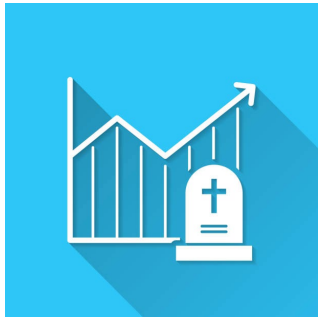
GESTIONE CHIRURGICA DELLE FISTOLE IN CHIRURGIA BARIATRICA

DR. SSA LAVINIA AMATO

S.C. Chirurgia Generale
P.O. Città di Castello

Dir. Dott Maurizio Cesari

“Leak is defined as a transmural defect with communication between the intra and extraluminal compartments, while **fistula** is defined as an **abnormal communication between two epithelialized surfaces**”



Choosing the best endoscopic approach for post-bariatric surgical leaks and fistulas: Basic principles and recommendations
Victor Lira de Oliveira, et al..
World J Gastroenterol 2023 February 21; 29(7): 1173-1193

INCIDENZA

- **0,4 – 5,6% RYGBP**
- **1,9 – 5,3 SG**
- ⬆⬆⬆ **POST CHIRURGIA DI REVISIONE**

⬇

0.5% NEI CENTRI AD ALTO VOLUME

MORTALITA’

- **0,2 – 0,4 %**
- **DOVUTA A DIAGNOSI TARDIVA E/O TRATTAMENTO DELLE COMPLICANZE**

Leak or fistula characteristics + patient clinical condition	Recommended management (first line approach)	Possible therapy (second line approach)
Acute and early leaks with undrained uncontained collection in unstable patients	Surgical lavage + external drainage (surgical placement) ± surgical repair ± endoscopic therapy (see column 4)	Image-guided external drainage + endoscopic therapy (see column 4) OR Intracavitary EVT
Acute and early leaks with undrained uncontained collections in stable patients (rare condition as most patients with undrained uncontained collections presents with peritonitis/sepsis)	Image-guided external drainage + endoscopic therapy (see column 4)	Surgical lavage + external drainage (surgical placement) ± surgical repair ± endoscopic therapy (see column 4) OR Intracavitary EVT
Acute and early leaks with undrained contained collections (both unstable or stable patients - most of these patients are stable due to the contained collection)	Endoscopic drainage techniques: Intracavitary EVT OR EID with DPS; If a septum is identified, septotomy must be performed	Image-guided external drainage + endoscopic therapy (see column 4)
Late and chronic leaks (both unstable or stable patients - most of these patients are stable as uncontained collection are extremely rare in late and chronic leaks)	Endoscopic drainage techniques: EID with DPS OREVT (intracavitary if associated collection > 3 cm); If a septum is identified, septotomy must be performed	Image-guided external drainage + endoscopic therapy (see column 4) OR Surgical approach
Late and chronic fistulas (both unstable or stable patients - most of these patients are stable)	Endoscopic therapy (see column 4); Cytology brushing or APC to loosen granulation tissue before endoscopic therapy is helpful; If a septum is identified, septotomy must be performed	Surgical approach
Late and chronic gastro-gastric fistula	Defect < 10 mm: Endoscopic therapy (see column 4); Defect > 10 mm: Surgical approach	Surgical approach after endoscopic management failure

There is no gold standard approach for these patients and usually more than one endoscopic intervention is required, especially in a chronic scenario. Furthermore, combined therapies may be required for some patients to achieve clinical success.

World Journal of Gastroenterology
World J Gastroenterol 2023 February 21; 29(7): 1123-1242

TIMING

- **ACUTE: < 30-45 GIORNI**
- **CRONICHE: > 45 GIORNI**

Endoscopic Management of Post-bariatric Surgery Fistula: a Tertiary Care Center Experience. Benosman et al.. **Obes Surg 2018**

Outcomes of a novel bariatric stent in the management of sleeve gastrectomy leaks: a multicenter study. de Moura EGH. **Surg Obes Relat Dis 2019**;

- **ACUTE:** <7 GIORNI
- **PRECOCI:** tra 1 e 6 SETTIMANE
- **TARDIVE:** > 6 SETTIMANE E < 3 MESI
- **CRONICHE:** > 3MESI

International Sleeve Gastrectomy Expert Panel Consensus Statement: best practice guidelines based on experience of >12,000 cases. Diaz AA, Basso N, Gagner. **Surg Obes Relat Dis 2012**

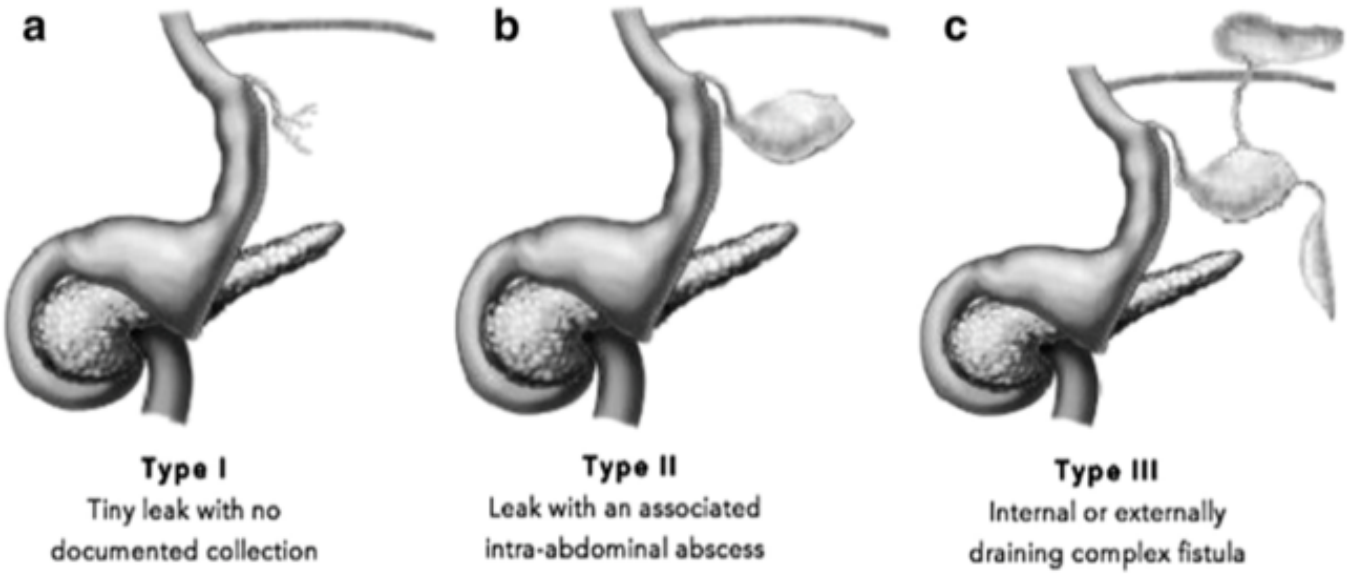
POSIZIONE

- **TIPO I**: TASCA GASTRICA
- **TIPO II**: GJ ANASTOMOSI
- **TIPO III**: MONCONE DIGIUNALE

- **TIPO IV**: J-J ANASTOMOSI
- **TIPO V**: REMNANT
- **TIPO VI**: MONCONE BILIARE prossimale
- **TIPO VII**: MONCONE BILIARE distale

