

AN EVIDENCE BASED ALGORITHM FOR MANAGING ANASTOMOTIC LEAKS

By

Prof. Wael Khafagy

Professor of Colorectal Surgery, Mansoura University Head of Mansoura Colorectal Surgery Unit ORIGINAL ARTICLE



Predictive Factors for Small Intestinal and Colonic Anastomotic Leak: a Multivariate Analysis

Ahmad Sakr¹ - Sameh Hany Emile¹ - Emod Abdallah¹ - Waleed Thabet¹ -Wael Khafagy¹

Received: 26 May 2016 / Accepted: 7 October 2016 Association of Surgeons of India 2016

Abstract Anastomotic leak (AL) is a serious complication of intestinal surgery with various predisposing factors. This study aims to assess several risk factors associated with AL. after small intestinal and colonic anastomoses through a multivariate analysis. Two hundred twenty-four patients (126 males) with intestinal anastomosis of a median age of 44 years. were reviewed. Independent factors associated with AL were male gender (OR = 2.59, P = 0.02), chronic liver disease (CLD) (OR = 8.03, P < 0.0001), more than one associated comorbidity (OR = 5.34, P = 0.017), anastomosis conducted as emergency (OR = 2.73, P = 0.012), colonic anastomosis (OR = 2.51, P = 0.017), preoperative leukocytosis (OR = 2.57, P = 0.015, and intraorserative blood transfasion (OR = 2.25, P = 0.037). Predicative factors significantly associated with AL were male sender, CLD, multiple comorbidities, emergent anastomoses, colonic anastomoses, properative leakocytosis, and intraoperative blood transfusion.

Ahmad Sakr Ahmadsakri 987@ gmail.com

> Sameh Hany Emile sameh200@hetmail.com

Finad Abdallah emadabdallahi 976 Ognail.com

Walcod Thabet thabet1510@yahoo.com

Wadi Khafagy wkhafagy@yaheo.com

Department General surgery, Faculty of Medicine, Mansoura University Hospitals, Elgenitusoria Street, Mansoura city, Dakablia, Egypt Keywords Anastomotic leak · Risk factors · Multivariate analysis - Colonic anastomosis

Introduction

Anastomotic leak (AL) is a serious complication of surgery of the alimentary tract in general, and of intestinal surgery in particular. The gravity of anastomotic disruption extends beyond being an isolated complication to include further lifethreatening complications and sometimes mortality.

Leak after intestinal anastemosis varies from 0.5 to 30 %, [1–3], and it can reach up to 39 % according to Buchs and colleagues [4]. Overall incidence of colorectal AL ranges from 1.5 to 16 % globally [5].

Various risk factors are associated with AL which can be subdivided into systemic and local factors; both entities contribute to poor healing and failure of anastomosis [6]. Systemic conditions include anemia, diabetes mellitus (DM), malnutrition, hypoalbuminemia, and prolonged steroid therapy. Local factors comprise local irradiation of bowel, diseased bowel as in Crohn's disease, and intestinal ischemia. In addition, high lightion of inferior mesenteric artery is considered a unique risk factor for disruption of colonic anastomosis [7].

AL varies with regard to the onset of its occurrence. Early leak occurs on the first or second postoperative days, mostly due to technical reasons. Latent leak, which is attributed to failure of the normal healing mechanism, occurs around the end of the first postoperative week.

Clinically, AL has different presentations, when the leak is controlled, it presents as localized intraperitoncal abscess, whereas in cases of uncontrolled leak, frank peritonitis supervenes [8]. Some leaks present in a subtle fashion, often late in the postoperative period [9]. - Def: Abnormal pathological connection between skin and GI tract.

• Fistula output:

— High output : > 500ml / 24 hr.

– Non high output

1. Moderate output: 200-500ml / 24 hr.

2. Low output: <200 ml / 24 hr.

While recent studies considered **low** output fistulas (effluent < 200 ml/24

h),

high output fistulas (effluent > 200 ml/24 h).

(Evenson & Fischer 2006)- (Datta & Windsor 2007).

Anastomotic Leak - who's to blame?

Technical factors

- Ischaemia of bowel ends
- Oedema of bowel ends
- Anastomotic tension
- Poor suturing technique
- Haemorrhage
- Sepsis

Patient factors

- Anaemia
- Sepsis
- Malnutrition& Hypoalbuminemia
- Steroids
- Radiotherapy
- Cardiovascular problems....

