Revisional surgery after endoscopic treatment failure of leak after sleeve gastrectomy

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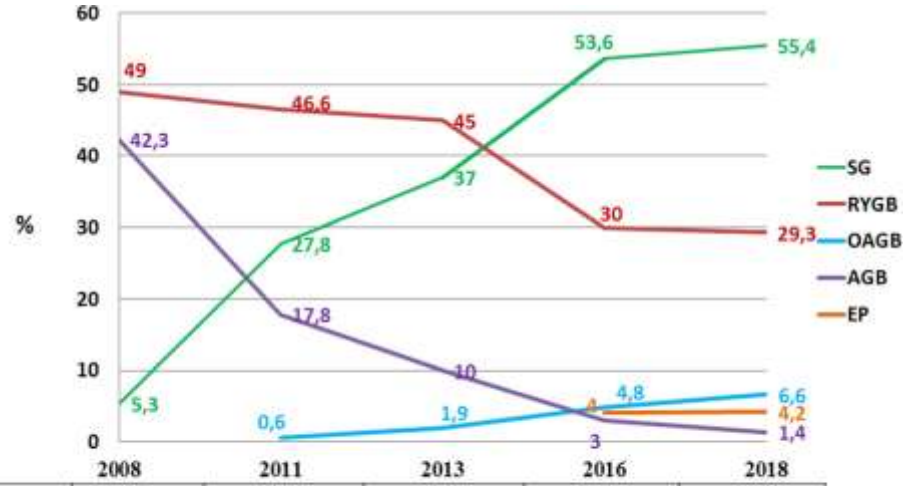
Introduction - Sleeve gastrectomy

- Most commonly performed procedure in bariatric surgery.
- 55 %, increasing
- 25 000 - 30 000 / year in France



Bariatric procedures (N)	344,221	340,768	468,609	685,874	696,191

Angrisani *et al.* Obes Surg 2021

Postoperative complications – Leak

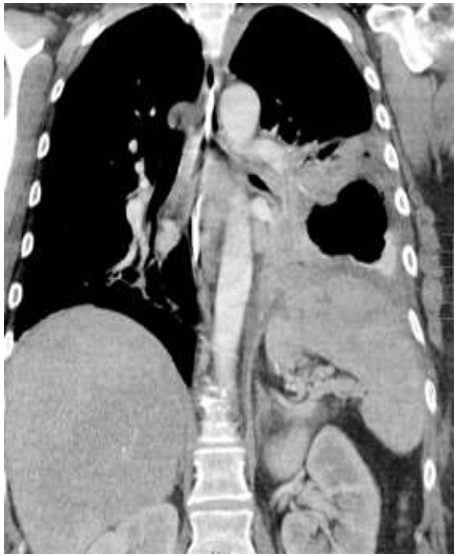
- Most feared postoperative complication:

- Incidence: 1-4%

- Location: most commonly occurs at the proximal part of the staple line

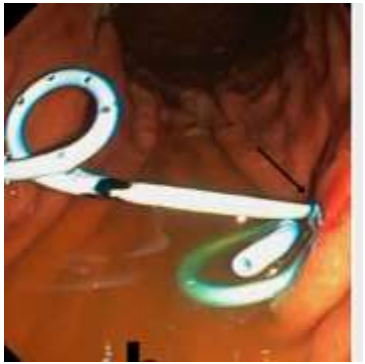
- Type: simple (gastro-collection) or complex (gastro-pleural, bronchial, gastro-colic etc…)

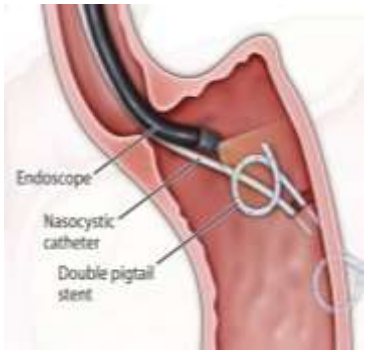
- Known risk factors: ischeamia or hematoma of staple line, twist or stenosis of sleeved stomach