Management of leakage and fistulas after bariatric surgery Stephen A. Firkins , Roberto Simons-Linares **Bariatric and Metabolic Endoscopy, Digestive Diseases 2024**

Classification and management of leaks after gastric bypass for patients with morbid obesity: a prospective study of 60 patients. Csendes A, Burgos AM, Braghetto I. **Obes Surg 2012**



Fistula Following Laparoscopic Sleeve Gastrectomy: a Proposed Classification and Algorithm for Optimal Management
G. Al Hajj, R. Chemaly. **Obes Surg 2017**

TO DRAIN OR NOT TO DRAIN…?

Obesity Surgery (2020) 30:569–579
https://doi.org/10.1007/s11695-019-04215-6

IFSO

ORIGINAL CONTRIBUTIONS

Check for updates

Trends in Drain Utilization in Bariatric Surgery: an Analysis of the MBSAQIP Database 2015–2017

Benjamin Clapp[1] · Carlos Lodeiro[1] · Christopher Dodoo[1] · Ginger Coleman[1] · Babak Sadri[1] · Ellen Wicker[1] · Ira L. Swinney[1] · Robert Cullen[1] · Alan Tyroch[1]

PZ/PROCEDURE DI MAGGIOR COMPLESSITA'

"…Patients with a drain were more likely to have had a provocative test and a swallow study and have a higher rate of complications and mortality…" > **LEAK AUMENTATO DEL 30%**

488.000

24% with drain

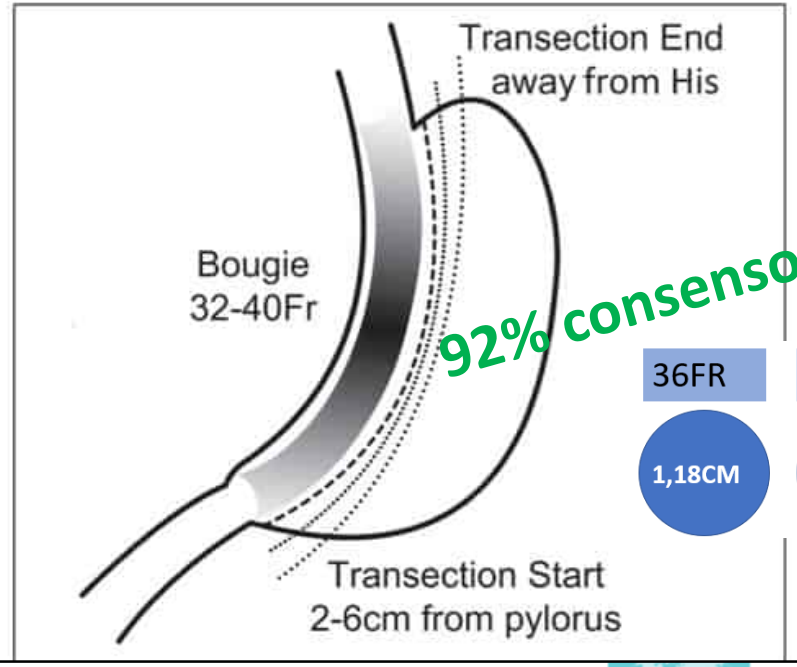
(29% LRYGB – 16.7% SG)

- Il drenaggio non modifica la gestione nella diagnosi: tc e/o esplorazione
- Il drenaggio non influisce positivamente nella risoluzione
- Il drenaggio non riduce il tasso di reintervento
- Il drenaggio non è necessario per una gestione post-operatoria sicura
- Non serve a prevenire nè a migliorare una perdita
- **Il loro uso routinario dovrebbe essere scoraggiato**

Routine drain placement in Roux-en-Ygastric bypass: an expanded retrospective comparative study of 755 patients and review of the literature. Kavuturu S, Rogers AM, HaluckRS
Obes Surg 2012

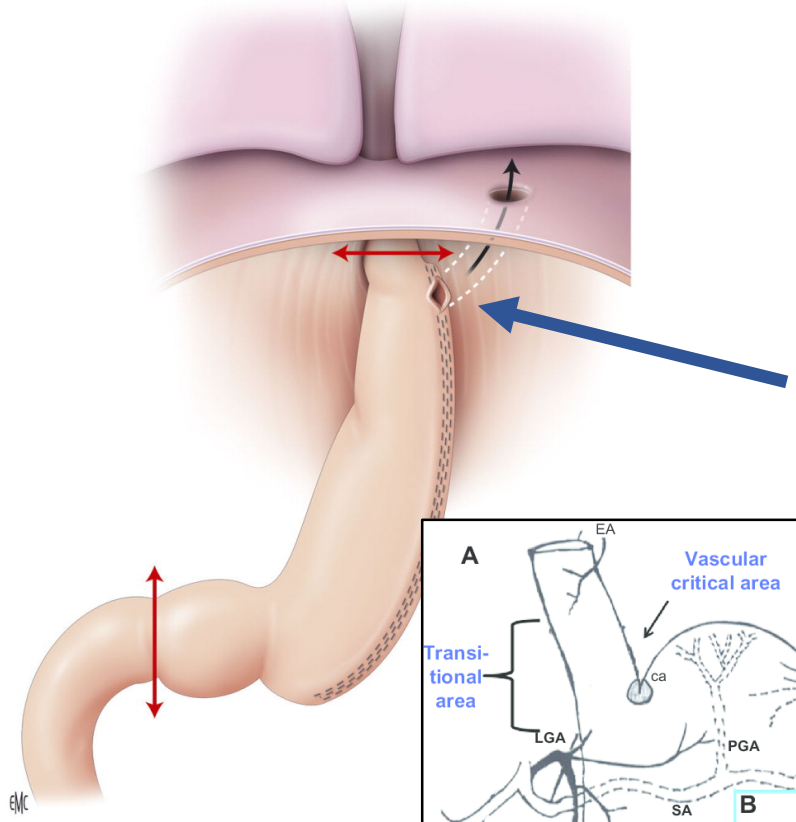
“…The smaller the bougie size and the tighter the sleeve, the higher the incidence of leaks…”

