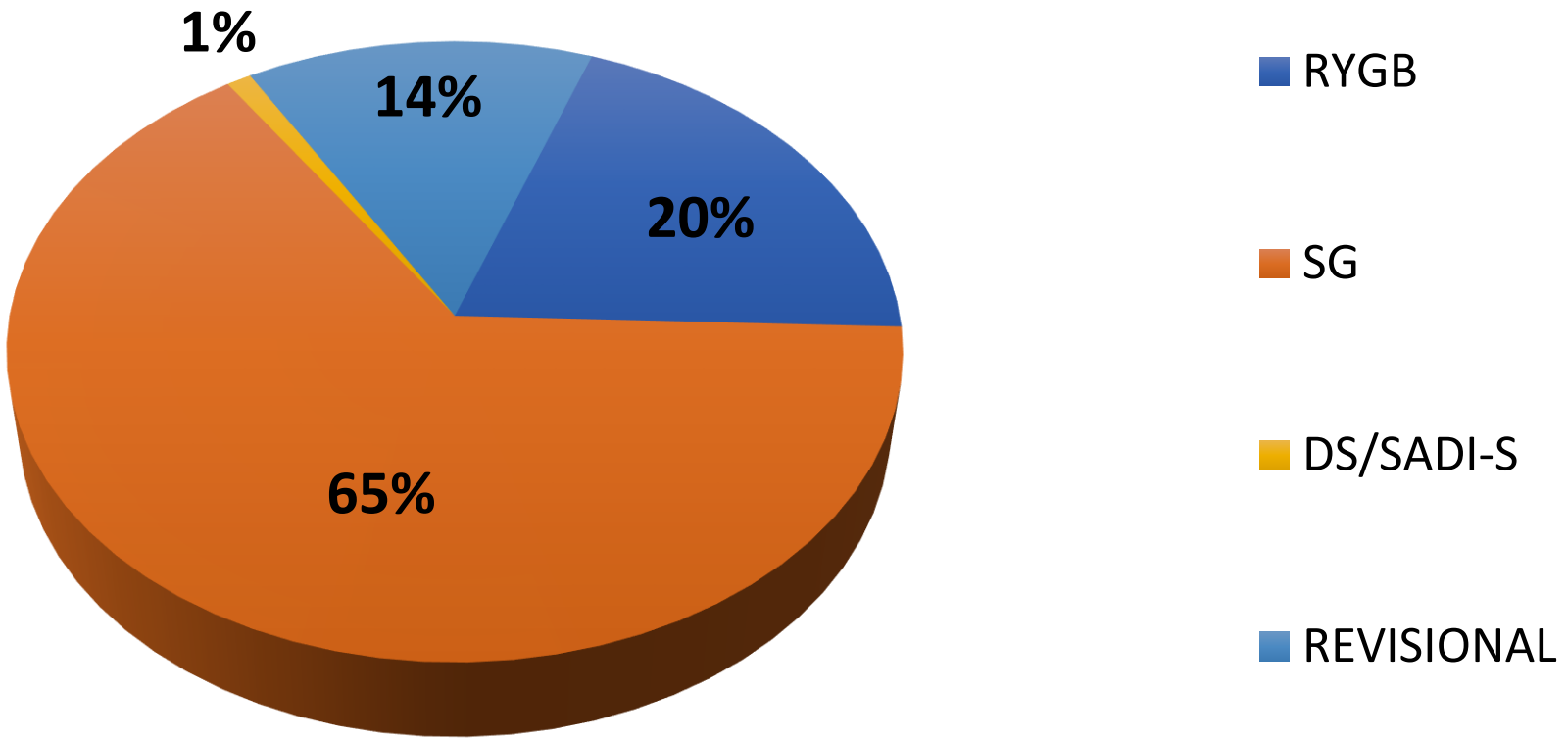
Robotic Bariatric Surgery Will be the Preferred Technique Before 2030

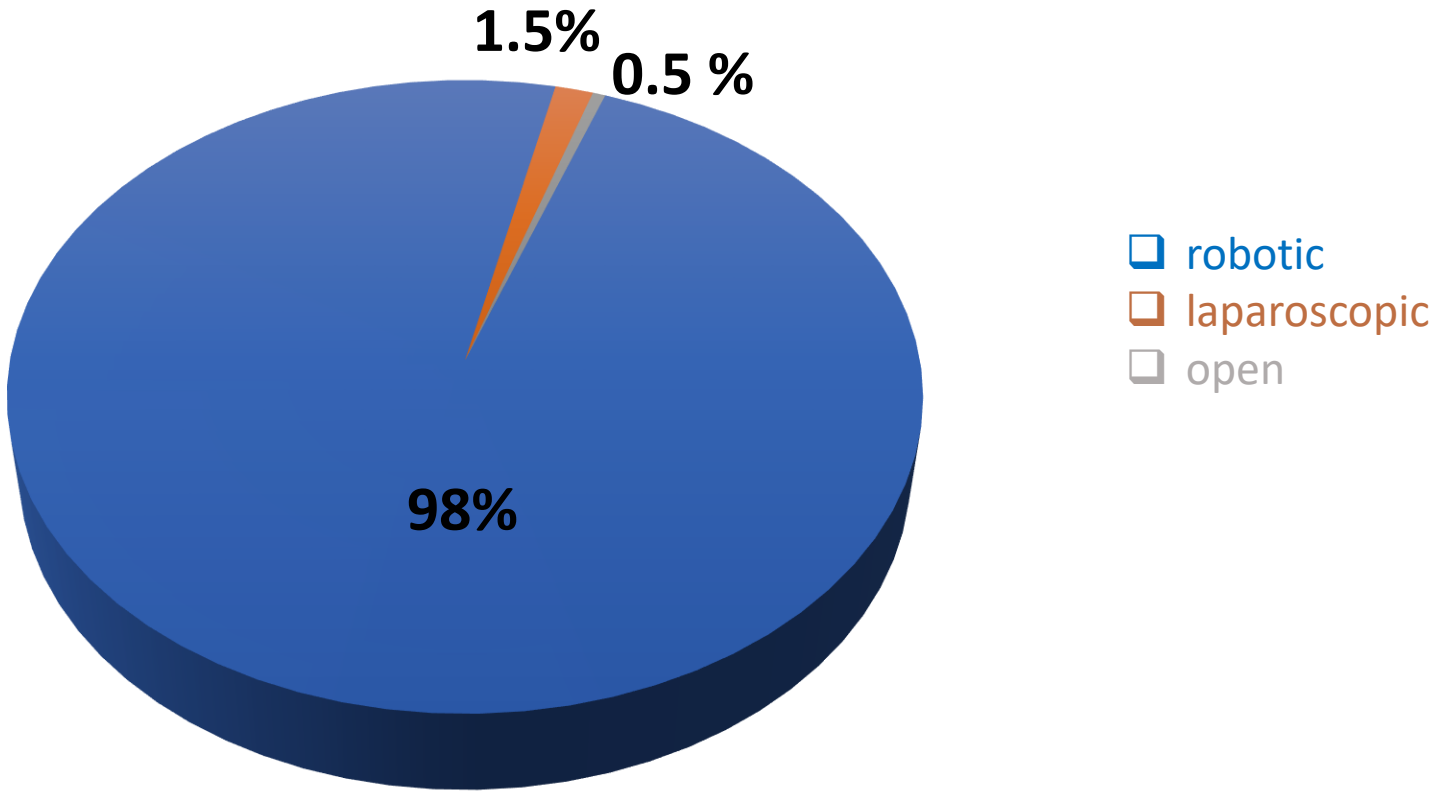
Ann M. Rogers, MD
President, ASMBS
IFSO Melbourne 2024