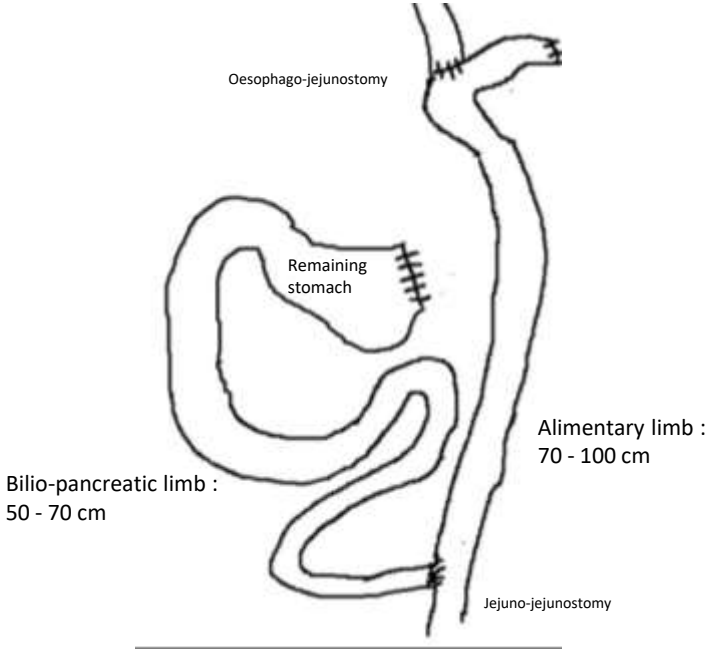
Catchlove et al. Obes. Surg. 2022
Kim et al. SOARD 2015
Caiazzo et al. Obes.Surg. 2020
Bashah et al. Obes.Surg. 2020
Rosenthal et al. SOARD 2012
Parmer et al. JSLS 2022
Sayida et al. Obes.Surg. 2022
Youri et. Al Ann. Surg. 2019

SGL Treatment algorithm

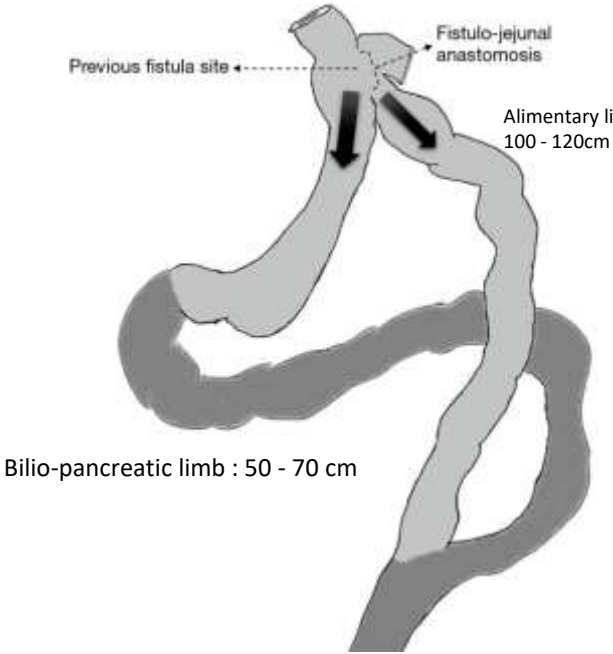




Subtotal Gastrectomy (STG) or Fistulojejunostomy (FJ)



Subtotal gastrectomy (STG) with en-Y oesophago-jejunostomy



Fistulojejunostomy (Baltasar procedure) with en-Y assembly

Baltasar et al. Obes.Surg. 2007

Study Aims

- Identify the risk factors associated with endoscopic treatment failure of acute leak after SG

- Evaluate the morbidity and mortality of revisional surgery of chronic fistula

Patients

- Retrospective monocentric
- Successive patients treated for SGL between January 2004 and December 2021
- Data Collection:
- Demographic data (age, sex, BMI)
- Associated comorbidities (HTN, T2DM, smoking, OSAS...)
- Data related to surgical procedures and complications

