



Comparison of three different anastomotic methods of sleeve gastrectomy with transit bipartition using an obese rodent model



Libin Yao



The Affiliated Hospital of Xuzhou
Medical University. China



Commonly used Bariatric surgeries

➤ SG:

Good effect of weight loss
and comorbidity remission

Weight regain and recurrence of diabetes

➤ RYGB:

Excellent effect of weight loss and long-term
Comorbidity remission

Uncapable of gastroscopy

➤ **other sleeve Plus procedures**





Sleeve Gastrectomy with Transit Bipartition (SG-TB)

> *Obes Surg.* 2006 Oct;16(10):1371-9. doi: 10.1381/096089206778663841.

Digestive Adaptation with Intestinal Reserve: a neuroendocrine-based operation for morbid obesity

Sergio Santoro¹, Carlos E Maltzoni, Manoel C P Velhote, Fábio Q Milleo, Marco A Santo, Sidney Klajner, Dival Damiani, João G Maksoud

Santoro et al. 2006



ORIGINAL ARTICLES

Sleeve Gastrectomy With Transit Bipartition A Potent Intervention for Metabolic Syndrome and Obesity

Santoro, Sergio MD¹; Castro, Luis Carlos MD²; Velhote, Manoel Carlos Prieto MD, PhD, FACS³; Maltzoni, Carlos Eduardo MD, FACS⁴; Klajner, Sidney MD, FACS⁵; Castro, Leandro Peraodin MD¹; Lacombe, Arnaldo MD⁶; Santo, Marco Aurélio MD, PhD⁷ **Author Information** ©

Annals of Surgery; July 2012 - Volume 256 - Issue 1 - p 104-110.



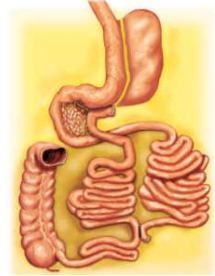
2012



Why we select SG-TB?

Potential advantages of SG-TB

- It can allow **food to pass through two channels**, achieving satisfactory treatment results while reducing the incidence of postoperative malnutrition and esophageal reflux
- The duodenum is not transected, and the gastrointestinal anastomosis is located in the gastric antrum. The operation is simple, with fewer postoperative complications, and is **easy to master**
- There is **no gastrointestinal blind loop**, which does not affect the examination and treatment of the upper gastrointestinal system under **gastroscopy after surgery**





Procedures	Roux-en-Y TB (RYTB)	One Anastomosis TB (SASI)	TB with Braun (B-TB)
Advantages	Better than SG	Simplified operation, comparable effects	Anti-bile reflux, simpler operation than RYTB
Disadvantages	Petersen hiatal hernia, complex operations	Bile reflux (5.8%)	Closure of mesenteric hiatal hernia



RYTB



SASI



B-TB



Purpose

- To investigate the effect and safety of the three SG-TB procedures
- To investigate the difference of bile reflux of the three procedures
- To explore the more beneficial anastomosis procedures for patients



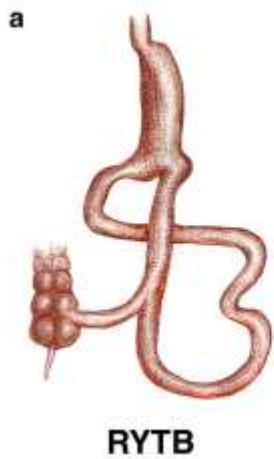
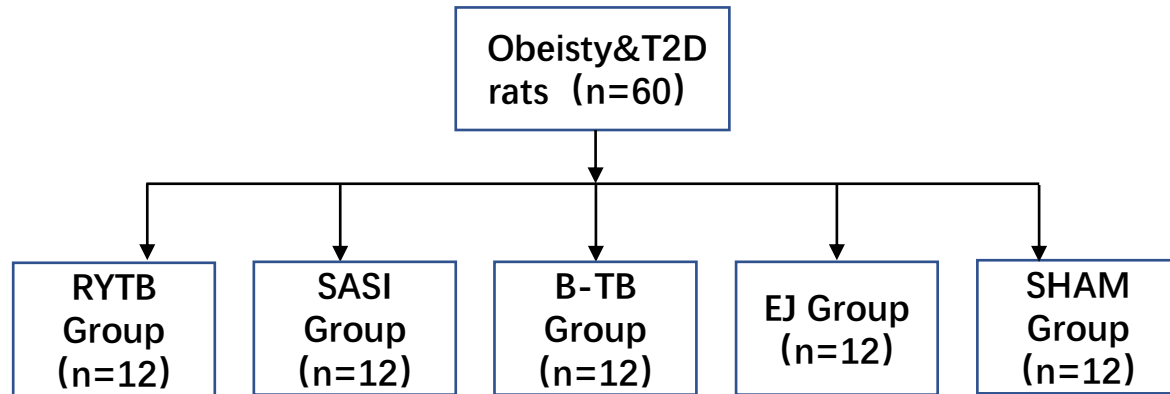
Modeling

