

## Infectious, inflammatory and neoplastic aspects for making an intestinal elimination stoma

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### Abstract

Intestinal ostomy is a surgical procedure that aims to change the path of effluents by externalizing part of the intestine on the surface of the abdomen. Life habits are factors that contribute to intestinal infections and inflammation, just as cancer is one of the pathologies that most often causes intestinal ostomies. This study aimed to identify, through review research, primary, infectious, inflammatory and oncological diseases that lead to intestinal infections and inflammations, as well as cancer being one of the pathologies that causes the most in ostomized individuals. A bibliographical review study of the literature with a qualitative approach of the descriptive reflective analysis type was carried out. Important points were reached under the influence of Crohn's disease and its relationship with the creation of an intestinal ostomy; Fournier syndrome related to the reason for creating an ostomy, and for colorectal cancer and the creation of an intestinal ostomy. It is concluded that patients with an intestinal ostomy, whether due to inflammatory diseases such as Crohn's disease, infectious diseases (Fournier Syndrome) or oncological diseases (colorectal cancer), are increasing due to modifiable factors linked to lifestyle, smoking, sedentary lifestyle, morbid obesity and poor eating habits associated with low water intake.

**Keywords:** intestinal metaplasia, Crohn's syndrome, colorectal cancer, physical inactivity, poor diet.

## Aspectos infecciosos, inflamatórios e neoplásicos para confecção de um estoma de eliminação intestinal

### Resumo

A estomia intestinal é um procedimento cirúrgico, que visa alterar o trajeto dos efluentes exteriorizando parte do intestino na superfície do abdômen. Os hábitos de vida são fatores que colaboram para infecções e inflamações intestinais assim como o câncer é uma das patologias que mais acarreta estomias intestinais. Este estudo teve por objetivo, identificar através da pesquisa de revisão enfermidades primárias, infecciosas, inflamatórias e oncológicas que acarretam a confecção de infecções e inflamações intestinais assim como o câncer é uma das patologias que mais acarreta indivíduos estomizados. Foi realizado estudo de revisão bibliográfica da literatura de abordagem qualitativa do tipo análise reflexiva descritiva. Pontos importantes foram alcançados sob a influência da doença de Crohn e sua relação com a confecção de estomia intestinal; a síndrome de Fournier relacionada ao motivo da confecção de uma estomia, e para o câncer colorretal e a confecção de uma estomia intestinal. Conclui-se que o paciente estomizado intestinal seja por doenças inflamatórias como a doença de Crohn, infecciosas (Síndrome de Fournier) ou oncológicas (câncer de colorretal) estão aumentando em decorrência de fatores modificáveis ligados ao estilo de vida, tabagismo, sedentarismo, obesidade mórbida e a

maus hábitos alimentares associada a baixa ingestão hídrica.

**Palavras-chave:** metoplasia intestinal, síndrome de Crohn, câncer colorretal, sedentarismo, má alimentação.

## **1. Introduction**

The term stoma means "mouth". Intestinal ostomy is a surgical procedure, which aims to change the path of feces and flatus by externalizing part of the intestine on the surface of the abdomen. They can be definitive or provisional depending on the severity, and the illness or issue that led to ostomization, they are called according to the location in which they were externalized, when performed in the ileum they are called ileostomy, while in the intestinal colon it is known as colostomy (Krishnamurty et al., 2017; Silva et al., 2023).

Oncological diseases as well as intestinal inflammation have been increasing, representing an alarming issue for public health. With urbanization, technological advances and industrialization, people live longer, but life and eating routines have changed, processed and industrialized foods, with less fiber and water intake, contribute to inflammatory bowel diseases as well as oncology. Among the inflammatory intestinal diseases, we have Crohn's disease and ulcerative colitis, which are chronic inflammations in the intestine with symptoms of abdominal pain, diarrhea, nausea, vomiting, bleeding in both the rectum and gastrointestinal tract, tiredness and/or weight loss (Baumgart; Sandborn, 2012; Torres et al., 2017; Oliveira et al., 2023).

