ΑΝΑΣΤΟΜΩΤΙΚΕΣ ΔΙΑΦΥΓΕΣ

ΑΝΤΙΜΕΤΩΠΙΣΗ

ΘΕΡΑΠΕΥΤΙΚΟΙ ΑΛΓΟΡΙΘΜΟΙ

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Anastomotic Leakage

- Most challenging issue facing both the patient and surgeon
- Deconditioned and septic patient
- Clinical judgement
- Experience

Landmann RG. Seminars in Colon and Rectal Surgery 2015

Systematic review

Systematic review of preoperative, intraoperative and postoperative risk factors for colorectal anastomotic leaks

Anastomosis type	Leak rate (%)
Enteroenteric[5,6]	1–2
Ileocolic[6–10]	1–4
Colocolic[7,9–11]	2–3
Ileorectal[6,9]	3–7
Colorectal/coloanal[6,7,10,12,13]	5–19
Ileoanal pouch[14,15]	4–7

↑ Morbidity

- extended hospital stay
- increased cost
- re-operation
- permanent stoma
- poor long-term quality of life
- increased recurrent rate for CA

↑ Mortality

- up to 7-10%

BJS 2015

Definition and grading of anastomotic leakage following anterior resection of the rectum: A proposal by the International Study Group of Rectal Cancer

Definition	Defect of the intestinal wall integrity at the colorectal or colo-anal anastomotic site (including suture and staple lines of neorectal reservoirs) leading to a communication between the intra- and extraluminal compartments. A pelvic abscess close to the anastomosis is also considered as anastomotic leakage.	
Grade	A	Anastomotic leakage requiring no active therapeutic intervention
	B	Anastomotic leakage requiring active therapeutic intervention but manageable without re-laparotomy
	C	Anastomotic leakage requiring re-laparotomy

…Anastomotic leakage grades are associated with outcome…!!!

Rahbary et al. Surgery 2010

Systematic review

Systematic review of preoperative, intraoperative and postoperative risk factors for colorectal anastomotic leaks

Severity Grading and Management of Anastomotic Leaks

Grade	Example/CT findings/ sepsis bundles	Clinical signs of peritonitis	Haemodynamic changes	Setting	Inotropes	Intervention
1	Deviated from expected course; biochemical abnormalities	No	None	Level 0 (ward), colorectal nursing	No	Observe drain/fistula output
2	Sepsis and ileus amenable to abscess drainage	No	None (or tachycardia rapidly responsive to treatment)	Level 0 (ward)	No	Antibiotics and TPN if needed
3	Sepsis with ileus; requirement for nasogastric drainage and urinary catheterization	Single quadrant	Persistent tachycardia but normotensive	Level 1 (ward with critical care input)	No	Careful observation, antibiotics, TPN; low threshold for laparotomy
4	Severe sepsis	Multiple quadrants	Tachycardia and hypotension	Level 2 (HDU)	+/−	Resuscitation and expedient laparotomy
5	Septic shock	Generalized	Tachycardia, hypotension and shock	Level 3 (ITU)	Yes	Resuscitation, intensive care and emergency laparotomy

F.T.McDermott, et al. BJS 2015

A collaborative study of the current concepts and challenges for treatment of anastomotic leakage in colorectal surgery

A Vallance[1], S Wexner[2], M. Berho[2], R Cahill[3], M. Coleman[4], N. Haboubi[5], R.J. Heald[6], R.H. Kennedy[7], B. Moran[6], N. Mortensen[8], R.W. Motson[9], R. Novell[10], P.R. O'Connell[11], F. Ris[12], T. Rockall[13], A. Senapati[14], A. Windsor[15], D.G. Jayne[16]