Methods



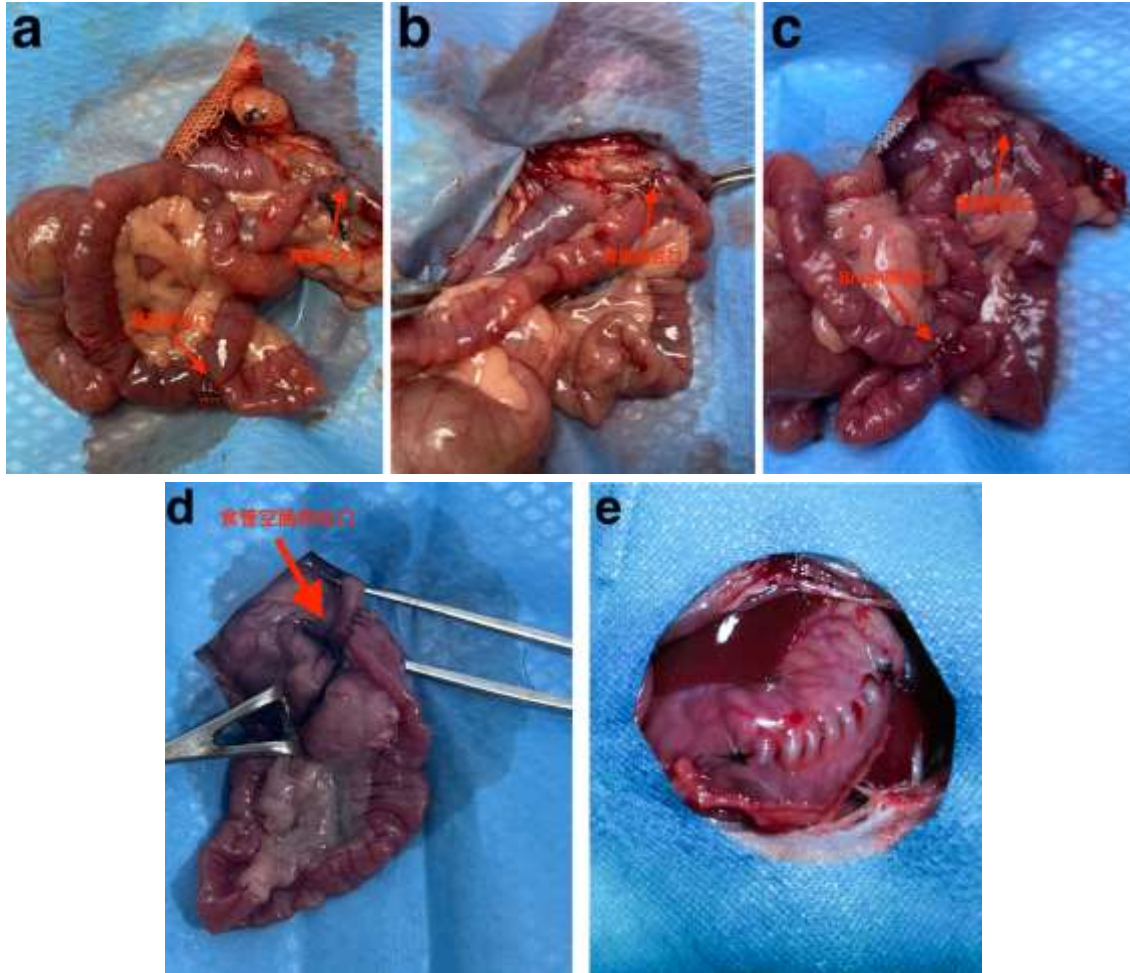
- Sixty SD(Sprague-Dawley) rats
- High-fat diet for four weeks
- Streptozotocin (STZ) (35mg/kg) intraperitoneal injection