Triad of death

Sepsis

Malnutrition

Fluid and electrolyte disturbance

INTRODUCTION

- Anastomotic leakage (AL) is considered the most feared and life-threatening complication after rectal cancer surgery.
- AL is associated with an increased morbidity, mortality, the length of hospital stay, the rate of re-intervention, and poor oncological outcomes.
- Furthermore, the quality of life is usually affected with poor functional outcomes and a higher rate of a permeant stoma in 56% of patients.

INTRODUCTION (CONTINUED)

- The postoperative mortality following an AL range between 6 to 39%.
- The incidence of AL following rectal resection ranges between 1% and 30%.
- This great discrepancy in reported incidences of AL in rectal resection may be attributed to the lack of objective and easily applicable definition of AL.

INTRODUCTION (CONTINUED)

Diagnosis of Anastomotic Leakage

- Prompt decision in patients with AL improves the outcome.
- There no consensus about a perfect diagnostic modality for AL.
- The main rely depend on non-reliable clinical bedside parameters and on the radiological modalities.
- There is a concern as these radiological modalities may delay the definitive intervention.

3.ASSESSMENT OF ANATOMY• Site of origin of fistula

- Anatomy of fistula tract
 - Complexity
 - Length of tract
 - Defect size
- Status of distal bowel
 - Integrity
 - obstruction

- CT scan
 - Intra-abdominal collection
 - Underlying causes
- Fistulogram

- Anatomy of fistula tract and GI tract

• MRI

• Endoscopy

MANAGEMENT

Management Plans

• The literature lacking evidence-based strategies describing how to manage AL.

1. Sepsis control

- Source of sepsis
 - Intra-abdominal collection
 - Others: Central line related infection, skin infection, chest infection, UTI
- Assessment
 - CT scan for collection.
- Drainage of collection
 - Image guided percutaneous drainage
 - Surgical drainage +/- proximal diversion

- Individualization of the treatment is important, putting into consideration general conditions of the patient, size of the anastomotic defect, the indication of primary resection, the presence of defunctioning stoma, anastomotic level, the interval between initial surgery and diagnosis.
- However, whatever the decision the treatment should be started promptly when diagnosis confirmed.

Acute Anastomotic Leakage; Operative Intervention

• Soeters et al considered that the anastomosis should be resected with the creation of Hartmann's colostomy in case of dehiscence more than the half of the circumference, extensive abscess, fecal peritonitis, and high-risk patients.

• Surgeons advocated that the Hartmann's colostomy will remove the source of sepsis especially in the intraperitoneal anastomosis reserving the strategy of "divert and drain" for extraperitoneal anastomosis with loop ileostomy and pelvic drainage salvaging of the anastomosis.

- The proximal diversion in intraperitoneal AL has 3 folds success possibility for stoma reversal compared to Hartmann's procedure. However, caution should be raised as many as 23 % of given diversion in consequence to leakage will be permanent. (Krarup et al)
- Lindgren et al testified that nearly more than 50% patients who were offered Hartmann's remain with a permanent stoma.

Acute Anastomotic Leakage; Non Operative intervention

Reoperation rarely indicated in patients with defunctioning • stoma at the time of initial operation which is usually the case in the extraperitoneal anastomosis, non-operative treatment includes transanal tube drainage anastomotic or percutaneous drainage of the pelvic collection guided by US or CT, or newer technology such as endoscopic endoluminal vacuum-assisted therapy, endoscopic stenting or clip placement.

Chronic Anastomotic Leakage "Chronic Sinus"

- AL in 36% of patients will result in a presacral sinus which may be radiologically diagnosed at the time of stoma reversal in 8% of patients.
- These sinuses may heal with time with the strategy "watch and wait". In the case of non-healing sinuses, local treatment options including marsupialization, Fibrin sealant injection, and a transanal advancement flap with the last resort being resection of the anastomosis which may end in a permeant stoma.

- An expert consensus of 43 colorectal surgeons and interventional radiologists drew an algorithm for the management of AL.
- They made their algorithm depending on whether it being intraperitoneal versus extraperitoneal leakage; subclinical versus clinical leakage; diverted versus non-diverted anastomosis. (Phitayakorn et al)







• Chopra et al proposed an algorithm for the endoscopic treatment for clinically suspicious AL after rectal resection, they employed diagnostics endoscopy, rectal contrast, and or pelviabdominal CT.



CONCLUSIONS

- Individualization of the treatment is important.
- Anastomotic salvage should be maintained when possible with a preference of minimally invasive intervention with endoscopic guidance.

