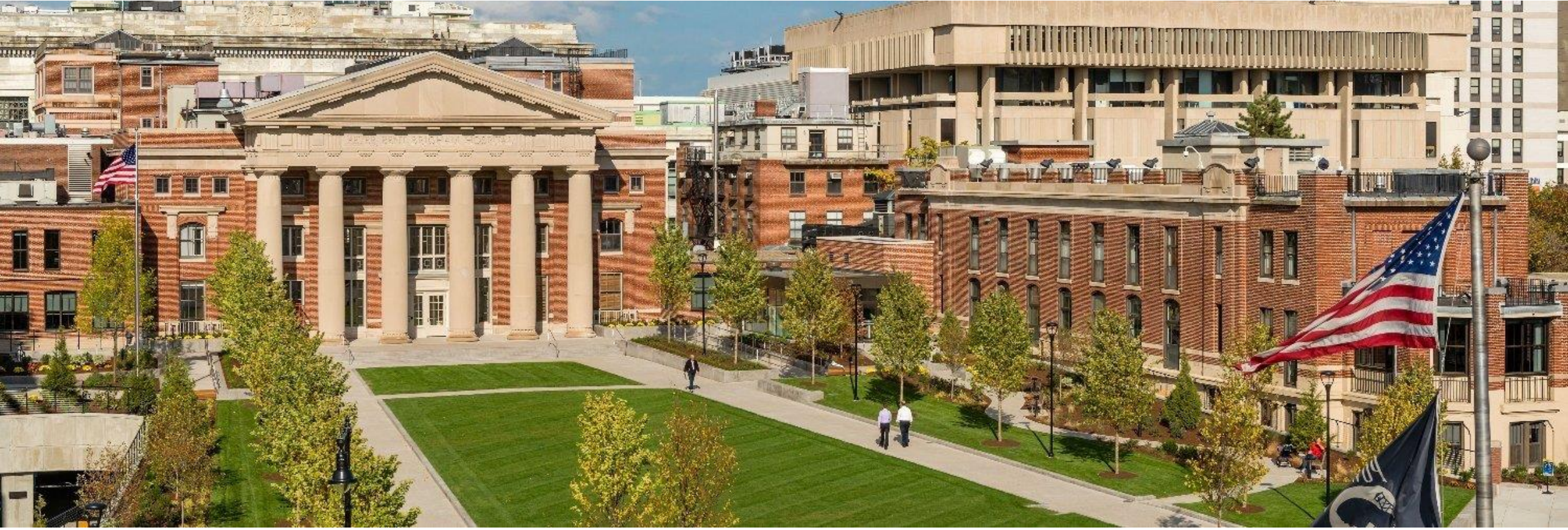

Robotic Metabolic/Bariatric Surgery: value of an assist port

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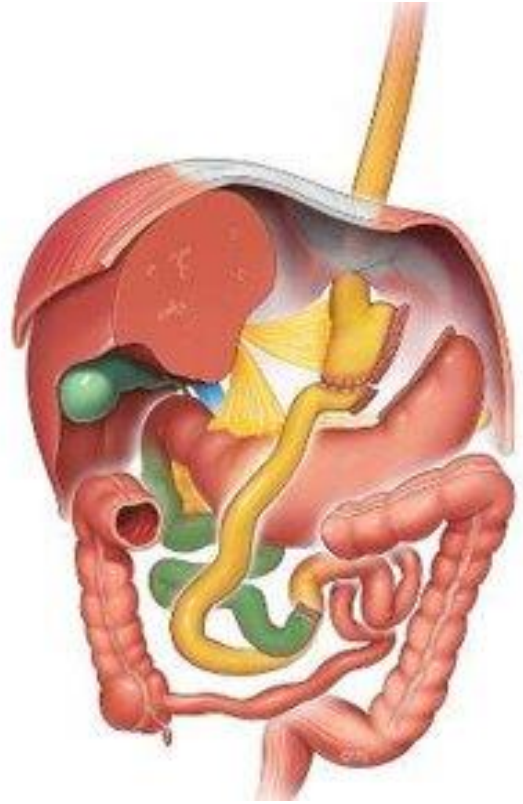
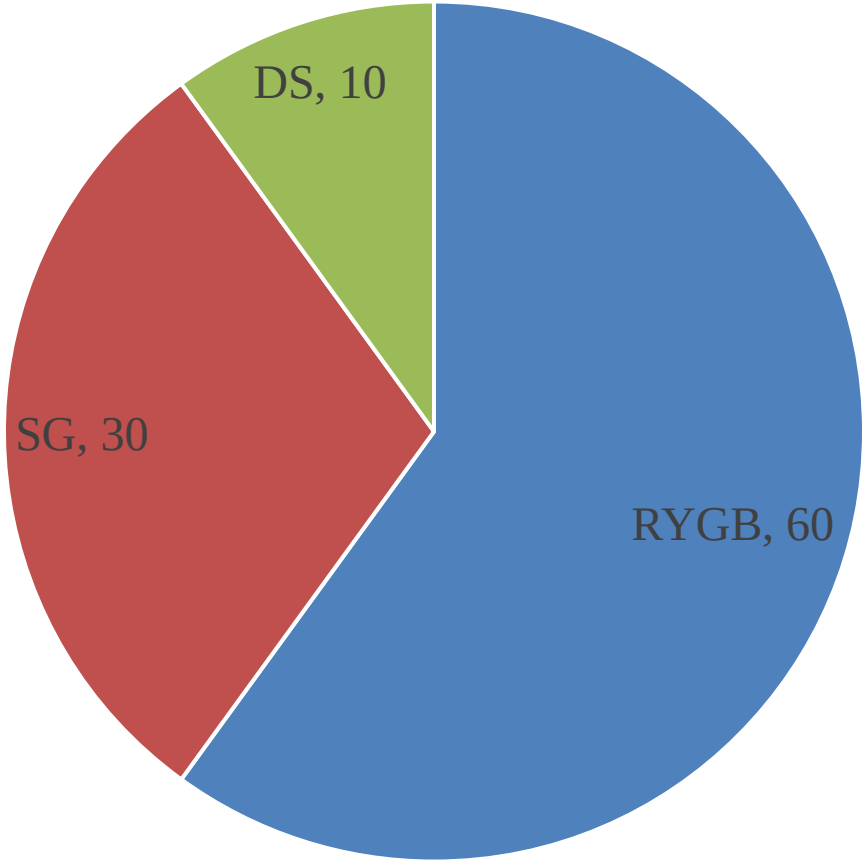
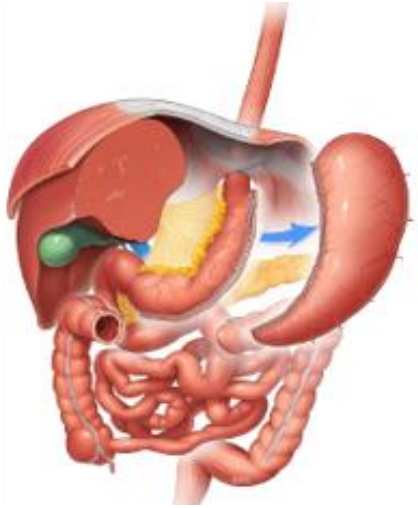
Speaker/Advisory board, Medtronic, Intuitive & Ethicon







Presentation outline

- *Utilization of Robotic vs laparoscopic MBS.*
- ***Value of robotic MBS compared to laparoscopic MBS.***
- *Benefits of an assist port, things to consider & why I stopped using an assist port.*