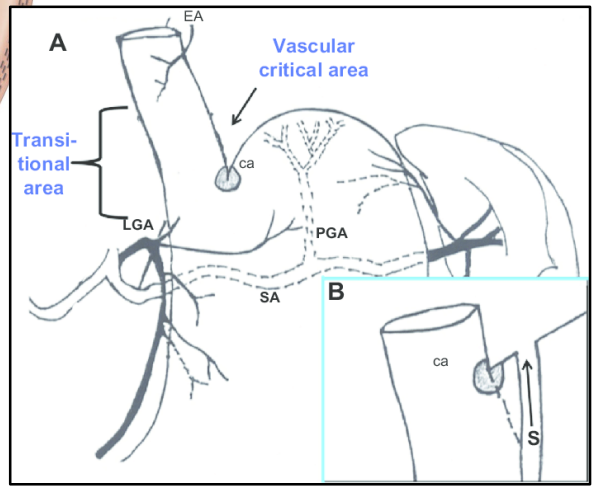
SLEEVE: 90% ANGOLO DI HIS



92% consenso Sondone 36-40 Fr

36FR	38FR	40FR
1,18CM	1,27CM	1,33CM





World J Surg
https://doi.org/10.1007/s00268-019-05233-2

ORIGINAL SCIENTIFIC REPORT

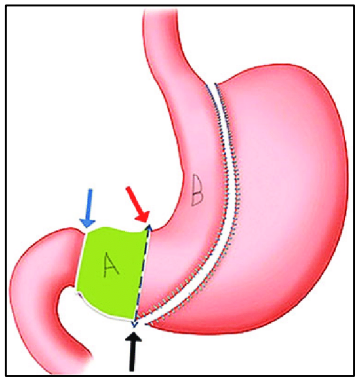
Low Incidence of Postoperative Leaks When Using Small-Diameter Calibrated Bougies During Laparoscopic Sleeve Gastrectomy: A Retrospective Cohort Study

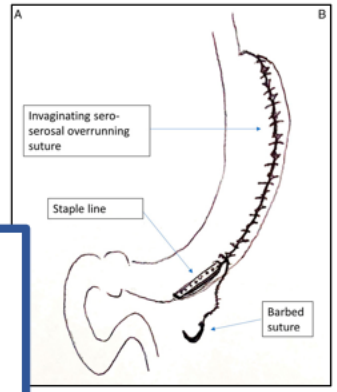
Nasser Sakran[1,2,3] · Asnat Raziel[1] · Ian M. Gralnek[3,4] · Zvi Perry[5] · Kamal K. Mahawar[6] · Scott A. Shikora[7] · David Goitein[1,8,9]

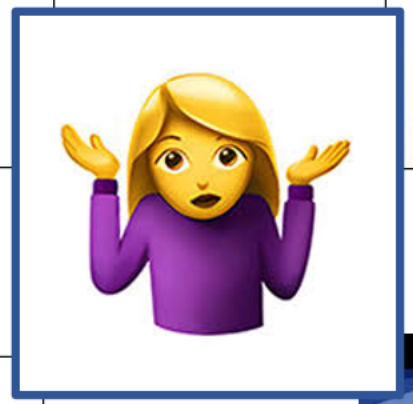
International Sleeve Gastrectomy Expert Panel Consensus Statement: best practice guidelines based on experience of >12,000 cases. Diaz AA, Basso N, Gagner. **Surg Obes Relat Dis 2012**

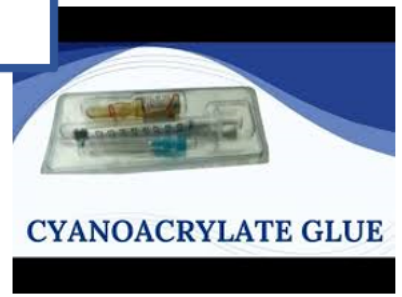
GESTIONE CHIRURGICA PREVENTIVA??

- Evitare tensione sull'anastomosi
- Rispettare il complesso antro-pilorico (2-6 cm)









- **A "critical area" of vascularization** may occur laterally, just at the esophagogastric junction at the angle of His.
- A resection line avoiding the "critical area" by **leaving 1–2 cm of gastric remnant just at the gastroesophageal junction may partly solve** the problem !!

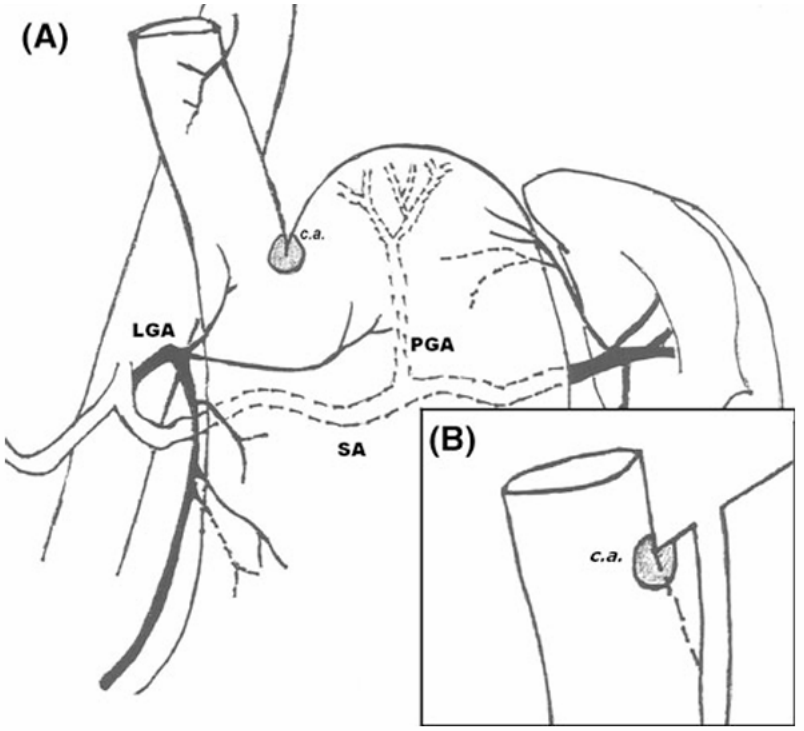


Fig. 4 **A** Vascularization of the cardias. LGA = left gastric artery; PGA = posterior gastric artery; SA = splenic artery; c.a. = critical area. **B** Leaving 1–2 cm of the gastric fundus at the esophagogastric junction the resection line avoids the "critical area" (c.a.)

Comparative Study > Surg Endosc. 2011 Feb;25(2):444-9. doi: 10.1007/s00464-010-1187-7. Epub 2010 Jul 7.

Laparoscopic sleeve gastrectomy as first stage or definitive intent in 300 consecutive cases

N Basso [1], G Casella, M Rizzello, F Abbatini, E Soricelli, G Alessandri, C Maglio, A Fantini

RICONOSCERE LA FISTOLA (TC ADDOME CON GASTROGRAFIN!!!!)

