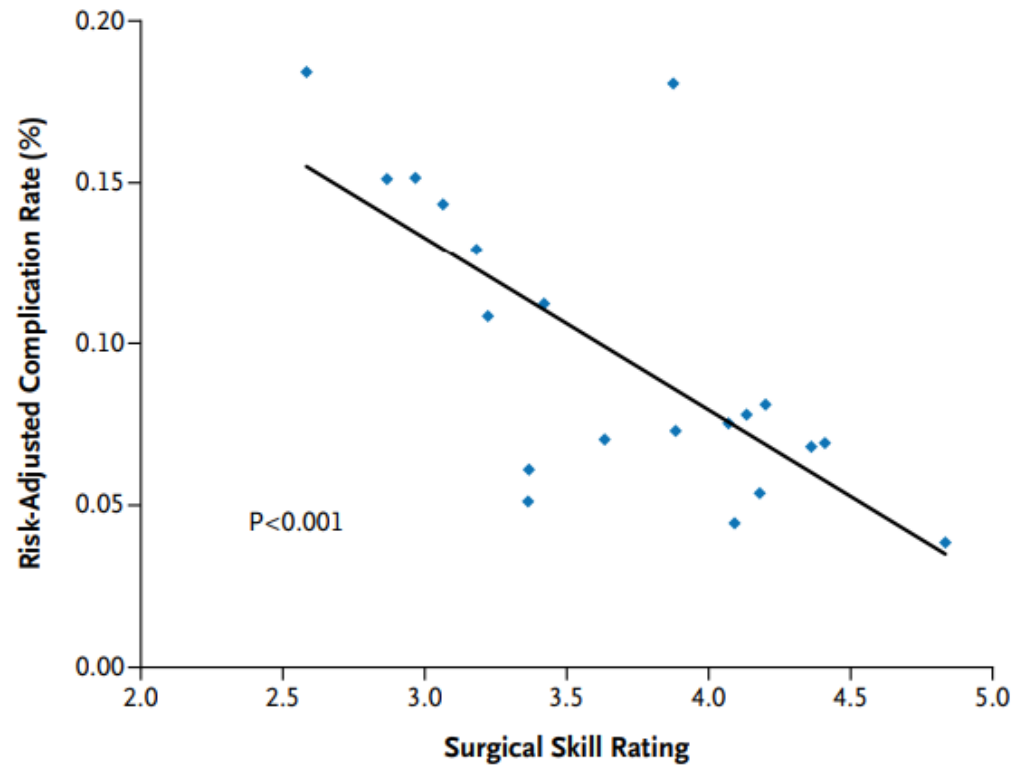


Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass. Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

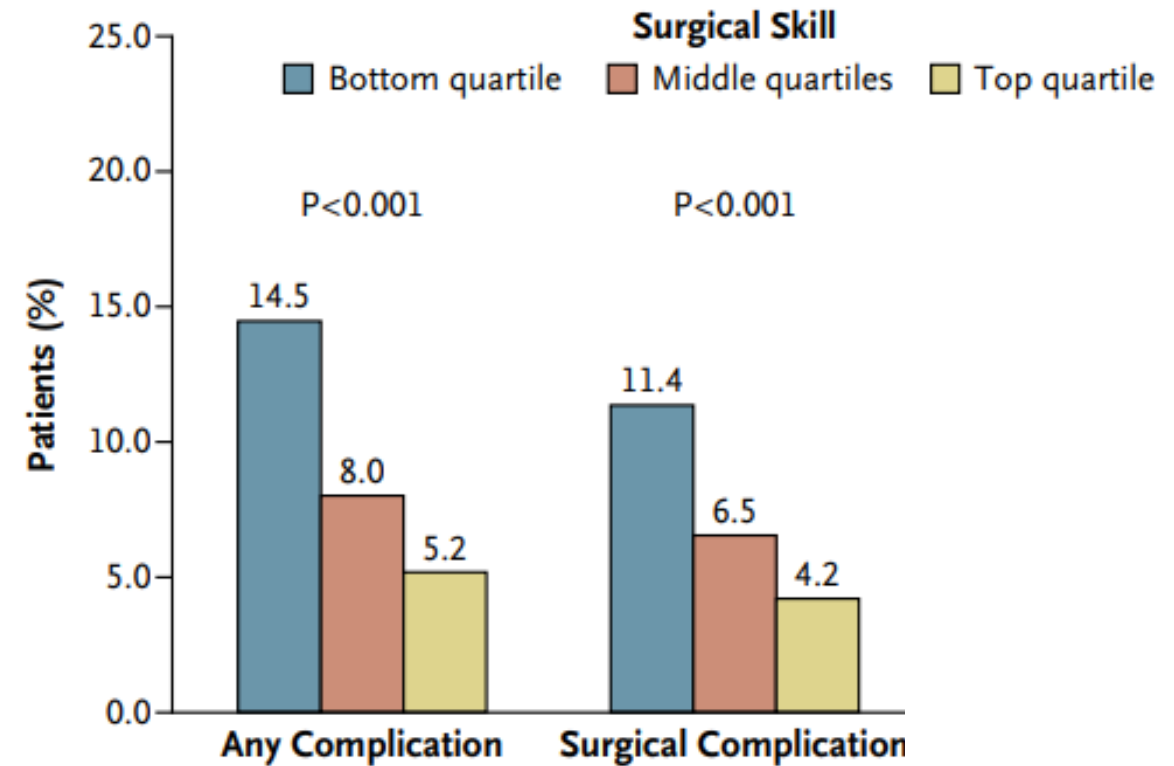


Figure 2. Risk-Adjusted Complication Rates with Laparoscopic Gastric Bypass, According to Quartile of Surgical Skill.

SPECIAL ARTICLE

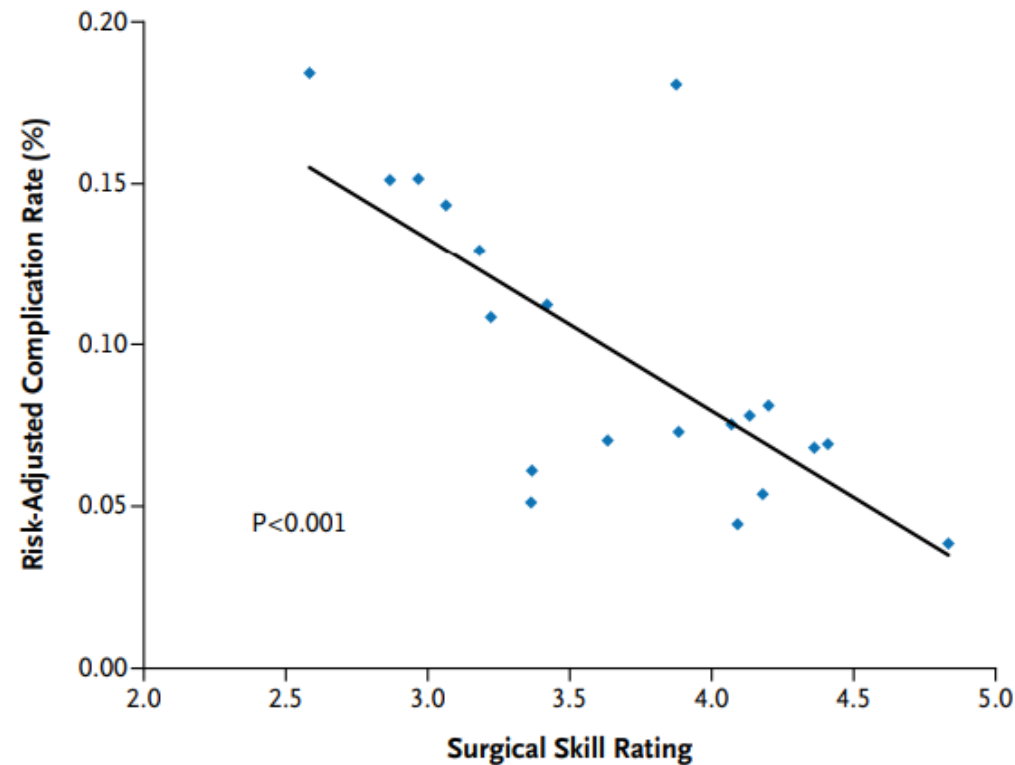
Surgical Skill and Complication Rates
after Bariatric Surgery

Figure 1. Relationship between Summary Peer Rating of Technical Skill and Risk-Adjusted Complication Rates after Laparoscopic Gastric Bypass. Each diamond in the scatter plot represents 1 of 20 practicing bariatric surgeons.