Factors to be considered for BEST treatment of CAL

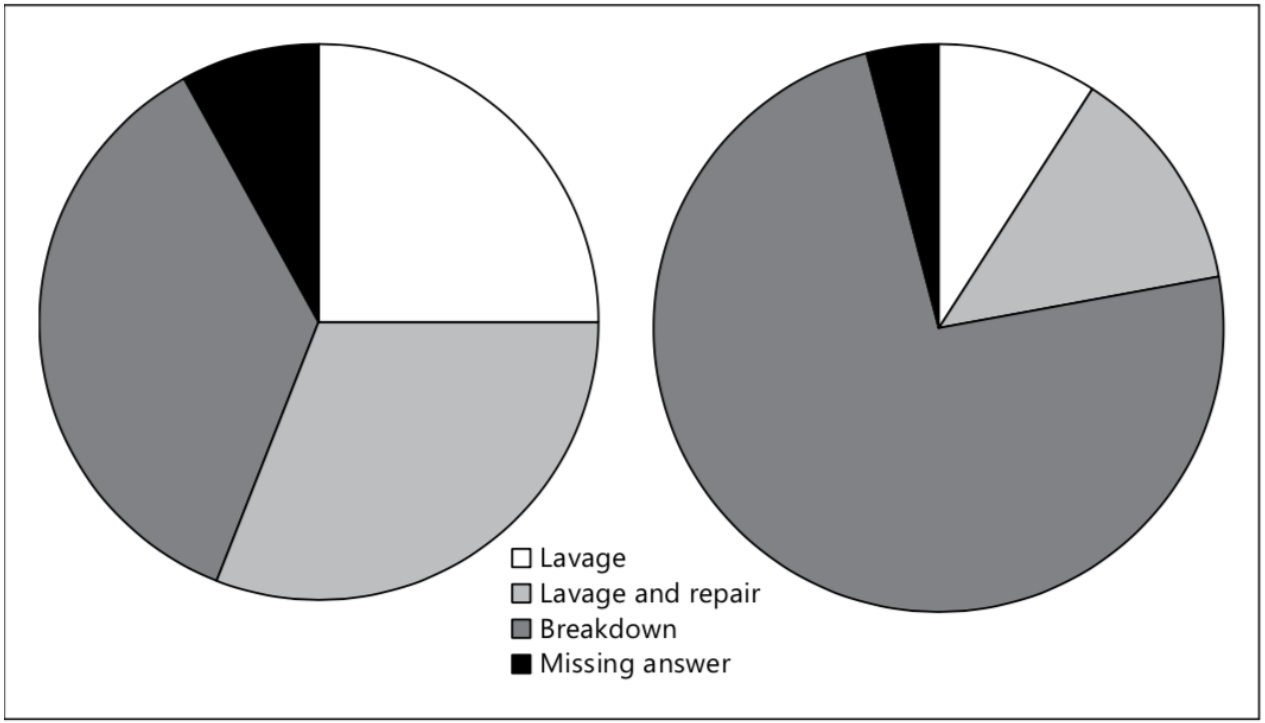
1. Age
2. Comorbidity – ASA score
3. Level of anastomosis
4. Type of anastomosis
5. Interval from primary operation
6. Degree of anastomotic dehiscence
7. Abdominal sepsis
8. Presence of defunctioning stoma

Individualized Approach!!!

Colorectal Dis 2017

Treatment of Colorectal Anastomotic Leakage: Results of a Questionnaire amongst Members of the Dutch Society of Gastrointestinal Surgery

Non - Sepsis



Sepsis

. ASA 1–2 in patients <80 years (left) and ASA 3 in patients >80 years (right).

Dig Surg 2012

Contemporary management of anastomotic leak after colon surgery: assessing the need for reoperation

ACS NSQIP 2012 -2013

32280 pts underwent colorectal surgery
1240 (3.8%) AL

56% required re-operation
25% non-surgical intervention
19% medically treated

Need for reop ↑ after colo-colonic than after colorectal or ileocolonic

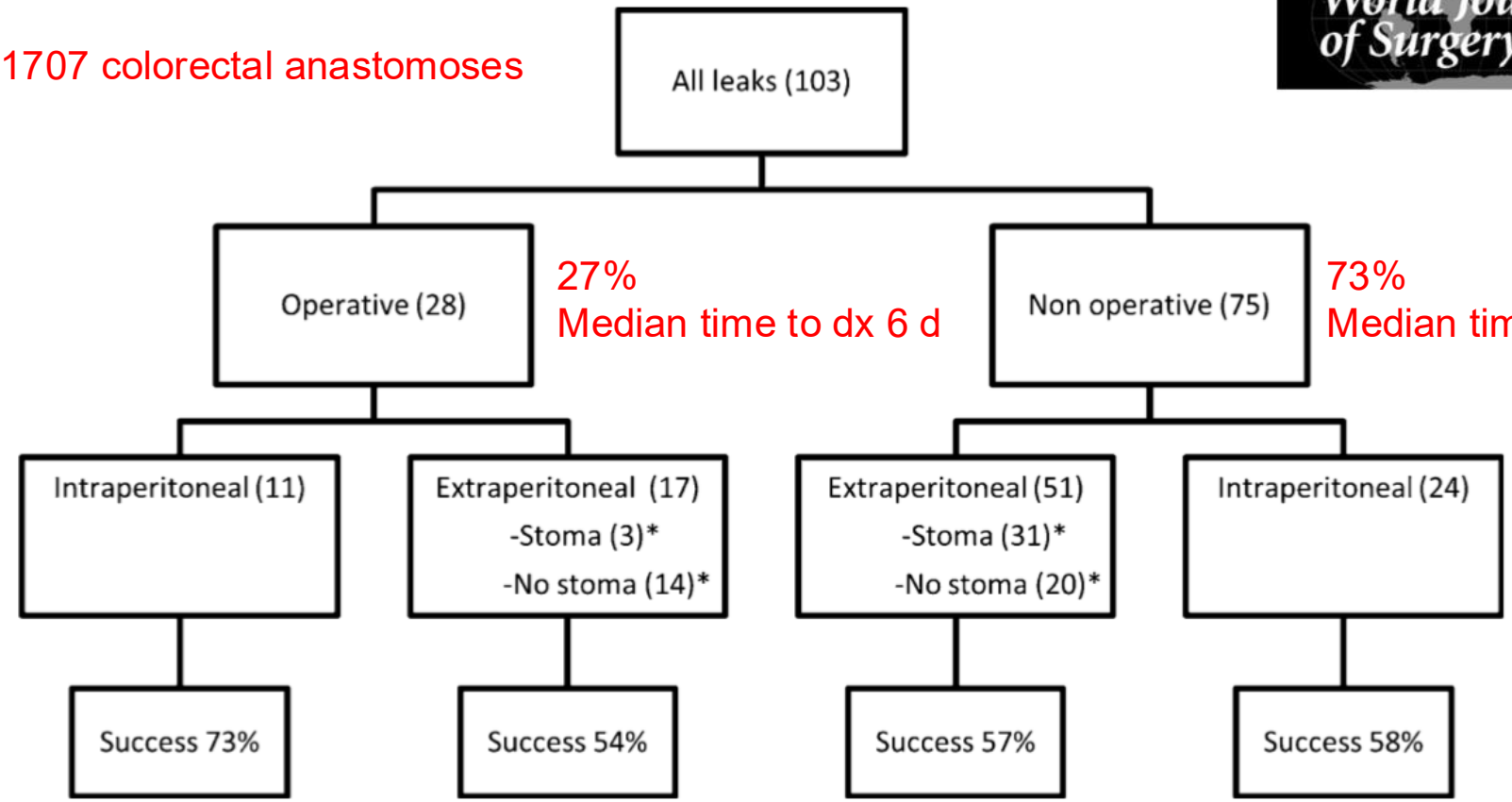
Need for reop ↓ after defunctioning stoma