History of Metabolic/Bariatric Surgery

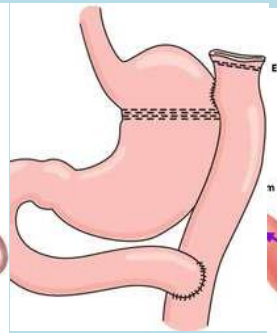
10% Mortality
50% Morbidity

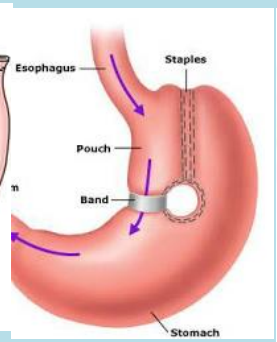
Safety, Serendipity, Innovation

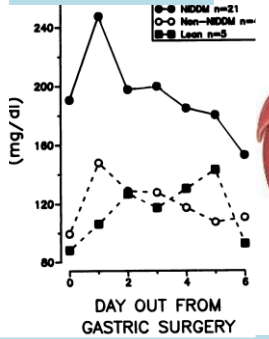
1954, A.J. Kremen
1956 JH Payne

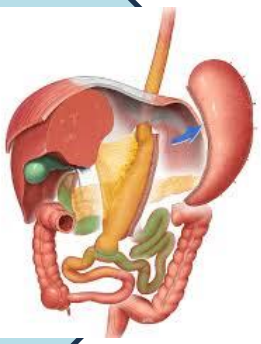
Robotic Bariatric Surgery
1998 Himpens

1954-1956 **1967** **1970s** **1976** **1988** **1994** **1995** **1998** **1998** **2000** **2007**









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Kremen, A.JAm. J. Surg. *118:141*, 1969

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Changes in Utilization of Bariatric Surgery in the United States From 1993 to 2016

Any complication

Mortality

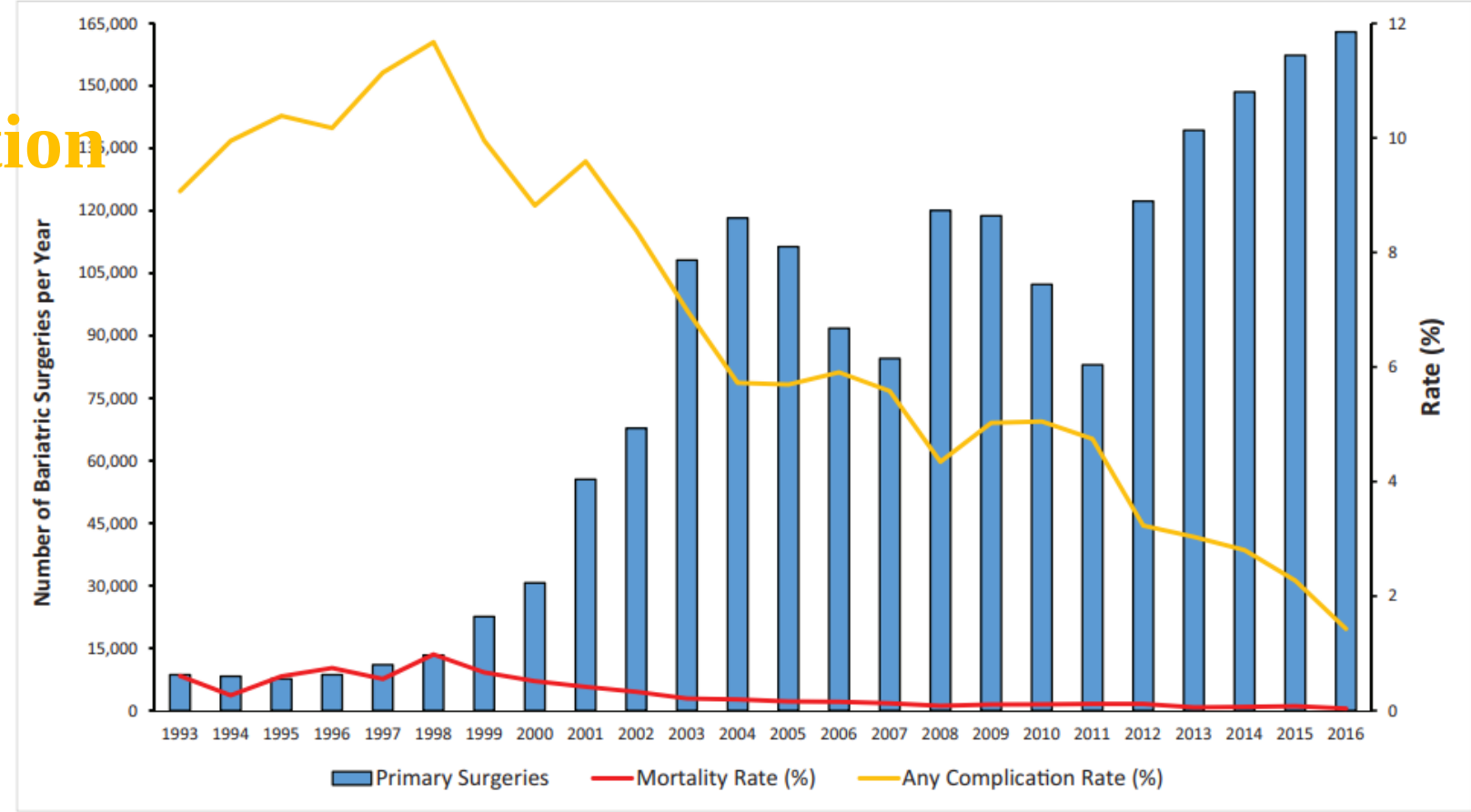
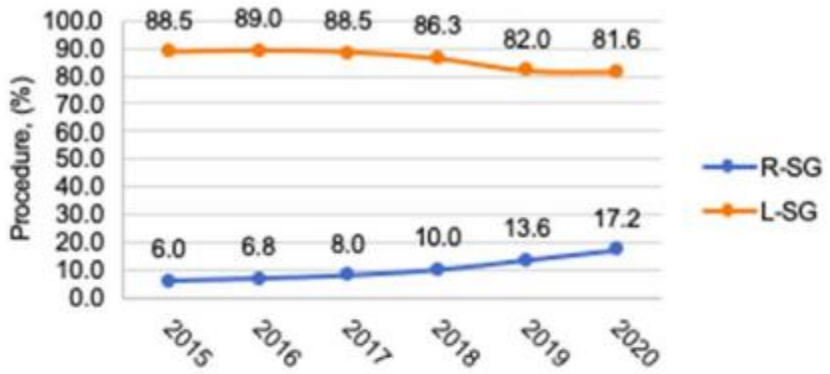
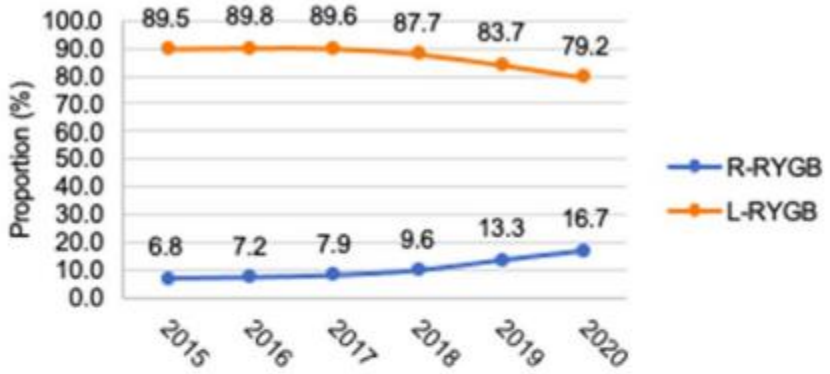


FIGURE 2. Number of inpatient primary bariatric surgery procedures and initial admission complication and mortality rates in the United States from 1993 to 2016.