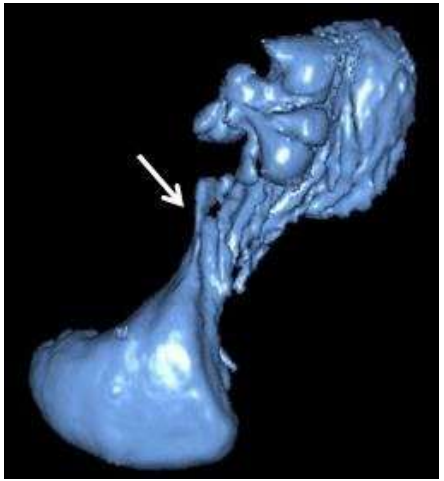
Results – Study population

- Patients: n = 123
- 78% female (n = 96)
- Mean age at sleeve: 40 years
- Mean BMI at sleeve: 42 kg/m2
- 20% had a history of bariatric surgery (mostly AGB)
- Median time of fistula occurrence: 7 days
- Proximal location: n = 117; 95%
- Type of fistula: gastro-collection; n = 100; 81%
- Reoperated in emergency: n = 88; 71%

Results – Study population

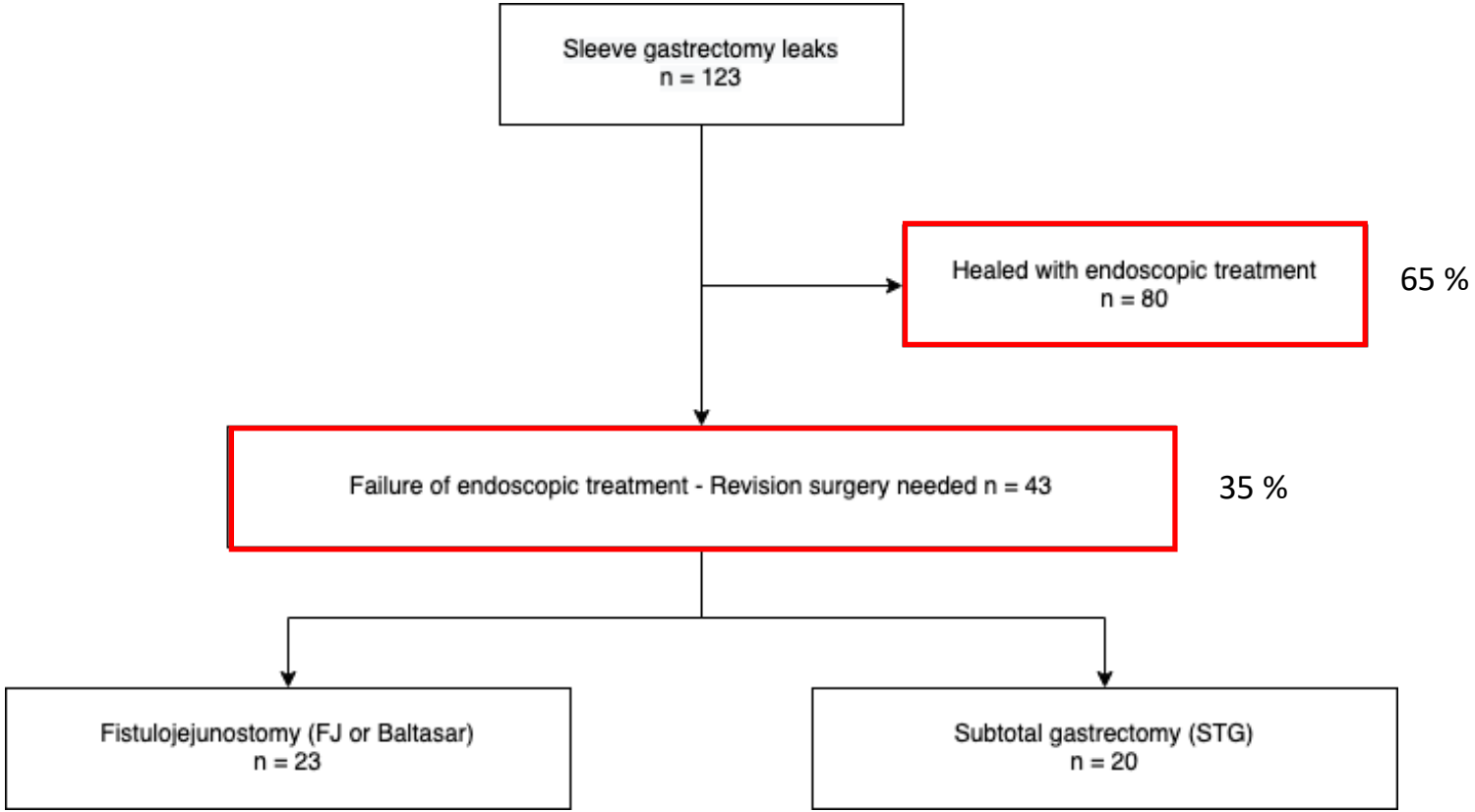
At inital endoscopy :