Another important disease that causes stomas is Fournier Syndrome (Moser et al., 2018). Fournier Syndrome is an infectious process that can lead to intestinal ostomization (Dornelas et al., 2012). It is caused by various types of aerobic and anaerobic bacteria, which generally occurs more in males. It usually starts in the urogenital tract, digestive tract or skin lesions. The multiplication of bacteria happens very quickly, causing tissue necrosis to occur, which begins in the genitals and then spreads towards the perineum until reaching the abdominal wall. This spread of bacteria leads to hypoxia and tissue ischemia in the affected region (Souza et al., 2019).

Habits and customs are factors that contribute mainly to cancer, which is one of the pathologies with the highest number of intestinal ostomies (Ilic; Ilic, 2022). Where the neediest population is the most affected, both by their lifestyle and by access to public health, which is often ineffective, where demand only occurs late, when their clinical condition is already aggravated, resulting in ostomization with a specific or indefinite period (Ribeiro et al., 2020).

In this sense, between pathologies and intestinal stoma, it is important to know the primary diseases, both infectious, inflammatory and oncological, that result in the creation of an intestinal stoma, for the future establishment of preventive prophylactic measures and educational programs, aiming at prevention, encouragement the early detection of pathologies that can cause a complete change in the life of an ostomized patient.

This review aims to describe the infectious, inflammatory and oncological aspects of the future occurrence of intestinal ostomization as a form of treatment in patients.

## **2. Materials and Methods**

### *2.1 Type of search*

The type of study is descriptive, qualitative (reflective analysis), drawn up using a literature review on infectious, inflammatory and neoplastic aspects with evolution towards the creation of an intestinal elimination stoma. Therefore, the review was carried out in a non-systematic way, with a random search for material in the Virtual Health Library, Google Scholar, Elsevier and Web of Science databases, to answer the following question: What are the infectious, neoplastic and inflammatory aspects to create an intestinal elimination stoma? To search for studies, the following descriptors were used: care; ostomy; intestinal neoplasms; Crohn's disease, and Fournier Syndrome. Articles published in the last five years were selected, in English, Portuguese and Spanish, that addressed the topic and with the aim of acquiring greater depth and proximity to the object of study to support reflections.

## **3. Bibliographic review**

### *3.1 Crohn's disease and its relationship with the creation of an intestinal stoma*

Crohn's disease is a chronic inflammatory disease, which can affect any segment of the digestive system, from the mouth to the anus and the perianal region, but the most affected areas are the terminal ileum (small intestine)

and the colon (Roda et al., 2021). The segmental involvement of inflammation between normal areas of the intestine is peculiar to this pathology. The lesion can extend to all layers of the intestine causing intestinal thickening and narrowing (Silva et al., 2021).

People with Crohn's disease have crises and periods of remission. Common symptoms include diarrhea, abdominal pain, rectal bleeding, fever, weight loss and fatigue. It can affect people of different age groups and type or lifestyle (Cushing; Higgins, 2021; Venito et al., 2022). With the progression and manifestation of the disease, intestinal perforation and obstruction and even tumors occur. Patients with diarrhea and physical discomfort may present with mucus or blood, as well as fever, low absorption rate of nutrients and water, loss of appetite, abdominal pain, and abdominal and rectal bleeding, especially at the beginning of symptoms (Guimarães et al., 2020; Atreya; Siegmund, 2021).

It is a chronic inflammation of the gastrointestinal tract that can affect any part of the gastric and intestinal system, where the most affected areas are the distal ileum and the colon. It is an equal pathology for both sexes (male and female), where the most common age group is among patients between 25 and 45 years old. Being cited in 1932 for the first time, by Chron, Ginzburg & Oppenheimer (Guimarães et al., 2020).

It should also be noted that this inflammatory process is extremely invasive and compromises all layers of the intestinal wall: mucosa, submucosa, muscular and serous. Its causes are still undefined and multifactorial, with hereditary factors and poor diet. This disorder may also present a high risk of colorectal cancer and later, as a surgical form of treatment intestinal ostomy (Basílio et al., 2021).