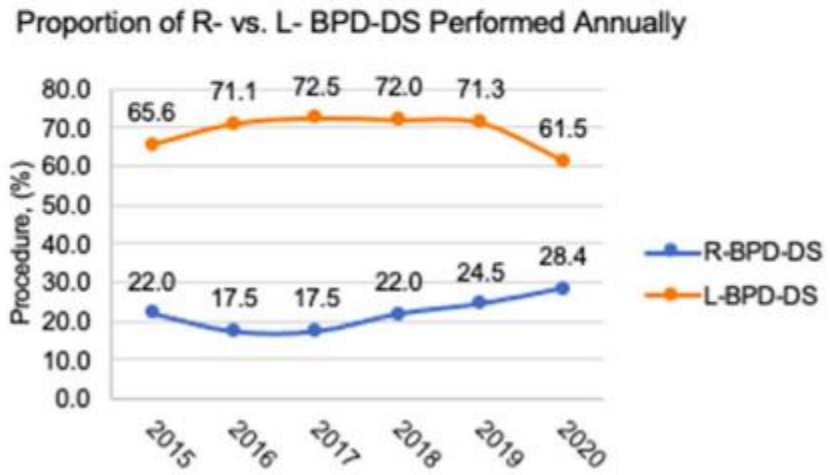
Robotic vs laparoscopic MBS 2015-2020



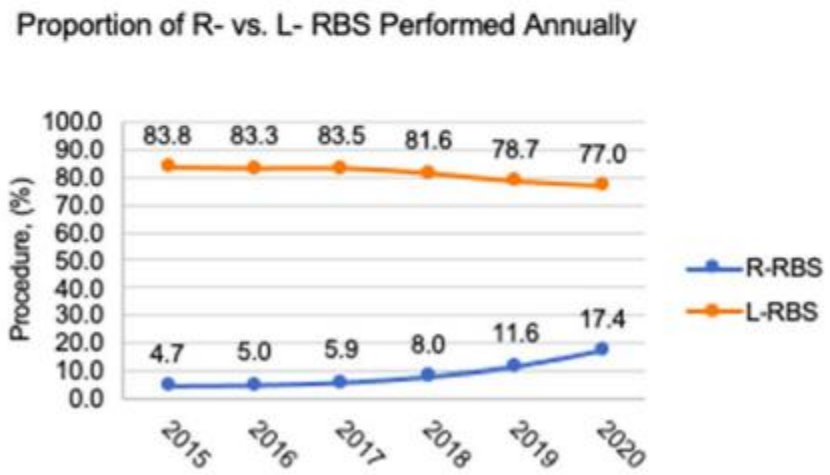
	2015	2016	2017	2018	2019	2020
R-SG (n)	5229	6918	8868	11393	15350	17063
L-SG (n)	76908	90263	98522	98747	92552	80864



	2015	2016	2017	2018	2019	2020
R-RYGB (n)	2554	2710	3023	3708	5372	6198
L-RYGB (n)	33661	33887	34445	33962	33781	29439



	2015	2016	2017	2018	2019	2020
R-BPD-DS (n)	221	205	272	447	506	393
L-BPD-DS (n)	659	832	1123	1465	1472	852

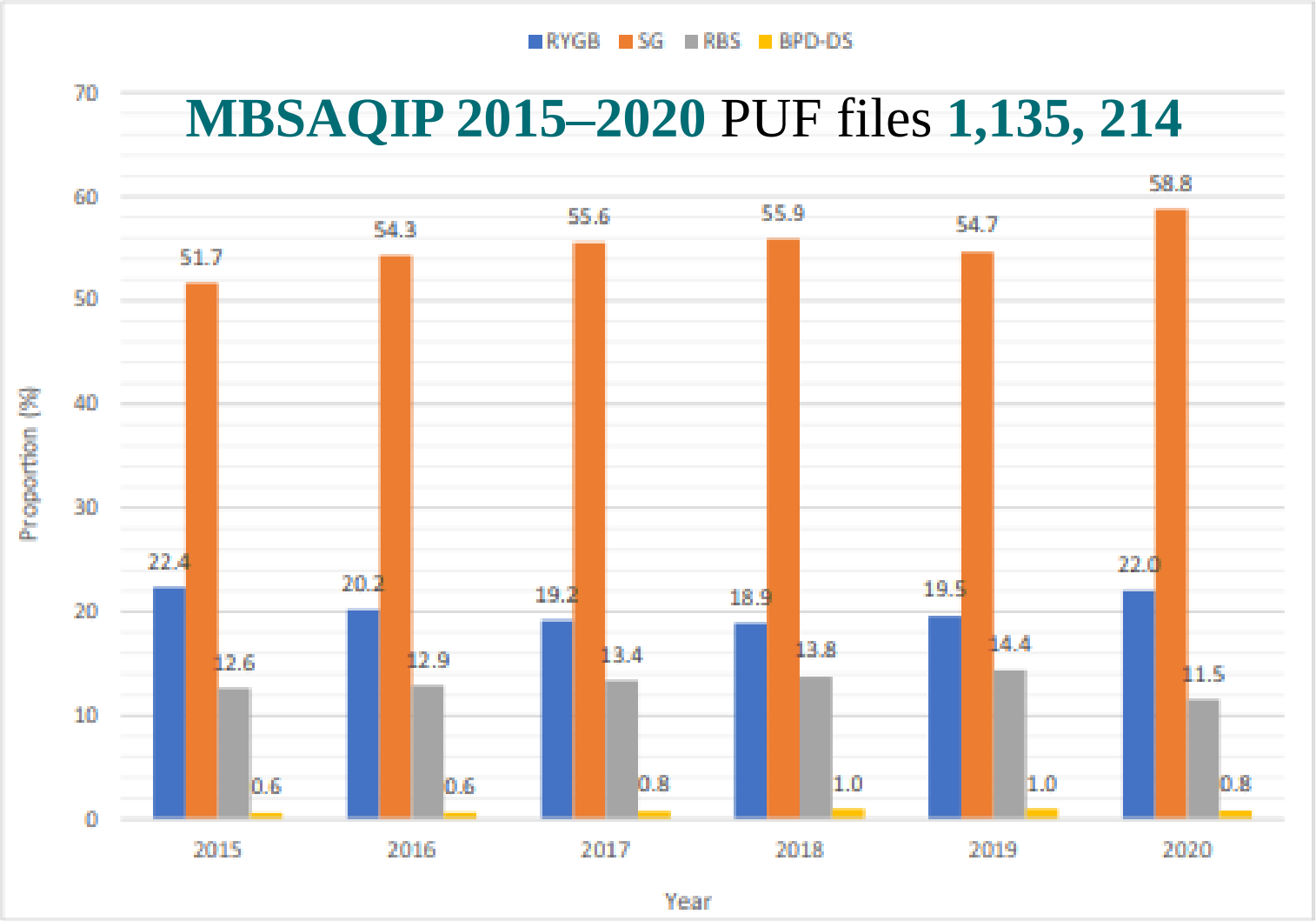


	2015	2016	2017	2018	2019	2020
R-RBS (n)	993	1199	1585	2257	3435	3386
L-RBS (n)	17737	20053	22364	23011	23330	14964

R-RYGB from (**6.8% to 16.7%**).
R-SG from (**6.0% to 17.2%**).
R-RBS from (**4.7% to 17.4%**).
R-BPD-DS from (**22.0% to 28.4%**).

W Bauerle et al Obes Surg. 2023; 33(2): 482–491.

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



Key of Procedure Type: RYGB = Roux-en-Y Gastric Bypass, SG = Sleeve Gastrectomy, RBS = Revisional Bariatric Surgery, and BPD-DS = Biliopancreatic Diversion with Duodenal Switch

Robotic SG 17%
Robotic RYGB 16.7%
Robotic DS 28.4%
Robotic Revisional MBS 17.4%

Greatest increase was in **R-RBS & R-SG** (3.70-fold difference; slope 2.4% per year & 2.87-fold difference; slope 2.2% per year.

Conclusion: There is a nationwide **increase in the utilization** of a R-approach in MBS.

There are concerns related to the potential **increase in healthcare expenditures** related to robotics.

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Presentation outline

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- ***Value of robotic MBS compared to laparoscopic MBS.***
- ***Benefits of an assist port, things to consider & why I stopped using an assist port.***

Value of robotic MBS compared to laparoscopic MBS

- *3 D compared to 2D laparoscopy.*
- **Dexterity of fingers, Left hand & steadiness.**
- *Ergonomics for surgeon.*
- **Instruments are easier to use.**
- *High BMI patients.*
- ***RYGB [handsewn GJA]& SADI-S & DS.***

Kai Siang Chan 1, Aung Myint J Gastro Surg 2023 Dec;27(12):2946-2982. **Establishing the Learning Curve of Laparoscopic and Robotic Distal Gastrectomy: a Systematic Review and Meta-Regression Analysis**

Laparoscopic versus robotic-assisted primary bariatric-metabolic surgery. Are we still expecting to overcome the learning curve? A propensity score-matched analysis of the MBSAQIP database

- Of **1,059,348** cases meeting inclusion criteria, **921,322 (87%)** laparoscopic MBS, **matched 1:1** with robotic MBS (**138,026**).
- **Reoperation** [OR] 1.07; 95% confidence interval [CI] 1.00-1.15, P = .0463), **postoperative morbidity** (OR 1.07; 95% CI 1.01-1.12, P = .0193), readmission (OR 1.14; 95% CI 1.09-1.18, P < .0001), & **ED visits** (OR 1.06; 95% CI 1.03-1.09, P = .0003) at 30 days postoperatively **were significantly greater for robotic-assisted cases.**
- **Robotic-assisted cases had a similar mortality** rate at 30 days postoperatively & **LOS >3 days** when compared with conventional laparoscopic cases.
- Similar results were observed in cases from 2020 to 2021, except for reoperation and ED visits, which showed no difference between groups and length of stay >3 days, which was greater in robotic-assisted cases.