- Twist : n = 27 ; **22 %**
- Stenosis : n = 35 ; **28 %**
- Diameter > 10 mm, n = 40 ; **37 %**



- On average, patients underwent 4.5 endoscopic procedures
- Healing with endoscopic treatment: n = 80; **65%**

Results - Flowchart



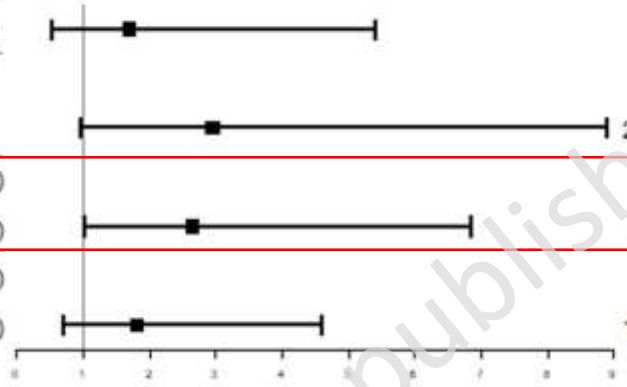
Univariate analysis for factors associated with failure of endoscopic treatment

Table 1: Characteristics of the study population. Comparison of patients who failed endoscopic treatment to patients cured by endoscopic treatment.

	Total n = 123	Failure n = 43	Healing n = 80	OR (IC95)	p
Type of fistula					
Gastro-collection	100 (81.3%)	31 (72.09%)	69 (86.25%)		
Others (gastro-cutaneous, -pleural, -bronchial -colonic)	23 (18.7%)	12 (27.91%)	11 (13.75%)	0.412 (0.164-1.03)	0.06
Stability at admission	76 (61.79%)	25 (58.14%)	51 (63.75%)	1.266 (0.593-2.70)	0.54
Severe sepsis	40 (32.52%)	16 (37.21%)	24 (30%)	0.723 (0.331-1.58)	0.42
Initial surgical re-intervention	88 (71.54%)	33 (76.74%)	55 (68.75%)	0.667 (0.285-1.56)	0.35
Endoscopic findings					
Twist	27 (22.13%)	17 (40.48%)	10 (12.5%)	0.21 (0.085-0.519)	**< 0.01**
Stenosis	35 (28.69%)	23 (54.76%)	12 (15%)	0.146 (0.061-0.34)	**< 0.01**
Diameter > 10 mm	40 (36.7%)	23 (58.97%)	17 (24.29%)	0.223 (0.096-0.51)	**< 0.01**
Time between fistula diagnosis and endoscopy > 2 weeks	43 (40.57%)	15 (41.67%)	28 (40%)	0.933 (0.412-2.11)	0.87
Duration of endoscopic treatment > 3 months	53 (49.53%)	25 (65.79%)	28 (40.58%)	0.355 (0.156-0.81)	**0.01**
Total number of endoscopic procedures	4.49 (±2.71) 4 [3;6]	5.47 (±3.29) 5 [3;7]	3.96 (±2.18) 3 [2;5]	0.809 (0.691-0.94)	**0.01**
Post-endoscopic complications	30 (28.04%)	8 (21.62%)	22 (31.43%)	1.661 (0.655-4.21)	0.29

Multivariate analysis to identify independent predictive factors of failure of endoscopic treatment

ENDOSCOPIC PARAMETER	MODALITY	HEALING / FAILURE	OR (95% CI)	P-value
		80 / 43		
TWIST	YES	70 (87.5%) / 25 (59.52%)		
	NO	10 (12.5%) / 17 (40.48%)	1.686 (0.526-5.4)	0.379
STENOSIS	YES	68 (85%) / 19 (45.24%)		
	NO	12 (15%) / 23 (54.76%)	2.949 (0.977-8.899)	0.055
DIAMETER OF LEAK	≤ 10 mm	53 (75.71%) / 16 (41.03%)		
	≥ 10 mm	17 (24.29%) / 23 (58.97%)	2.644 (1.02-6.855)	0.045
ENDOSCOPIC TREATMENT DURATION	≤ 3 months	41 (59.42%) / 13 (34.21%)		
	≥ 3 months	28 (40.58%) / 25 (65.79%)	1.802 (0.705-4.604)	0.219