VERIFICARE LE CONDIZIONI GENERALI

- DOLORI ADDOMINALI
- TACHICARDIA
- FEBBRE
- DISPNEA
- FINO AI CASI PIU' GRAVI CON SEGNI DI SEPSI
- LEUCOCITOSI, PCR E PROCALCITONINA

DRENARE

e/o

PORTARE IL PAZIENTE ALL'ENDOSCOPISTA

- RYGBP: più precoce anche durante il ricovero
- SG: più tardiva dopo la dimissione

M. Al Zoubi, N. Khidir, M. Bashah *Challenges in the Diagnosis of Leak After Sleeve Gastrectomy: Clinical Presentation, Laboratory, and Radiological Findings.* **Obes Surg 2021** Feb;31(2):612-616

FATTORE TEMPO

M. Al Zoubi, N. Khidir, M. Bashah *Challenges in the Diagnosis of Leak After Sleeve Gastrectomy: Clinical Presentation, Laboratory, and Radiological Findings.* **Obes Surg 2021** Feb;31(2):612-616

SLEEVE: 80 leak, 95% diagnosi dopo la dimissione

Obesity Surgery (2018) 28:3775–3782
https://doi.org/10.1007/s11695-018-3409-3

ORIGINAL CONTRIBUTIONS

Not All Leaks Are Created Equal: a Comparison Between Leaks After Sleeve Gastrectomy and Roux-En-Y Gastric Bypass

Abbas Al-Kurd[1] · Ronit Grinbaum[1] · Ala'a Abubeih[1] · Ariel Verbner[1] · Amram Kupietzky[1] · Ido Mizrahi[1] · Haggi Mazeh[1] · Nahum Beglaibter[1]

SG: 26 giorni RYGB: 6 giorni

N. Beaupel, M. Bruzzi, T. Voron, H.A. Nasser, R. Douard, J.M. Chevallier. *Management of acute intra-abdominal sepsis caused by leakage after one anastomosis gastric bypass.* **Surgery for Obesity and Related Diseases Volume 13, Issue 8, August 2017**

OAGB: Tempo medio di presentazione 4 giorni

Techniques in Gastrointestinal Endoscopy (2010) 12, 141-145

ELSEVIER

Techniques in GASTROINTESTINAL ENDOSCOPY
www.techgiendoscopy.com

Treatment of leaks and fistulae after bariatric surgery

Sohail N. Shaikh, MD, Christopher C. Thompson, MD

Division of Gastroenterology, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts.

Le fistole dovrebbero essere trattate conservativamente quando le condizioni cliniche sono conservate > terapia antibiotica, drenaggio, nutrizione parenterale e digiuno.

La terapia endoscopica è promettente e probabilmente diventerà una componente integrale dell'algoritmo di gestione delle fistole in chirurgia bariatrica.

Obesity Surgery (2018) 28:3775–3782
https://doi.org/10.1007/s11695-018-3409-3

ORIGINAL CONTRIBUTIONS

IFSO

CrossMark

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SLEEVE GASTRECTOMY

- Endoscopia 87%
- Endoscopia risolutiva nel 37,5%
- Risoluzione con drenaggio 18%

RYGBP

- Endoscopia 22%
- Endoscopia risolutiva nel 0%
- Risoluzione con drenaggio 67%

ESPLORAZIONE CHIRURGICA >>>>

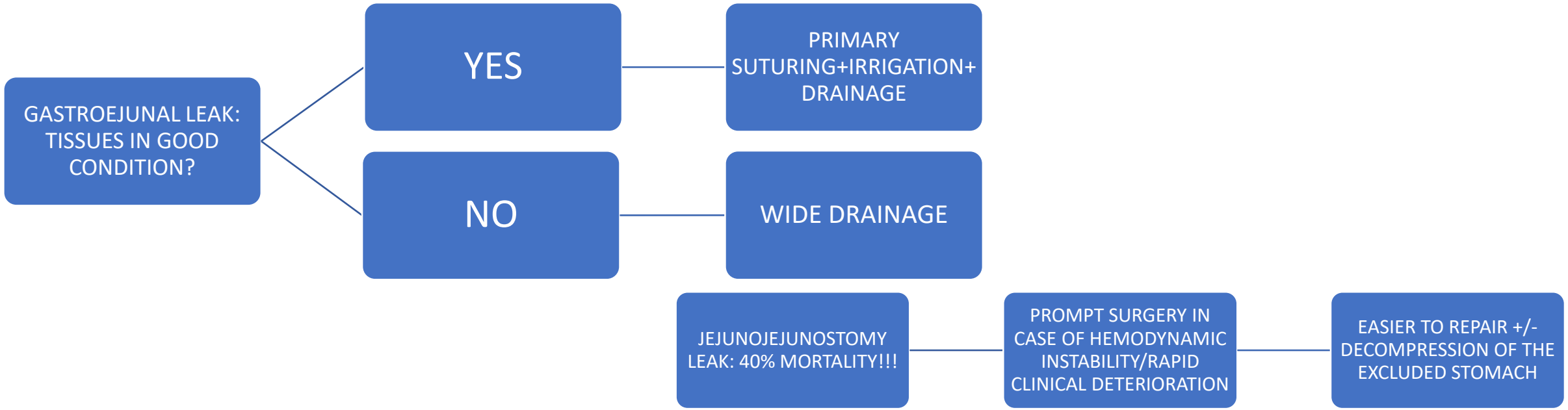
- Solo in caso di sepsi o shock settico e condizioni instabili
- Sensibilità, specificità e accuratezza superiori alla TC
- TC 30% FALSI NEG !!!
- Peritonite e segni di sepsi + TC negativa> esplorazione chirurgica

OTTENERE DRENAGGIO + CONTROLLO FISTOLA

ASMBS position statement on prevention, detection and treatment of gastrointestinal leak after gastric bypass and sleeve gastrectomy including the role of imaging, surgical exploration and nonoperative management. **2015**

PRINCIPI CHIRURGICI DI TRATTAMENTO DI UN LEAK

- Copertura antibiotica ad ampio spettro
- Identificare e riparare il difetto
- Lavaggio e controllo dell'area contaminata
- Garantire un adeguato supporto nutrizionale (jejunostomy/gastrostomy tube)



Bariatric and Metabolic Surgery, S. H. Choi, K. Kasama, Springer **2014**

RIPARAZIONE/SUTURA>>>>

The primary goal *should not be* definitive repair (Repair attempt in the first 48-72h)

ASMBS position statement on prevention, detection and treatment of gastrointestinal leak after gastric bypass and sleeve gastrectomy including the role of imaging, surgical exploration and nonoperative management. **2015**

Nel caso di **leak a carico dell'anastomosi gastro-digiunale**, qualora la **condizione dei tessuti lo consenta**, può esser eseguita una **sutura primaria** del difetto, seguita da **lavaggio** e successivo posizionamento di **drenaggio**. Qualora la sutura non fosse possibile, un «wide drainage» è un'opzione.

