华南理工大学附属第三医院
前海人寿广州总医院

暨南大学附属第一医院
THE FIRST AFFILIATED HOSPITAL OF JINAN UNIVERSITY
广州華僑醫院
GUANGZHOU OVERSEAS CHINESE HOSPITAL

KEY TECHNICAL POINTS AND ANATOMICAL RECONSTRUCTION STRATEGIES OF ANATOMICAL REVERSAL AFTER METABOLIC BARIATRIC SURGERY

减重手术后修复手术的关键技术点及解剖重建策略

The First Affiliated Hospital of Jinan University
暨南大学附属第一医院，中国广州
The Third Affiliated Hospital of South China University of Technology
华南理工大学附属第三医院，中国广州

CC Wang MD. PhD 王存川
Professor of surgery
President: CSMBS IH
Past President： IFSO-APC CSMBS

Email: twcc@jnu.edu.cn

声明

This speech contained no conflicts of interest

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Bariatric surgery： Personal experience (2000-2026)

Laparoscopic surgery （>6000cases） : 100%

- SG： 65%
- RYGB： 24%
- Revision： 7%
- SG+TB： 1%
- OAGB/MGB： 1%
- BPD-DS/SAIDS: 0.5%
- other： 1.5%

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

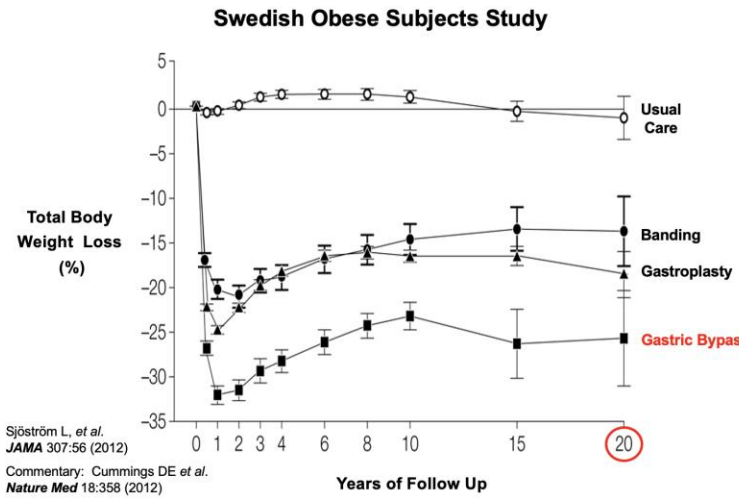
32Y BMI 58
2011-8-25 RYGB

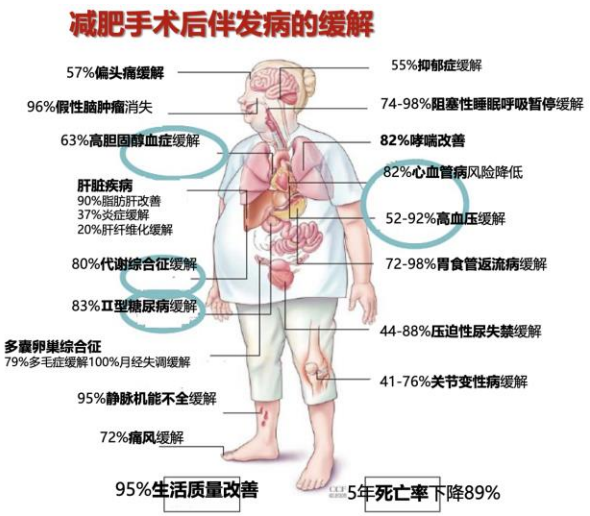
2Y after RYGB
2013-11-8 BMI 26

Surgical treatment is the fastest, most effective, and most lasting method of weight loss

The outcomes of surgery

* Weight loss
* Relief of comorbid metabolic diseases (such as diabetes)/related conditions?
* Very low rates of complications and mortality
* Improved quality of life





Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, Ch

The development of bariatric surgery
减肥手术的发展历程


Fig. 2
Jejuno-ileal
Bypass (JIB)
End-to-Side (Payne)

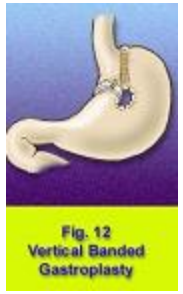


Fig. 12
Vertical Banded
Gastroplasty

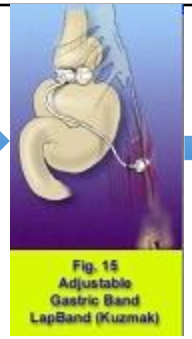
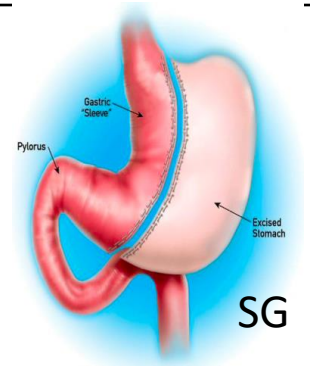


Fig. 15
Adjustable
Gastric Band
LapBand (Kuzmak)



Restrictive

SG

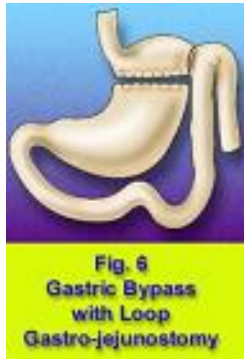
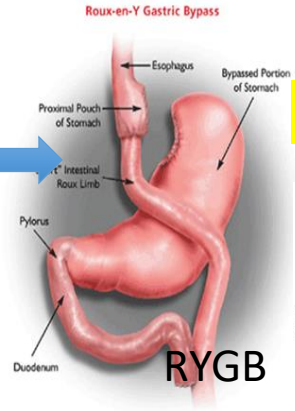


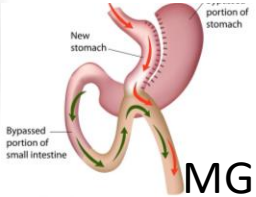
Fig. 6
Gastric Bypass
with Loop
Gastro-jejunostomy

RYGB is a middle route



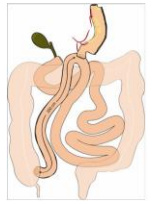
Mixed surgery

RYGB



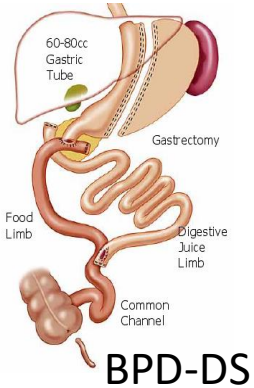
MGB


Fig. 4
Biliopancreatic
Diversion (BPD)
(Scopinaro)



Malabsorption

SAIDS



BPD-DS

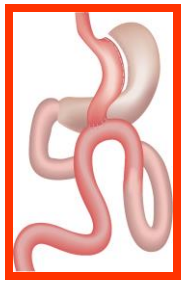
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