Repair or reconstruction ALWAYS with stoma!!!

The American Journal of Surgery (2015)

Management of Anastomotic Leak: Lessons Learned from a Large Colon and Rectal Surgery Training Program

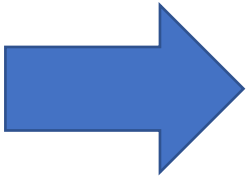
1707 colorectal anastomoses



Blumetti J, et al. World J Surg 2014

Intraperitoneal Anastomotic Leak with Generalized Peritonitis / High-Grade Sepsis

- Early postop presentation < 7days
- Immediate surgery after resuscitation
- Major anastomotic defect
  a. > 1cm
  b. > 30%
  c. Unstable pt, peritoneal soiling, ischemia



Resection of anastomosis in all cases!!!

- Hartmann's procedure with end stoma ± mucus fistula (safest option)
- Mikulicz-type double barreled stoma (rare)
- Repair/Reconstruction of anastomosis with proximal stoma (re-leak!!!)

Intraperitoneal Anastomotic Leak with Generalized Peritonitis / High-Grade Sepsis

- Minor anastomotic defect
  a. < 1cm
  b. < 30%
  c. Stable pt

1.hemodynamically stable, adequate nutrition, tissue quality

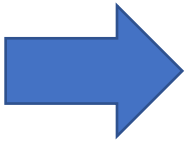
→ Primary anastomotic repair/redo with proximal diversion with drains / omentoplasty / intraop colonic irrigation

2. Unstable, malnourished, friable/ischemic tissue for sutures

→ Resection of anastomosis

Intraperitoneal Anastomotic Leak with Generalized Peritonitis / High-Grade Sepsis

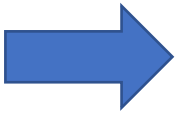
- Large phlegmon
    1. Great risk at exploring the inflammatory mass
    2. Deemed inoperable
    3. Risk of converting a small walled-off leak into major disruption



Insertion of drains in any abscess cavity/perianastomotic area and proximal diverting colostomy or ileostomy

Intraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess

- Complete imaging workup
- Triple-phase CT scan of abdomen and pelvis
- Oral, intravenous, rectal or stoma contrast



Free intraperitoneal leak treat as in Generalized Peritonitis

Intraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess

- Triple-phase CT imaging
  Late postop > 7 days

a. Contained leak
b. Large abscess > 3cm
c. Multiple abscesses
d. Multi-loculated abscess

→ CT – guided abscess drainage, if possible

In case of:

1. IR not available
2. Abscess in an inaccessible anatomic location
3. CT-guided drainage incomplete
4. Deteriorating clinical status

→ Operation as in generalized peritonitis

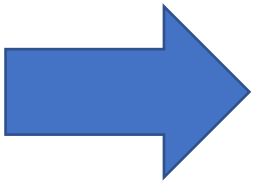
1. Gentle manipulations
2. Intraop air, betadine or endoscopic assessment of anastomosis
3. Intraop drain

Intraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess

- Triple-phase CT imaging

a. Contained leak

b. Small abscess <3cm



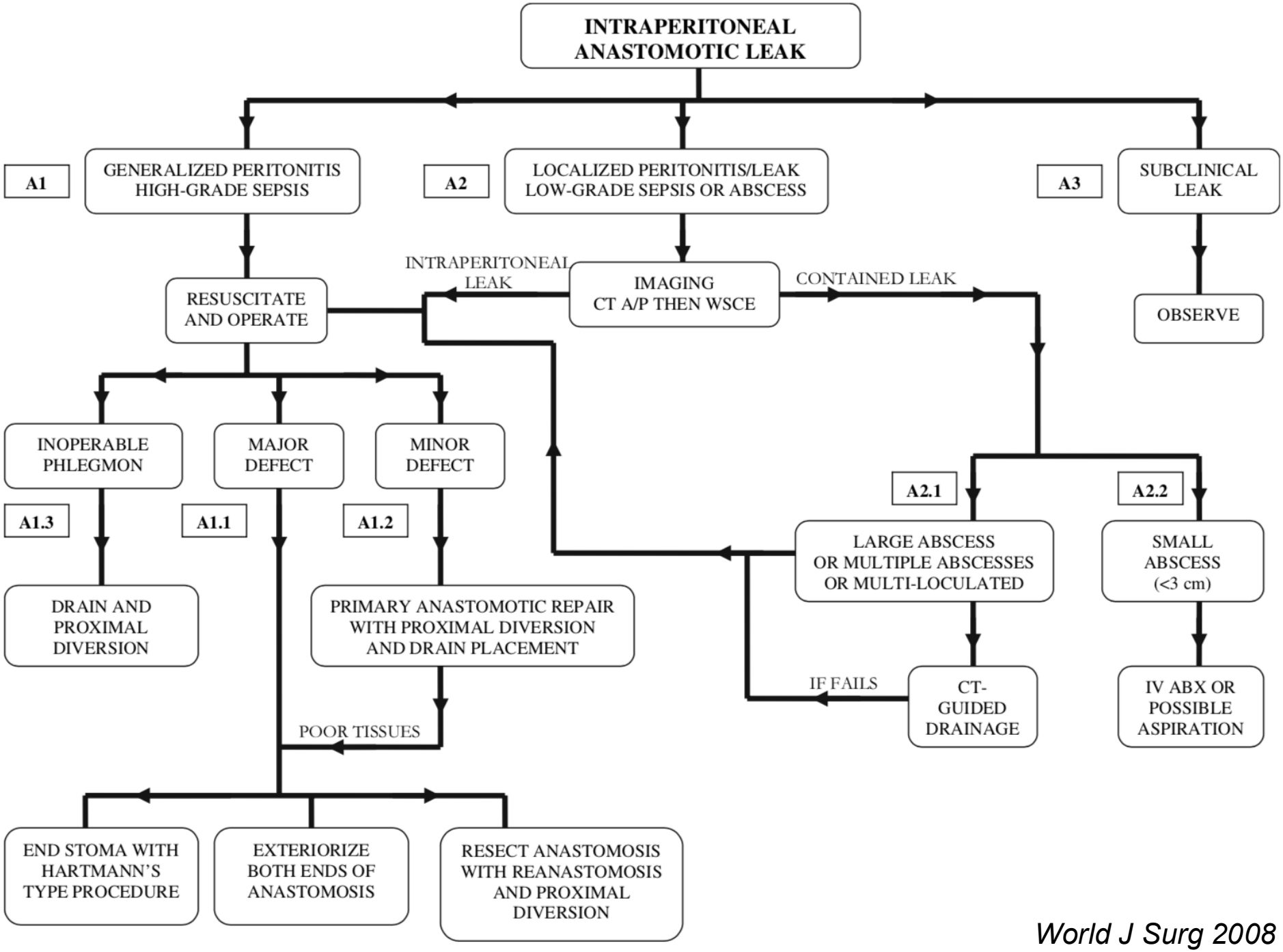
Broad spectrum iv antibiotics against Gram-/anaerobes

CT-guided aspiration or drainage, if possible

Irrigation / Urokinase in the abscess cavity

NPO

TPN, if needed



World J Surg 2008

Extraperitoneal Anastomotic Leak with Generalized Peritonitis / High-Grade Sepsis

→ Treat as in Intraperitoneal Leak

Attention!!!

- In Hartmann’ s type end colostomy after colorectal/coloanal/ileoanal leak
- Rectal stump too short, too inflamed to suture or staple
- Abdominal and/or transanal drain through the defunctioned rectum/anus

Upper Extraperitoneal Anastomotic Leaks with Low Grade Sepsis

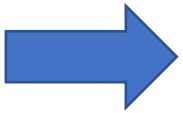
→ Treat as in Intraperitoneal Leak

Extraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess in the Low Pelvis

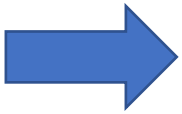
- Generally Posterior Abscess
- CT scan - WSCE
- Related to coloanal, low colorectal or ileoanal anastomoses
    a. Contained Abscess
    b. Abscess in continuity with the anastomotic leak
- Anterior Abscess
    a. Greater risk of adjacent organ injury
    b. Greater risk of intraperitoneal sepsis
    c. Otherwise, treat like posterior

Extraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess in the Low Pelvis

1. <u>Contained Abscess Not in continuity with AL</u>



a. < 3cm — Broad spectrum iv antibiotics alone



b. > 3cm — CT – guided drainage

transabdominal, transvaginal, transanal, or transrectal pathway

Posterior abscess may need transsciatic or transgluteal approach – risk of sciatic neuritis or fecal dissemination

If IR fails: EUA - ERUS

Transanal or transanastomotic drainage

Extraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess in the Low Pelvis

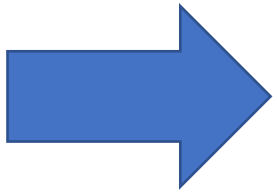
2. <u>Abscess in continuity with the AL</u>

EUA permits effective trans-anal drainage of the abscess with minimal risk of fistula development