Five group experiment pictures





Observed Results

The rats were sacrificed 12 weeks after the operation

Food take.
Weight loss

OGTT, ITT every month.
Serum indications

Specimens of the esophagus,
gastroesophageal junction,
GI anastomosis

HPLC、HE
staining



statistics

- SPSS 26.0 software was used for statistical analysis.
- Comparisons were conducted using one-way ANOVA and Bonferroni test for multiple comparisons. A significant difference was assumed when P was less than 0.05.

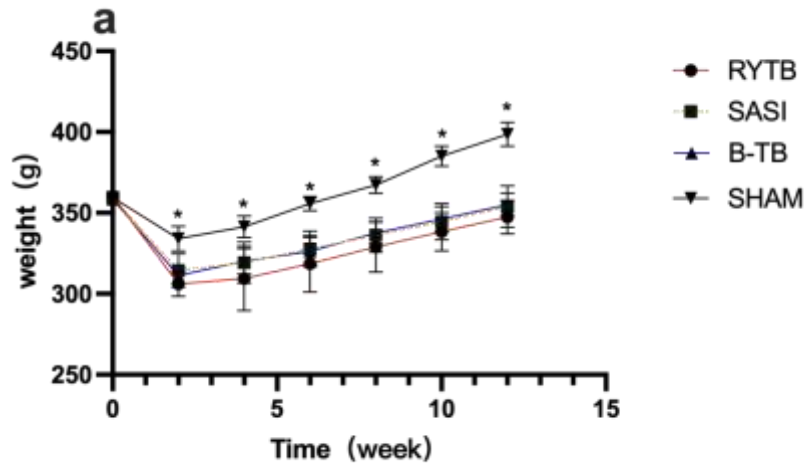


Results



Weight loss

	RYTB	BTB	SASI	SHAM	F	P
Pre	360.3±2.3	358.4± 1.6	359.6±3.1	359.4±3.5	0.651	0.589
2W	306.0±7.8*	311.3±5.2*	310.4±6.0*	334.0±7.8	27.483	<0.001
4W	309.4±19.8*	320.0±7.9*	319.3±12.7*	341.4±6.7	8.819	<0.001
6W	318.5±17.5*	326.3±8.6*	327.8±11.1*	355.8±4.3	16.337	<0.001
8W	328.9±15.5*	337.5±6.7*	336.3±10.6*	367.3±5.1	21.737	<0.001
10W	338.4±11.9*	346.3±7.7*	344.5±11.3*	385.0±6.2	39.151	<0.001
12W	347.4± 10.4*	355.0±7.1*	353.9±12.9*	398.5±7.4	46.436	<0.001

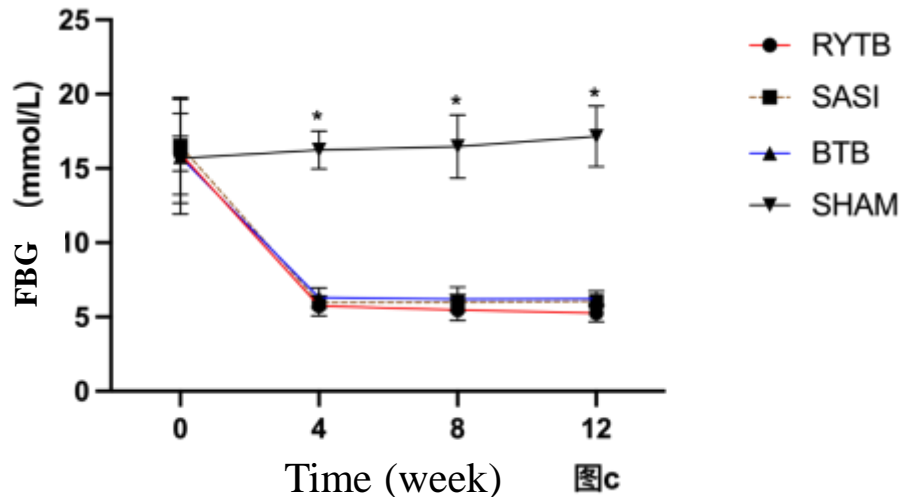


*means the three surgery groups compared with SHAM ($p < 0.05$)