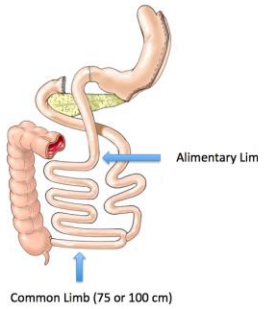
CSMBS Endorsement Procedure 2021

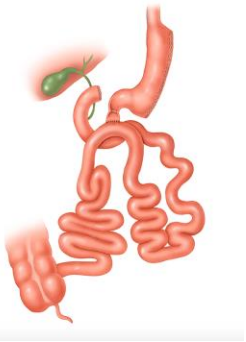
1. Actively recommend
(1) LSG
(2) LRYGB

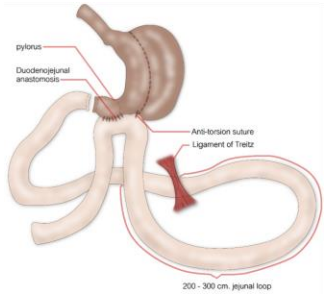
2. Recommended with caution:
(1) MGB/OAGB
(2) BPD-DS
(3) SADI-S
(4) LSG-DJB
(5) Intragastric Balloons

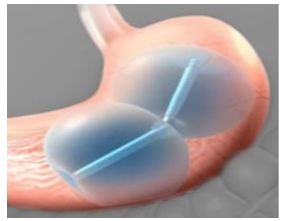
3. Not recommended:
(1) AGB
(2) Large gastric pouch GB
(3) JIB
(4) VBG
(5) OPEN

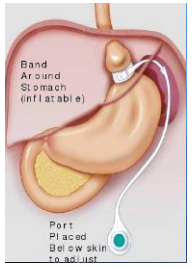


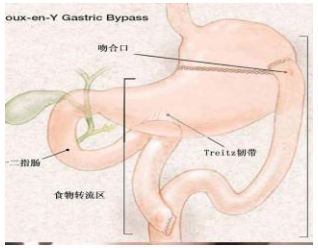


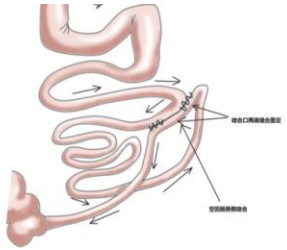


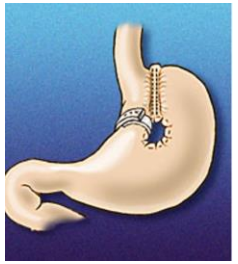


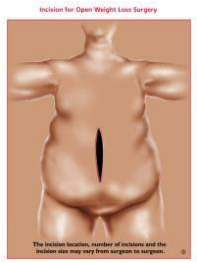












中国肥胖代谢外科手术方式推荐立场声明

杨华[1]，张鹏[2]，董志勇[1]，张能维[3]，梁辉[4]，王勇[5]，姚琪远[6]，程中[7]，姜涛[8]，张频[9]，杨雁灵[10]，张忠涛[2]，刘金钢[5]，朱晒红[11]，王存川[1]，中国医师协会外科医师分会肥胖和糖尿病外科医师委员会，中国肥胖代谢外科研究协作组

Estimate of Bariatric Surgery Numbers, CSMBS + CSMBS-IH 2008-2025

COMES
中国肥胖代谢外科数据库
Chinese Obesity & Metabolic Surgery Database

中国肥胖代谢外科手术推算数量2025

术式	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
RYGB	10	30	395	850	1660	3132	2920	2350	1830	1729	2380	1851	976	1505	1117	901	1520	1537
OAGB	0	0	0	0	0	0	0	0	0	0	0	75	100	537	760	1228	1234	1114
SG	10	30	60	165	240	777	2200	3221	4201	5119	6233	7386	10669	19846	25642	30352	24443	32481
SG Plus	0	0	0	0	0	48	30	110	49	15	560	646	1064	1999	1618	2183	3021	
SG+JJB																		927
SG+TB																371	847	1774
SG+DJB																		2
AGB	97	220	185	135	45	36	0	1	0	0	0	0	7	1	1	0	5	0
Fundoplication	0	0	0	0	5	113	90	10	32	10	5	0	30	103	11	254	112	22
JIB/GIA	0	0	0	0	0	0	0	400	100	1880	1200	1500	850	581	650	1718	801	298
DS/SADI-S	0	0	0	0	0	0	0	0	0	0	0	10	145	311	6	99	102	35
Endoscopic	0	0	0	0	0	0	0	0	0	0	0	9	12	58	15	21	158	593
Revision	0	0	0	0	0	0	0	0	100	110	120	134	182	237	248	382	725	1126
Other	0	0	0	0	0	0	0	0	28	79	77	89	2	30	3	108	221	150
TOTAL	**117**	**280**	**640**	**1150**	**1950**	**4106**	**5240**	**6092**	**6340**	**8942**	**10575**	**11700**	**14037**	**25208**	**30071**	**37246**	**32342**	**40059**

Indications of *Revision Surgery*
修正手术的适应症

1. 减肥效果不佳
2. 体重反弹
3. 严重并发症
4. 代谢疾病的复发
5. 无法适应术后生活方式
6. 严重短肠综合征和营养不良

1. Poor weight loss results
2. Regain weight
3. Severe complications
4. Recurrence of metabolic diseases
5. Unable to adapt to postoperative lifestyle
6. Severe short bowel syndrome and malnutrition

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

修正手术的种类 Types of revision surgery

1.Conversions

2.Corrective

3.Reversals

➢The number of bariatric surgery performed worldwide has been steadily **increasing** for the last 20 years， The volume of revision surgeries is also increasing

Reversal

➢**Himpens** first reported reversal to normal anatomy in 2006

➢Due to the large number of **RYGB** and **OAGB** surgeries performed over the last decade, **reversal** of the bypass to normal anatomy has been increasingly reported

Himpens J, et al. Laparoscopic conversion of the gastric bypass into a normal anatomy. Obes Surg. 2006;16(7):908

Clinical Practice Guidelines
AACE/TOS/ASMBS Updates 2019

- **R84.** (2008). Revision of a bariatric surgical procedure can be recommended when serious complications related to previous bariatric surgery cannot be managed medically **(Grade C; BEL 3).**
- **R85.** (2008). Reversal of a bariatric surgical procedure is recommended when serious complications related to previous bariatric surgery cannot be managed medically and are not amenable to surgical revision **(Grade D).**

当之前的减重手术引起的严重并发症无法通过医学方法处理且无法通过手术修正时，建议行修复手术（复原手术）

Indications for Reversal after RYGB and OAGB

1.Malnutrition, Protein deficiency, Food intolerance

2.Early dumping syndrome,Postprandial hyperinsulinemic hypoglycemia

3.Anastomotic/Marginal ulcer

4.Intractable abdominal pain, nausea and vomiting

5.Excessive weight loss or cachexia

6.Fatigue

7.Diarrhea (not related to dumping)

8.Psychological intolerance, not able to adjust to life after surgery

9.Hypocalcemia with primary hypoparathyroidism

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Reversal surgery are associated with high complication rates and long operative times

➢Published series report long mean **operative times** ranging from 120 -170 min

➢**High rates of complications** – such as leaks (30%), bleeding (30%), among others – as well as high postsurgical morbidity