Bariatric and Metabolic Surgery, S. H. Choi, K. Kasama, Springer **2014**

Techniques in Gastrointestinal Endoscopy (2010) 12, 141-145

ELSEVIER

Techniques in GASTROINTESTINAL ENDOSCOPY

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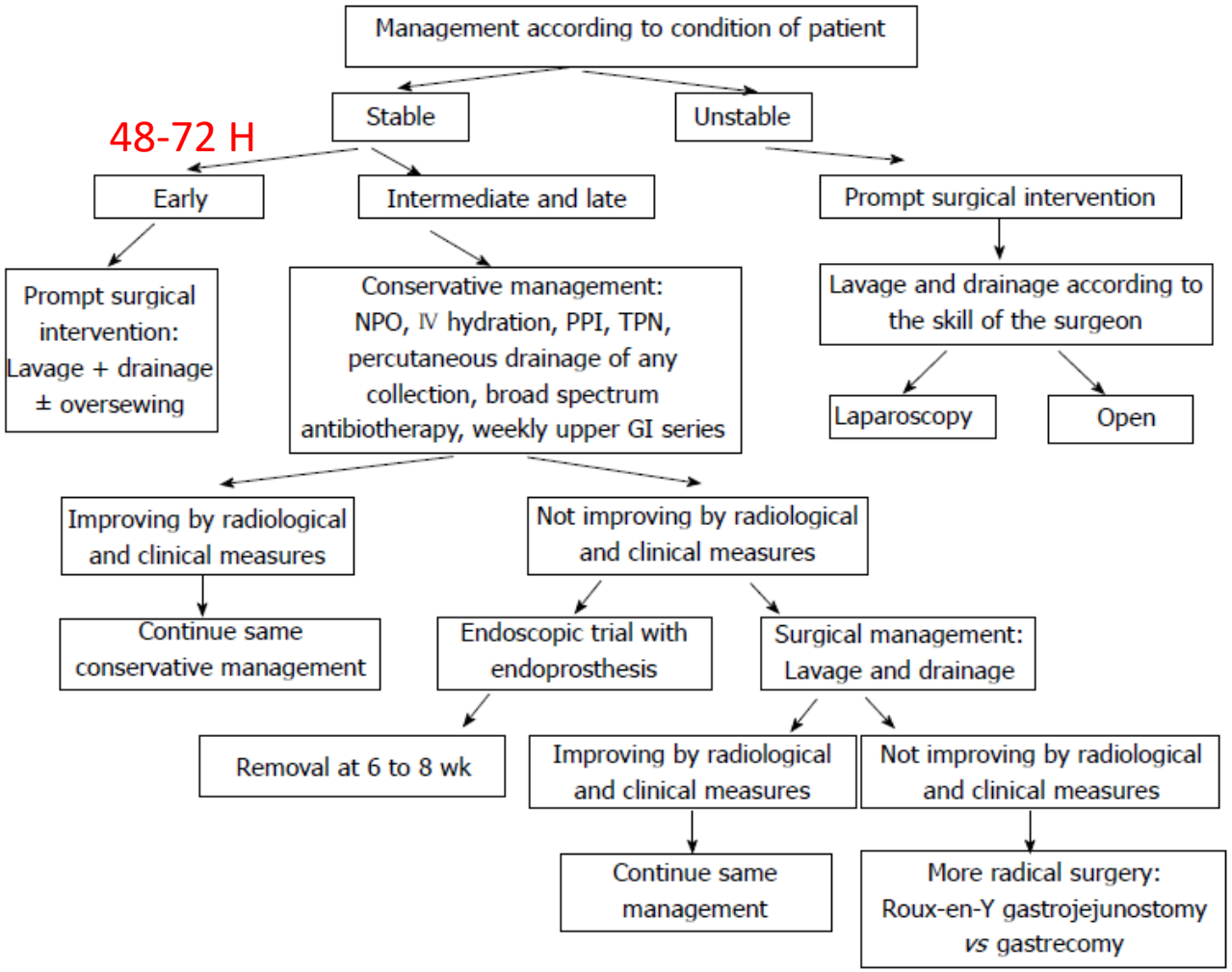
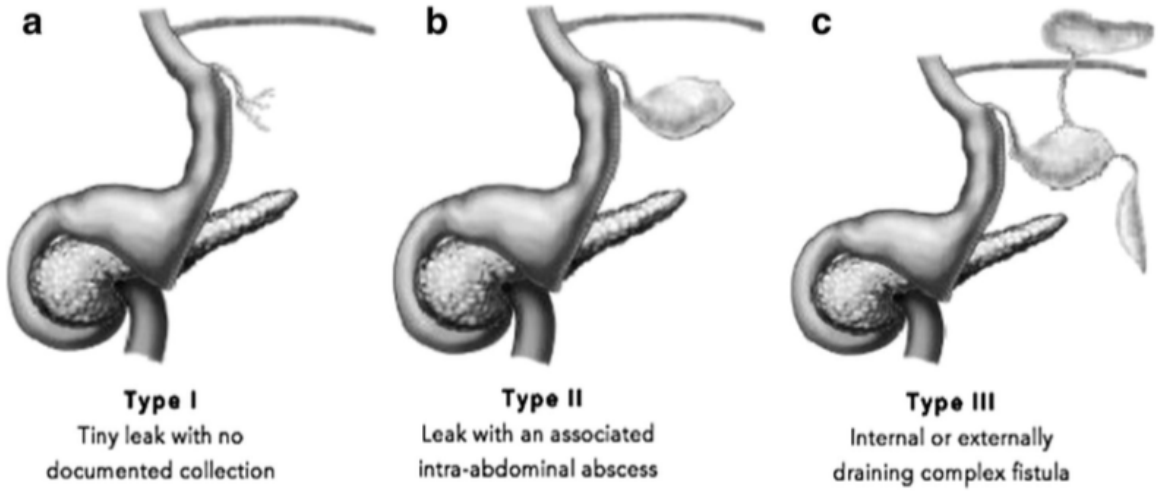
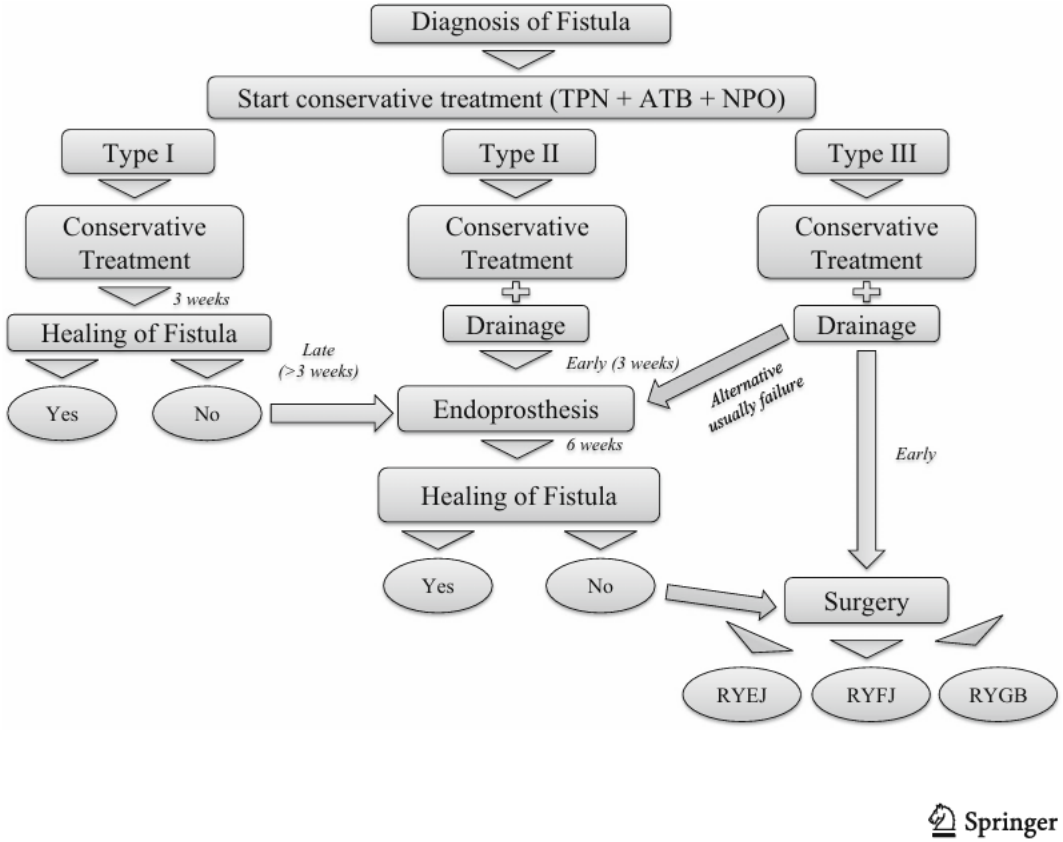


