

Title:

Current status of the postoperative fistula in the gastrointestinal tract. A multi-centric and multi-national study. "FISTULA DAY"

Key words:

Abdominal sepsis, anastomotic leak, enteroatmospheric fistula, enterocutaneous fistula, hostile abdomen, anastomotic dehiscence, intestinal anastomosis, intestinal perforation, intestinal failure.

Background:

The enteroatmospheric fistulas and enterocutaneous fistulas are usually the result of an intestinal leak.

Even though the close follow up of the patient is a cornerstone in the early diagnosis of the intestinal leak, there is evidence that when the treating physician is thinking of a possible diagnosis on an earlier manner highly impacts evolution.

Current treatment actually depends on the moment in which the diagnosis is made, which makes the treatment quite varied and with total absence of a standardized criteria.

In recent years, the American society of parenteral and enteral nutrition and the Latin American federation of enteral and parenteral nutrition collaborated as a unit to edit the ASPEN-FELANPE clinical guidelines where the entero-cutaneous fistulas was consistently described as <500ml or >500ml effluent, however, as of today, there is no such thing as a generalized and broadly implemented classification for fistulas or intestinal leaks.

Treatment and surgical techniques that are being implemented are based on series of case reports as well as retrospective series with a staggering amount of method flaws.

There is enough evidence to demonstrate that the failure to achieve an early and accurate diagnosis of intestinal leaks and intestinal fistulas is a common denominator in such patients.

Justification:

As of today there are no global cross-sectional surveys to describe the prevalence of the gastrointestinal leak/fistula.

The study intends to generate new epidemiological data about how frequent the problem is, how the diagnosis and treatment approaches differ from one country to another or a major hospital center from another, as well as the risk factors, and the level of standardization that current managements have.

The study intends to propose unified and standardize criteria for diagnosis as well as for treatment. Disregarding the country of origin.

Bibliographic analysis:

Multiple studies about intestinal leaks and fistulas have been presented through out the years, looking to identify risk factors, affected population, incidence and morbidity for this disease, however, there are few in which the standardization of treatment is mentioned. The few published studies, which attempt to approach a standardization of treatment, tend to have a poor methodology in their elaboration. For this study protocol, studies which have been published in the last ten years that talk about intestinal leaks and or fistulas, incidence, risk factors, diagnostic methods and treatment were reviewed, very few from the mentioned above have attempted to establish a standardization of specific treatment.

Objectives:

General:

- Identify the prevalence of the postoperative gastrointestinal leaks/fistulas.

Specific:

- Analyze the diversity in the diagnosis which is frequently described as fistula.
- Evaluate the co-occurrence of nutritional risk or malnutrition in patients diagnosed with postoperative fistulas.
- Propose a standardized classification of the diagnosis clustered by scenarios.

- Report 30-day and 60-day outcomes of the included patients with a leak/fistula with timing relative to initial diagnosis of the leak/fistula.
- Describe the current management of the postoperative gastrointestinal leaks/fistulas.

Hypothesis:

The prevalence of the postoperative gastrointestinal fistulas continues to be elevated and the clinical entity difficult to diagnosis and treatments are variable.

Methodology:

Environment of the study.

2nd and 3rd level Hospitals, Latin America, Europe, North America, Asia

Population to be studied:

All in-hospital patients with a diagnosis of gastrointestinal leak/fistula.

Inclusion criteria:

Adult hospitalized patients the public and private sector admitted with leak/fistula and history of gastrointestinal anastomosis or a repair of gastrointestinal perforation will be included.

Exclusion criteria:

Patients in intensive care units for other reasons, medical patients, psychiatry admissions, , pediatric patient population will be excluded, patients being managed as out-patients.

Sample size and sampling procedures:

Every patient with a diagnosis of gastro-intestinal leak or anastomosis admitted in none primary care hospitals meaning

general hospitals and highly specialized hospitals in North America, Latin America, Europe, Asia.

Design of the study:

Cross-sectional, descriptive, analytic, point prevalence survey.

Variables:

Variable	Concept Definition	Operational definition	Type of variable	Mesuring scale
Age	Amount of time that person has lived, starting from the day of birth.	Patient's age at the admission to the hospital.	Discreet quantitative	Years
Sex	Biological condition that differentiates male and female.	Male or female, confirmed by an official document.	Nominal Qualitative.	Female Male
In-hospital stay	Amount of days a patient remains in the hospital.	Amount of time since the hospital admission	Discreet quantitative	Capture the exact amount of days
Comorbidities	Adjacent Clinical situation the patient suffers from coupled to the current diagnosis.	Clinical situation which may or may not compromise the patient's progress in a direct or indirect manner.	Discreet qualitative	YES NO
Primary diagnosis	Main reason why the patient is being hospitalized	Clinical situation which drives the patient to be admitted to the hospital.	Binary	i.e.: abdominal hernia. Yes/no
Intestinal fistula	Abnormal communication between two epithelial surfaces.	Abnormal communication between two surfaces.	Binary	yes/ no
Intestinal leak	Abnormal content discharge from a portion of the gastrointestinal tract.	Clinical condition that causes sepsis, secondary to the abnormal content discharge from the gastrointestinal tract, most common in the first days of treatment.	Binary	Yes/No