*Park JY, et al. Successful laparoscopic reversal of gastric bypass in a patient with malnutrition. Ann Surg Treat Res. 2014;87(4): 217
*Ma P, et al. Reversal of Roux-en-Y gastric bypass at a large tertiary center with a large experience in laparoscopic gastric bypass revision: Indications and outcomes. Surg Obes Relat Dis. 2016;12:56
*Vilallonga R, et al. Laparoscopic reversal of Roux-en-Y gastric bypass into normal anatomy with or without sleeve gastrectomy. Surg Endosc. 2013;27(12):4640
*Nergaard BJ,et al. Gastric bypass with long alimentary limb or long pancreato-biliary limb–long-term results on weight loss, resolution of co-morbidities and metabolic parameters. Obes Surg. 2014;24(10):1595
*Arman GA,et al. Medium-Term Outcomes after Reversal of Roux-en-Y Gastric Bypass. Obes Surg. 2018;28(3):781
*Pernar LI, et al. Gastric bypass reversal: a 7-year experience. Surg Obes Relat Dis. 2016;12(8):1492
*Arman GA, et al. Medium-Term Outcomes after Reversal of Roux-en-Y Gastric Bypass. Obes Surg. 2018;28(3):781
*Ambrecht U, et al. Causes of malabsorption after total gastrectomy with Roux-en-Y reconstruction. Acta Chir Scand. 1988;154(1):37
*Higa KD, et al. Complications of the laparoscopic Roux-en-Y gastric bypass: 1040 patients-what have we learned? Obes Surg. 2000;10(6):509

关键抉择

- 行复原手术还是行其他种类的修正手术？
- 解剖性复原（完全）？功能性复原（不完全）？

Key technologies关键技术

- 穿刺孔的选择与安全放置Selection and safe placement of the trocar
- 分离粘连：如何避免出血、穿孔并发症等Separation of adhesions: how to avoid bleeding, perforation complications, etc
- 重新吻合技术：Realignment technology

  手工缝合（防滑可吸收线、可吸收线、不吸收线）Manual stitching (non-slip absorbent thread, absorbable thread, non-absorbent thread)

  切割吻合Cutting and anastomosis
- 保留的原吻合口如何保证是通畅的How to ensure the original retained anastomosis remains unobstructed
- 血供与系膜缺损的关闭 blood supply and defects closure
- 引流管的精准放置 Precise placement of drainage tubes

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Reversal after RYGB/OAGB

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Male、55 years, BMI 37+diabetes, etc.
2019-9-11: RYGB (BPL 25ml+Roux 225cm)
Small intestine length 825cm.

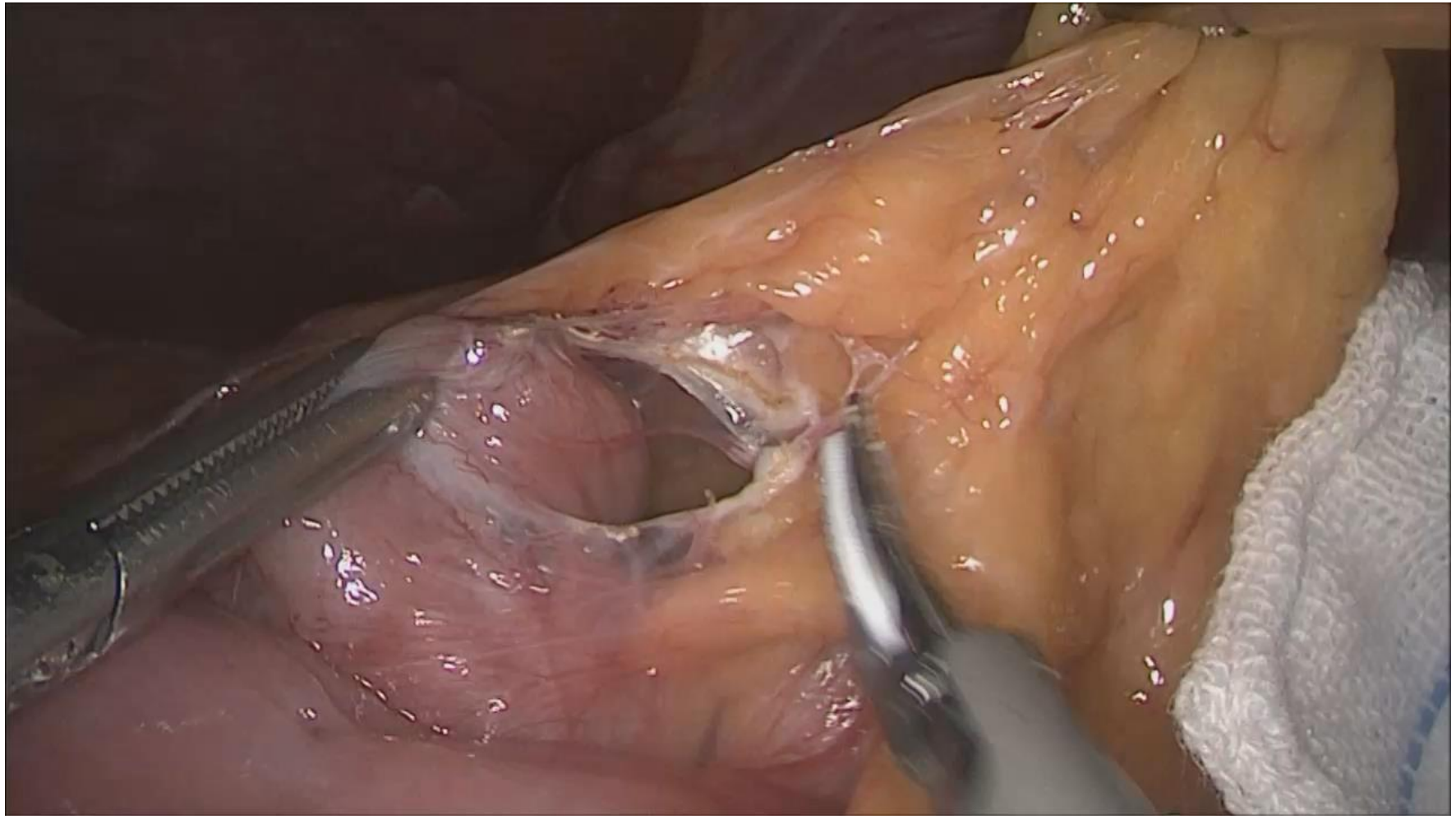
Due to occasional vomiting discomfort after eating（Gastric bezoar）, unable to adapt to postoperative life

BMI 26, postoperative diabetes improved，2023-10-10 Reversal surgery was performed on