Figure 2 Algorithm for the management of a gastric leak post sleeve gastrectomy. NPO: Nil *per os*; IV: Intravenous; PPI: Proton pump inhibitor; TPN: Total par-enteral nutrition; GI: Gastrointestinal.

Fig. 3 Flowchart of the three types of fistula from diagnosis to the respective management. TPN, total parenteral nutrition; ATB, antibiotics; NPO, nil per os; RYEJ, Roux-en-Y esophago-jejunostomy; RYFJ, Roux-en-Y fistulo-jejunostomy; RYGB, Roux-en-Y gastric bypass





Fistula Following ***Laparoscopic Sleeve Gastrectomy****: a Proposed Classification and Algorithm for Optimal Management*
G. Al Hajj, R. Chemaly. **Obes Surg 2017**

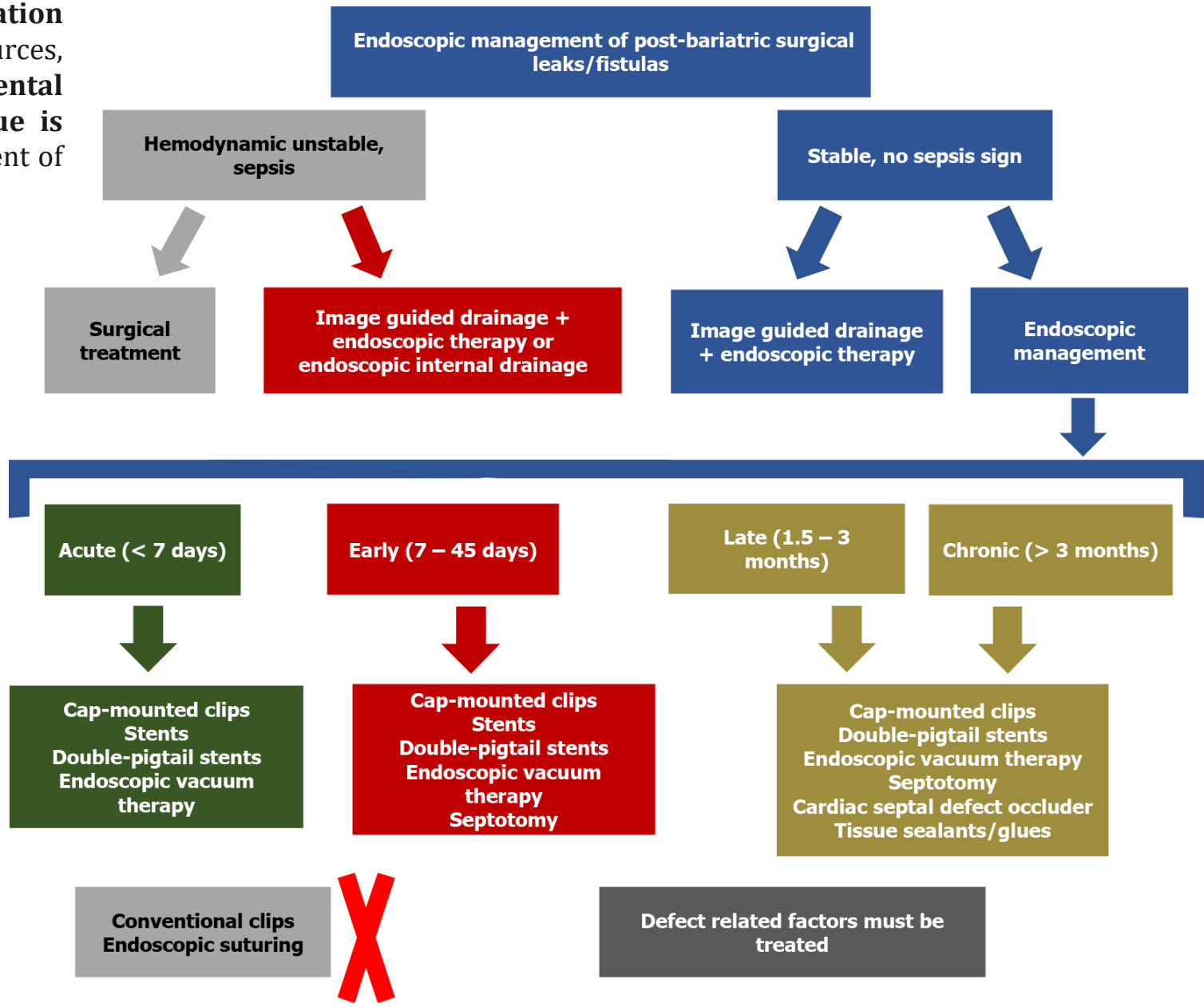
A **multidisciplinary team and individualized evaluation** considering patient and defect characteristics, available resources, local and personal experience, and **knowledge of fundamental principles and mechanisms of action of each technique is essential to choosing the best approach** for the management of post-bariatric surgical leaks and fistulas