Predictors and Outcomes Associated with Bariatric Robotic Delivery: An MBSAQIP Analysis of 318,151 Patients

- MBSAQIP PUF 2020 to 2021, 318,151 (20.7%) robotic RYGB/SG.
- Patients undergoing robotic procedures were **older** (43.4 ± 11.8 vs. 43.1 ± 11.8; $p < 0.001$) and had **higher (BMI**; 45.4 ± 7.9 vs. 45.0 ± 7.6; $p < 0.001$).
- Robotic cases had higher rates of medical comorbidities, including **OSA, HLD, (GERD),** and **T2DM**. Robotic cases were more likely to undergo **RYGB** (27.4% vs. 26.4%; $p < 0.001$).
- Robotic patients had higher rates of numerous complications, including **bleed**, **reoperation**, and **reintervention**, resulting in **higher serious complication** rates on multivariate analysis. Independent predictors of robotic selection included **increased BMI** (aOR 1.02), female sex (aOR 1.04), **GERD** (aOR 1.12), **metabolic dysfunction**, **RYGB** (aOR 1.08), **black racial status** (aOR 1.11), and **lower albumin** (aOR 0.84).

Comparing the Efficacy of Robotic Versus Laparoscopic Sleeve Gastrectomy: A Systematic Review and Meta-Analysis

- We incorporated 21 articles. Both the RSG and LSG cohorts exhibited comparable rates of readmission, conversion, mortality, and incidence of complications ($p > 0.05$).
- Moreover, the efficacy of weight loss was similar between RSG and LSG.
- Nonetheless, **RSG was linked to longer operative duration** (WMD, -27.50 minutes; 95% [CI], -28.82 to -26.18; $p < 0.0001$), **prolonged hospitalization** (WMD, -0.15 days; 95% CI, -0.25 to -0.04; $p = 0.006$), and **elevated expenses** (WMD, -5830.9 dollars; 95% CI, -8075.98 to -3585.81; $p < 0.0001$).
- **Conclusions:** While both RSG and LSG demonstrated positive postoperative clinical outcomes, RSG patients experienced extended hospital stays, longer operative times, and increased hospitalization costs compared to LSG patients.
- **Using the robotic platform for (SG) in patients with obesity did not appear to offer any clear benefits.**

A Systematic Review to Summarise and Appraise the Reporting of Surgical Innovation: a Case Study in Robotic Roux-en-Y Gastric Bypass

- **Robotic Roux-en-Y gastric bypass (RRYGB)** is an innovative alternative to traditional laparoscopic approaches. This systematic review used the **Idea, Development, Exploration, Assessment and Long-term follow-up (IDEAL)** framework to assess the reporting quality of available literature.
- **Forty-seven studies** published between **2005 and 2024** were included.
- There **was incomplete/inconsistent reporting of governance/ethics, patient selection, surgeon expertise/training and technique description, with heterogenous outcome reporting**.
- RRYGB **reporting was poor and did not align with IDEAL guidance**.
- Robust prospective studies reporting findings using IDEAL/ other guidance are required to facilitate safe widespread adoption of RRYGB and other surgical innovations.

Presentation outline

- *Utilization of Robotic vs laparoscopic MBS.*
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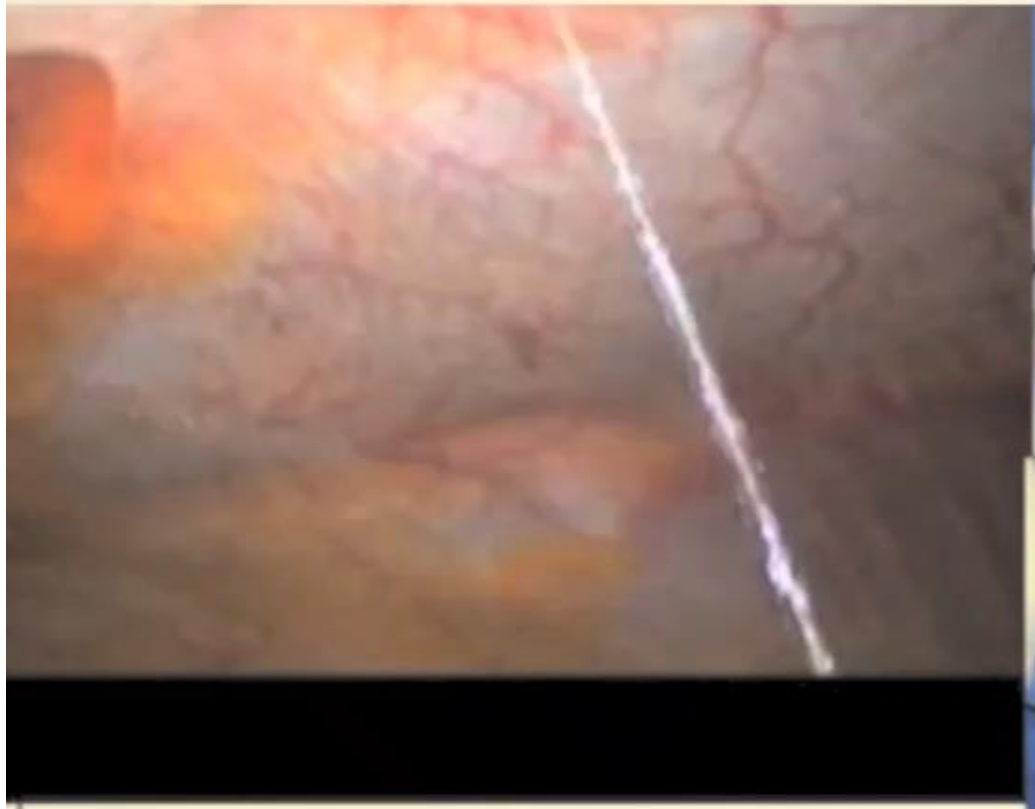
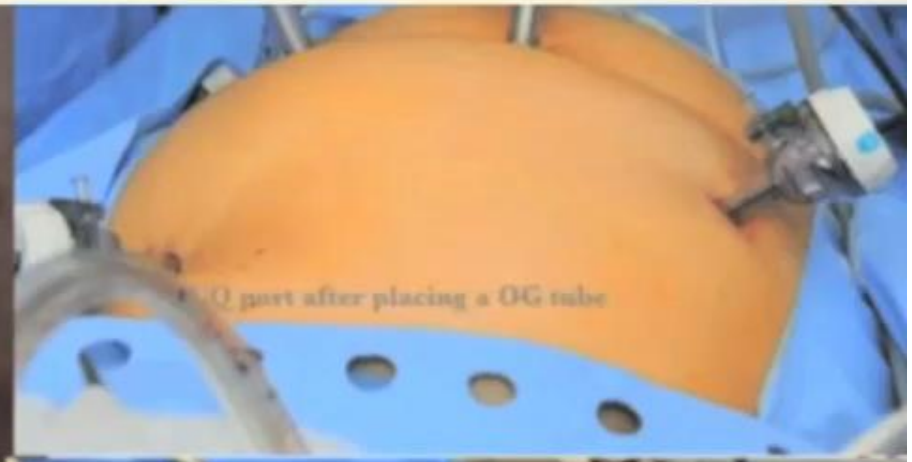
What to consider when doing robotic MBS compared to laparoscopy