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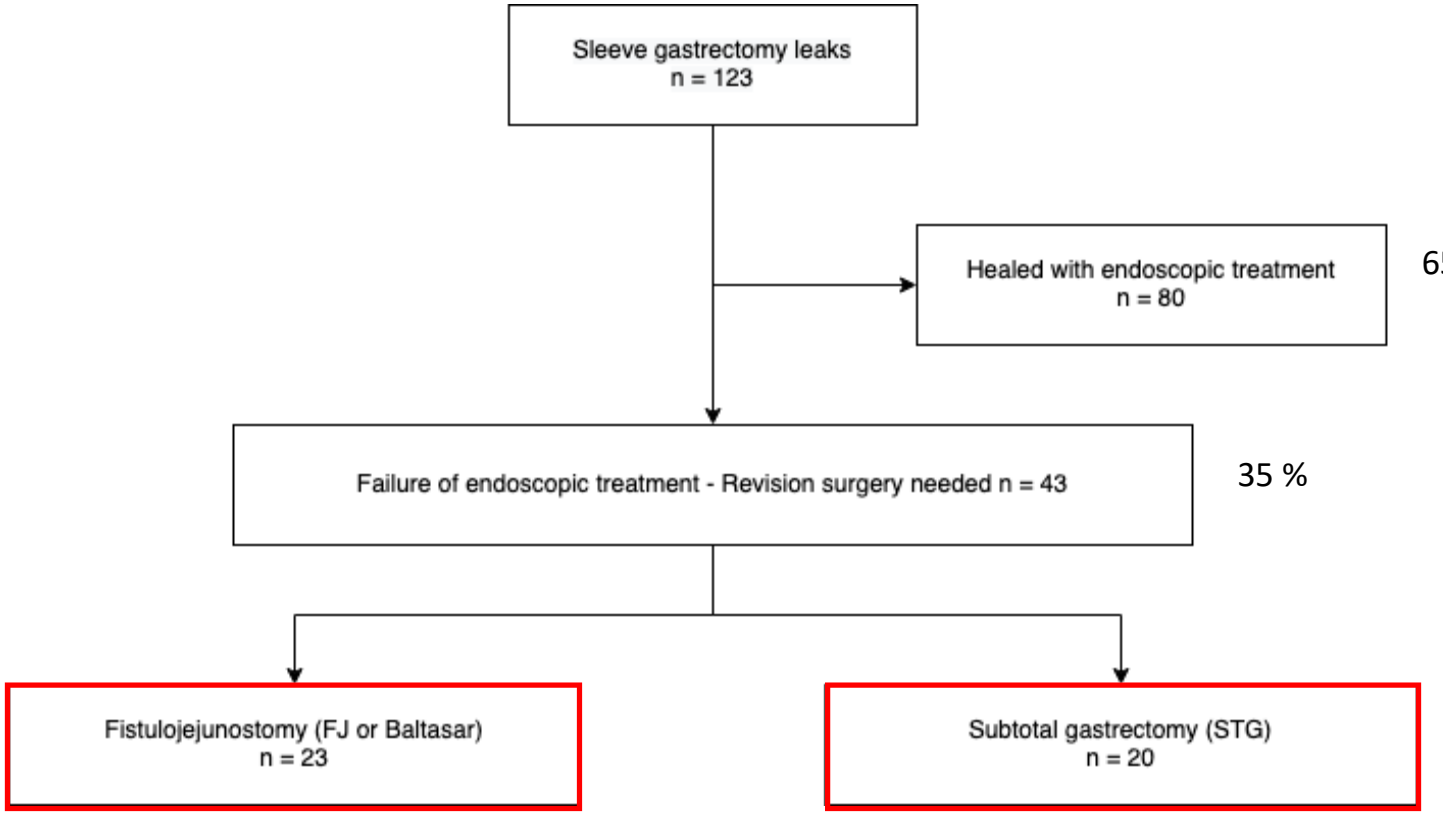