Gastrointestinal anastomosis	Surgical connection between two portions of the gastrointestinal tract.	The site of surgical repair	Binary	Yes/ NO
Body mass index	Weight (kg)/height (m ²)	Weight/Size	Binary	Capture the actual
Fasting	Deprived from food and beverage.	Due to the patient's current condition, the doctor prescribed deprivation from food and beverage (NPO).	Binary Continuos	YES/ NO Number of days
Body weight	Body mass (kg)	Body mass (kg) measured by scale.	Continuous	Number expressed in kilograms.
Height	Designates an individual's height, which is determined by genetic and environmental factor	Height measured in centimeters	Quantitative Continuos	Number expressed in Centimeters
Albumin	Biomarker from the blood test results.	Biomarker from the blood test results.	Continuous	g/L
Types of nutrition	Types and forms of the nutritional support and caloric contribution	Parenteral Nutrition Enteral Nutrition Oral Diet Oral Supplements	Binary continuous	Type of feeding: yes/no Caloric intake: Kcal/day; kcal/kg body weight/day Protein intake: g/day; g/kg body weight/day
Nutritional needs	Amount of calories necessary to obtain an adequate nutritional balance.	Necessary caloric contribution though different nutritional courses to obtain an adequate nutritional balance.	Continuous	To compare actual intake to goal intake
Ocreotide	Octapeptide derived from somatostatin with an action	Drug derived from somatostatin that has similar effects but with a more	Binary continuous	yes/no

	mechanism that excels somatostatin	prolonged action spectrum.		dose
Temporary abdominal closure	Clinical situation in which the abdomen is not completely closed.	Surgical management takes place as a damage control measure, such as intraabdominal infections or prevention of elevated intrabdominal pressure	Binary	What type of temporary abdominal closure was used? Was temporary closure implemented?
Reoperation	Surgical intervention in an individual who had prior surgical repair.	Acute Surgical intervention to an individual who had already been previously intervened.	Binary	yes/no
Intensive Care Unit	Admission from the general hospital ward to an intensive care unit.	Usually for hemodynamic instability or their risk to develop such instability	Binary Continuous	Admitted Not admitted Number of ICU days
Fistula discharge	Amount of fluid discharged.	Daily average of fistula effluent.	Continuous	Number of milliliters.

Data capture

Hospitals and health professionals will be invited to share the required data from patients that fall under the diagnosis of intestinal fistula/leak and are in-hospital at the time of the given date which will be previously selected. The information will be entered into an online platform (*Redcap*) using a patient identification code but not including unique patient identifiers. Participating sites will join the survey only after obtaining regulatory approval at their site. Data will be stored on a password-protected server and downloaded to complete the analysis by the research team.

Data analysis

The acquired data will be analyzed using measures of central tendency and standard deviations, using RedCap. Statistical models predicting the development of leak or fistula (high

versus low-output ECF) will be developed using logistic regression. $P < 0.05$ will be considered statistically significant.

Limitations of the study:

Technological difficulties from the hospitals that don't have internet access at the given date. Data entry will be made by volunteers, and may not have complete accuracy.

Ethical values applied to this study:

Due to the cross-sectional nature of this study, patients' care will not be intervened upon in any way. It is unlikely that the ethics reviewers at individual sites will require signed informed consent, but sites must evaluate this individually. The biggest risk may be loss of confidentiality. However, with the use of patient identification codes, not names, addresses or hospital identification codes, this risk minimizes.

Research team's experience on the subject:

FELANPE more than 20 years involved in the education and training of clinical nutrition in Latin America.

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Dr. Daren Heyland (Canada)
RD. Charlene Compher (USA)
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Available human resources to achieve the project's completion:

- **FELANPE (Latin America)**
- **Latin American surgery societies and academies**

- **ASPEN (Usa y Canadá)**
 - **ESPEN(Europa)**
 - **PENSA (Asia)**
- **Surgical associated infectious diseases of Latin America (SISLA)**
- **Nursing associations and societies**
- **FELAC**

Glossary:

2nd level: patients in this type of institution have a higher level of complexity than a primary care clinic, this includes pediatrics, obstetrics and gynecology, general surgery and internal medicine, as well as complementary diagnostic services and treatment.

3rd level: This hospital is a social organization, with the purpose of promoting clinical research and formal education. It has a highly specialized staff, as well as the technical resource to develop activities of protection, recovery and rehabilitation with the culture of prevention. Emergency services, patient care 24 hours a day, 364 days a year. With a minimum capacity of 20 hospitalized patients.

Enterocutaneous fistula: established communication between the intestinal epithelium and the skin. It favors the exit of the intraluminal material towards the outer surface and was usually preceded by a digestive leak or an intestinal inflammatory process that favored the loss of the continuity of the visceral wall

Enteratmospheric Fistula: Loss of the continuity of the visceral wall which is open towards the atmosphere without adhering to the skin. They are usually formed in the context of a hostile abdomen; The intestinal mucosa is evolved in an islet of granulation tissue with the open abdomen. It is usually very difficult to control.

Leak: leakage of digestive tract material, given by a loss of the continuity of the digestive wall secondary to lesions, anastomotic dehiscence and / or raphia intestinalis, which causes localized intra-abdominal infection (abscess) or it may cause diffuse peritonitis.

Adults: Patients above the age of 14 years 11 months.

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