Investigate the abdominal cavity to prevent damage to the stomach and intestines

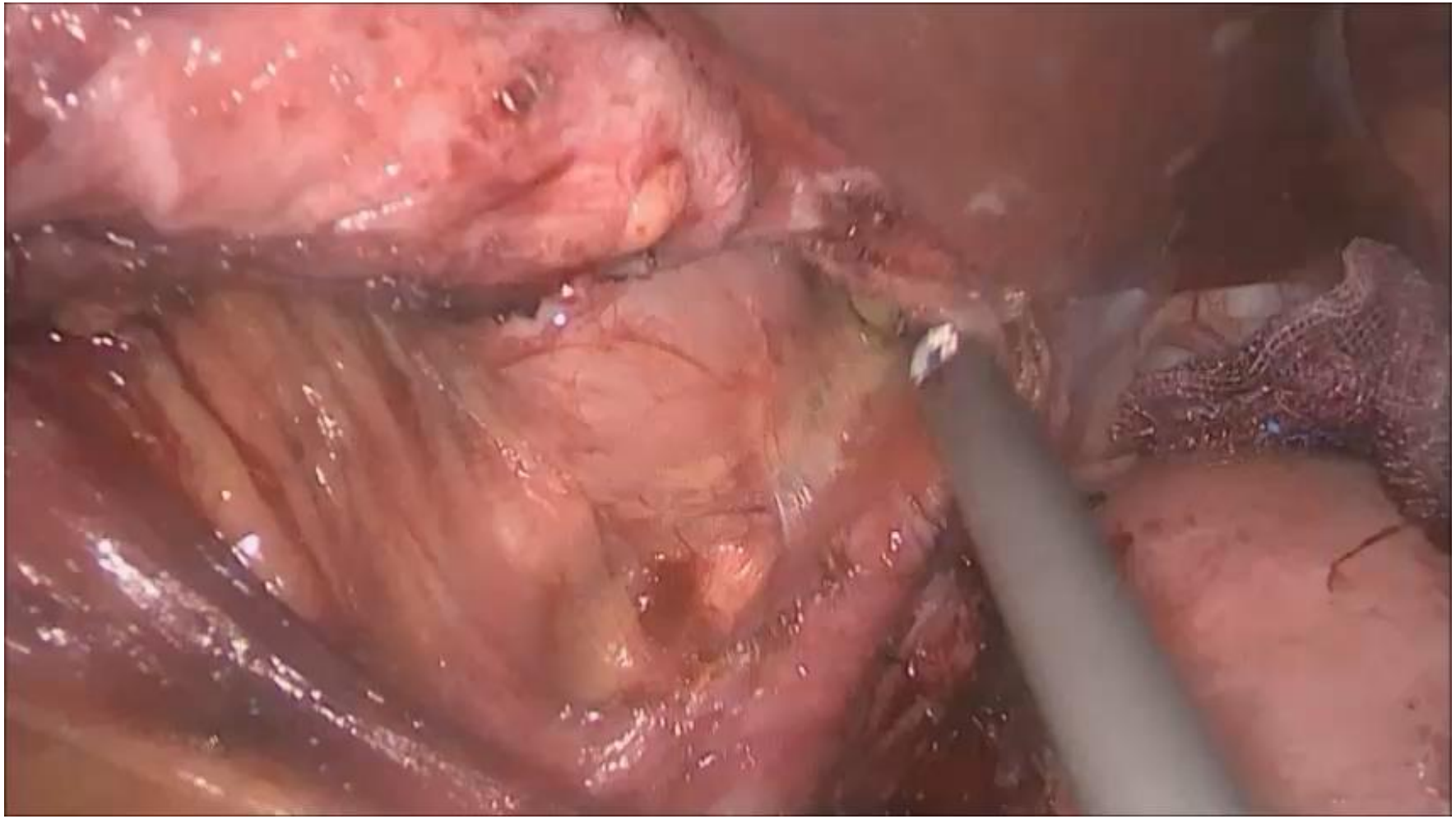
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

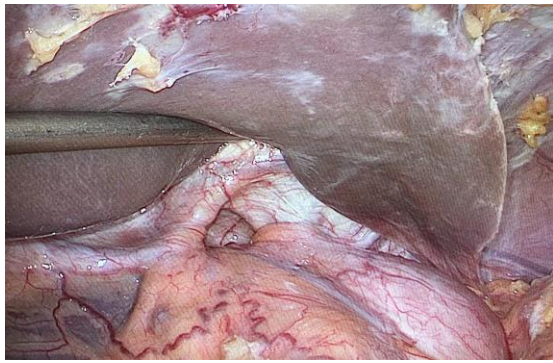
Separate the adhesions around the gastrojejunal anastomosis and cut the jejunum



Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Investigate esophageal hiatus and repair hiatal hernia



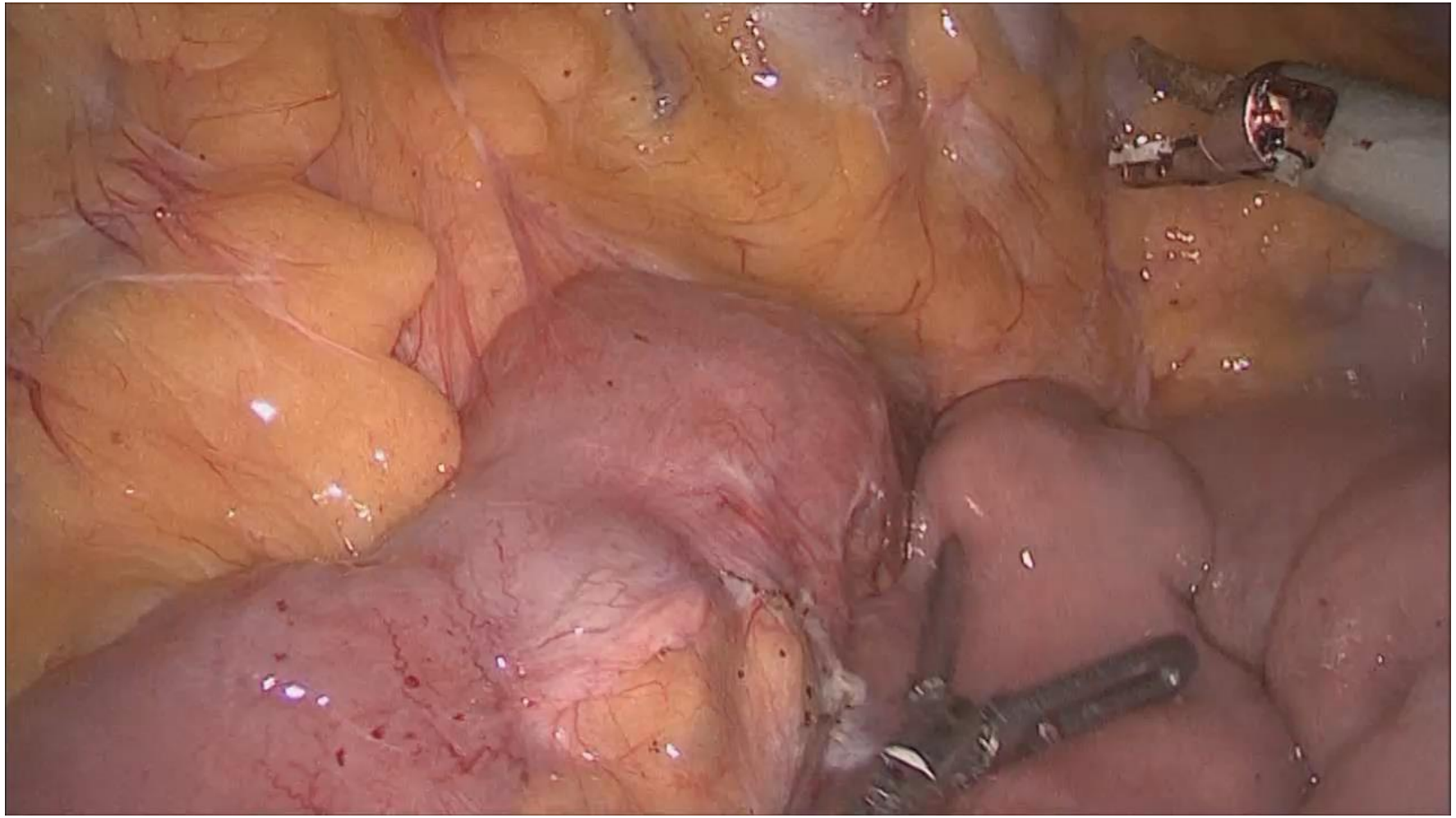


Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Gastrogastric anastomosis: suturing/cutting device