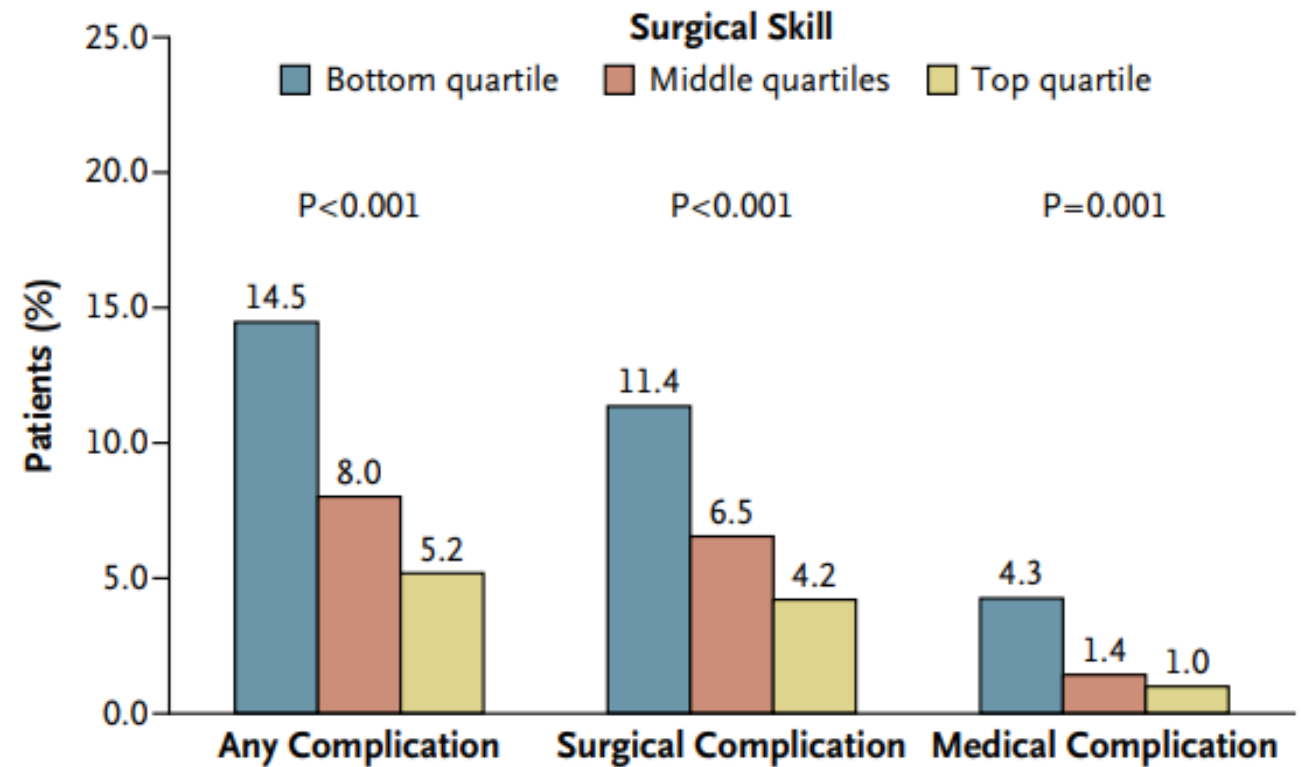


Figure 2. Risk-Adjusted Complication Rates with Laparoscopic Gastric Bypass, According to Quartile of Surgical Skill.

are preliminary, they suggest that peer rating of operative skill may be an effective strategy for assessing a surgeon's proficiency.

Association Between Surgeon Technical Skills and Patient Outcomes

[Jonah J. Stulberg](#), MD, PhD, MPH,^{1,2} [Reiping Huang](#), PhD,^{1,2} [Lindsey Kreutzer](#), MPH,^{1,2} [Kristen Ban](#), MD,^{1,3}
[Bradley J. Champagne](#), MD,⁴ [Scott R. Steele](#), MD,⁵ [Julie K. Johnson](#), PhD,^{1,2} [Jane L. Holl](#), MD, MPH,⁶
[Caprice C. Greenberg](#), MD, MPH,⁷ and [Karl Y. Bilimoria](#), MD, MS^{1,2,3}

Findings

In this quality improvement study including 17 practicing surgeons and outcome data from the American College of Surgeons National Surgical Quality Improvement Program as a reference group, better technical skill scores, assessed via intraoperative video, were statistically significantly associated with lower rates of any complication, unplanned reoperation, and death or serious morbidity.

Overall, technical skill scores were associated with approximately 26% of the variation in risk-adjusted complication rates.

Meaning

Quality improvement efforts aimed at improving patient outcomes should include a focus on improving surgeon-level technical skill.

Or Make Surgery Easier??

Meaning

Quality improvement efforts aimed at improving patient outcomes should include a focus on improving surgeon-level technical skill.

The impact of complications on costs of major surgical procedures: a cost analysis of 1200 patients

René Vonlanthen ¹, Ksenija Slankamenac, Stefan Breitenstein, Milo A Puhan, Markus K Muller, Dieter Hahnloser, Dimitri Hauri, Rolf Graf, Pierre-Alain Clavien

Affiliations + expand

PMID: 21562405 DOI: 10.1097/SLA.0b013e31821d4a43

Patients and methods: Morbidity of 1200 consecutive patients undergoing major surgery from 2005 to 2008 in a tertiary, high-volume center was assessed by a validated, complication score system. Full in-hospital costs were collected for each patient. Statistical analysis was performed using a multivariate linear regression model adjusted for potential confounders.

Results: This study population included 393 complex liver/bile duct surgeries, 110 major pancreas operations, 389 colon resections, and 308 Roux-en-Y gastric bypasses. The overall 30-day mortality rate was 1.8%, whereas morbidity was 53.8%. Patients with an uneventful course had mean costs per case of US\$ 27,946 (SD US\$ 15,106). Costs increased dramatically with the severity of postoperative complications and reached the mean costs of US\$ 159,345 (SD US\$ 151,191) for grade IV complications. This increase in costs, up to 5 times the cost of a similar operation without complications, was observed for all types of investigated procedures, although the magnitude of the increase varied, with the highest costs in patients undergoing pancreas surgery.

Conclusion: This study demonstrates the dramatic impact of postoperative complications on full in-hospital costs per case and that complications are the strongest indicator of costs. Furthermore, the study highlights a relevant savings capacity for major surgical procedures, and supports all efforts to lower negative events in the postoperative course.

The impact of complications on costs of major surgical procedures: a cost analysis of 1200 patients

René Vonlanthen ¹, Ksenija Slankamenac, Stefan Breitenstein, Milo A Puhan, Markus K Muller, Dieter Hahnloser, Dimitri Hauri, Rolf Graf, Pierre-Alain Clavien

Affiliations + expand

PMID: 21562405 DOI: 10.1097/SLA.0b013e31821d4a43

Patients and methods: Morbidity of 1200 consecutive patients undergoing major surgery from 2005 to 2008 in a tertiary, high-volume center was assessed by a validated, complication score system. Full in-hospital costs were collected for each patient. Statistical analysis was performed using a multivariate linear regression model adjusted for potential confounders.

Results: This study population included 393 complex liver/bile duct surgeries, 110 major pancreas operations, 389 colon resections, and 308 Roux-en-Y gastric bypasses. The overall 30-day mortality rate was 1.8%, whereas morbidity was 53.8%. Patients with an uneventful course had mean costs per case of US\$ 27,946 (SD US\$ 15,106). Costs increased dramatically with the severity of postoperative complications and reached the mean costs of US\$ 159,345 (SD US\$ 151,191) for grade IV complications. This increase in costs, up to 5 times the cost of a similar operation without complications, was observed for all types of investigated procedures, although the magnitude of the increase varied, with the highest costs in patients undergoing pancreas surgery.