- *Port positioning*
- **Table motion.**
- *Bed side assist experience.*
- **Liver retractor set up.**
- *Bowel measurement strategy.*
- **Sponge in the abdomen.**
- *When to place sutures in the abdomen.*

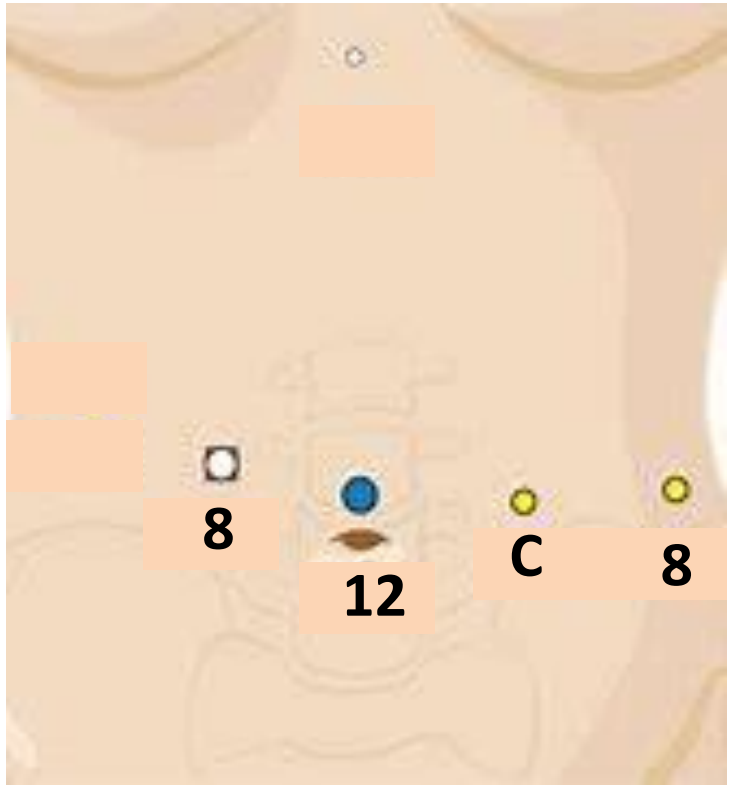
Place ports based on inside anatomy



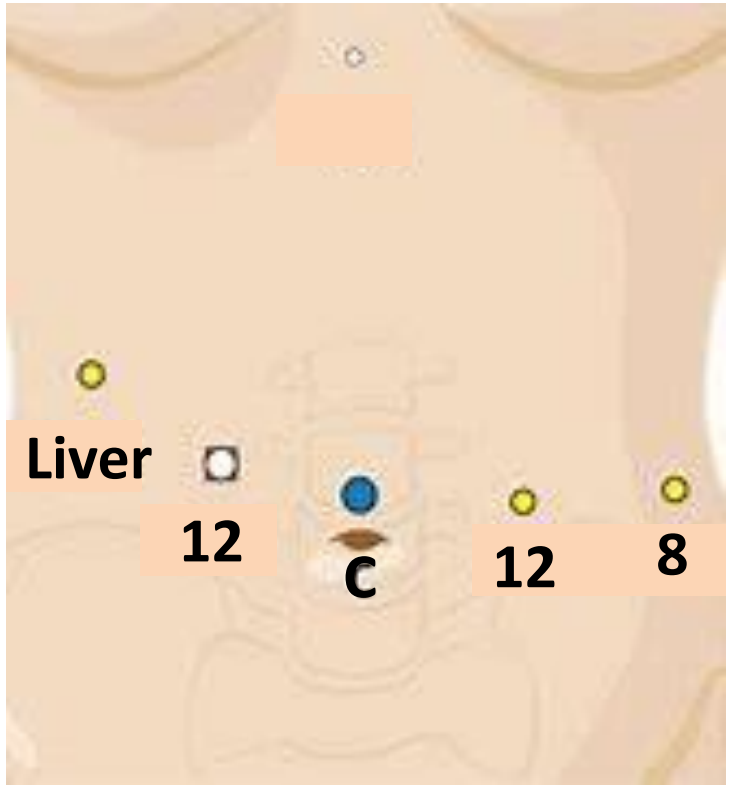


What to consider when doing robotic MBS compared to laparoscopy

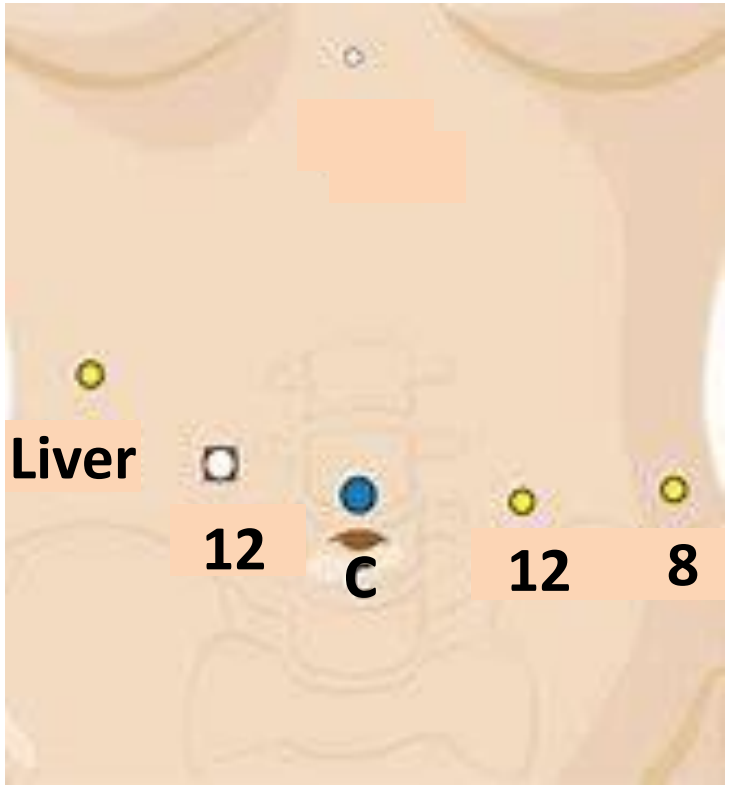
Consider the experience of your Bed side assist.