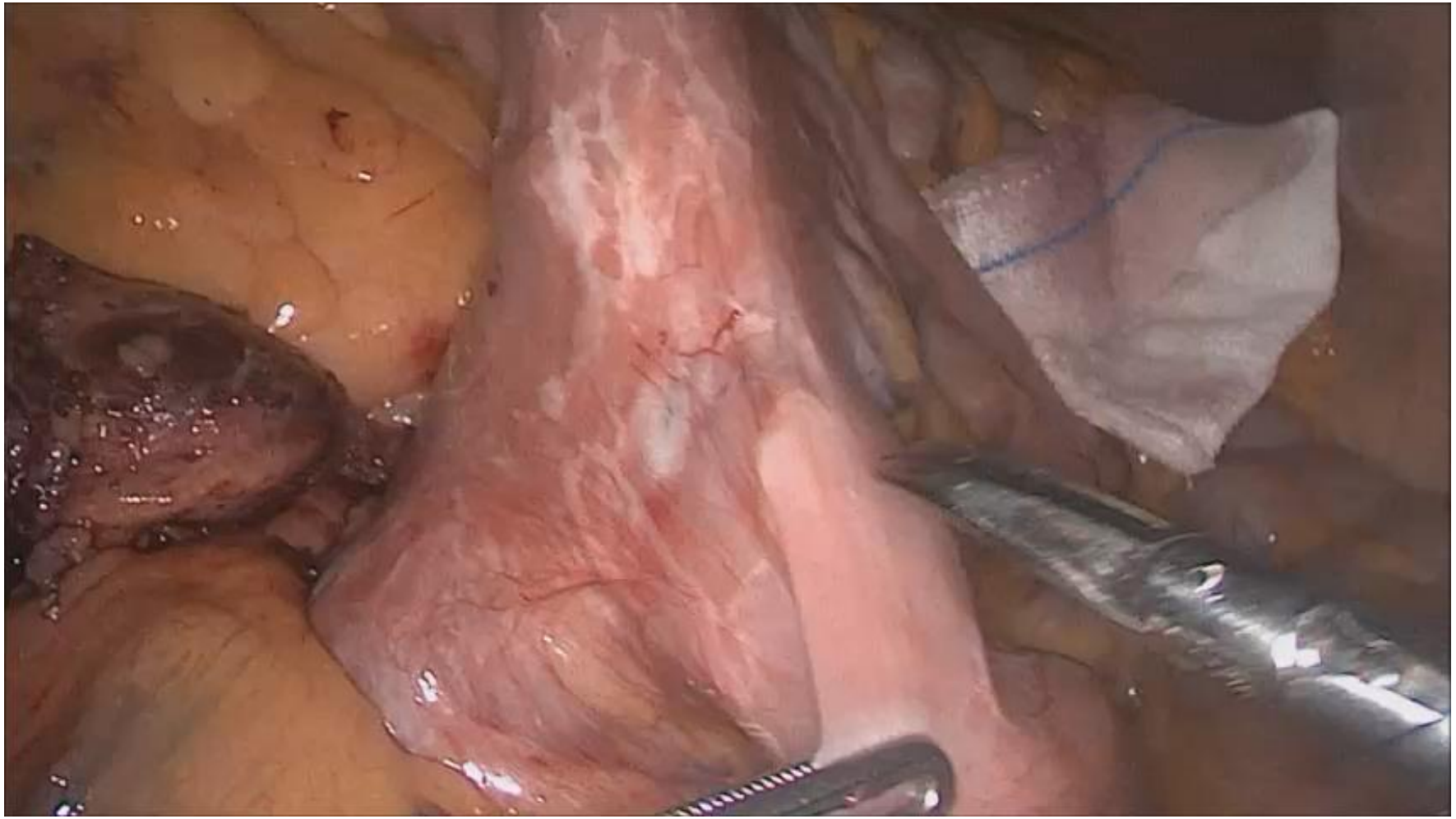
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Repair transverse mesenteric tears after Retrocoli antegastric RYGB



Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Separate the intestinal anastomosis, and pay attention to thermal damage to the intestines



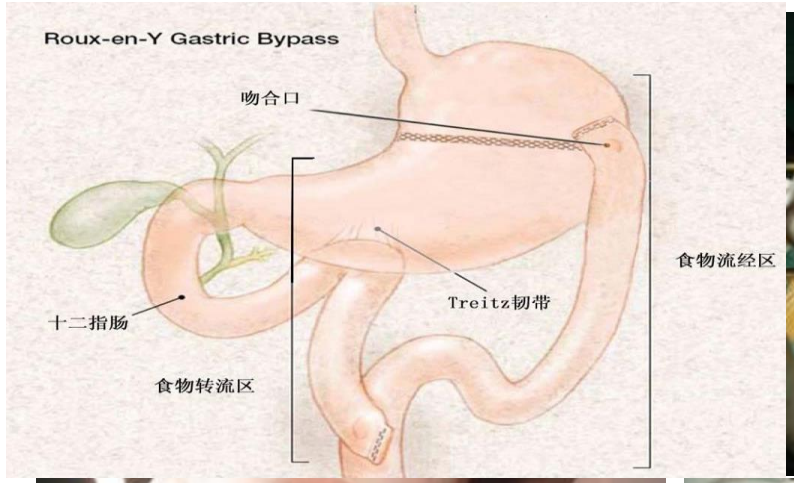
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Jejunjunal anastomosis: restores continuity of the small intestine

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Non-obesity diabetes with non-standard metabolic surgery

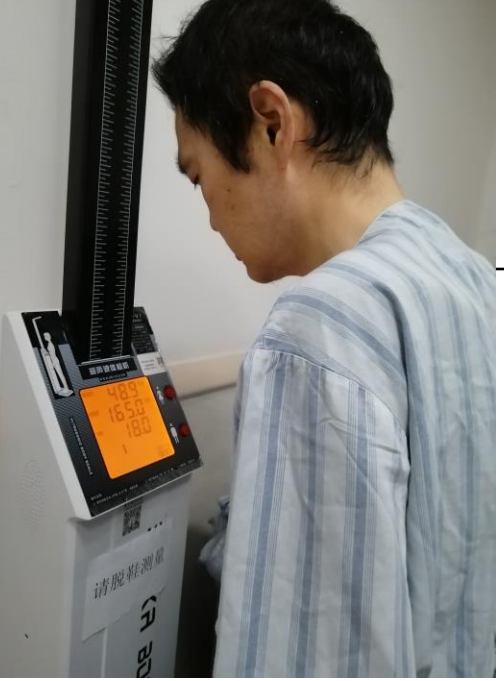
Since October 2004, small amount chinese doctors begun performing open large pouch gastric bypass surgery for type 2 diabetes in non-obesity/mildly to moderate obesity(Similar to OAGB）, and has been promoted in some primary hospitals