FBG (Fasting blood glucose)

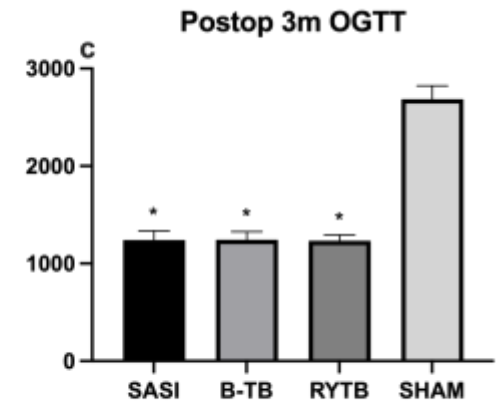
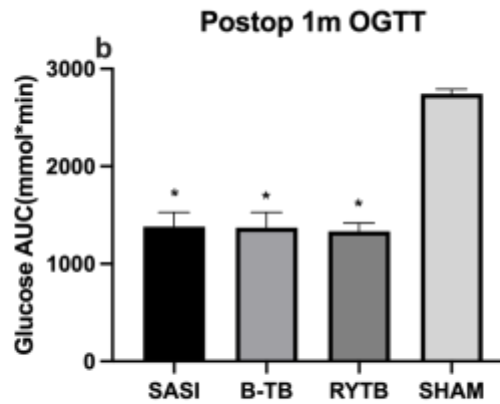
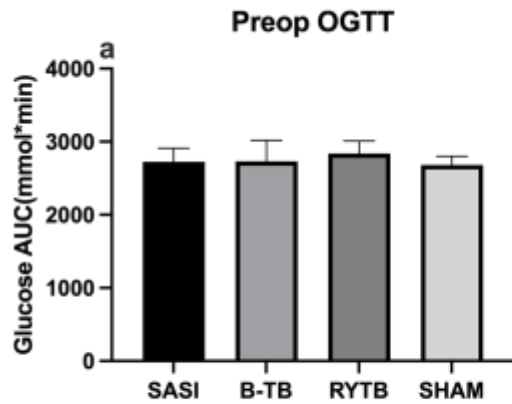
	RYTB	BTB	SASI	SHAM	F value	P value
Pre-Op	15.9±1.2	15.8±4.0	16.3±3.8	16.6±1.0	0.096	0.962
1M	5.7±0.7*	6.3±0.7*	6.1±0.6*	16.3±1.3	308.633	<0.001
2M	6.7±1.3*	6.1±0.8*	6.4±0.9*	16.5±0.8	260.722	<0.001
3M	5.3±0.6*	6.2±0.6*	6.1±0.5*	17.3±2.0	209.396	<0.001



*significant the three surgery groups compared with SHAM ($p < 0.05$)



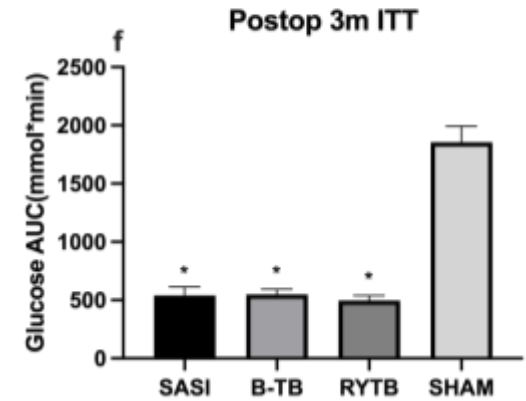
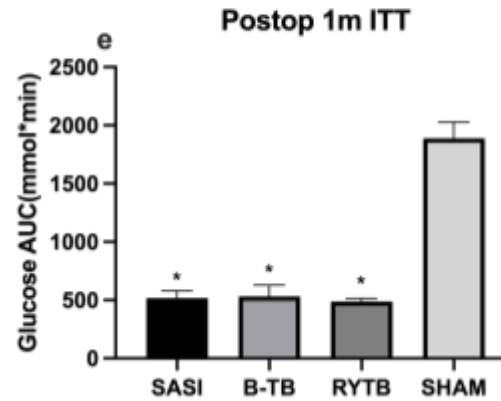
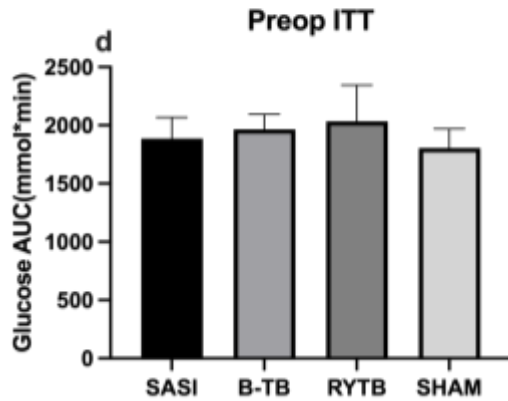
OGTT (Oral Glucose Tolerance Test)