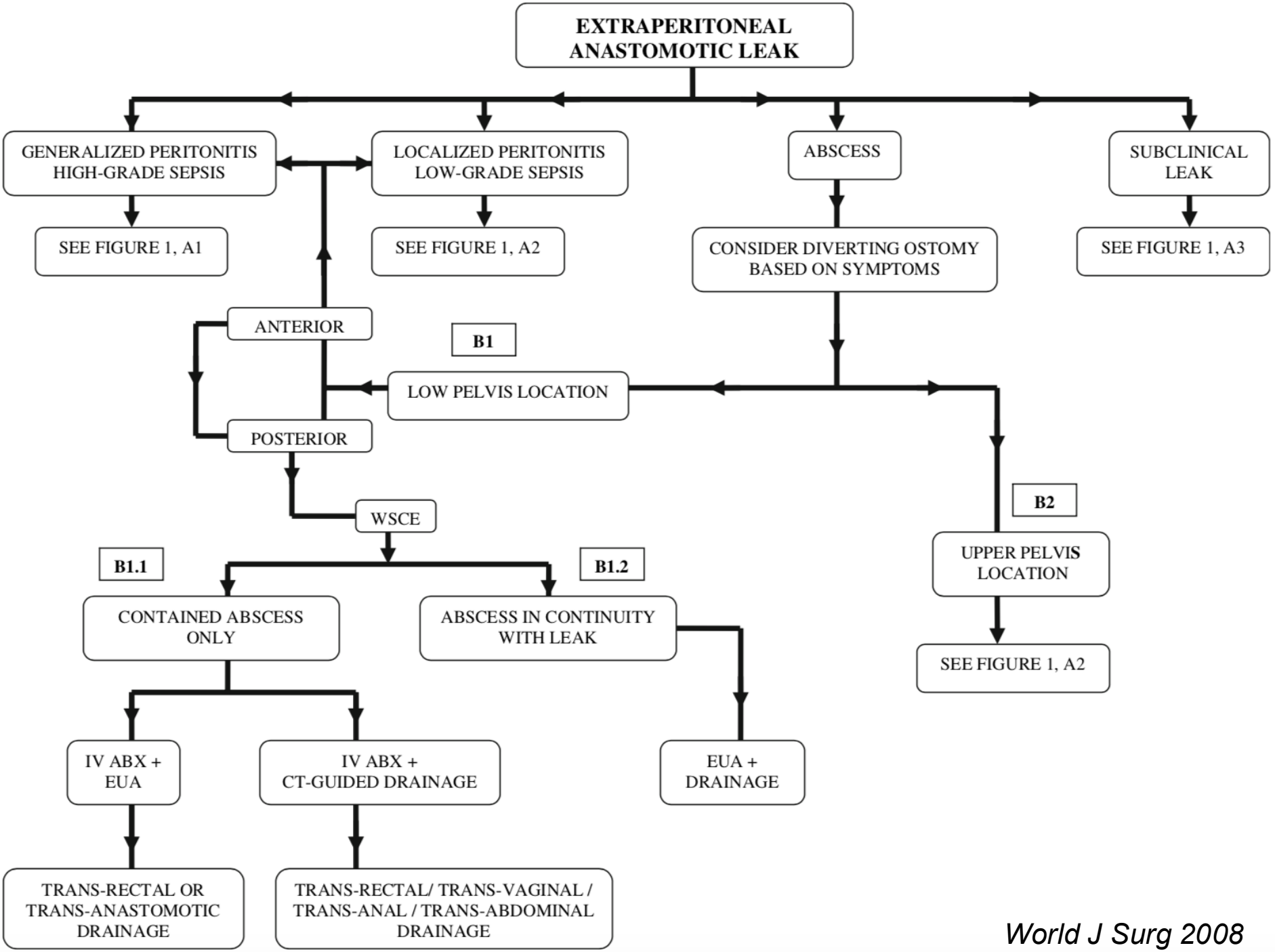
Several technical options used:

1. Wide opening in the anastomosis with finger or surgical instrument
2. Small opening with mushroom-tipped catheter insertion
3. Catheter sutured in place and exits through the anal canal
4. With or without irrigation
5. Taken out several weeks after
6. Attention to possible stenosis
7. May need repeat EUA and transanal dilation

Extraperitoneal Anastomotic Leak with Localized Peritonitis / Low-Grade Sepsis/ Abscess in the Low Pelvis



In all such cases, consider proximal diverting ostomy based on clinical presentation



World J Surg 2008

Patient with Diversion and Intraperitoneal Anastomotic Leak

- If clinical leak with generalized/localized peritonitis or abscess:

→ Late Presentation!!!
Treat as in pts Without Diversion

- If subclinical, intraperitoneal and too small for drainage:

→ Observation under abx

Reimaging in 6 – 8 wks

If leak not resolved, 2 more wks under abx and imaging in 6-8 wks

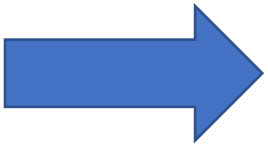
Most of these leaks eventually resolve

Irrigation through the distal limb of stoma

If persisting, proceed with ostomy closure with small risk of sepsis recurrence

Endoscopic cauterization – stent - dilation

Patient with Diversion and Extraperitoneal Anastomotic Leak



Treat as in Non - diverted pts with extraperitoneal anastomotic leaks and low pelvis abscess