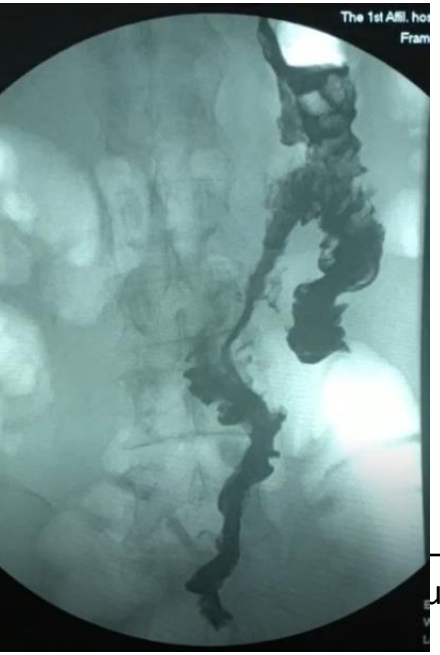


2020-11-19

Before the Reversal

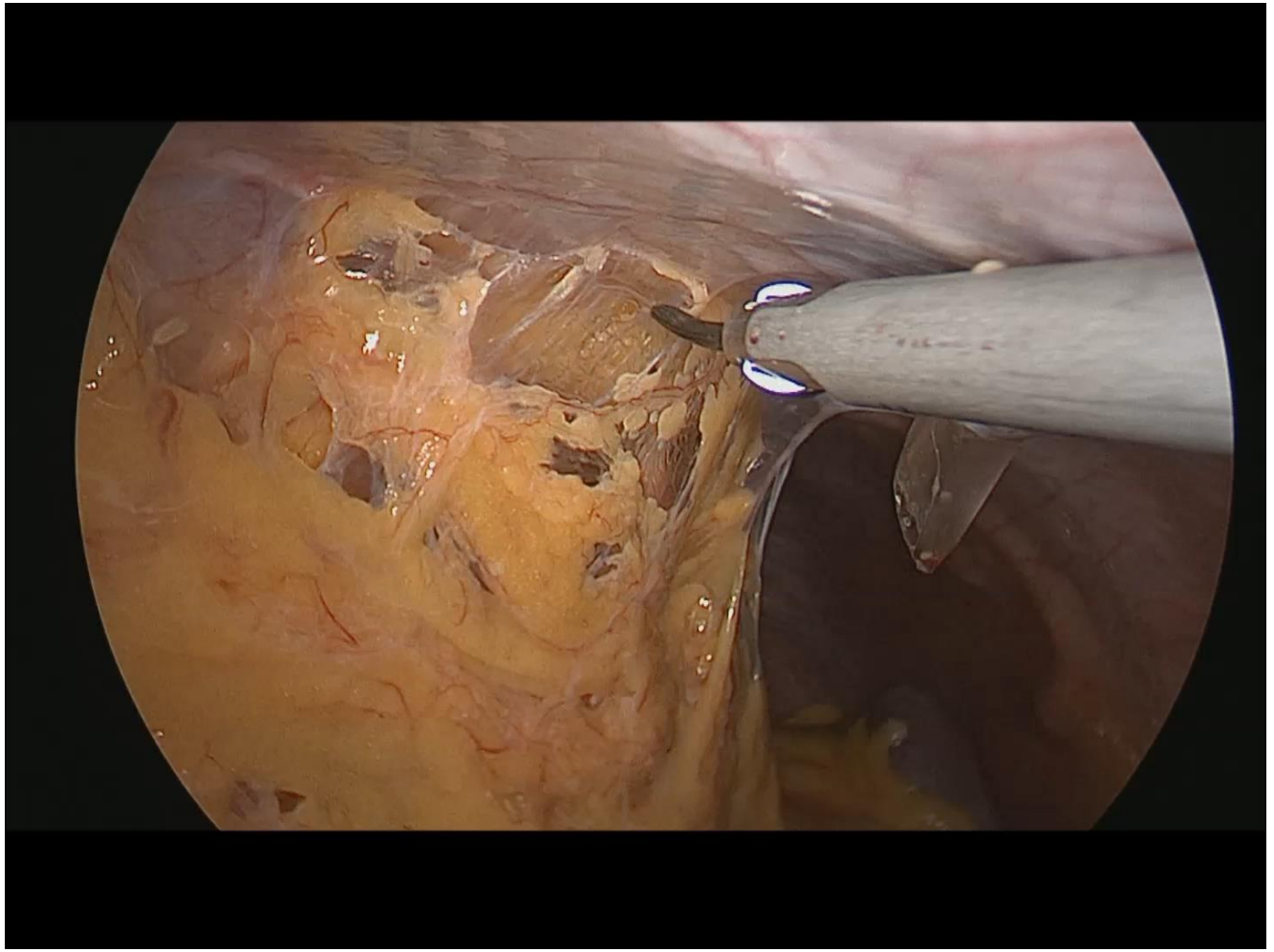
Male. 41 years old (1.5years ago, underwent open OAGB (large stomach pouch) at a hospital in another city due to BMI 21+ diabetes; BPL 275cm + small intestine lateral anastomosis, postoperative diarrhea + abdominal pain + edema + malnutrition + fracture + gastric food retention) BMI 17.8 + diabetes + etc. 2020-12-7; laparoscopic Reversal surgery





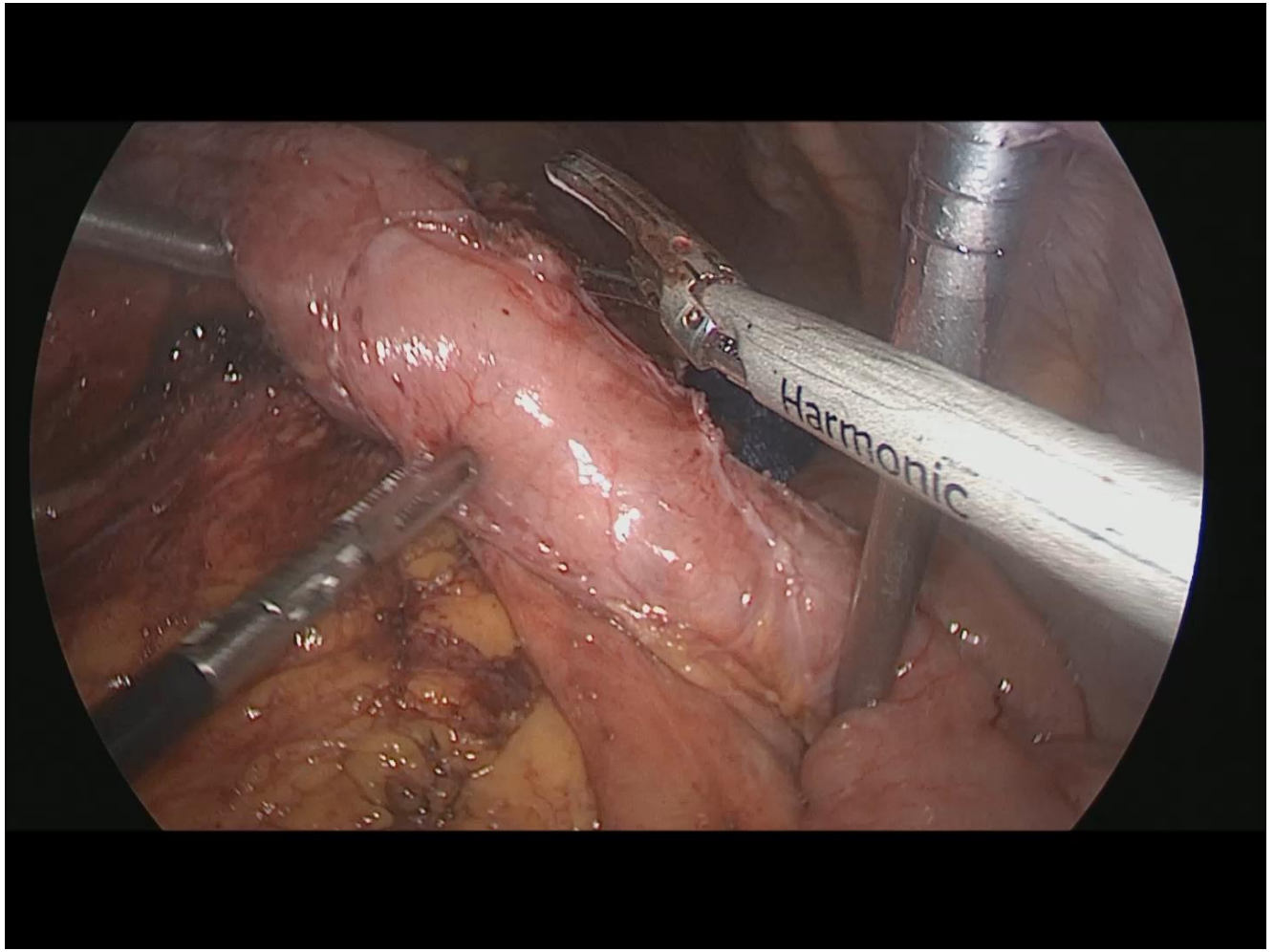
uan War u.cn an University, Guangzhou,

Abdominal cavity was explored, abdominal adhesions were separated using an ultrasonic scalpel, and the length of the small intestine was measured