I have the following potential conflicts of interest to report:

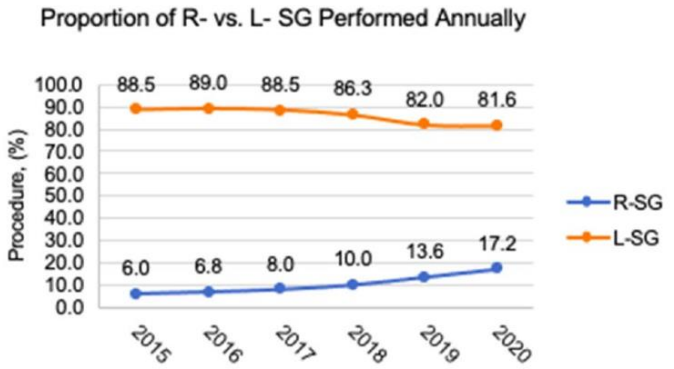
I have the following potential conflicts of interest to report:

- Intuitive Surgical - Speaker/Proctor
- WL Gore – Speaker/Proctor
- Medtronic - Speaker

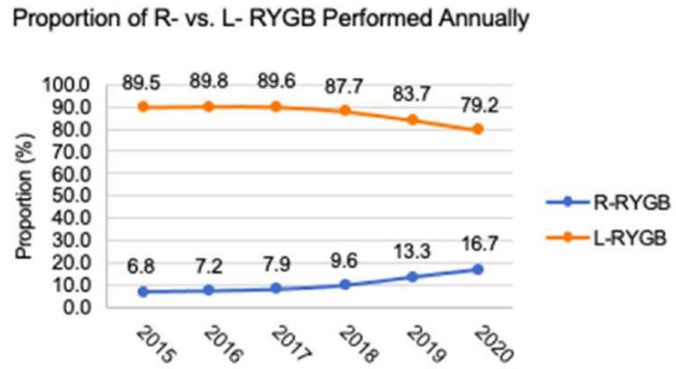

1%
14%
20%
65%
RYGB
SG
DS/SADI-S
REVISIONAL


1.5%
0.5 %
98%
robotic
laparoscopic
open

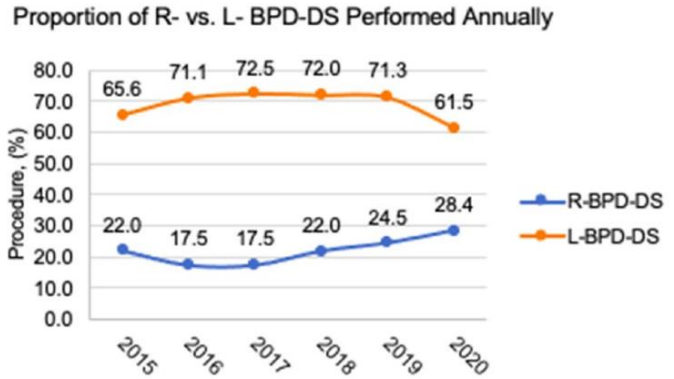
2015-2020 MBSAQIP PUF analysis showed over 17% of SG, nearly 17% of RYGB, and over 28% of DS were being performed robotically

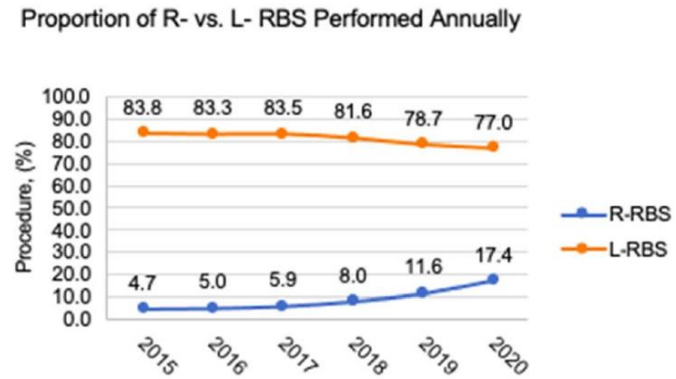


R-SG (n)	5229	6918	8868	11393	15350	17063
L-SG (n)	76908	90263	98522	98747	92552	80864