*significant compared with SHAM ($p < 0.05$)



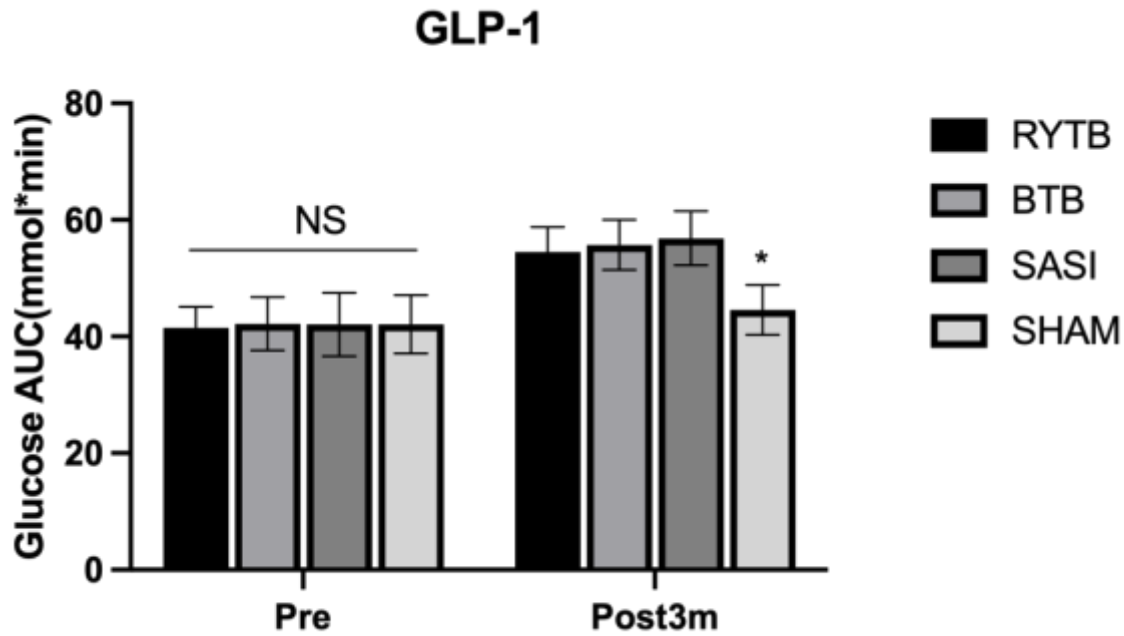
ITT (Insulin tolerance test)



*significant compared with SHAM ($p < 0.05$)



GLP-1

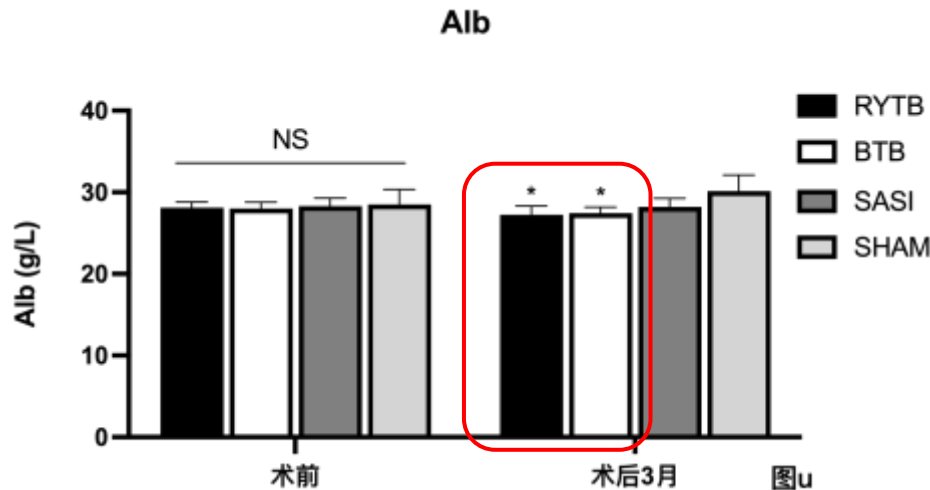


*significant compared with SHAM ($p < 0.05$)