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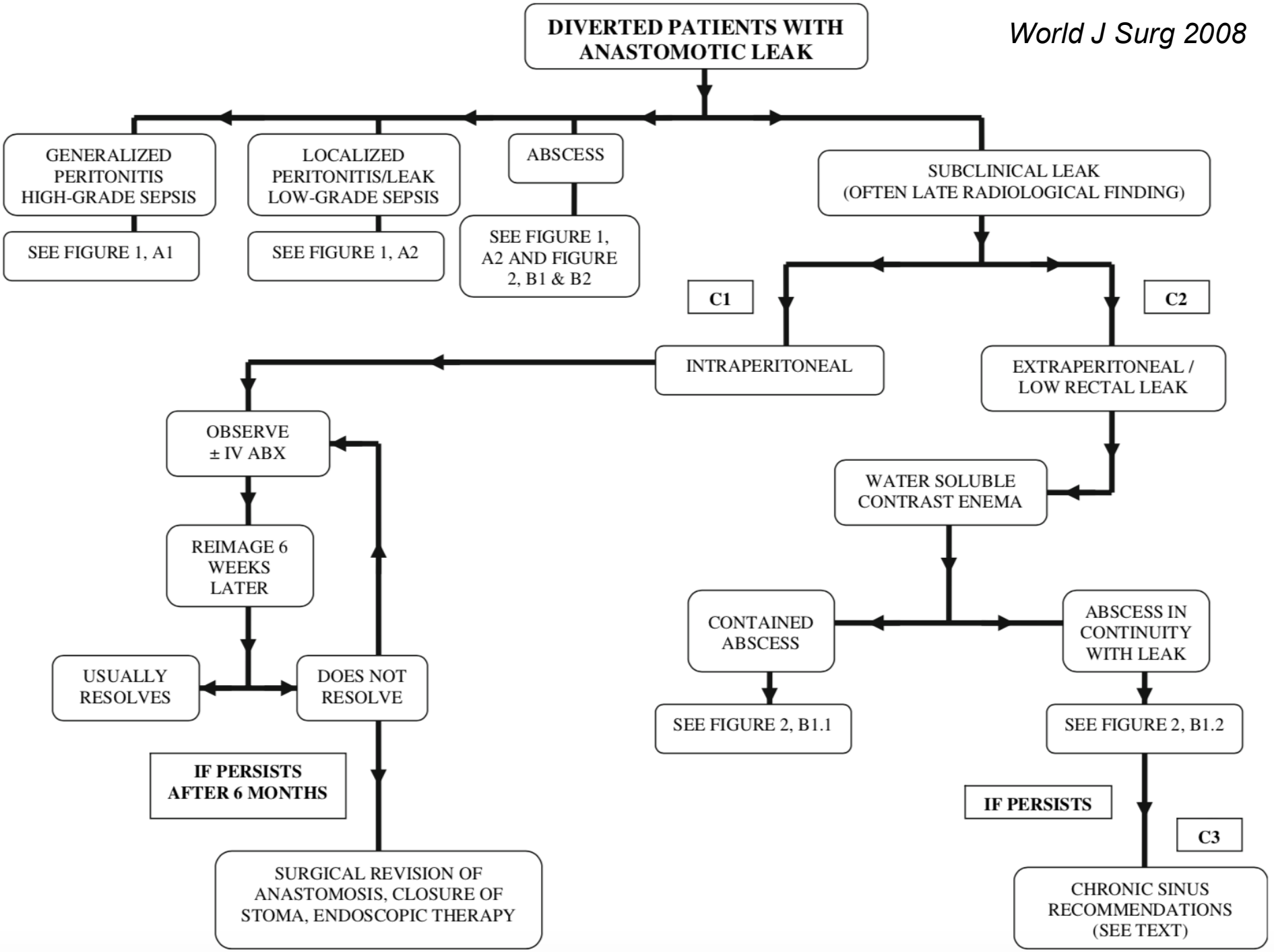
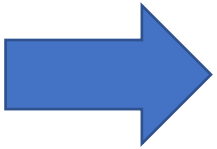


Management of a chronic low-rectal anastomotic sinus after coloanal or ileoanal anastomosis

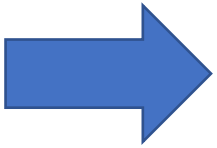
- Diagnosed before stoma closure in WSCE (8-15% of pts)

1. <u>If small <1cm and pt asymptomatic:</u>



   a. Observation
   b. Spontaneous resolution
   c. Stoma closure after 3 months

2. <u>If large >1cm and pt symptomatic:</u>



   a. Mushroom-tipped cath through the defect
   b. EUA every 3-4 wks allowing cath gradually downsizing
   c. Saline irrigation through cath
   d. Marsupialization, curretage of posterior wall
   e. Transanal anastomotic sleeve advancement
   f. Redo coloanal/ileonal anastomosis with stoma formation

Management of leak based on type of anastomosis

1. Entero-enteric and enterocolic anastomoses

Absence of pronounced sepsis

Absence of high dose corticosteroids

Early onset leaking

→ Resection and creation of new anastomosis

In setting of hypotension and/or sepsis

→ Resection with end ileostomy and end colostomy (mucus fistula) brought out together for subsequent local re-anastomosis

Management of leak based on type of anastomosis

2. Colo-colonic and colorectal anastomoses

Major leak:

→ Hartmann's procedure

Minor leak:

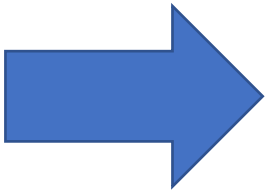
→ Proximal diversion, Omentoplasty, Drainage

Reconstruction of anastomosis, if possible, with diversion

In low rectal anastomosis, avoid Hartmann's because of lower rate of restoration!!!