R-RYGB (n)	2554	2710	3023	3708	5372	6198
L-RYGB (n)	33661	33887	34445	33962	33781	29439





Obesity Surgery (2023) 33:482–491
https://doi.org/

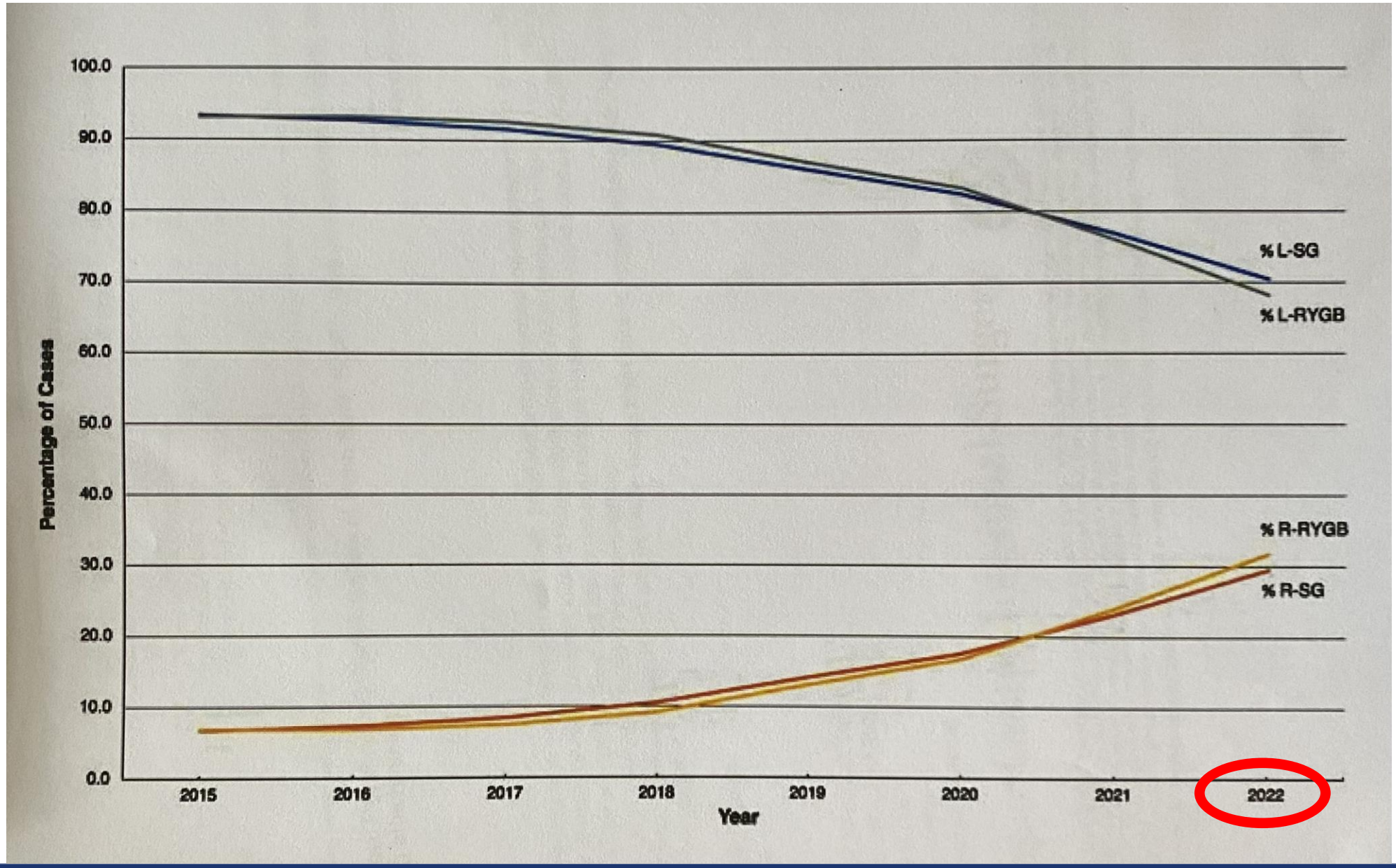
IFSO

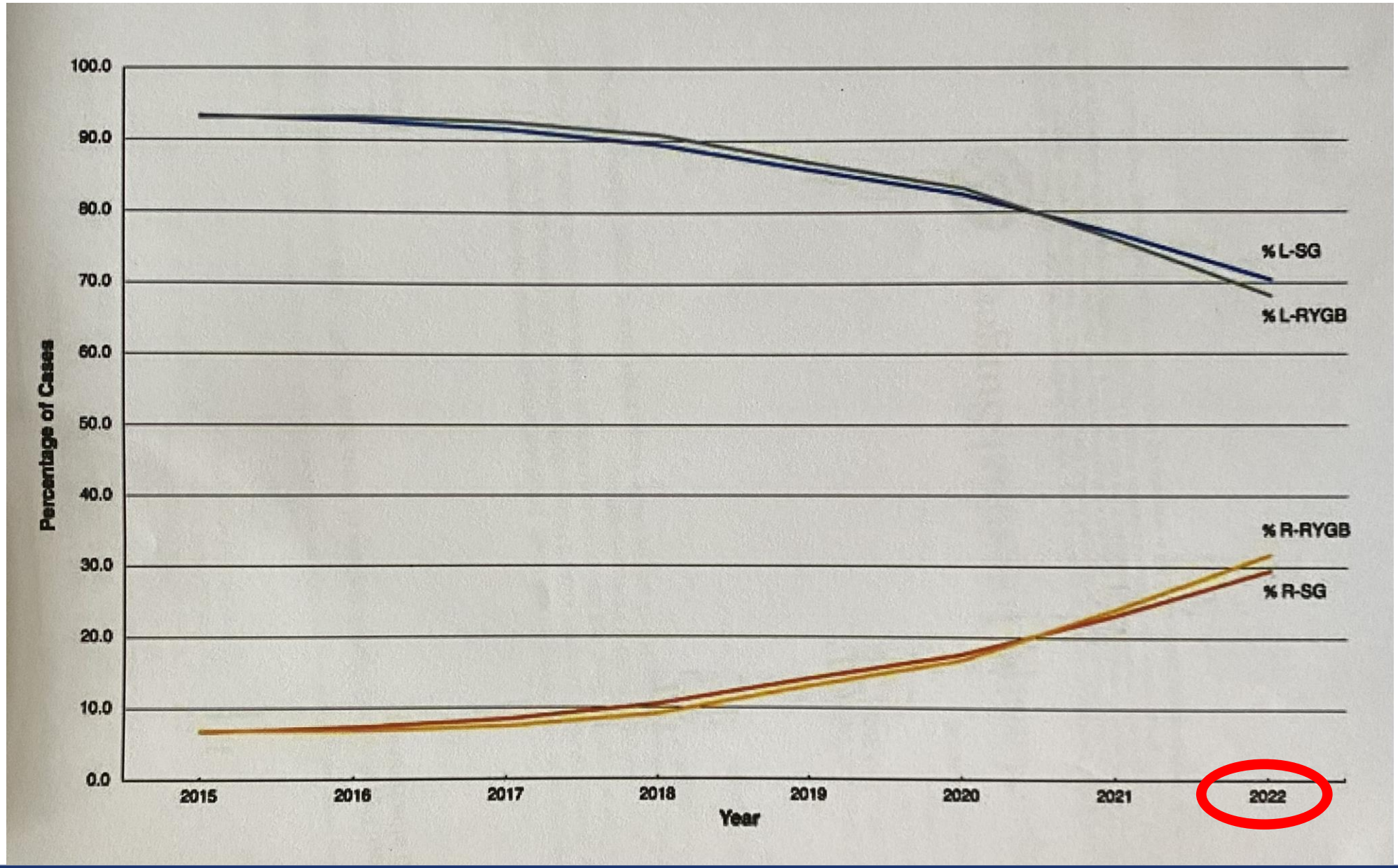
ORIGINAL CONTRIBUTIONS

Check for updates

Current Trends in the Utilization of a Robotic Approach in the Field of Bariatric Surgery

Wayne B. Bauerle[1] · Pooja Mody[2] · Allison Estep[2] · Jill Stoltzfus[3] · Maher El Chaar[2]