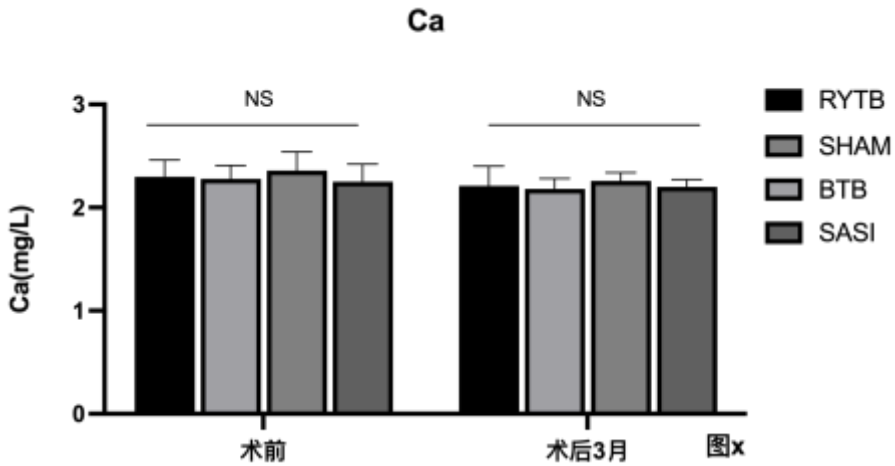
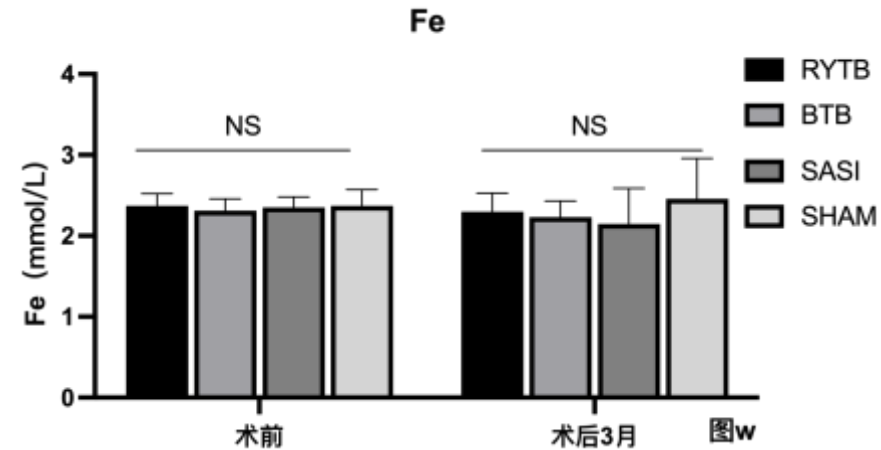
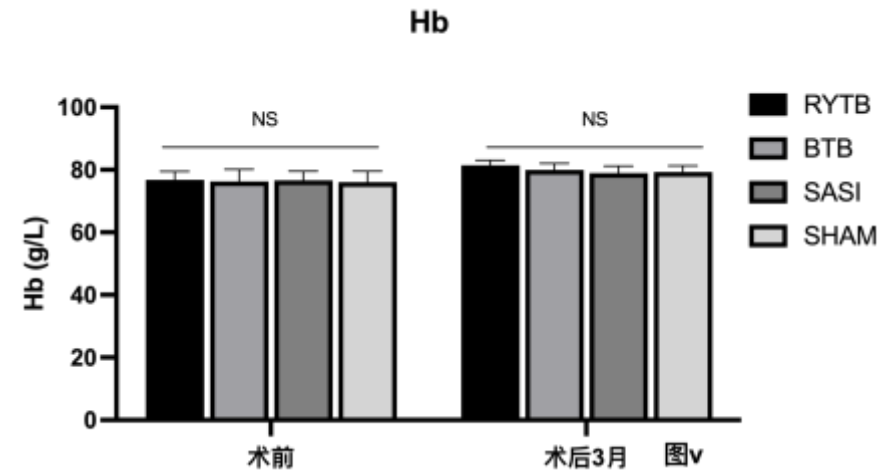