Management of leak based on type of anastomosis

3. Coloanal and ileoanal anastomosis



If not already diverted, DIVERT!!

IR pelvic abscess drain

Trans anal repair:

a. glue b. plugs c. sponge d. flaps e. clips

Reserve transabdominal approach in failure of perineal ones

Wait – Wait – Wait for stoma closure!!!

Management of leak based on type of anastomosis

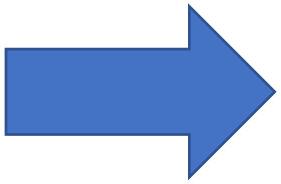
4. <u>Anastomotic leak after Restorative Proctocolectomy and Ileal Pouch Anal Anastomosis</u>

RPC/IPAA

Surgical / technical issue?

IBD related issue (cuffitis)?

If leak persists >6 months → Mechanical process



Additional temporary or permanent stoma

Possible pouch excision

Handsewn redo with worst functional results

Transanal repair

Management of leak based on type of anastomosis

5. Rectovaginal (RVF) and Rectourethral (RUF) Fistula

5% of coloanal and IPAA

Neoadjuvant chemo-radiotherapy

Initial control of sepsis
- draining seton through the fistula
- decrease of symptoms
- avoid abscess formation
- sphincter preservation
- proximal diversion

Later repair
rectal/vaginal advancement flaps
sphincteroplasty for trans-sphincteric fistula
biologic glue or plugs
muscle interposition
transabdominal reconstruction

Chronic Pelvic Sepsis and/or Stricture in the setting of Colorectal Anastomotic Leak

- Proximal diversion with a stoma

Resection of anastomosis with terminal colostomy or

New primary anastomosis

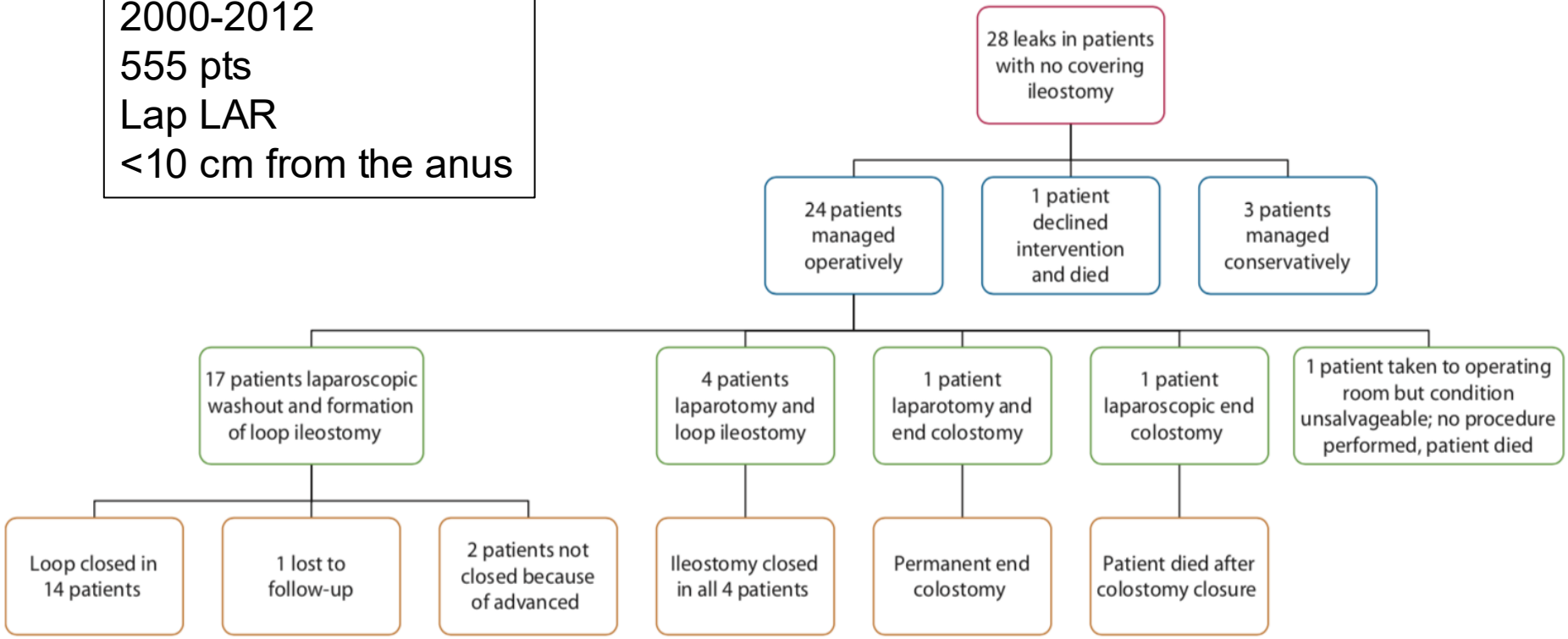
- Non-traditional accessory maneuvers in anastomotic creation:
    1. Deloyer's of hepatic flexure for subsequent R colon to rectal anast
    2. Toupet's for freeing the transverse colon
    3. Turnbull-Cutait for colonic exteriorization with delayed coloanal anast
    4. Soave coloanal anast through a rectal muscular sleeve
- Morbidity 26 – 55%
- 70% some degree of incontinence