Conclusion: This study demonstrates the dramatic impact of postoperative complications on full in-hospital costs per case and that complications are the strongest indicator of costs. Furthermore, the study highlights a relevant savings capacity for major surgical procedures, and supports all efforts to lower negative events in the postoperative course.

Duodeno-ileal magnetic compression anastomoses in metabolic surgery: a systematic review a meta-analysis

Patrick Noel, M.D. ^{a,b}  · Laurent Biertho, M.D. ^{c,d} · Jaime Ponce, M.D. ^e · Pierre Garneau, M.D. PhD. ^f · Rami Lutfi, M.D. ^g · Michel Gagner, M.D. PhD. ^h

Methods

MEDLINE, EMBASE, CENTRAL, Web of Science, and [ClinicalTrials.gov](#) were searched to 31 March 2026. Eligible studies reported DI-MCA using linear (LMAS), biofragmentable (BMAS), self-forming (SNAP/SNAP-S), or immediately-patent (IMPA-DI) devices. Cohort overlap was resolved by investigator correspondence. Proportions were pooled with Freeman-Tukey transformation; continuous

Results

Twelve prospective studies (220 enrolled, 218 implanted) met inclusion criteria; after de-duplication, 153 enrolled adults (151 implanted) were verified-unique. The pooled device-related leak rate was 0.0% (95% CI 0.0–1.7), with zero 30-day mortality.

Efficacy is reported descriptively by procedural context. Primary DI-MCA with concurrent sleeve gastrectomy: 6-month %TWL 28.1% (n=24, LMAS 1.9 cm) and 10.7% (n=17, BMAS 4–5 cm), with 12-month data in 5 patients (%TWL 34.0%). Revisional solo DI-MCA: %TWL 5.4% at 6 months (n=24) and 5.3% at 12 months (n=23). Solo biofragmentable DI-MCA in mild obesity with type 2 diabetes: 12-month %TWL 8.7% (n=8/15); HbA1c 8.2%→6.6%. Protein-energy malnutrition (9.3%, 5/54) was confined to the SNAP subset. Certainty of evidence was low to very low.

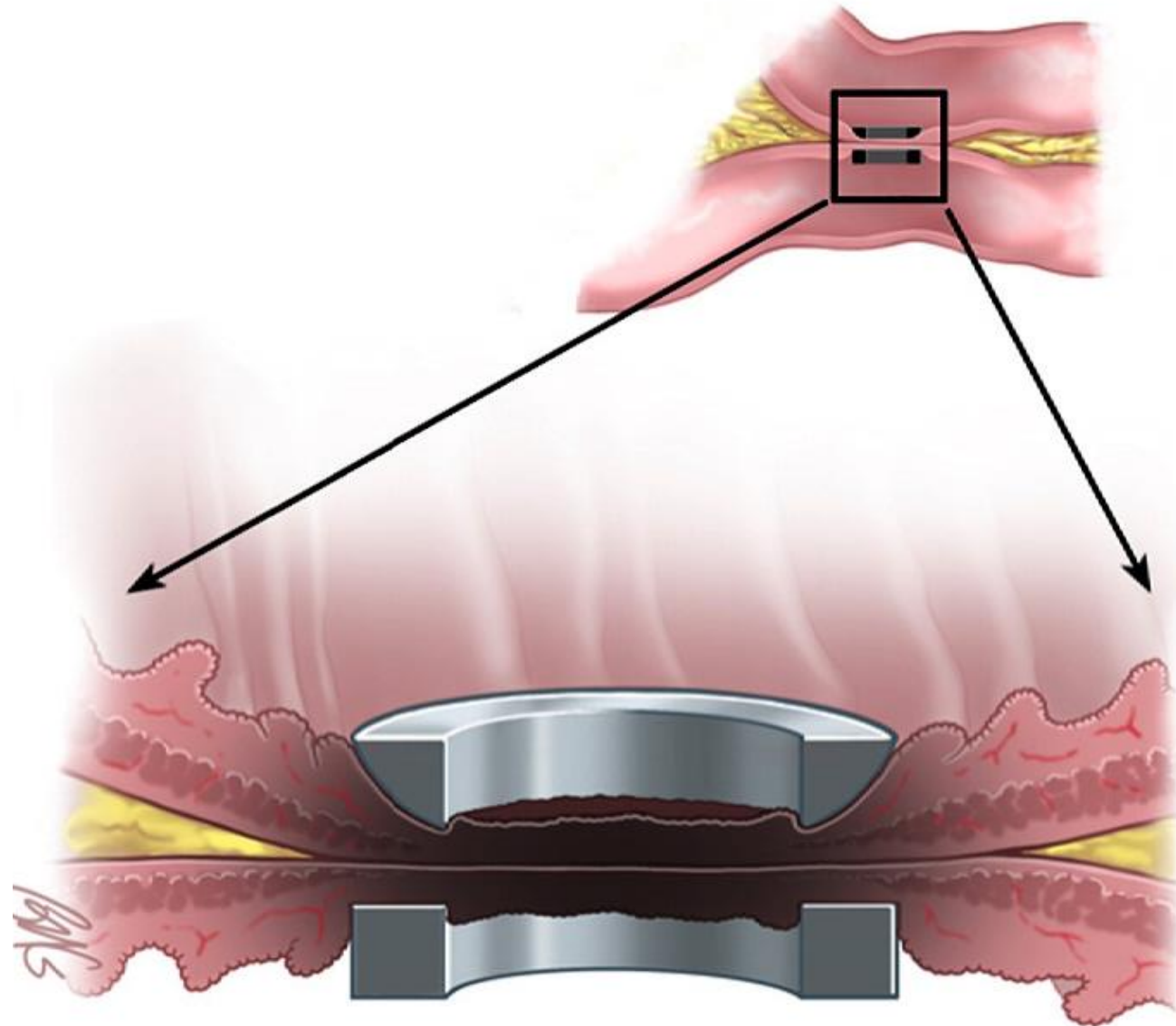
Conclusions

DI-MCA is feasible, with no device-related anastomotic leak and no 30-day mortality; early efficacy is device- and context-dependent. All available data derive from small, industry-sponsored single-arm studies in highly selected patients at experienced investigational centers, and support feasibility and early safety rather than comparative effectiveness or generalizability to routine practice. Larger comparative studies with longer follow-up are needed; the SNAP malnutrition signal warrants prospective surveillance.

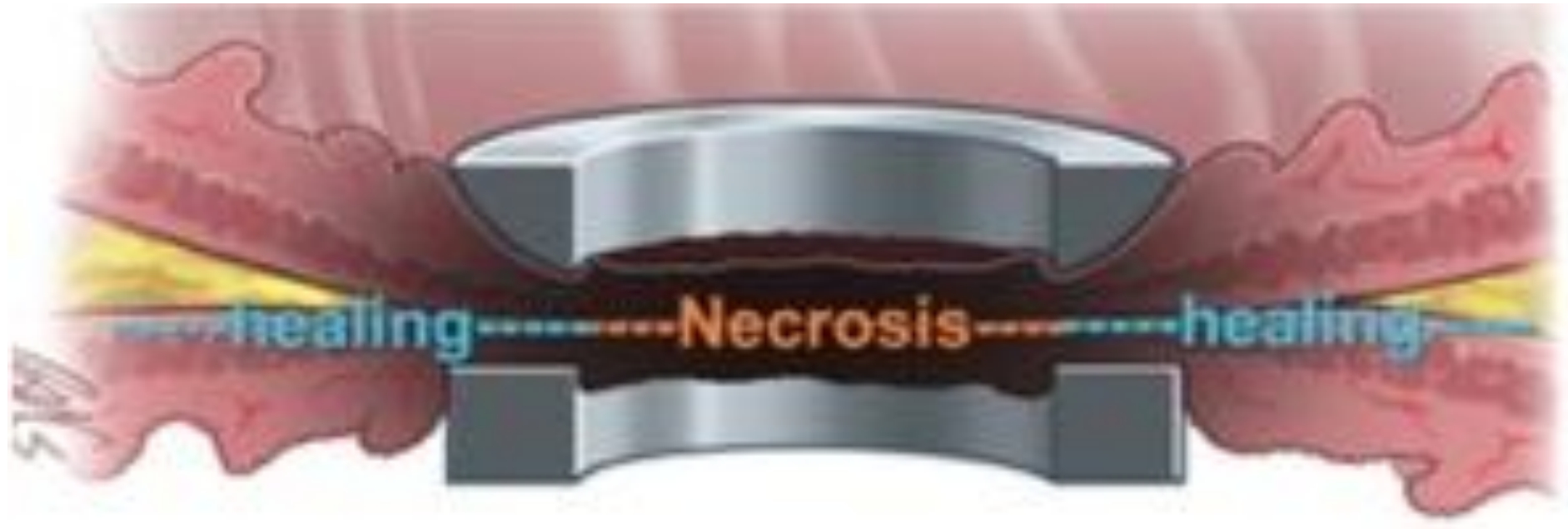
Imagine if we can “fuse” the bowel:

- Easy to do
- Independent of trocar placement
- Not invasive
- Can potentially be done endoscopically
- Not operator dependent
- Reproducible
- No immediate trauma
- No immediate inflammation
- Anastomosis forms over time

Magnetic Compression Anastomosis



Magnetic Compression Anastomosis



The Magnets produce a gradient of compressive forces on the bowel wall

→ transmural ischemia and necrosis centrally,

Remodeling of the intestine at the periphery is preserved

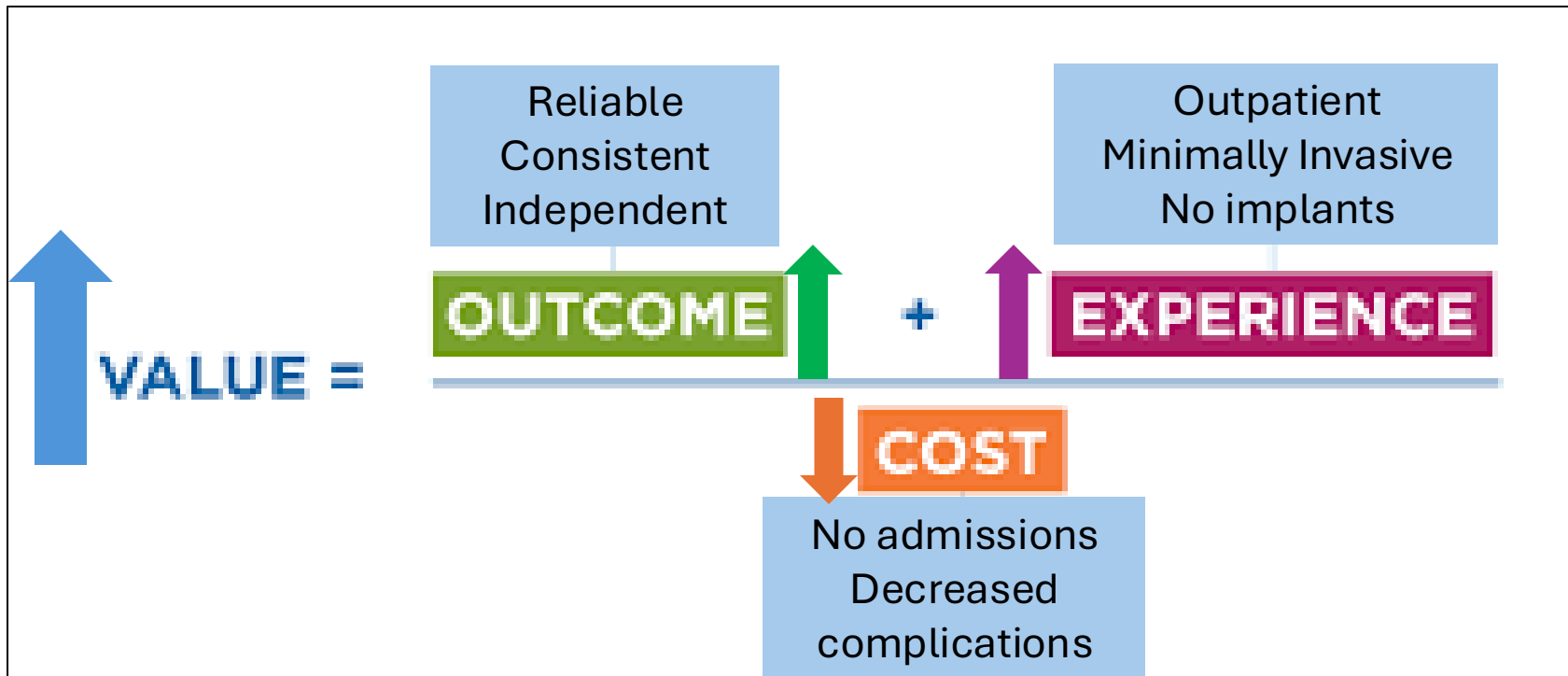
Gradually a full-thickness anastomosis is formed

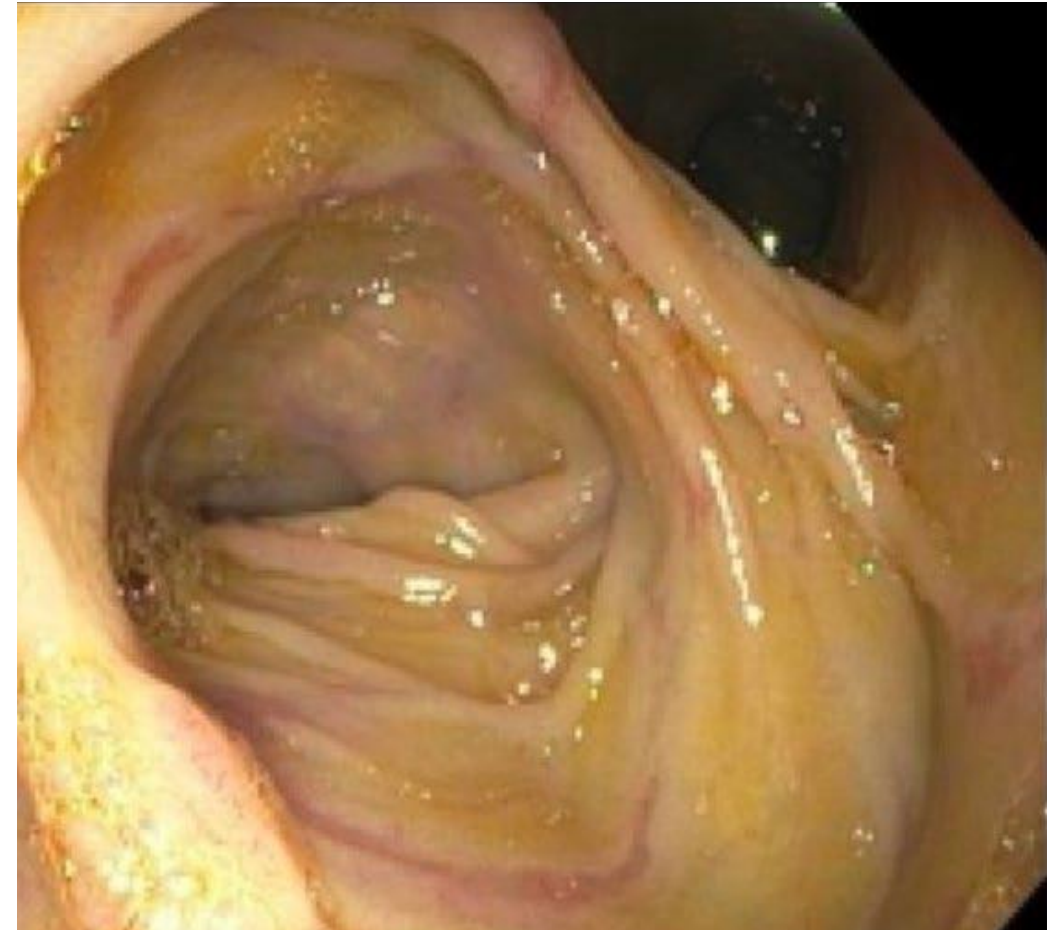
Imagine if we can “fuse” the bowel:

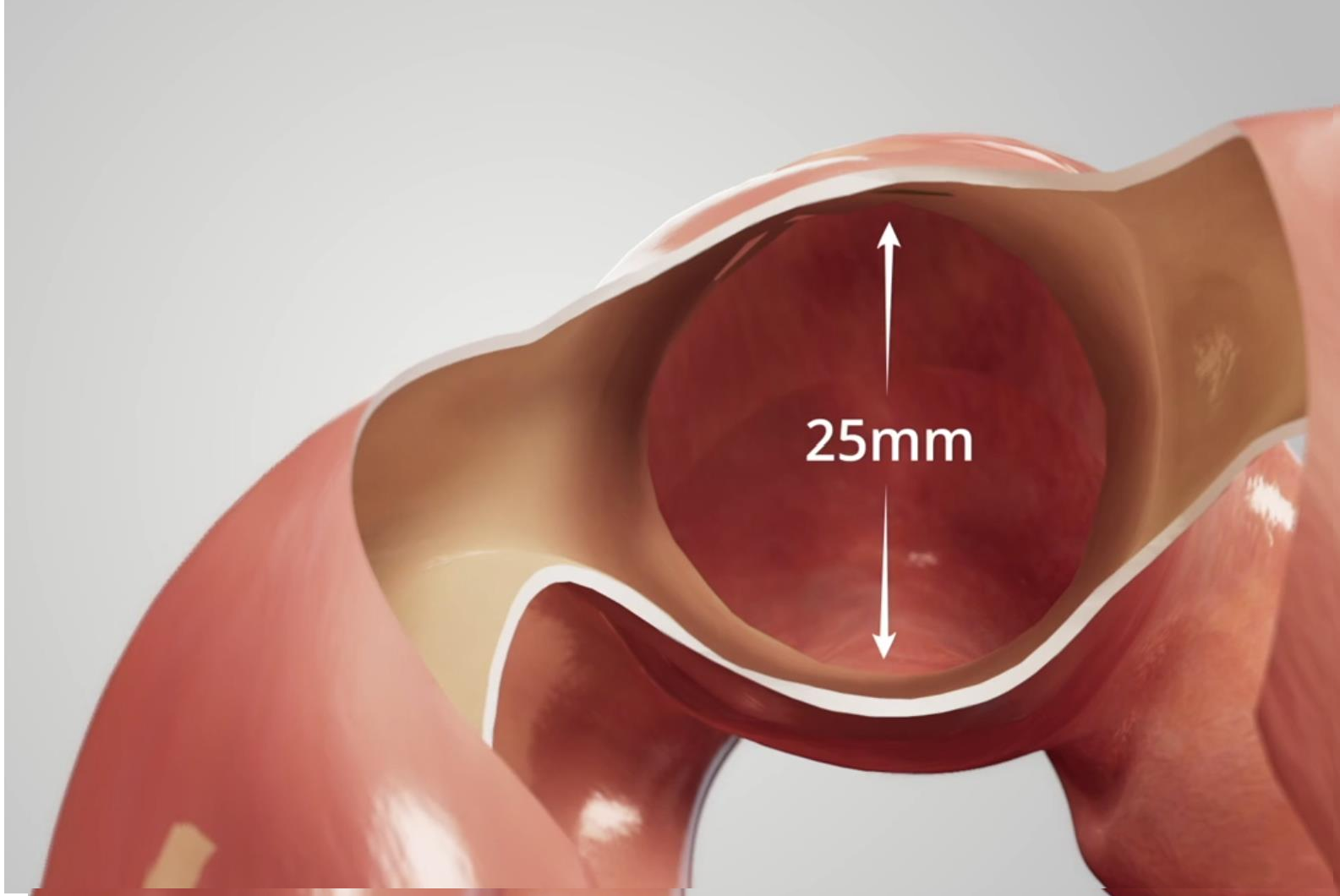
- Easy to do
 - Independent of trocar placement
 - Not invasive
 - Can potentially be done endoscopically
 - Not operator dependent
 - Reproducible
 - No immediate trauma
 - No immediate inflammation
 - Anastomosis forms over time
-
- (almost) NO LEAK
 - (almost) NO BLEED
 - (almost) NO STRICTURE



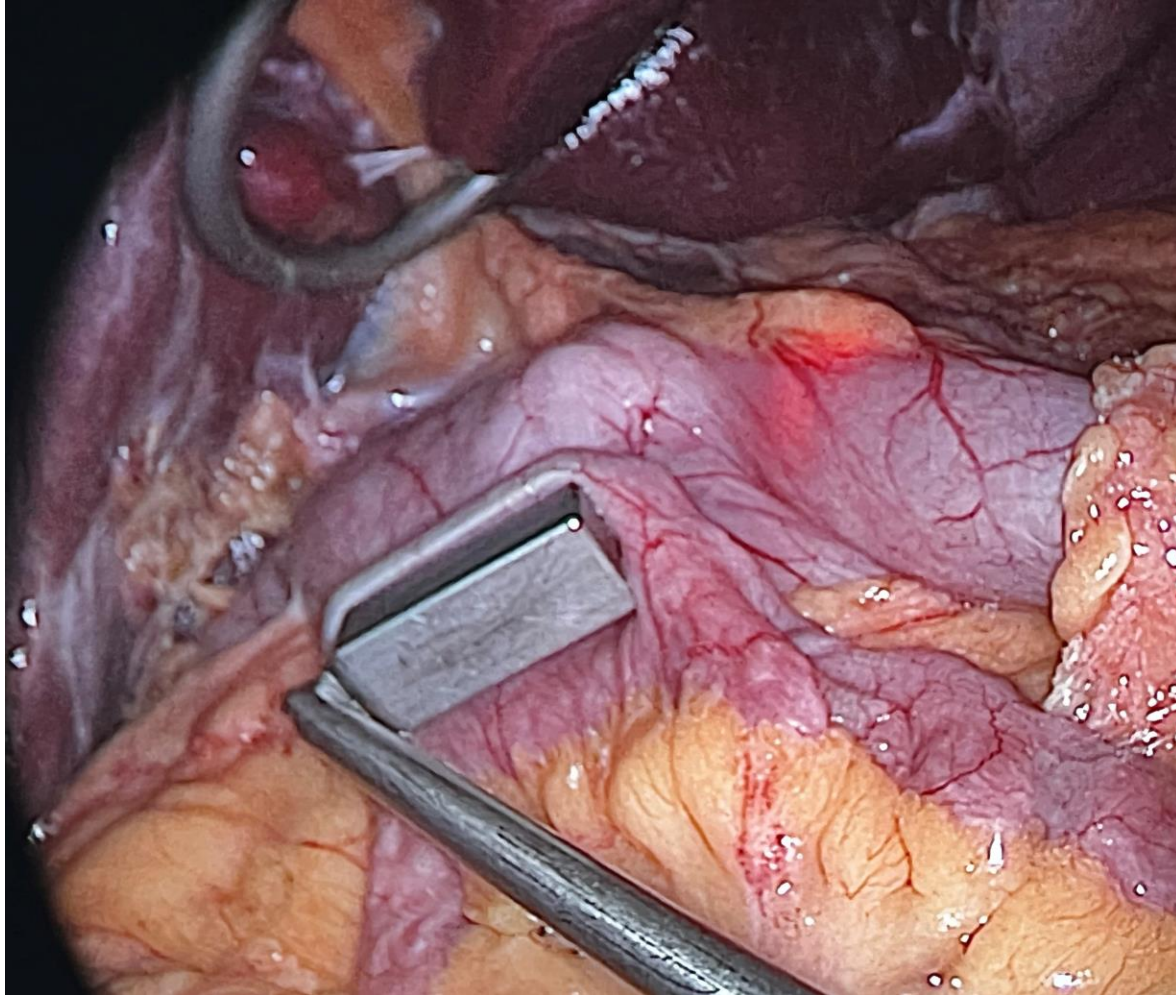
The Goal:



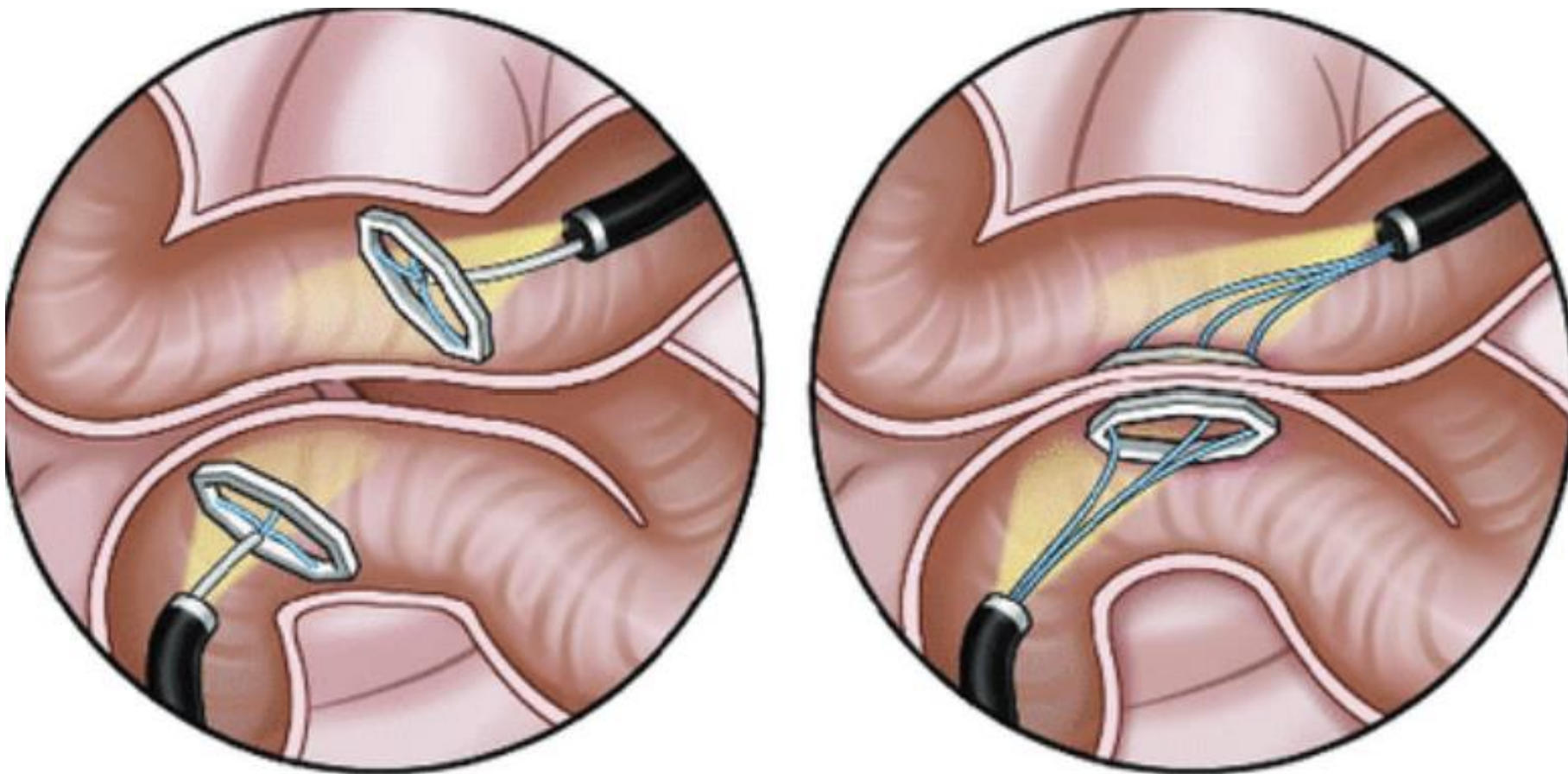




Laparoscopy & Endoscopy



Endoscopy

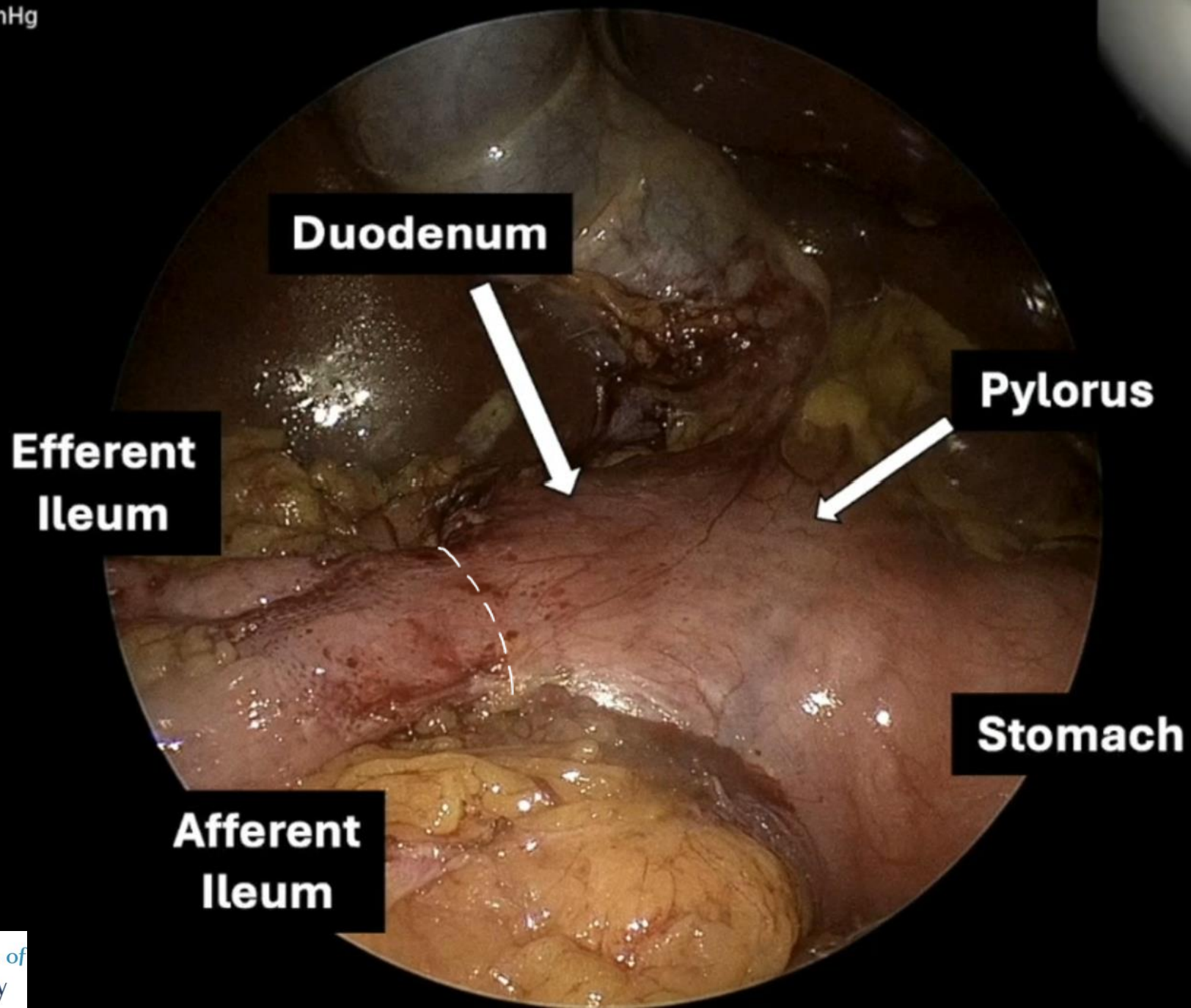


pt. pressure mmHg 0 mmHg

Actual pressure mmHg 0 mmHg

Setpoint flow 0 l/min

Actual flow 0 l/min

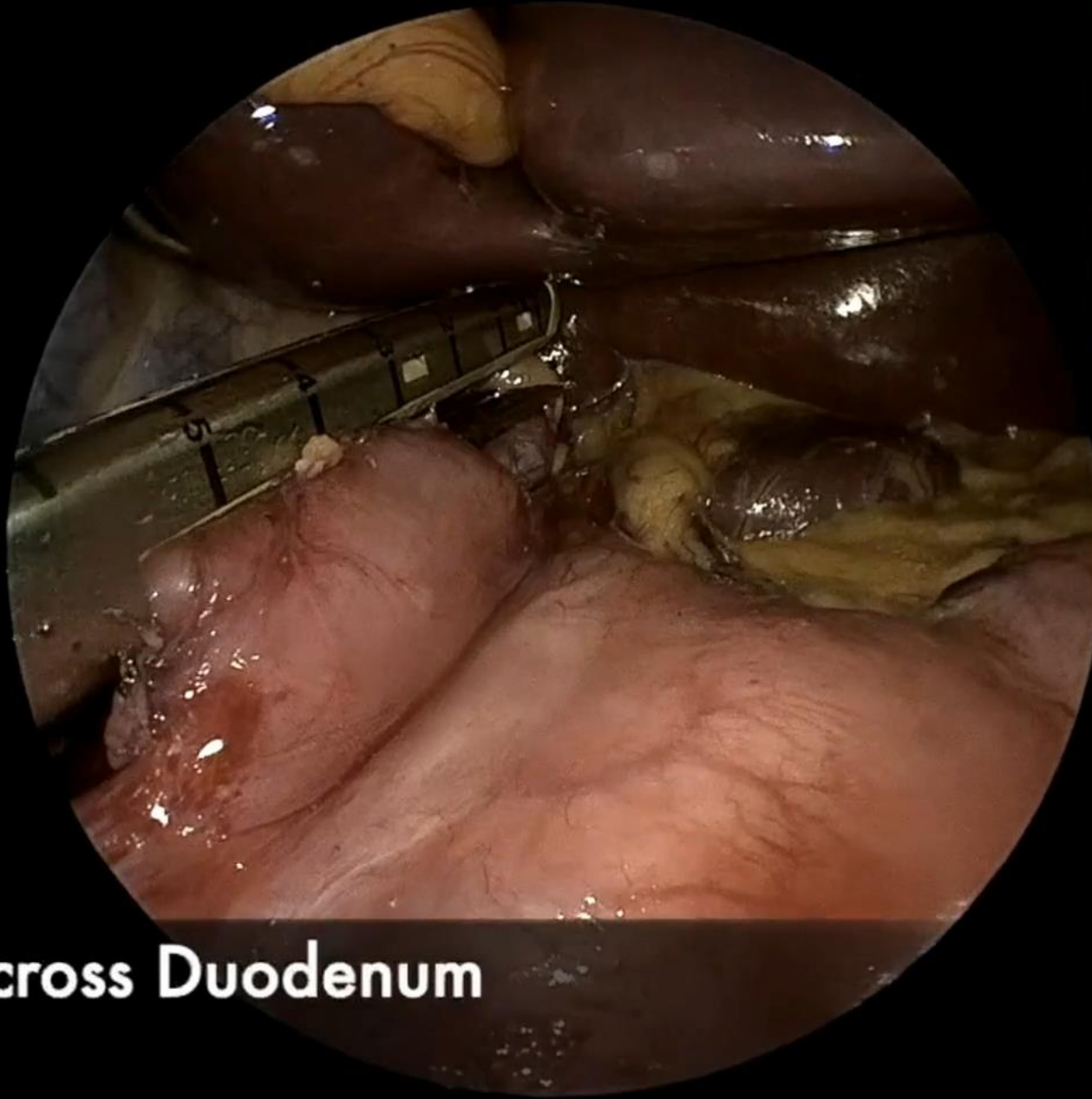


Setpt. pressure mmHg 0 mmHg

Actual pressure mmHg 0 mmHg

Setpoint flow 0 l/min

Actual flow 0 l/min