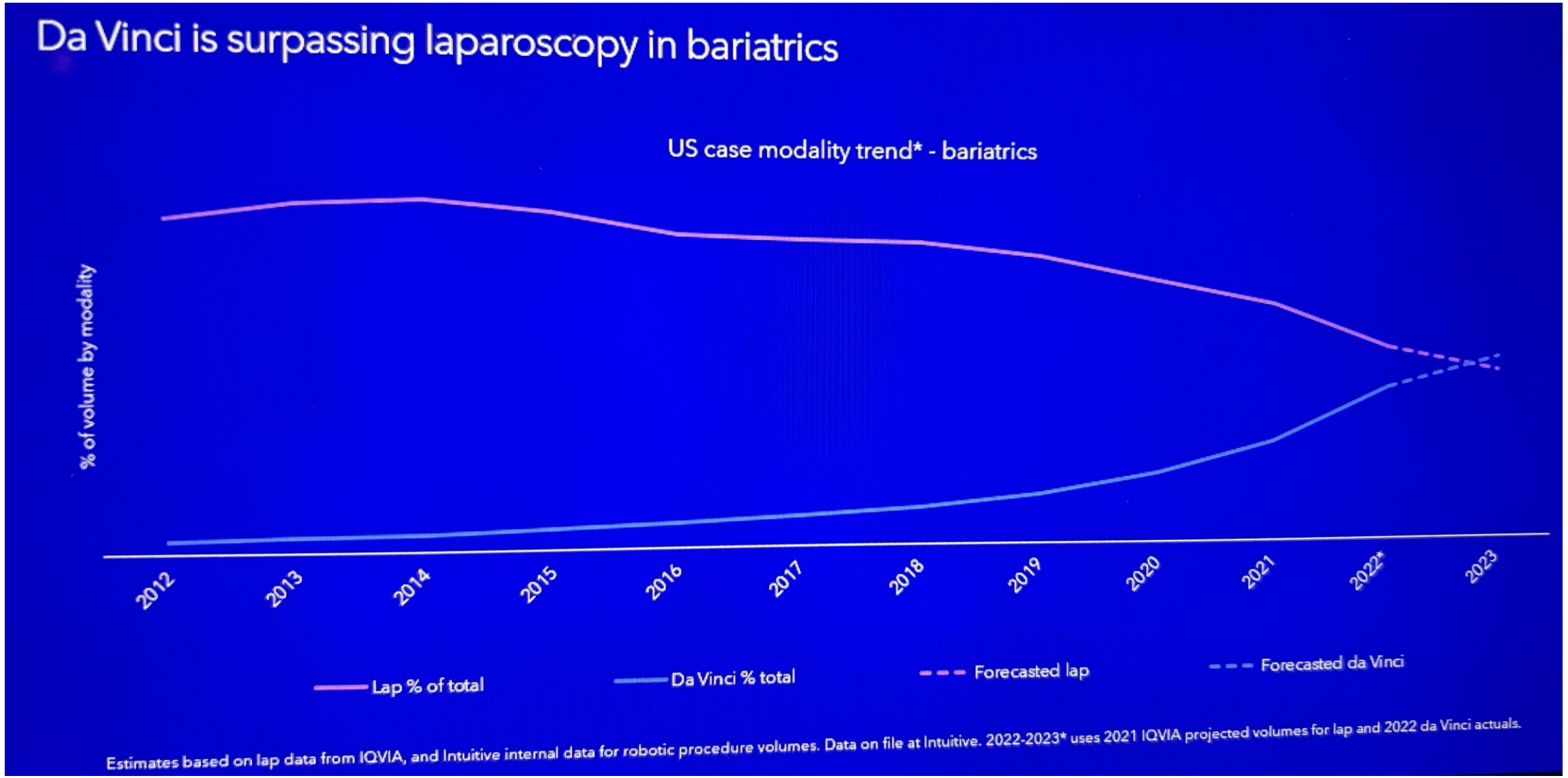

100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Percentage of Cases
% L-SG
% L-RYGB
% R-RYGB
% R-SG
2015
2016
2017
2018
2019
2020
2021
2022
Year



70% lap

30% robo

Da Vinci is surpassing laparoscopy in bariatrics



Estimates based on lap data from IQVIA, and Intuitive internal data for robotic procedure volumes. Data on file at Intuitive. 2022-2023* uses 2021 IQVIA projected volumes for lap and 2022 da Vinci actuals.