Seminars in Colon and Rectal Surgery 2015

ORIGINAL CONTRIBUTION

Management of Low Colorectal Anastomotic Leakage in the Laparoscopic Era: More Than a Decade of Experience

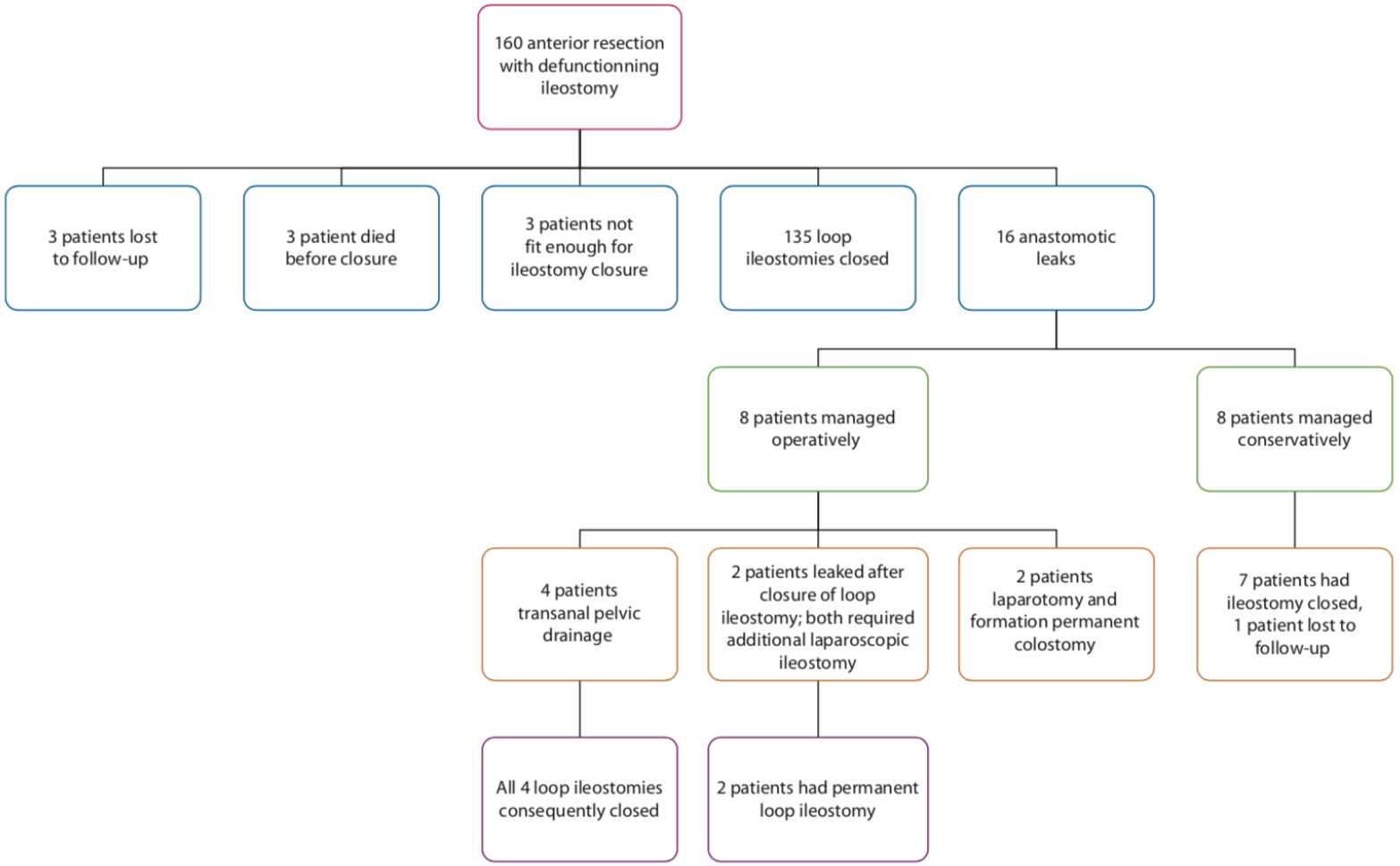
2000-2012
555 pts
Lap LAR
<10 cm from the anus



Dis Colon Rectum 2017

ORIGINAL CONTRIBUTION

Management of Low Colorectal Anastomotic Leakage in the Laparoscopic Era: More Than a Decade of Experience



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Proposed algorithm for managing anastomotic leak after laparoscopic anterior resection

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