World Journal of Gastroenterology

World J Gastroenterol. 2023 Feb 21;29(7):1173–1193. doi: 10.3748/wjg.v29.i7.1173

Choosing the best endoscopic approach for post-bariatric surgical leaks and fistulas: Basic principles and recommendations

Victor Lira de Oliveira [1], Alexandre Moraes Bestetti [2], Roberto Paolo Trasolini [3], Eduardo Guimarães Hourneaux de Moura [4], Diogo Turiani Hourneaux de Moura [5]



!! Endoscopic suturing needs robust and healthy tissue around the defect for primary closure. Therefore, this technique is not effective in closing most leaks and fistulas

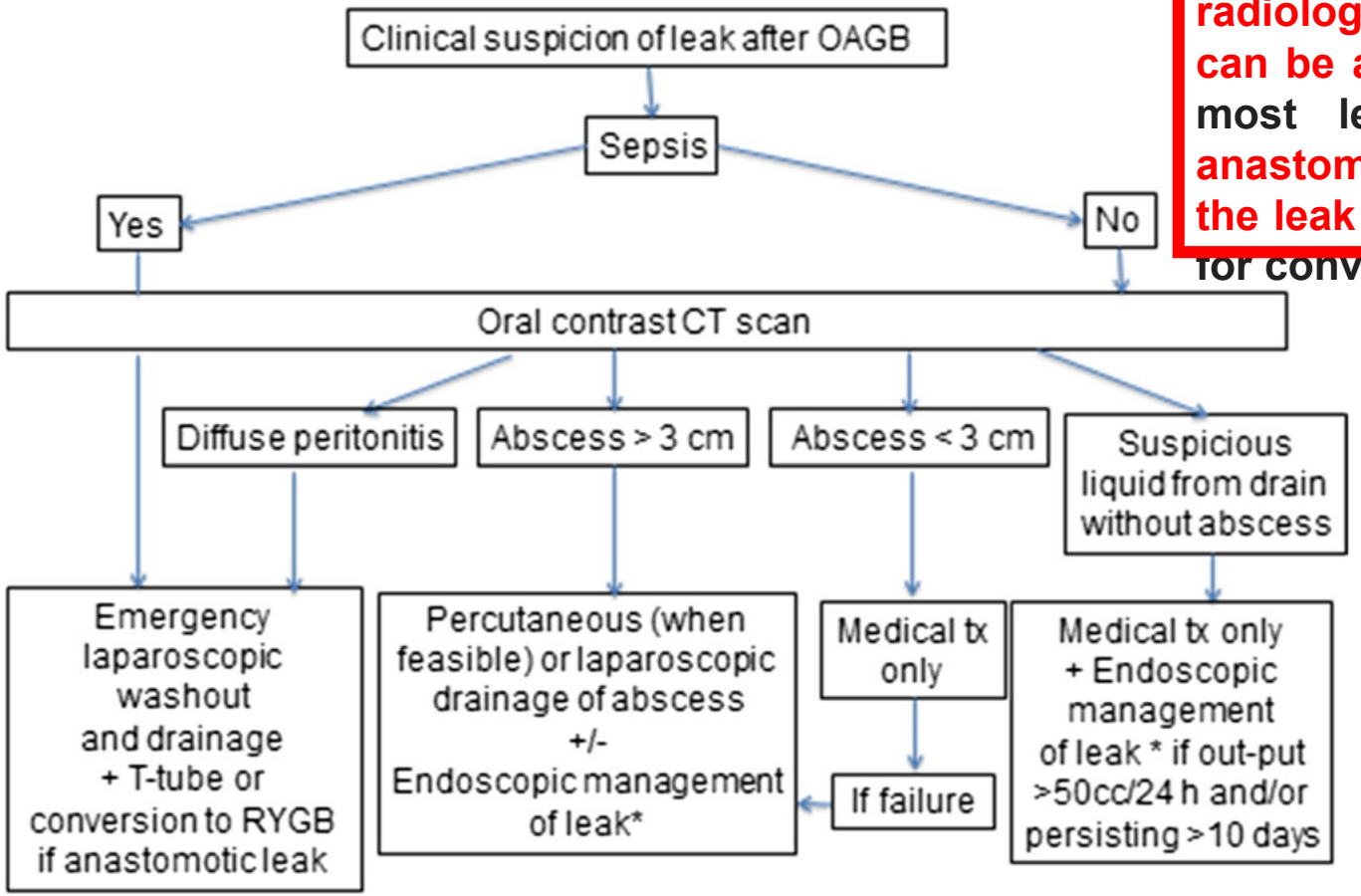
DOI: 10.3748/wjg.v29.i7.1173

Multidisciplinary management of leaks after one-anastomosis gastric bypass in a single-center series of 2780 consecutive patients.
Obesity Surg 2019

2780 OAGB > 46 (1.7% leaks)

- 20% sola tp medica
- 50% trattati con endoscopia/ dr PCT
- 30% laparoscopic management

(washout and drainage plus T-tube placement in 5 cases or conversion to RYGB in one case)



If endoscopy and interventional radiology are available, reoperation can be avoided in most patients. In most leaks at the gastrojejunal anastomosis, inserting a T-tube in the leak orifice avoids the necessity for conversion to RYGB.