ALB

	RYTB	BTB	SASI	SHAM	F	P
Pre	28.1±0.7	28.0±0.8	28.3±1.0	28.5±1.8	2.954	0.050
12 W	27.25±1.1*	27.4±0.7*	28.2±1.1	30.1±2.0	6.139	0.002



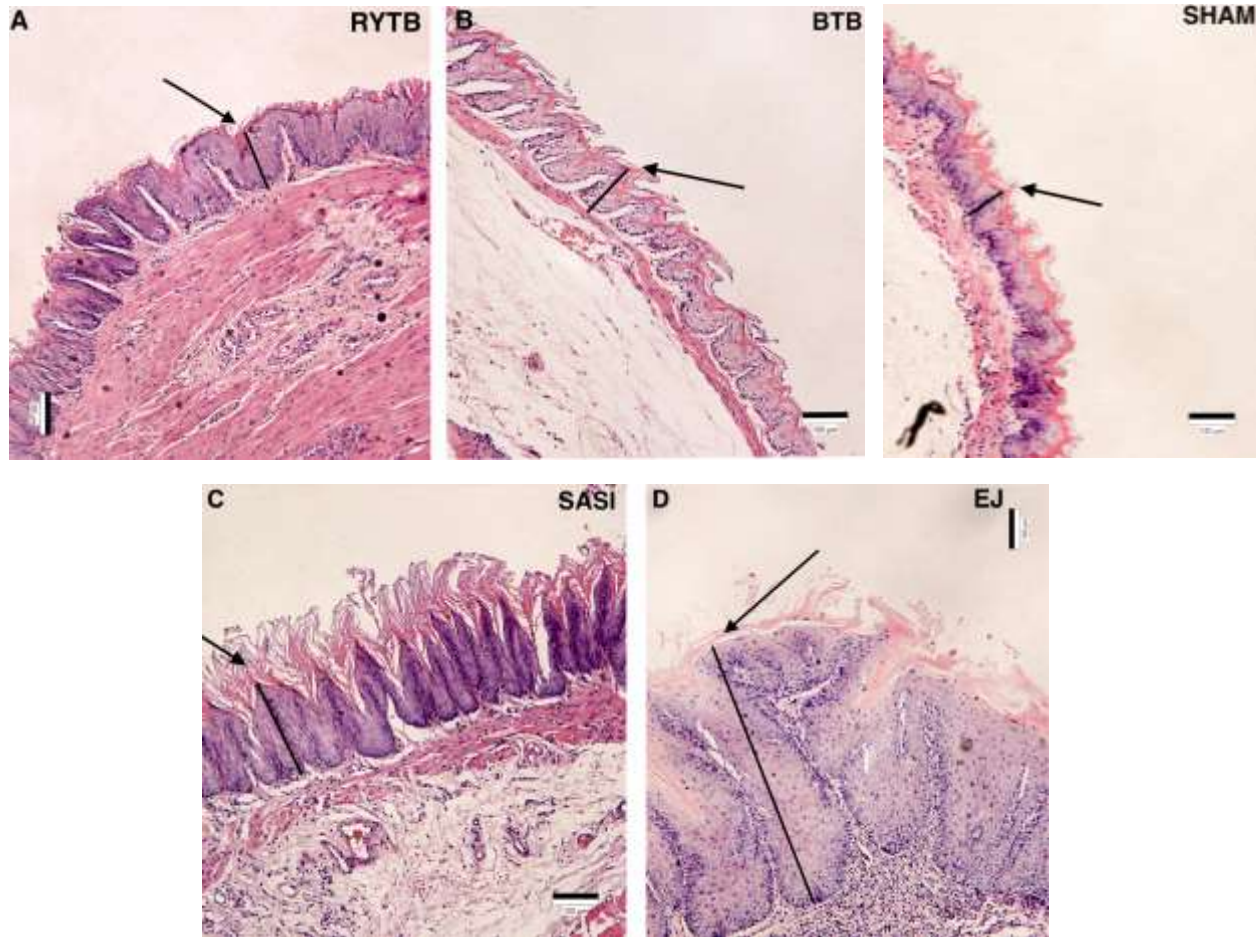
*significant RYTB, BTB compared with SHAM ($p < 0.05$)