Sleeve gastrectomy

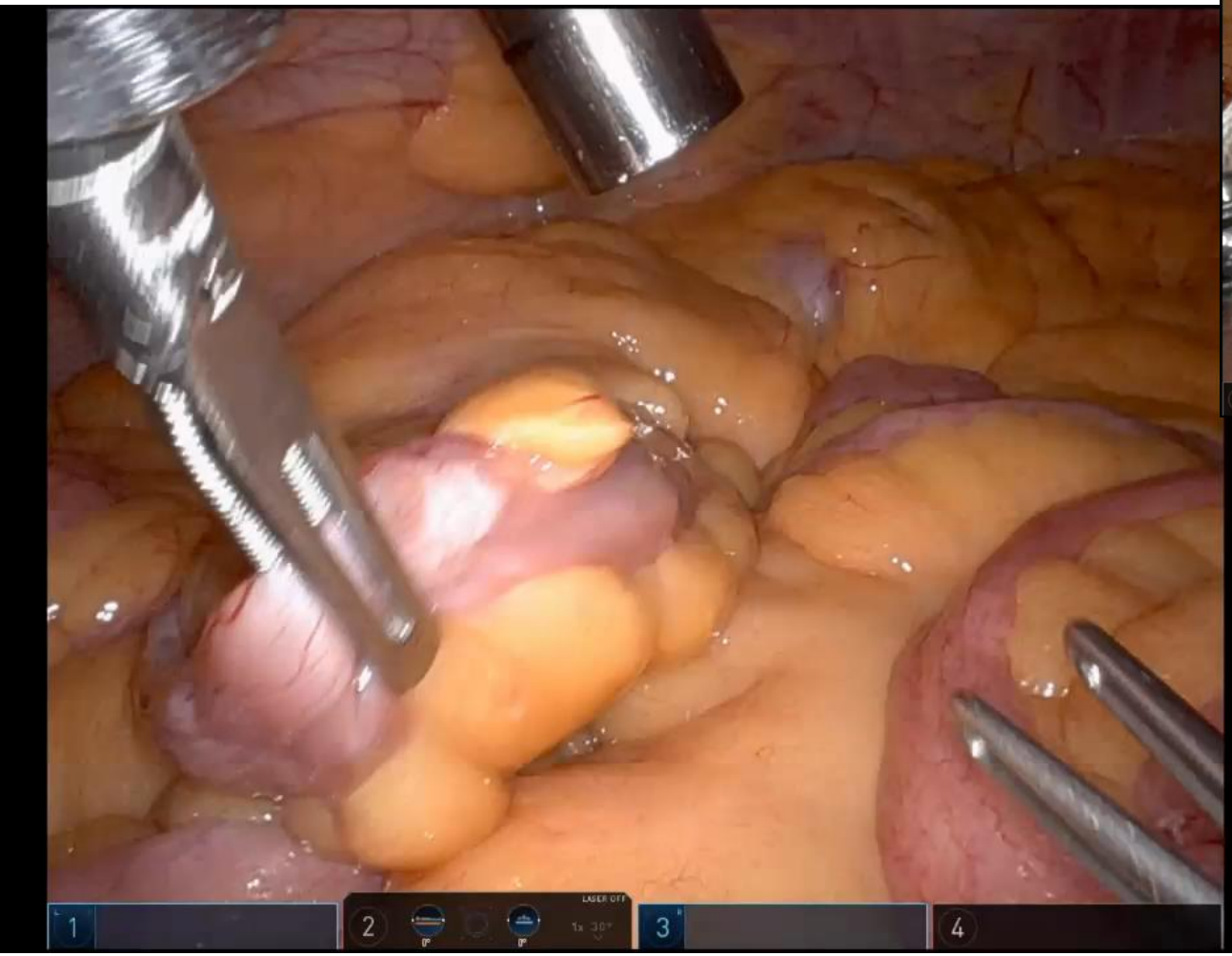


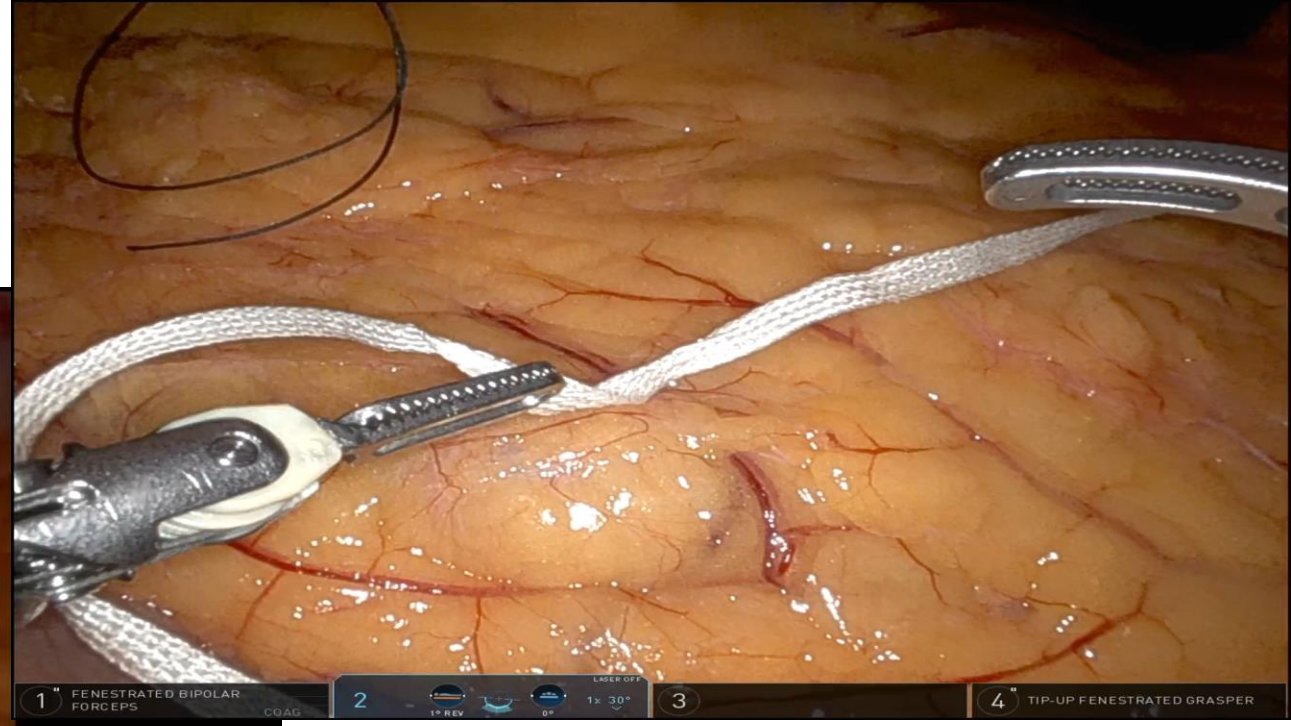
Roux en Y gastric bypass



SADI&DS

Table motion, unless your OR table has table motion. Start the case in reverse Trendelenburg.