VIER Surgery for Obesity and Related Diseases ▮ (2017) 00–00

Original article

Management of acute intra-abdominal sepsis caused by leakage after one anastomosis gastric bypass

Nathan Beaupel, M.D.[a,b], Matthieu Bruzzi, M.D.[a,b,*], Thibault Voron, M.D.[a,b], Haydar A. Nasser, M.D.[a,b], Richard Douard, M.D., Ph.D.[a,b], Jean-Marc Chevallier, M.D., Ph.D.[a,b]

[a]*Service de Chirurgie Générale et Digestive, Hôpital Européen Georges Pompidou, Paris, France*
[b]*Université Paris Descartes, Paris, France*

Received December 9, 2016; accepted April 4, 2017

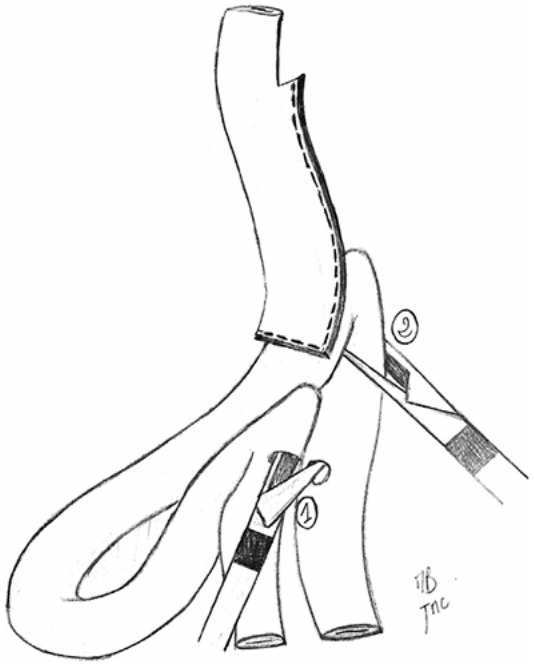


Fig. 1. Conversion of one anastomosis gastric bypass (OAGB) into Roux-en-Y gastric bypass. (A) A mechanical 70-cm Roux-en-Y enteroenterostomy is performed: 70 cm of the OAGB efferent limb is measured from the gastrojejunal anastomosis (GJA) and then anastomosed to the distal part of the biliary afferent limb, just before the GJA. (B) Finally, a stapler is fired to separate the GJA and the new enteroenterostomy to create a Roux-en-Y loop.

- 17 pz tra il 2006-2016 con leak diagnosticato 4 gg post OAGB
- 16 pz trattati chirurgicamente (5 VLS, 11 open)- 1 tp conservativa
- 6 OAGB>RYGB (in case of GJA, gastric-tube, and biliary-limb leakages)

Reduced overall morbidity rate (16.7% versus 83.3%) and shorter lengths of stay in the “conversion to RYGB” group !!

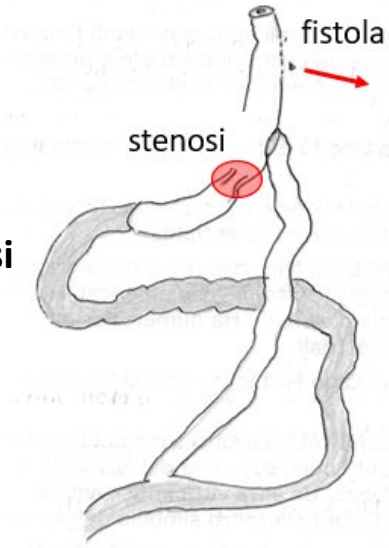
LA FISTOLA CRONICA
CHIRURGIA DI SALVATAGGIO

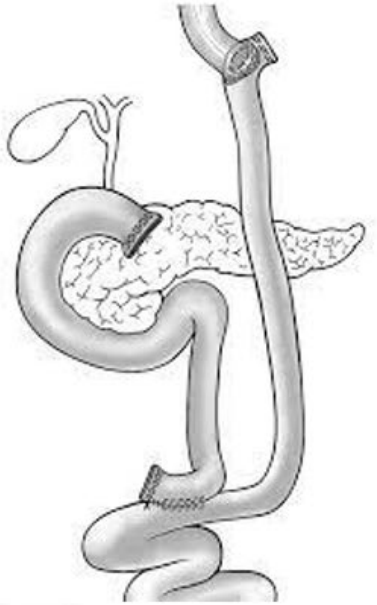
- 37 pazienti
- 81% tratt endoscopico (internal pigtails, stents, septoplasty, endoluminal vacuum therapy and over-the-scope clips)
- 19% chirurgia salvataggio
- Leak < 6 settimane 97% successo endoscopico
- Leak > 45 giorni successo endoscopico del 25%
- Chirurgia in caso di 4 tentativi endoscopici falliti:

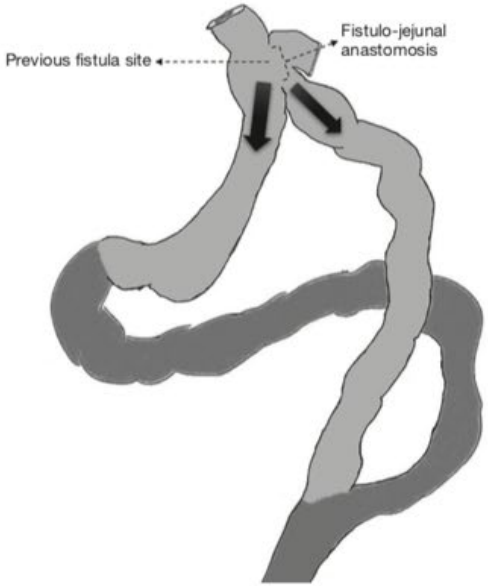
❑ **Gastrectomia tot RY Esofago-digiuno anastomosi**

❑ **RYGBP prossimale alla stenosi**

❑ **RY fistola-digiuno anastomosi**







Long-term follow-up of a cohort with post sleeve gastrectomy leaks: results of endoscopic treatment and salvage surgery. **Surg End 2023**

LA FISTOLA CRONICA
CHIRURGIA DI SALVATAGGIO

Use of a Roux limb to correct esophagogastric junction fistulas after sleeve gastrectomy.
Obes Surg 2007

Management of chronic proximal fistulas after sleeve gastrectomy by laparoscopic Roux-limb placement.
Surg Obes Relat Dis 2013

Roux-En-Y Fistulo-Jejunostomy as a salvage procedure in patients with post-sleeve gastrectomy fistula.
Surg Endosc 2014

Laparoscopic Roux limb placement for the management of chronic proximal fistulas after sleeve gastrectomy: technical aspects. **Surg Endosc 2015**

Roux-en-Y fistulo-jejunostomy as a salvage procedure in patients with post-sleeve gastrectomy fistula: mid-term results. **Surg Endosc 2016**

Laparoscopic Roux-En-Y Fistulo-Jejunostomy, a Preferred Technique after Failure of Endoscopic and Radiologic Management of Fistula Post Sleeve Gastrectomy. **Obes Surg 2019**

Salvage procedures for chronic gastric leaks after sleeve gastrectomy: the role of laparoscopic Roux-en-Y fistulo-jejunostomy. **Ann Transl Med 2019**

- La fistola in chirurgia bariatrica ha una **bassa incidenza e bassa mortalità**
- Tuttavia si tratta di una evenienza **potenzialmente catastrofica**
- Il compito del chirurgo è di saperla **riconoscere**
- L'obiettivo **non è riparare ma controllare** la perdita
- Preferire sempre un **trattamento conservativo**
- Solo **Terapia, Endoscopico, Radiologico**
- **Reintervento è indicato in caso di sepsi o fistole croniche** non responder

Take Home Messages

Thank You!