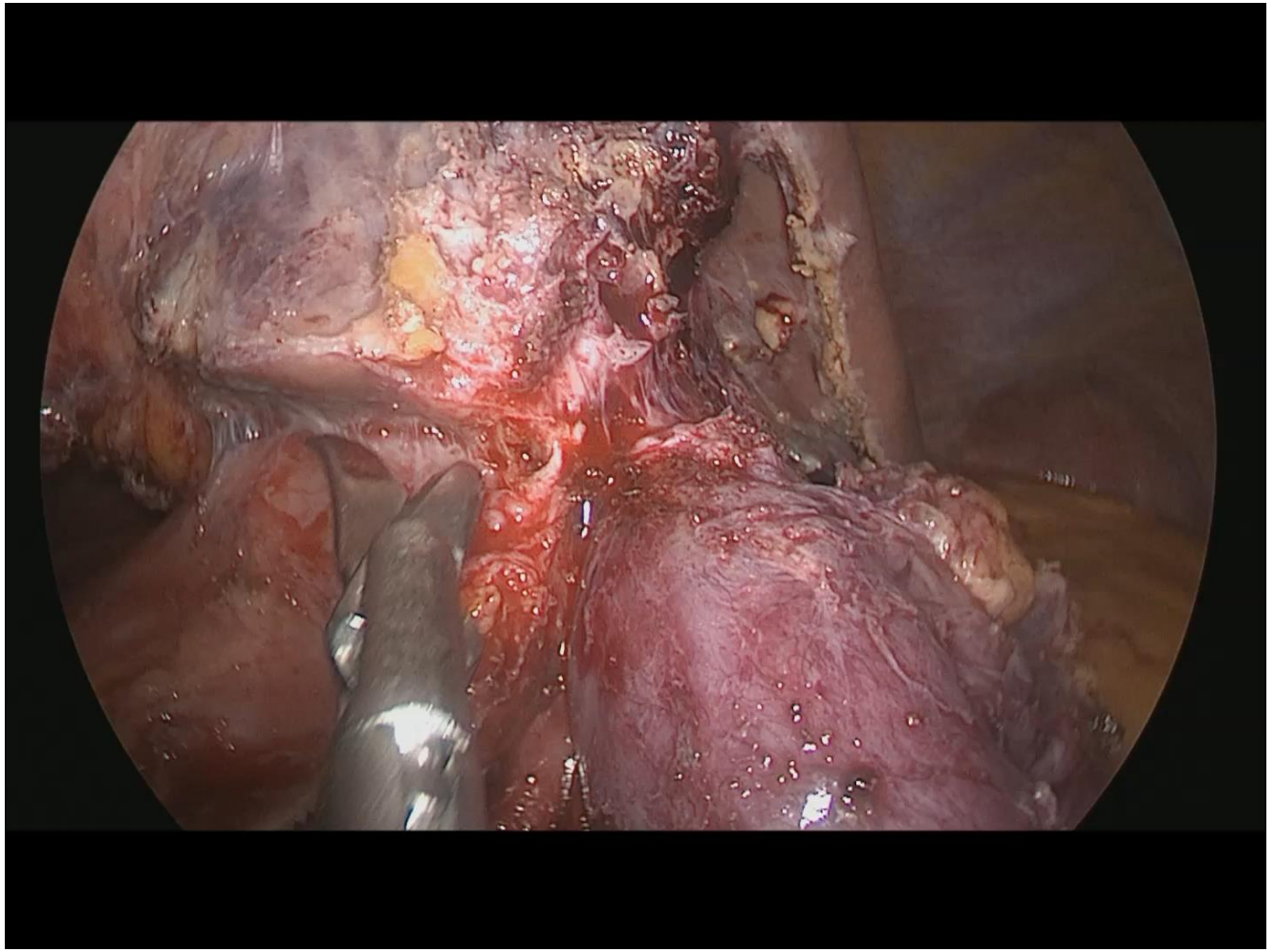
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

The small intestine regains continuity



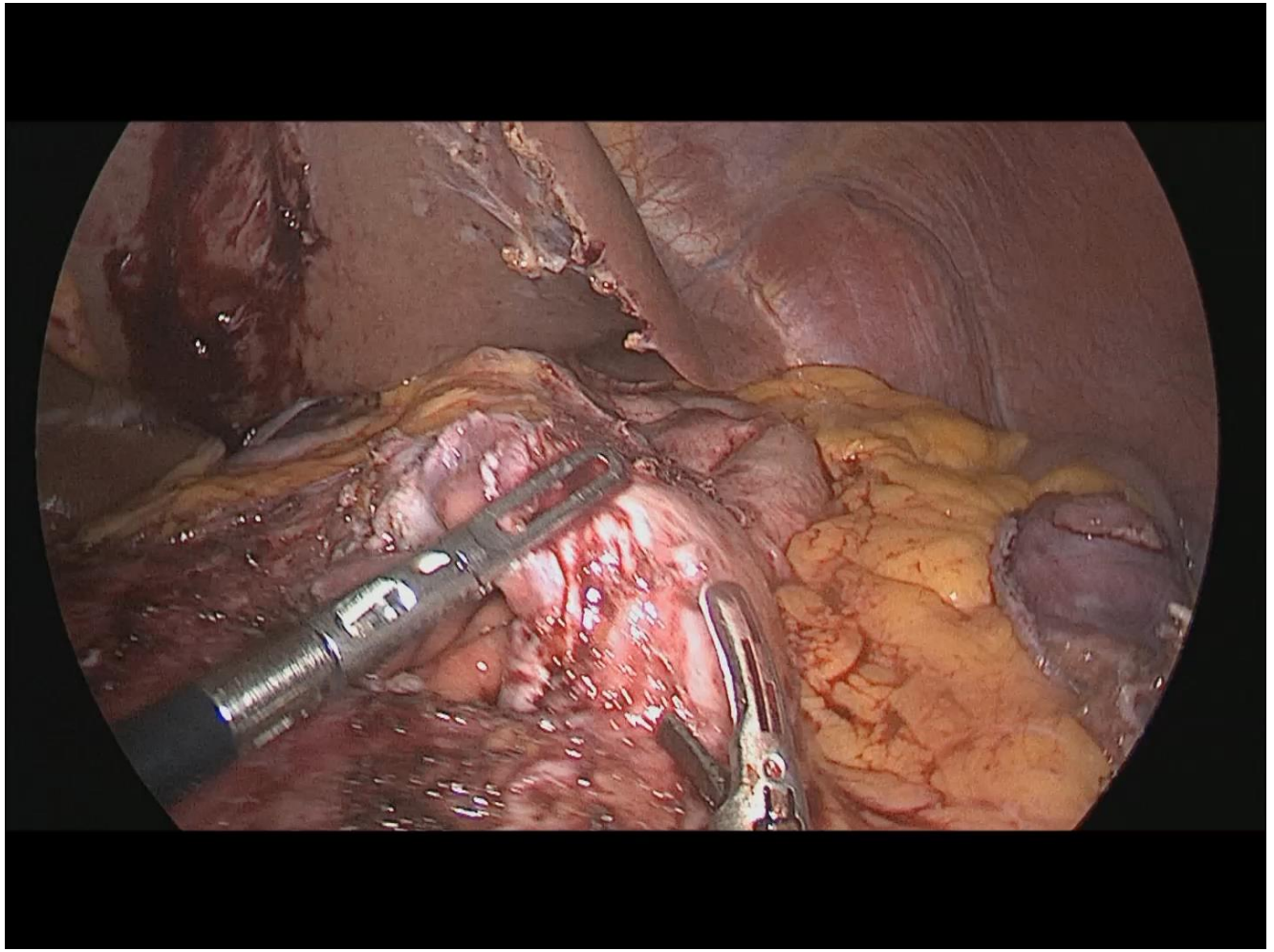
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Cut the gastric jejunal anastomosis