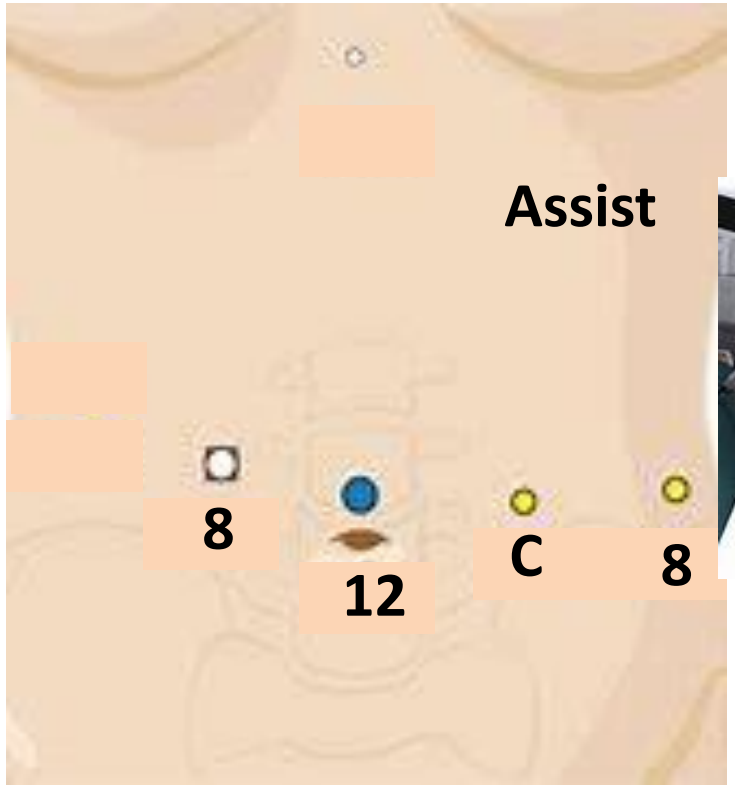


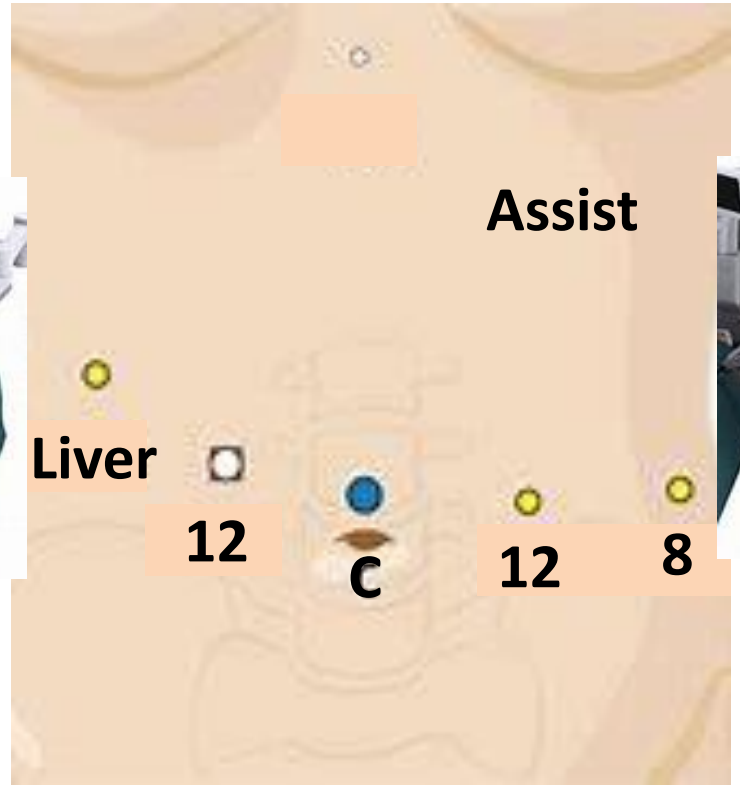
Bowel measurement strategy

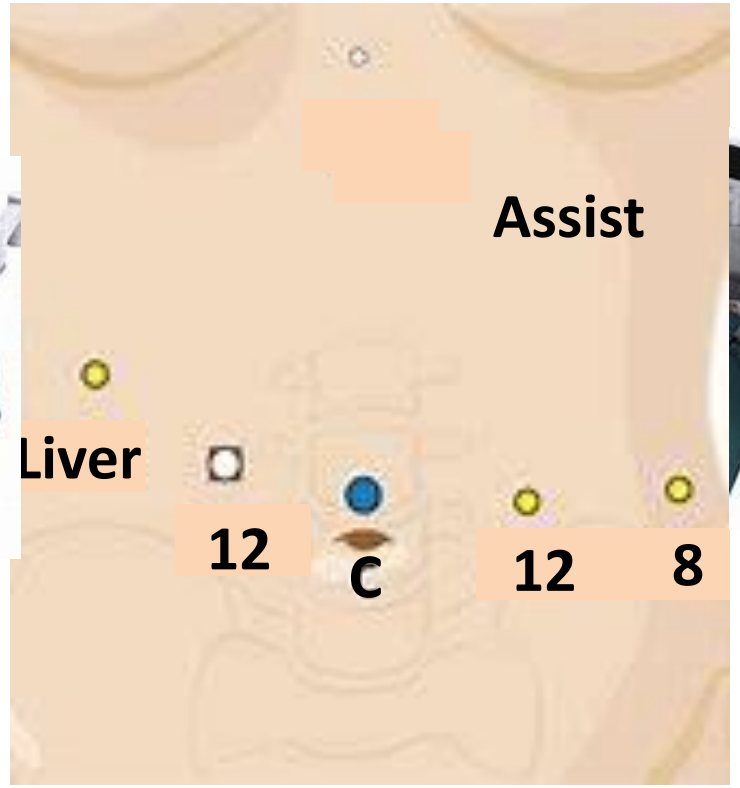
***Place a* Sponge early in the abdomen.**

Benefits of an assist port

Consider the experience of your Bed side assist.