It is a pathology that is still little known, which affects the bile ducts, causing intra and extrahepatic inflammation, leading to impaired liver function, especially mucous membranes and the malfunction of the intestinal system that progresses to the creation of an elimination stoma, which can be temporary or definitive (Oliveira et al., 2022; Olén et al., 2022).

In theory, hereditary factors are considered concomitant with dietary and environmental habits, alcohol consumption and mainly smoking. It should be added that it is a multifactorial disease that causes protein-energy malnutrition due to side effects and drugs, where if inflammation occurs in an intestinal loop, the surgical rate increases to create an intestinal elimination ostomy (Geyl et al., 2021; Santos et al., 2021).

### *3.2 Fournier syndrome and its correlation with ostomy*

Fournier's Syndrome or Fournier's Gangrene is a rapidly progressing infectious pathology that consists of a synergistic necrotizing fasciitis in the perineal region and the abdominal wall (Morpurgo; Galandiuk, 2002). It is emphasized that when not treated early, it can progress to sepsis and multiple organ failure. Early diagnosis together with appropriate and aggressive treatment are determining factors in the patient's prognosis (Florentino et al., 2020; Zhang et al., 2022).

Fournier's is a rare pathology characterized by tissue destruction in the perianal, perineal and genital regions that occurs due to its polymicrobial origin composed of aerobic and anaerobic bacteria characterized by necrotizing fasciitis, which affects men aged between 30 and 60 years, and patients who have chronic diseases such as diabetes mellitus, are malnourished, immunosuppressed and drug users (Lira et al., 2021; Huayllani et al., 2022). Lesions from Fournier syndrome cause major physical impacts, leading to a loss of skin integrity in the perineal, perianal and genitalia region, which may result in the need for a stoma (Silva et al., 2021; Lira et al., 2021; Féres et al., 2021).

As bacteria spread, tissue oxygen decreases, developing ischemia and thrombosis, resulting in necrosis in the skin and adjacent tissues compromising the genital area. Among the treatments proposed for some cases of this syndrome is the ostomy (Silva et al., 2021). Its infection is aggressive and rapid, causing a deformity in the organ, raising the immediate surgical suggestion for the preservation of the patient, which includes the procedure for a temporary stoma due to the involvement of the genital system. Ileostomy and colostomy are used, in some cases, as treatment; however, other factors may be involved (Kuchinka et al., 2019; Kappel et al., 2020; Silva et al., 2021).

### *2.3 Colorectal cancer and creation of an intestinal stoma*

Tumors called colorectal cancer (CrC) can start in the large intestine, also called the colon, and travel to the rectum (Tsujinaka et al., 2020). Symptoms of CrC are bloody stools (enterorrhagia), abdominal discomfort, abdominal mass, changes in bowel habits, weakness and anemia, and also changes in the stools that make them

thin like a ribbon, therefore, as a form of prevention, it is recommended physical exercise, a balanced diet, avoiding the consumption of processed foods, fatty foods, and maintaining body mass is of great importance, aiming to meet BMI (body mass index) standards (Menezes et al., 2022).

It is a neoplastic pathology that most frequently affects men over 60 years of age, presenting tumors in the segment of the large intestine and rectum. These tumors occur due to the lack of screening for polyps that appear in their initial phase and can be removed surgically, in the absence of an early diagnosis. Polyps can transform into tumors that compromise the mechanics of the organ (Faria et al., 2018; Vogel et al., 2021).

Cancer encompasses more than 100 types of malignant pathologies, caused by the disordered growth of cells. Most of it affects the individual silently, colorectal cancer is the third most common pathology, and can develop both in the colon and in the final part of the large intestine (rectum or anus) (Nebbia et al., 2020; Barros et al., 2022).