Robotic-Assisted and Laparoscopic Bariatric Surgeries Still Have Clinically Comparable Outcomes

Clay L. Cashman[1] · Swapnil V. Shah[1] · Alexander G. Hall[2] · Ryan W. Walters[2] · Kalyana C. Nandipati[3]

Obesity Surgery (2022) 32:2341–2348
https://doi.org/10.1007/s11695-022-06082-0

ORIGINAL CONTRIBUTIONS

Robotic vs. Laparoscopic Metabolic and Bariatric Surgery, Outcomes over 5 Years in Nearly 800,000 Patients

R. Wesley Vosburg[1,2] · Omar Haque[1,3] · Eve Roth[1,3]

Robotic SG has equal risk of VTE and organ dysfunction.
Robotic GBP has LOWER deep space SSI and organ space SSI; LOWER rate of transfusion; equal VTE and organ dysfunction.

Original article

Robotic versus laparoscopic gastric bypass in bariatric surgery: a systematic review and meta-analysis on perioperative outcomes

Yit J. Leang, M.B.B.S., F.R.A.C.S.[a,b,*], Naveen Mayavel, M.B.B.S.[b],
Wilson T. W. Yang, M.B.B.S., M.S(Sc).[b],
Joseph C. H. Kong, M.B.Ch.B., F.R.A.C.S., M.S., Ph.D.[a],
Chrys Hensman, M.B.B.S., F.R.A.C.S.[a], Paul R. Burton, M.B.B.S., F.R.A.C.S., Ph.D.[a,b],
Wendy A. Brown, M.B.B.S., F.R.A.C.S., F.A.C.S., Ph.D.[a,b]

Conclusion: This systematic review and meta-analysis showed that there was no significant difference in key outcome measures in robotic versus laparoscopic gastric bypass.

Robotic sleeve gastrectomy vs laparoscopic sleeve gastrectomy: our preliminary experience and a literature review

Tartaglia N., Pavone G., Petruzzelli F., Di Lascia A., Vovola F., Maddalena F., Cianci P., Fersini A., Pacilli M., Ambrosi A.

Conclusion. There aren't significant differences between the robotic and laparoscopic groups in terms of length of stay, EWL and complications, except for the mean operative time that is slightly higher in the robotic group and this difference is statistically significant. RSG proved to be a safe and efficient procedure, with satisfactory results comparable to LSG. Longer and larger studies are needed for a better comparative evaluation.

Inpatient opioid use and pain control after robotic versus laparoscopic sleeve gastrectomy

Tariq Saleh, BS · Jordanne Ford, BA · Tammy Kindel, MD PhD · Rana Higgins, MD · Kathleen Lak, MD · Jon Gould, MD MBA · Wen Hui Tan, MD Show less

Conclusion

There is no difference in inpatient opioid use or pain scores between patients undergoing laparoscopic and robotic sleeve gastrectomy.

Original Research Article

Thirty day outcomes for laparoscopic versus robotic sleeve gastrectomy: Does the stapler matter?

Sarah Samreen [a], Shih-Hao Lee [b], Yuki Liu [b], Feibi Zheng [b,c], Michael Edwards [d,*]

Conclusions: When stapler type used is accounted for, patient outcomes following RSG and LSG are equivalent.

Journal of Robotic Surgery (2024) 18:34
https://doi.org/10.1007/s11701-023-01748-y

RESEARCH

Robot-assisted vs laparoscopic bariatric procedures in super-obese patients: clinical and economic outcomes

Giuseppe Marincola[1] · Priscilla Francesca Procopio[1,2] · Francesco Pennestrì[1,2] · Pierpaolo Gallucci[1] · Nikolaos Voloudakis[1,2] · Luigi Ciccoritti[1] · Francesco Greco[1] · Giulia Salvi[1,2] · Francesca Prioli[1] · Carmela De Crea[1,2] · Marco Raffaelli[1,2]

"Robotic platforms may help the surgeon to overcome the technical difficulties in super-obese (SO, BMI ≥ 50 kg/m2) patients, in which multi-quadrant operations could be challenging. Intraoperative and post-operative complication rates and LOS were comparable."

Review

Advancements in Bariatric Surgery: A Comparative Review of Laparoscopic and Robotic Techniques

Velardi A.M. [1,*], Anoldo P. [2], Nigro S. [1] and Navarra G. [1]

Abstract: This article examines the evolution of bariatric surgery, with a focus on emerging technologies such as robotics and laparoscopy. In the case of gastric bypass, no significant differences have emerged between the two techniques in terms of hospitalization duration, weight loss, weight regain, or 30-day mortality. Robotic surgery, while requiring more time in the operating room, has been associated with lower rates of bleeding, mortality, transfusions, and infections. In revisional bariatric surgery, the robotic approach has shown fewer complications, shorter hospital stays, and a reduced need for conversion to open surgery. In the case of sleeve gastrectomy, robotic procedures have required more time and longer post-operative stays but have recorded lower rates of transfusions and bleeding compared to laparoscopy. However, robotic surgeries have proven to be more costly and potentially more complex in terms of post-operative complications. The review has also addressed the topic of the single anastomosis duodeno-ileal switch (SADIS), finding comparable results between robotic and laparoscopic techniques, although robotic procedures have required more time in the operating room. Robotic technology has proven to be safe and effective, albeit with slightly longer operating times in some cases.

Original Article

Outcomes of totally robotic single-anastomosis duodenal–ileal bypass with sleeve gastrectomy: A large single-centre series

Lun Wang, Zeyu Wang, Tao Jiang*

Conclusion: Totally robotic SADI-S seems to be feasible and effective in the treatment of morbid obesity, just like laparoscopic SADI-S. The learning curve of robotic SADI-S is 27 cases.