Sleeve gastrectomy

Roux en Y gastric bypass

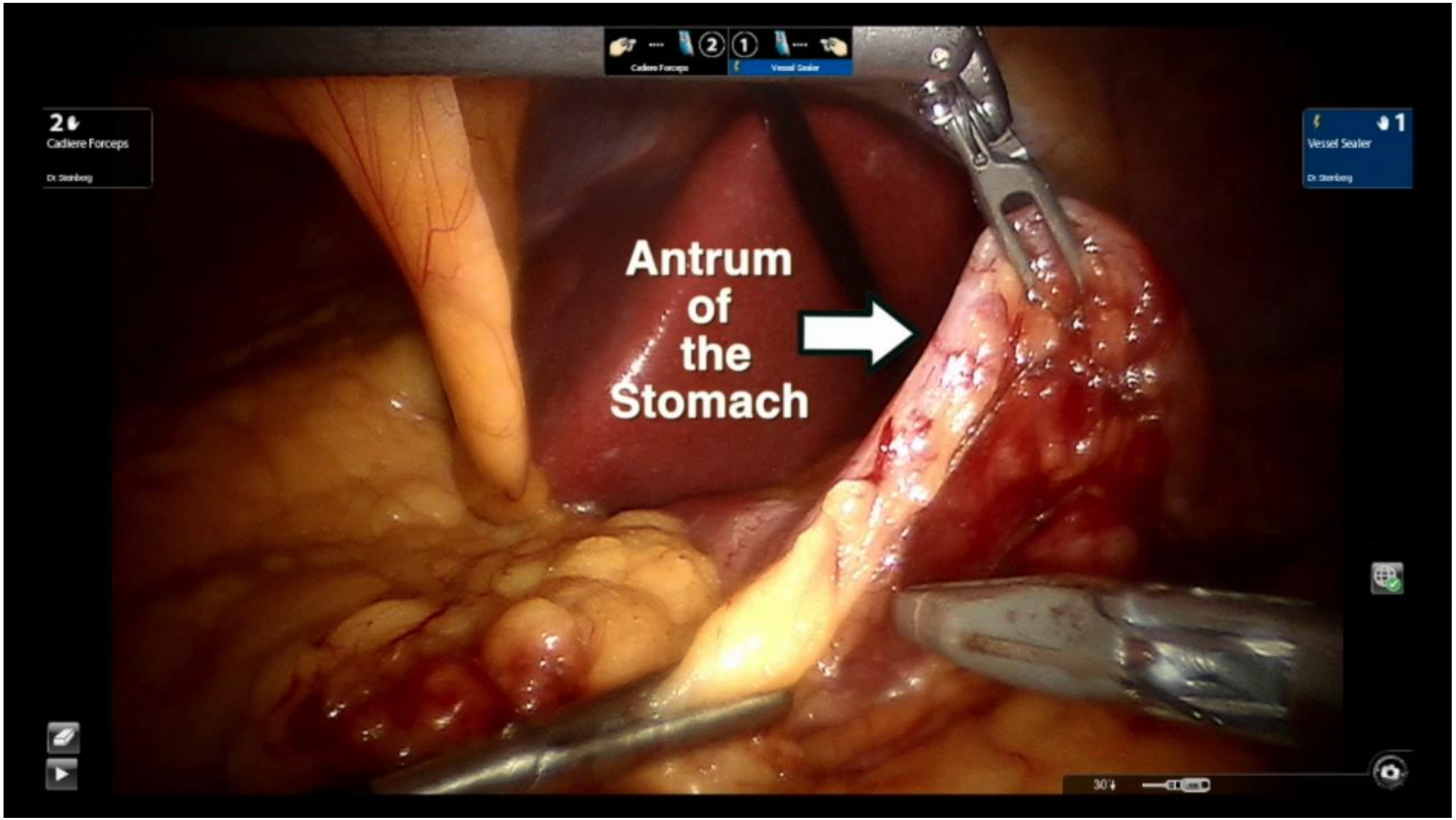
SADI&DS

Benefits of an assist port

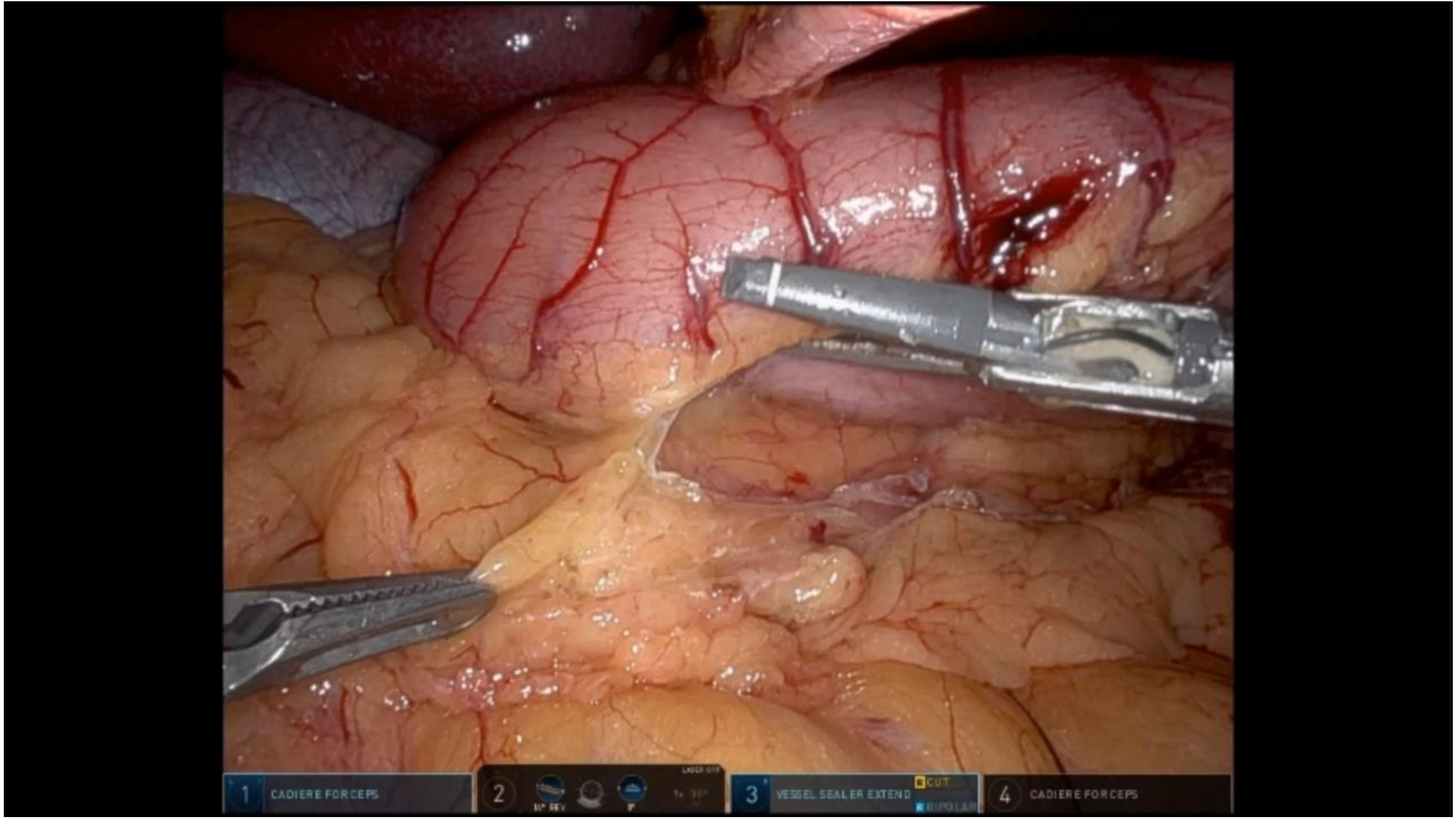
- **Consider the experience of your Bed side assist.**
- ***An assist port is helpful early in your experience, for retraction, suction, passing sutures or sponges & for improved exposure or to hold pressure.***
- **Place the assist port in the upper abdomen away from the Robotic ports to make access easy for the assist**
- ***Air seal allows for stable pneumoperitoneum.***

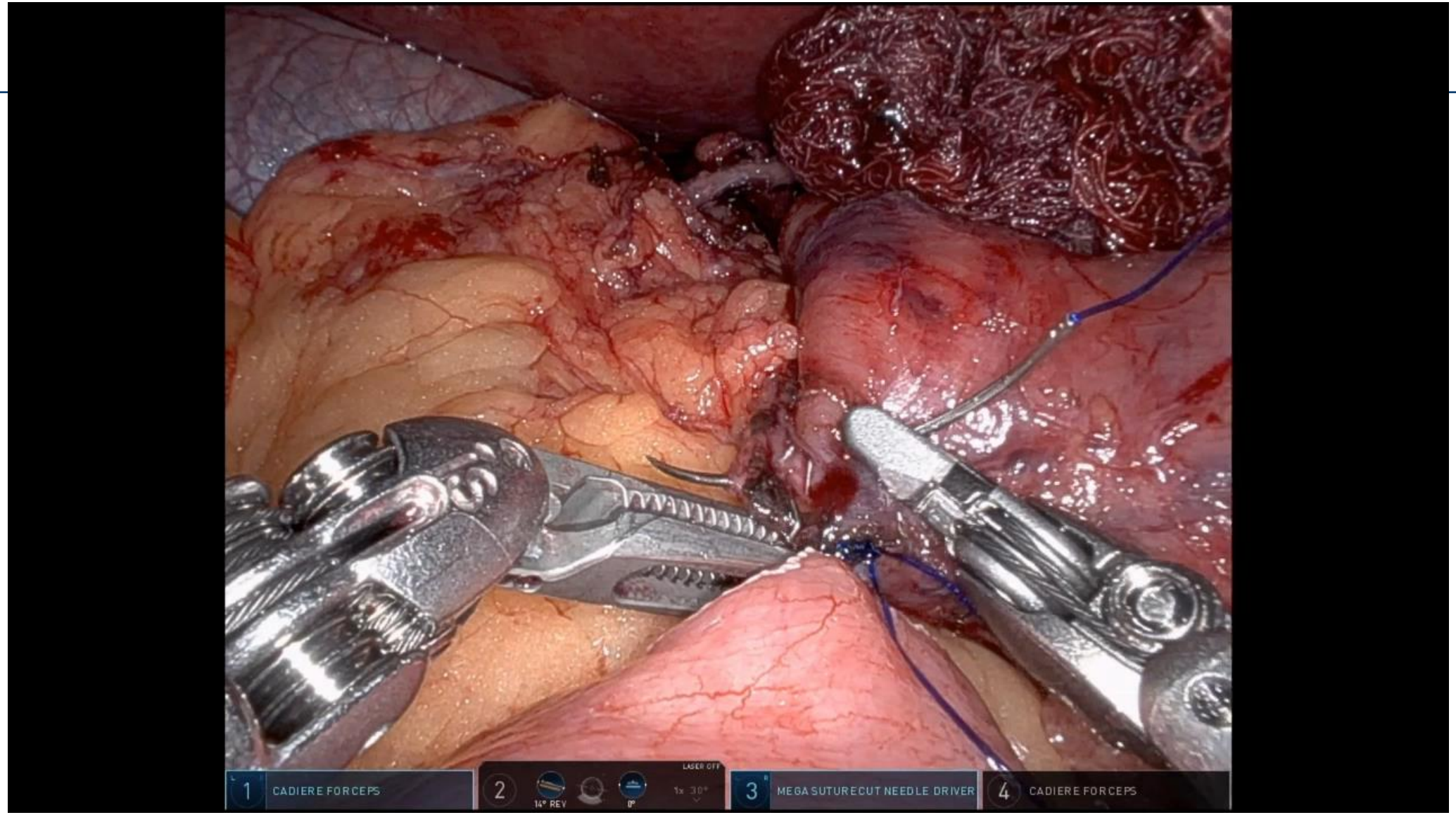

Stable pneumoperitoneum
provides constant exposure,
even during suction or leaks

AN IATROGENIC PORTAL VEIN INJURY DURING DUODENAL DISSECTION FOR SADI-S



Scott Steinberg; Amit Surve; Daniel Cottam; Benjamin Horsley; Samuel Cottam; Emory Healthcare, Decatur GA; Bariatric Medicine Institute, South Salt Lake City UT


1 CADIERE FORCEPS
2
3 VESSEL SEALER EXTEND
CUT
4 CADIERE FORCEPS


1
CADIERE FORCEPS
2
14° REV
0°
LASER OFF
1x 30°
3
MEGA SUTURECUT NEEDLE DRIVER
4
CADIERE FORCEPS

Why I started with an assist port, but no longer us it

- **No longer use Air seal for pneumoperitoneum.**
- ***Cannot guarantee experienced bed side assist.***
- **Place a sponge early & anticipate when to place sutures after stapler firing & place sutures together.**
- ***No assist ports allows for 1 less port.***
- **Train residents & fellows to perform robotic MBS without needing an experience bed side assist.**

Take home message

- *Most of MBS is done laparoscopically in the US [16-28%].*
- ***The value of robotic MBS compared to laparoscopic MBS is not clear based on the published literature.***
- ***Benefits of an assist port:*** *flattening of the initial learning curve of MBS, retraction, suctioning passing stuff & Airseal.*
- ***Why I do not use an assist port:*** *dependance on an experienced assist, difficulty in accessing the assist port & 1 less port during robotic surgery.*