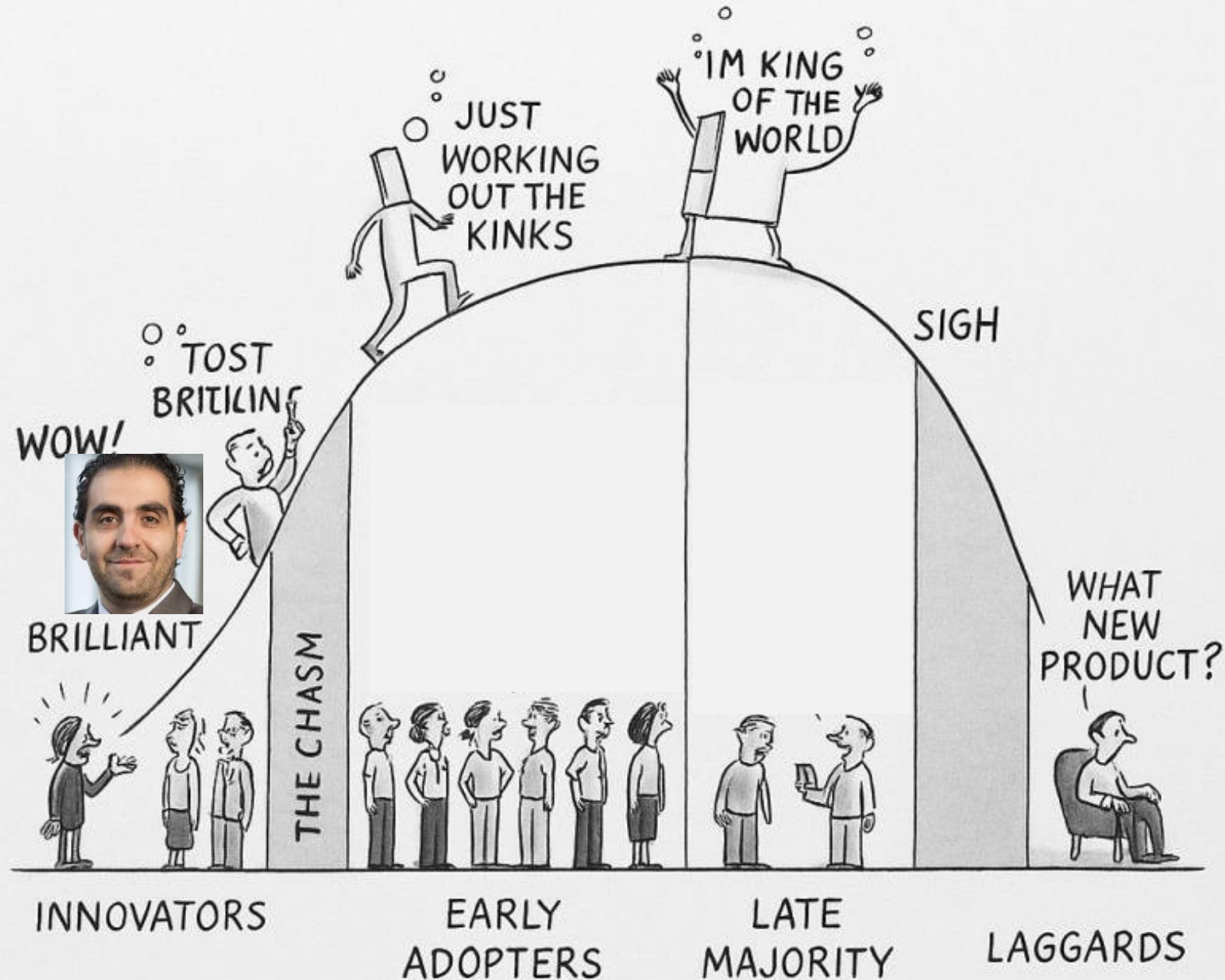


Staple Fire Across Duodenum

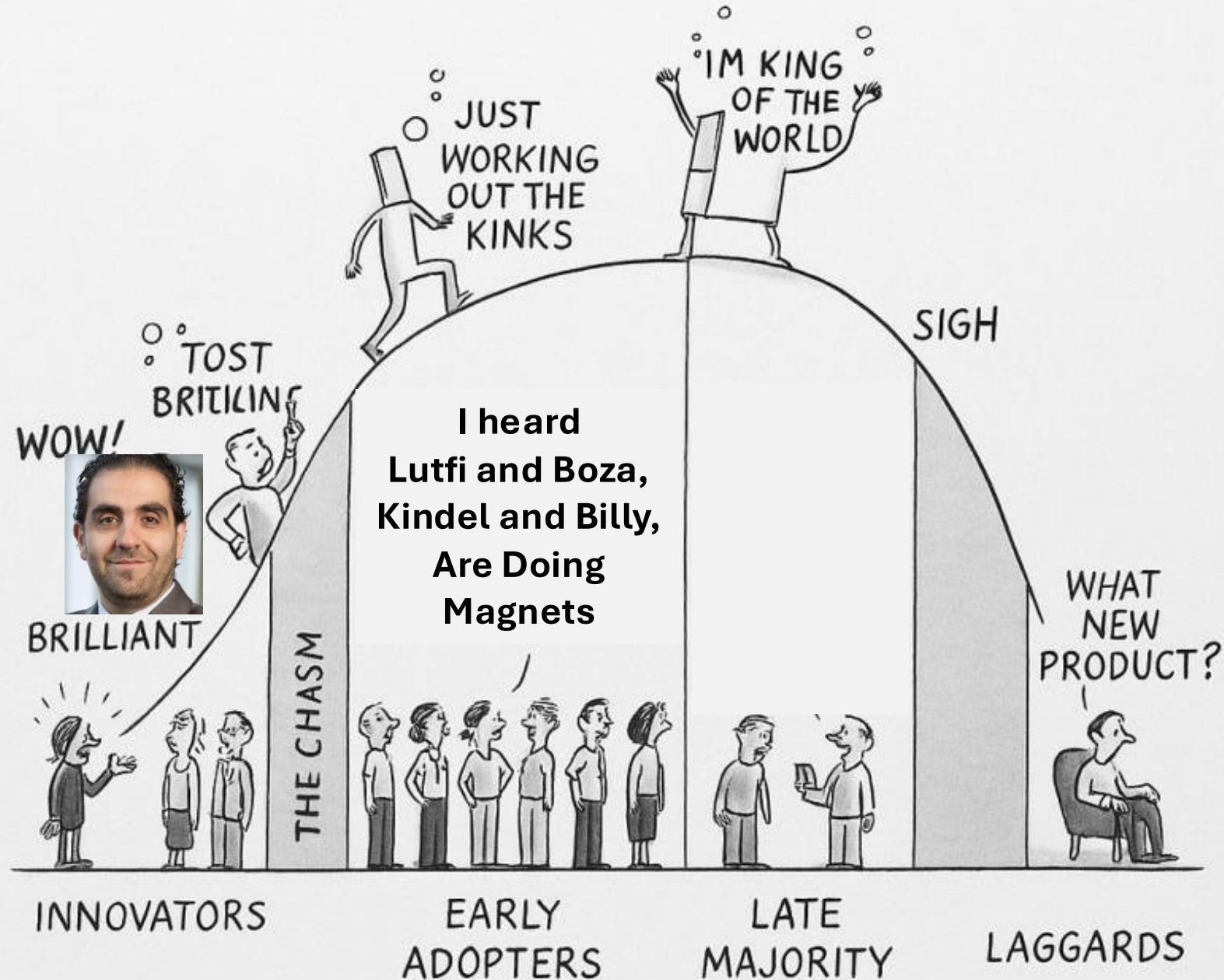
Conclusion:

- **Primary goal of innovation is better outcome with controlled cost**
 - Anastomotic mishaps and complications are the main driver for:
 - Downstream cost
 - Morbidity and mortality
 - Low patients' satisfaction