Robot-assisted duodenal switch with DaVinci Xi: surgical technique and analysis of a single-institution experience of 661 cases

Andre Teixeira [1], Muhammad Jawad [1], Muhammad Ghanem [1], Alexis Sanchez [2], Cristina Inchausti [3], Ivan Mogollon [4], Romulo Lind [1]

We describe our technique using the system DaVinci Xi. Operative and perioperative variables, postoperative complications, and readmission rate were determined. A total of 661 patients underwent duodenal switch which correspond to the 20.7% of the total bariatric procedures performed in this period. A clear decrease in surgical time and length of stay was observed as the number of cases progressively increased. The complication rate during the first 30 days was 9.1%. Among these, only 1.9% corresponded to major complications, being strictures the most frequent (0.9%), followed by leaks (0.45%). Readmission rate in this period was 6.1%. Between 30 and 90 days postoperatively, the complication rate was 0.91%. Robotic-assisted duodenal switch is a safe surgery with a low complication rate. This procedure is highly effective in terms of durable weight loss in obese and super-obese patients. Robotic DaVinci Xi system allows surgeons to achieve a high level of proficiency and master technique resulting in reduction of surgical time and length of stay.

A202

IMPROVED SURGICAL OUTCOMES OF ROUX-EN-Y GASTRIC BYPASS (RYGB), SLEEVE GASTRECTOMY (SG), AND DUODENAL SWITCH (DS) PERFORMED TOTALLY ROBOTIC VERSUS LAPAROSCOPIC

Dennis Smith *Celebration FL*[1], Ciara Lopez *Celebration FL*[2], Sharon Krzyzanowski *Celebration FL*[2], Catherine Santos *Celebration FL*[2], Cynthia Buffington *Celebration FL*[2]
AdventHealth Celebration Hospital[1] AdventHealth[2]

Maybe it's not just equivalent… maybe it's better!!

Conclusions: MBS performed totally robotic vs. LAP is associated with a faster rate of recovery (LOS), and, for the RYGB and SG, fewer complications and a shorter time in surgery.

THE ADVANTAGES OF TOTALLY ROBOTIC (TR) METABOLIC BARIATRIC SURGERY (MBS) ON SURGICAL OUTCOMES OF PATIENTS WITH TYPE 2 DIABETES

Cynthia Buffington *Celebration FL*[1], Dennis Smith *Celebration FL*[1], Ciara Lopez *Celebration FL*[1], Sharon Krzyzanowski *Celebration FL*[1], Catherine Santos *Celebration FL*[1]
AdventHealth[1]

Background: Diabetes increases surgical risk for MBS patients. In this study we have examined the effects of totally robotic (TR) versus laparoscopic (LAP) surgery on peri- and 30-day postoperative surgical outcomes of MBS patients with Type 2 diabetes (T2D).

Conclusion: Surgical outcomes are improved with the totally robotic system over conventional laparoscopy for patients with T2D.

I’m old enough to have been a lap chole naysayer – you can do an open chole in 20 minutes skin-to-skin – why would you torture yourself for hours doing it laparoscopically??!

International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 03 Issue 11 November 2023

Page No: 2754-2757

DOI: https://doi.org/10.47191/ijmscrs/v3-i11-40, Impact Factor: 6.597

Comparing Bile Duct Injuries: Open Versus Laparoscopic Cholecystectomy

David H. Corral Federico*[1], Ian Xavier Gil Fernández[2], Marthel Aketzali Carrillo Hernández[3], Alejandro Alcalde Márquez[4], David Arturo Colina Lopez[3], Francisco Alvarez Trejo[5], Benjamín Fernández Reséndiz[6], Aarón Díaz Navar[7].

Safety and Efficacy of Laparoscopic Cholecystectomy

A Prospective Analysis of 100 Initial Patients

JEFFREY H. PETERS, M.D., E. CHRISTOPHER ELLISON, M.D., JEFFERY T. INNES, M.D., JONATHAN L. LISS, B.A., KEITH E. NICHOLS, M.D., JACK M. LOMANO, M.D., SHERI R. ROBY, P.A., MARY E. FRONT, R.N., and LARRY C. CAREY, M.D.

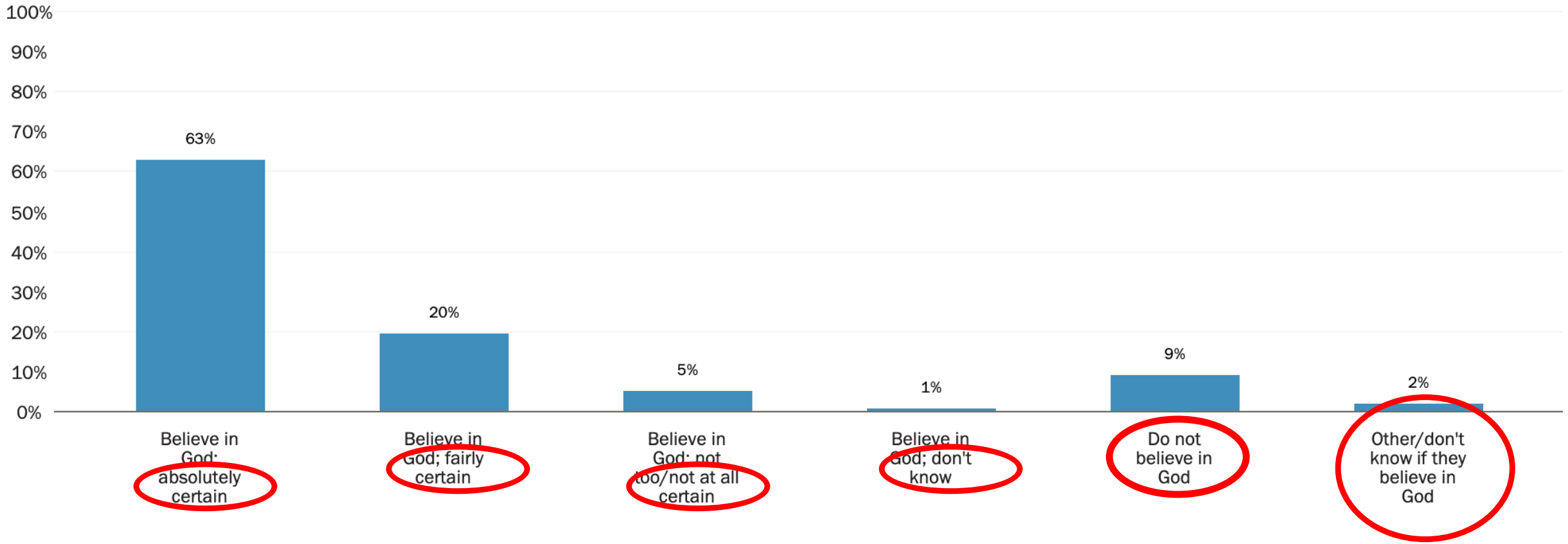
BUT HOW QUICKLY DID IT BECOME THE GOLD STANDARD?!!