There are several therapeutic methods for CrC one of which is the surgical procedure in which the affected portion of the colon is removed, and one, or more portions of the intestinal loop are externalized to the outside of the abdomen, known as a stoma intestinal in which an artificial orifice is created, with the aim of promoting fecal elimination (Ribeiro et al., 2019; Pallan et al., 2021).

Colonoscopy is the main form of screening for colorectal cancer, it is an invasive approach that must be performed every 10 years. The Ministry of Health recommends screening mainly humans between 50 and 75 years of age through laboratory testing for hematochezia and colonoscopy, although there is no screening program (Brasil, 2010; Maciel et al., 2019; Macêdo et al., 2020; Silva et al., 2020; Pires et al., 2021; Felisberto et al., 2021).

Like all neoplastic pathologies, these have risk factors that are directly correlated with the individual's lifestyle habits, as well as population aging or for genetic reasons. When diagnosed late, it consequently presents significant involvement in the natural physiology of the colon and the patient needs to undergo surgery for a colostomy (Felisberto et al., 2021; Alenezi et al., 2021).

Colorectal cancer is initially caused by the formation of disordered natural cells in the large intestine and rectum, causing blood-irritated tumors that, if not discovered initially, can invade other types of tissues. Colorectal pathology is recognized as one of the main risk factors in individuals over the age of 50, especially those with a family history of colorectal cancer, a previous personal history of ovarian, endometrial or breast cancer, a diet high in fat and meat, low calcium content, morbid obesity and sedentary lifestyle. This can generally include urinary changes, intestinal dysfunction and negative manifestations in sexual performance. If diagnosed early, there is a great chance of cure and adequate treatment, which consists of intestinal elimination stoma (Souza et al., 2019; Sena et al., 2020; Mohamed et al., 2021).

CrC tumor neoplasia has been advancing due to factors such as population aging, unfavorable eating habits, obesity, lack of physical exercise and smoking, these factors influencing the high risk rate of this oncological pathology. Depending on the degree of intestinal involvement, it is carried out as a form of treatment, where a more radical surgery involves the removal of parts of the large intestine and rectum, requiring the creation of an ostomy (Macêdo et al., 2020; Caspi et al., 2021). It is confirmed that a neoplasm arises from the disordered multiplication of cells in the colon and rectum, where this disease has been growing due to factors discussed previously, however, with the advancement of health technologies, the incidence of mortality has been decreasing (Maciel et al., 2019; Huang et al., 2023).

#### **4. Conclusions**

Crohn's disease, as seen, is a chronic inflammatory disease that, as it progresses, causes intestinal obstructions and perforations and can even lead to tumors compromising the functioning of the intestine, leading to the need for a stoma. In Fournier Syndrome, rapid necrosis occurs in the region of the abdominal wall, which can result in the need for a stoma through a surgical process, which may have age and type of diet as one of the factors. Colorectal cancer can lead to intestinal ostomy, influenced by the lack of early screening for intestinal polyps in humans over 50 years of age.

It is concluded that intestinal ostomy, whether due to inflammatory, infectious or oncological diseases, is increasing due to the occurrence of modifiable factors linked mainly to lifestyle, such as: smoking, sedentary lifestyle, obesity, poor eating habits associated with low water intake.

## 5. Authors' Contributions

*Ane Raquel de Oliveira*: survey of ideas, writing, reading of texts, corrections, submission. *Ana Fagundes Carneiro*: corrections, reading of articles, creation of review topics. *Wanderson Alves Ribeiro*: advisor, corrections, writing monitoring and publication. *Pietro Henrique Benevides Pedrosa*: grammatical correction of English. *Mirian Maria Ferreira Guedes*: writing, corrections, discussion of the bibliography. *Érica Motta Moreira de Souza*: submission, corrections to the literature review, material and methods. *Tarsila Reis Pinto Pires*: corrections, writing and translation. *Gabriel Nivaldo Brito Constantino*: translation and layout corrections.

## 6. Conflicts of Interest

No conflicts of interest.

## 7. Ethics Approval

Not applicable.

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