No significant were observed among all groups before and 12W after surgery



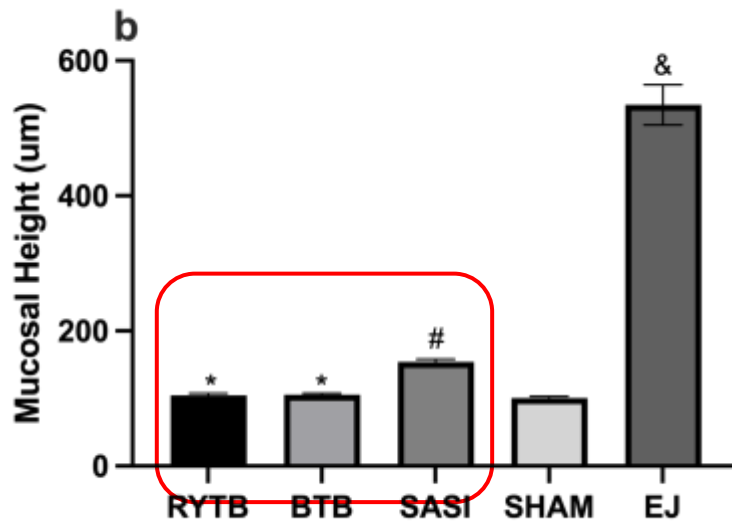
H&E staining (100*)





Height of esophagus mucosa (100*)

	RYTB	BTB	SASI	SHAM	EJ	F	P
12 W	104.8±3.1*	105.7±2.0*	154.3±4.1*	100.6±2.8	534.7±29.8	18.893	<0.001
			#		*&		



*Significant RYTB, BTB compared with SHAM, ($p < 0.05$);

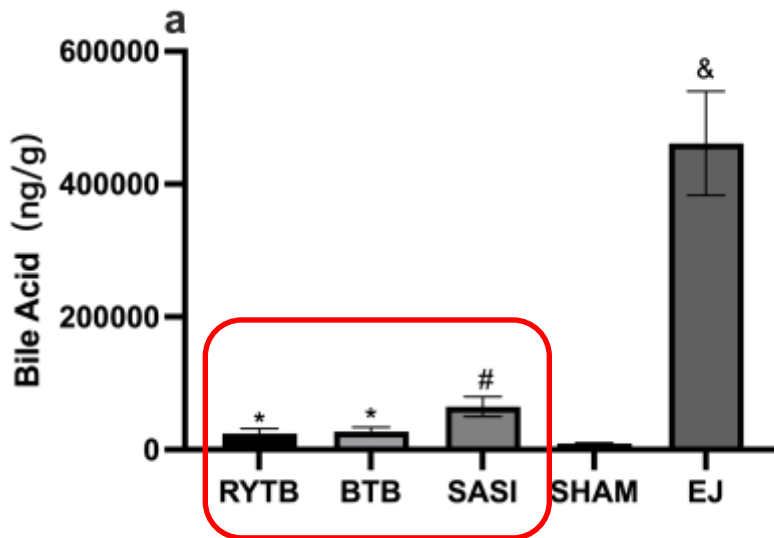
#Significant RYTB, BTB compared with SASI, ($p < 0.05$);

&Significant EJ compared with the other groups, ($p < 0.05$)



The mean total bile acid concentration of gastroesophageal junction (HPLC MS/MS)

	RYTB	BTB	SASI	SHAM	EJ	F	P
12 M	24060±7500*	27089±6564*	64983±14989*#	9437±1025	461437±78362*&	237.118	<0.001



*Significant RYTB, BTB compared with SHAM, ($p < 0.05$);
#Significant RYTB, BTB compared with SASI, ($p < 0.05$);
&Significant EJ compared with the other groups, ($p < 0.05$)



Conclusion

- There were no significant differences in weight loss and glycemc remission among the RYTB, BTB, and SASI groups.
- B-TB may be a superior primary procedure as it demonstrated parallel bariatric and metabolic results to the RYTB procedure and a better anti-reflux effect than the SASI procedure.



Thanks for
your attention!