It’s harder to demonstrate differences between lap and robotic, unlike obvious differences between open and laparoscopic…

At this point, a surgeon's opinion on the laparoscopic vs. robotic literature seems to depend on whether the surgeon uses robotics or not…

Belief in God

% of adults who say they...



Review Article

Robotic primary bariatric surgery

Vivek Bindal[1], Daksh Sethi[2], Dhananjay Pandey[1]

"The robotic system offers improved ergonomics and less fatigue for the surgeon; even better in patients with severe obesity. There are more degrees of freedom, particularly while performing difficult dissection and sutured anastomoses."

Review Article

Robotic primary bariatric surgery

Vivek Bindal[1], Daksh Sethi[2], Dhananjay Pandey[1]

"Cost has always been the center of the debate... When direct cost is analysed, it always appears to be higher; however, with overall cost it isn't so... Hagen et al. took into consideration complications and readmissions. The overall cost in their study was lower for robotic compared to lap gastric bypass. Hand-sewn anastomosis in place of the stapler during robotic procedures also decreases cost…"

Review Article

Robotic primary bariatric surgery

Vivek Bindal[1], Daksh Sethi[2], Dhananjay Pandey[1]

"Robotics provides a digital interface between patient and surgeon - a huge potential with AI and machine learning. With fluorescence, image integration, virtual and augmented reality, tele-surgery, single site platforms, natural orifice surgery and haptic feedback, we believe that it can potentially change the way surgery is practiced today."

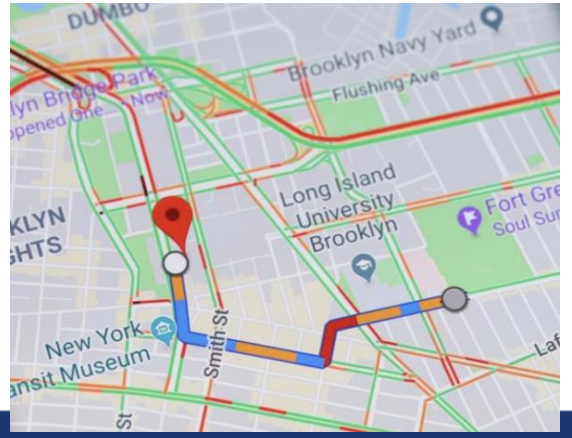
This is disruptive technology

Other examples of disruptive technology:

- **Mobile phones**
- **Ride apps**
- **Movie streaming services**
- **GPS systems**

Other examples of disruptive technology:

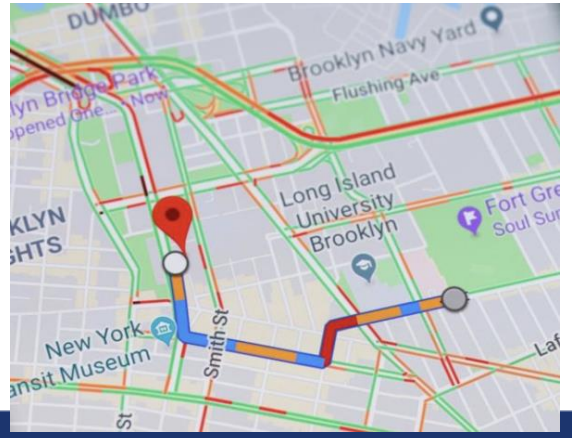
- Mobile phones
- Ride apps
- Movie streaming services
- GPS systems



Other examples of disruptive technology:

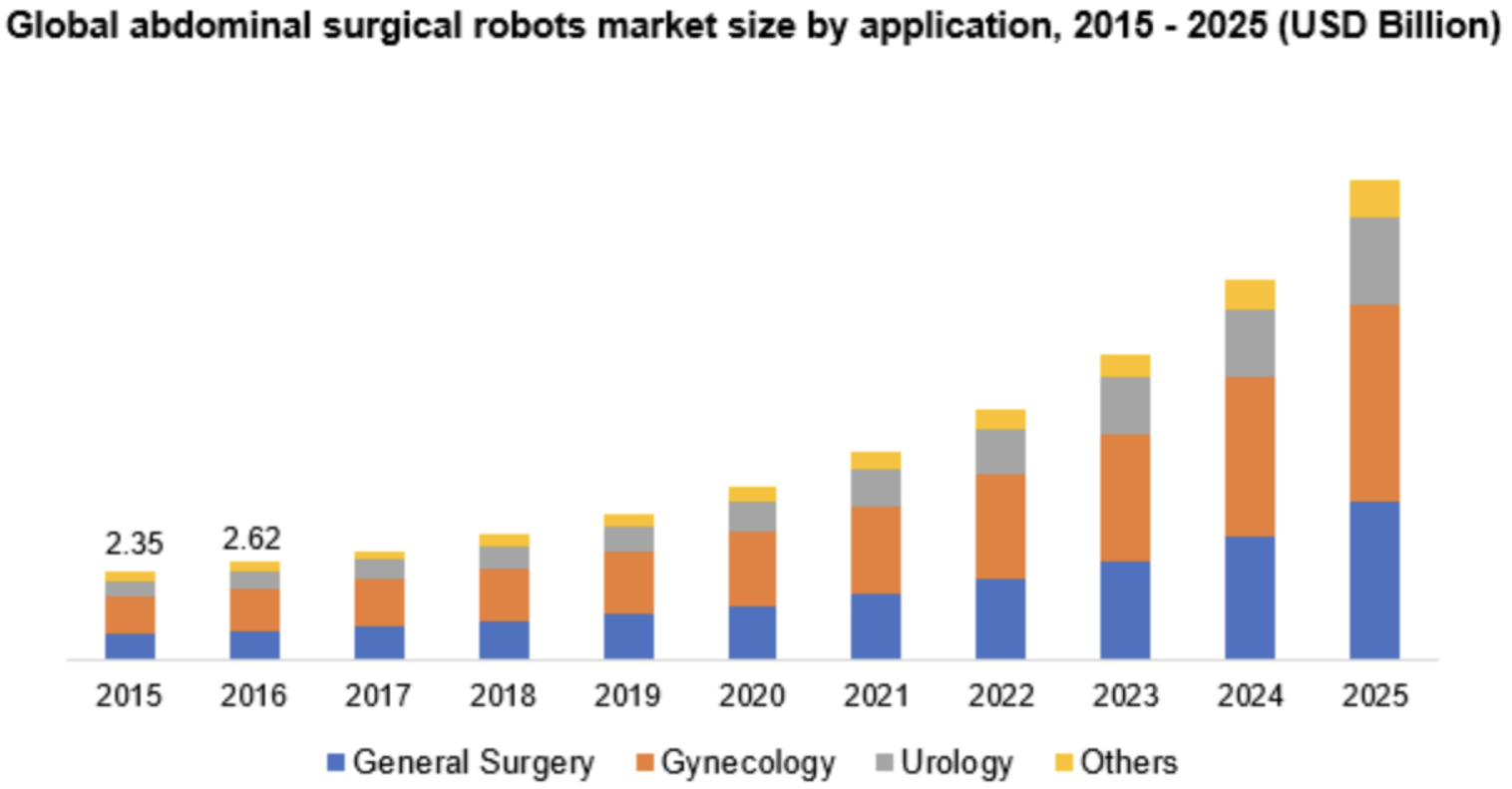
- Mobile phones
- Ride apps
- Movie streaming services
- GPS systems

WE'RE NEVER GOING BACK!

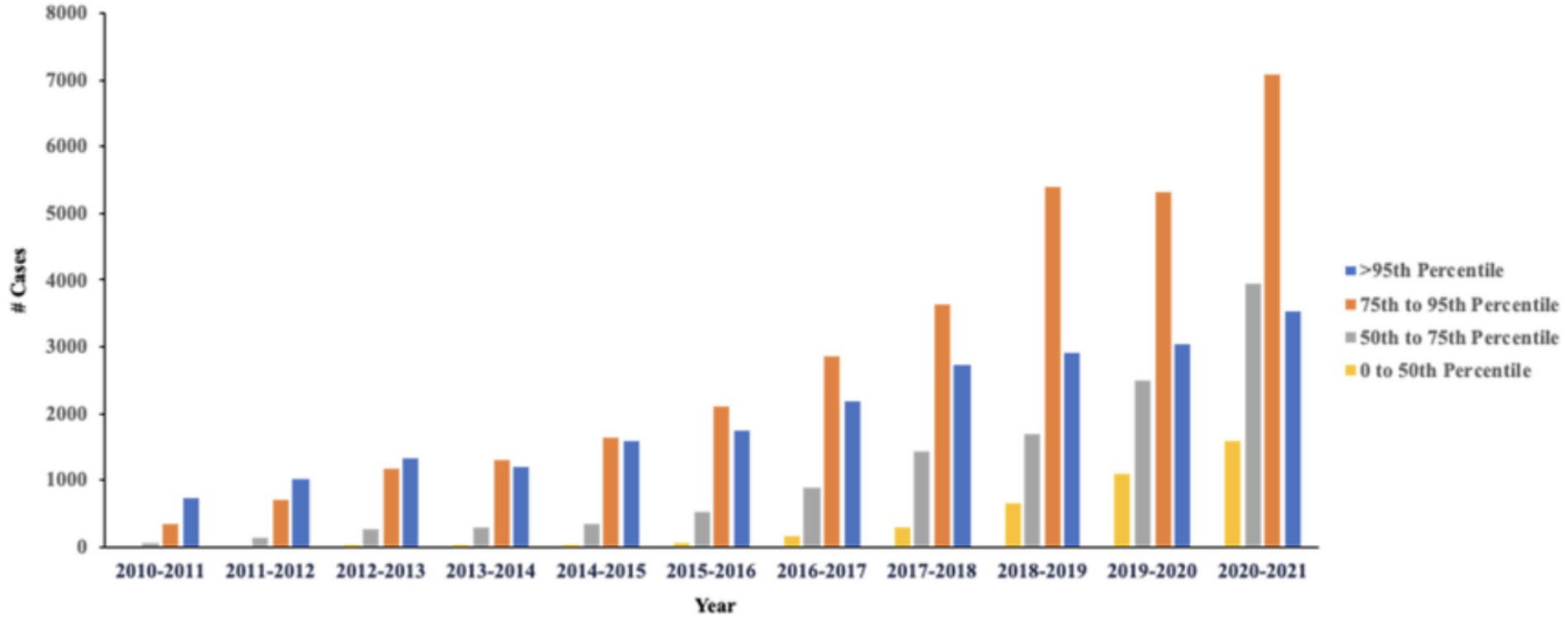


Bottom Line

- You may not like robotics for any or all of your cases
- But it's is here to stay in bariatric surgery as in all surgeries



MIS fellow training in robotics is growing and will lead to surgeons' demand for the robot in jobs



Change in number of robotic cases performed per year stratified by MIS fellow case logs in the 0–50th percentile, 50th–75th percentile, 75th–95th percentile, and > 95th percentile of robotic utilization

Robotic Bariatric Surgery Will be the Preferred Technique Before 2030

Thanks

Ann M. Rogers, MD, FACS, FASMBS
arogers@pennstatehealth.psu.edu
+1 717-395-5641