- **We should change our mind set about anastomoses → paradigm shift**
 - Compression Magnetic Anastomosis
 - Should be investigated as an alternative to conventional methods
 - **Dr. Lakdawala should come to Chicago to see how we do it**

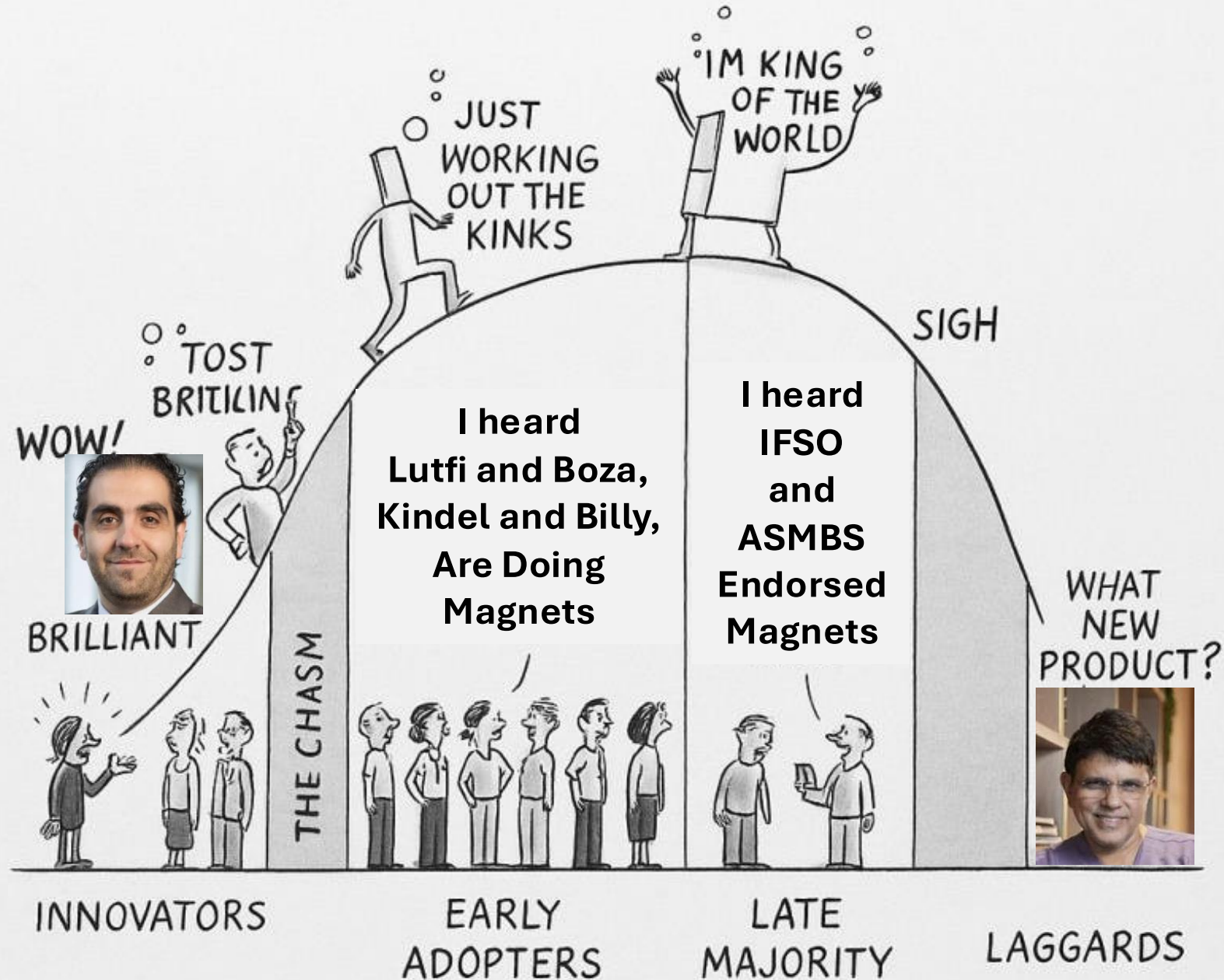
Innovation-Adoption Curve



Innovation-Adoption Curve



Innovation-Adoption Curve





Thank you
R. Lutfi