Comparative analysis of the morbidity and mortality of the two procedures

Table 2 (continued)	Total n = 43	Subtotal gastrectomy n = 20	Fistulojejunostomy n = 23	OR (IC95)	p
Length of biliary limb (cm)	50.4	47.5	53	1.03 (0.98-1.08)	0.25
Length alimentary limb (cm)	104	93.2	113.2	1.01 (1-1.03)	0.11
Operation time (min)	259	228	286	1.01 (1-1.02)	**0.03**
Blood loss (mL)	183	235	139	1 (1-1)	0.33
Intraoperative transfusion	9 (20.93%)	6 (30%)	3 (13.04%)	0.35 (0.07-1.64)	0.18
Early complication	22 (51.16%)	9 (45%)	13 (56.52%)	1.59 (0.48-5.31)	0.45
Early medical complication	9 (20.93%)	6 (30%)	3 (13.04%)	0.35 (0.07-1.64)	0.18
Early surgical complication	18 (41.86%)	7 (35%)	11 (47.83%)	1.7 (0.5-5.83)	0.4
Leak after salvage procedure	15 (34.88%)	5 (25%)	10 (43.48%)	3.08 (0.78-12.12)	0.11
Fistula grade					
0 = No leak	28 (65.12%)	15 (75%)	13 (56.52%)		
1 = Need for medical treatment	5 (11.63%)	3 (15%)	2 (8.7%)	0.83 (0.12-5.82)	0.4
2 = Drainage/endoscopy	8 (18.6%)	2 (10%)	6 (26.1%)	4.38 (0.76-25.06)	0.4
3 = Surgical managment	2 (4.65%)	0 (0%)	2 (8.7%)	NC	
Approach					
Laparoscopy	26 (60.47%)	6 (30%)	20 (86.96%)		
Laparotomy	17 (39.53%)	14 (70%)	3 (13.04%)	0.06 (0.01-0.3)	**< 0.01**
Intraoperative conversion	5 (11.63%)	3 (15%)	2 (8.7%)	0.54 (0.08-3.61)	0.52

Comparative analysis of the morbidity and mortality of the two procedures

	Total	STG	vs	FJ
Mortality :	n = 1 (2,3%)	0		n = 1 (4,3%)
Healing :	n = 42 (97,7%)	n = 20 (100%)		n = 22 (95,7%)
Healing time :	32,6 j	37,1j		28,3j

Quality of life – GiQli forms preliminary results

1 year follow-up - mean GiQLi score:

10 FJ: 85.7 / 144

5 STG: 64.5 / 144

Take home message

- Endoscopic treatment efficient in ≈ **2/3** of cases
- Fistula diameter **> 10 mm** is an independent predictive factor of endoscopic treatment failure
- Discuss revisional surgery in case of persistent fistula at 3 months or 5 endoscopic sessions associated with stenosis, twist, or fistula diameter > 10 mm
- No difference in terms of morbidity and mortality between STG and FJ

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Thank you for your attention

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Discussion – Limits

- Retrospective study
- Monocentric
- Lost to follow-up
- Mean follow-up of 1.7 years -> mid-term data
- Evaluation of quality of life remains to be assessed:

  9 FJ : mean GiQLi = 85.7 / 144

  4 STG : mean GiQLi = 64.5 / 144

Comparative analysis of the morbidity and mortality of the two procedures

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3 = Surgical managment	2 (4.65%)	0 (0%)	2 (8.7%)	NC	
Intensive care hospitalisation	13 (30.23%)	9 (45%)	4 (17.39%)	0.26 (0.06-1.03)	0.06
ICU duration (weeks)	1.9	3.1	0.91	0.85 (0.7-1.03)	0.1
Healing	42 (97.7%)	20 (100%)	22 (95.7%)	NC	1
Delay between salvage surgery and healing (days)	32.6	37.1	28.3	1 (0.98-1.01)	0.55
Death	1 (2.33%)	0 (0%)	1 (4.35%)	NC	1
Long-term follow-up (days)	626.88 (731.13) 283 [202.5;905.5]	801.15 (963.79) 295 [207.5;1027.75]	475.35 (408.23) 283 [203.5;736.5]	1 (1-1)	0.17