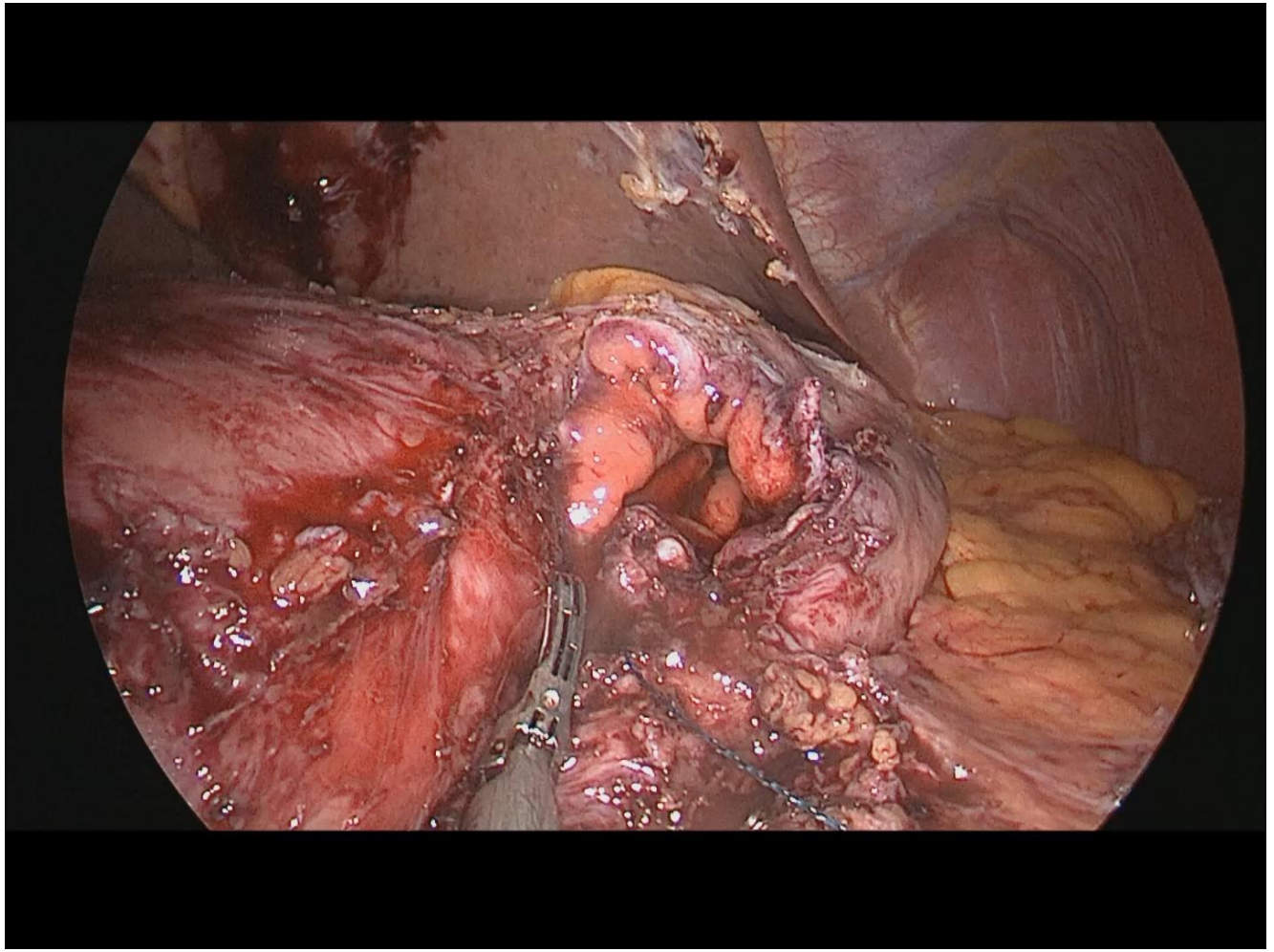
Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Restoring the normal structure of the stomach



Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Gastric anastomosis is underway



Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

Two years after the reversal surgery, BMI 24, diabetes controlled by medication, blood sugar control was effective

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China

术前94.8斤　术后1年6个月119.8斤

不规范胃转流手术　复原手术

术前94.8斤　术后1年6个月119.8斤

不规范胃转流手术　复原手术

Result: personal experience

- **2008-11-12～2025-11-11 52例**

Including: Our hospital case: 3 cases RYGB (3/1260, 0.24%)

Not our hospital cases: 48 cases of irregular diabetic bypass surgery (similar to OAGB); 3 cases of irregular diabetic jejunal anastomosis; OAGB: 1 case

Complications: Two cases of obstruction at the gastoenteric anastomosis after surgery, cured again by laparoscopic surgery with no other serious complications。 No other serious complications

After surgery, weight returned to normal, and postoperative drug therapy for Hyperglycemia in some cases

Conclusion

1.Reversal procedures is a regret drug for bariatric surgery, It is an effective procedure to treat chronic complications of RYGB and OAGB
2.Indications for reconstructive surgery must be strictly understood
3.Weight gain and improvement in nutrition are seen soon after reversal
4.The long-term effects after the restorative surgery still require further observation
5.Reversal of RYGB/OAGB should be performed by surgeons with technical competence and resources available to manage perioperative complications
6.GLP-1 RA drugs may can help patients after reversed surgery

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China


SAVE THE DATE
XXX
IFSO WORLD
CONGRESS
Advancing Multimodal
Obesity Care
IFSO
PARIS 2027
24-27 AUGUST
ifso2027.org
IFSO


XXX IFSO WORLD CONGRESS
"Advancing Multimodal Obesity Care"
24-27 August 2027
ifso2027.org
IFSO
PARIS 2027
See you in
PARIS


IFSO
IFSO
XXX IFSO WORLD CONGRESS
"Advancing Multimodal Obesity Care"
IFSO Congress President 2027
Pr David NOCCA
CHU de Montpellier
Pr François PATTOU
CHU, Lille
SAVE THE DATE
24-27 August 2027
Paris, France
ifso2027.org

Thank you!

谢谢大家！

The development of bariatric surgery is like a long march

Coming together is a beginning.
Keeping together is progress.
Working together is success.
----Henry Ford

Cunchuan Wang, MD, PhD Email: twcc@jnu.edu.cn The First Affiliated Hospital of Jinan University, Guangzhou, China