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Is endoscopic therapy safe and efficient in the treatment of lesions located in the rectum?

A terapêutica endoscópica é segura e eficiente no tratamento de lesões localizadas no reto?

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ABSTRACT

Introduction: Colorectal cancer is among the most common malignant neoplasms worldwide and the pre-malignant lesions that lead to its appearance are polyps in their various types. As a minimally invasive method, endoscopic resection emerges as the preferred method for focused lesions.

Objective: To carry out a review verifying whether endoscopic therapy is safe and efficient in the treatment of lesions located in the rectum.

Methods: Narrative review collecting information published on virtual platforms (SciELO, Google Scholar, Pubmed and Scopus). Initially, a search was carried out for descriptors related to the topic, which were identified through DeCS/MeSH, namely: "colorectal cancer, adenoma, mucosectomy, dysplasia, polyp" with AND or OR search, considering the title and/or abstract. Afterwards, only those that were most similar were chosen, and the works were read in full.

Results: 41 articles were evaluated.

Conclusion: With the evolution of concepts and technological improvements, there is an increasing possibility of diagnosing non-polypoid or superficial lesions (superficially elevated, flat or depressed) and laterally spreading or laterally growing lesions or tumors (LST).) that, by definition, have a diameter greater than 10 mm. Mucosectomy may be indicated for minimally invasive treatment or prevention in cases that have not yet advanced and can be cured endoscopically.

KEYWORDS: Colorectal cancer. Adenoma. Mucosectomy. Dysplasia. Polyp.

RESUMO

Introdução: O câncer colorretal está entre as neoplasias malignas mais comuns em todo mundo e as lesões pré-malignas que levam ao seu surgimento são os pólipos em seus variados tipos. Como forma minimamente invasiva a ressecção endoscópica desponta como método preferencial nas lesões focadas.

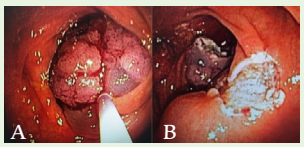
Objetivo: Efetuar revisão verificando se a terapêutica endoscópica é segura e eficiente no tratamento de lesões localizadas no reto.

Métodos: Revisão narrativa colhendo informações publicadas em plataformas virtuais (SciELO, Google Scholar, Pubmed e Scopus). Inicialmente foi realizada busca por descritores relacionados ao tema, os quais foram identificados por meio do DeCS/MeSH, a saber: "câncer colorretal, adenoma, mucosectomia, displasia, pólipo" e seus equivalentes em inglês "colorectal cancer, adenoma, mucosectomy, dysplasia, polyp" com busca AND ou OR, considerando o título e/ou resumo. Após, foram escolhidos somente os que tinham maior similitude, e realizada a leitura na íntegra dos trabalhos.

Resultados: Foram avaliados 41 artigos.

Conclusão: Com a evolução dos conceitos e com a melhora tecnológica, há possibilidade de diagnosticar cada vez maior lesões não-polipoides ou superficiais (superficialmente elevadas, planas ou deprimidas) e as lesões ou tumores de espraiamento ou crescimento lateral (LST, Laterally Spreading Tumor) que por definição apresentem diâmetro maior que 10 mm. A mucosectomia pode ser indicada para o tratamento minimanente invasivo ou prevenção nos casos ainda não avançados e que possam ser curados endoscopicamente.

PALAVRAS-CHAVE: Câncer colorretal. Adenoma. Mucosectomia. Displasia. Pólipo.



A) Mucosecomy with loop of LST rectum; B) mucosa with margin

Central message

Colorectal cancer is among the most common malignant neoplasms in the world and the premalignant lesions that lead to its appearance are polyps in their various types. As a minimally invasive form, endoscopic resection emerges as the preferred method in focused lesions. This review seeks to update data that may support the indication of mucosectomy in these lesions while in the initial phase.

Perspective

With the evolution of concepts and technological improvements, endoscopists have increasingly diagnosed non-polypoid or superficial lesions (superficially raised, flat or depressed) and laterally spreading or lateral growth (LST) lesions or tumors that tend to grow laterally in relation to the surface of the colon or rectum and that by definition have a diameter greater than 10 mm. Thus, it is important to consider the possibility of minimally invasive treatment – mucosectomy – with the objective of cure or prevention, in cases that are not yet advanced and that can be treated endoscopically.

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INTRODUCTION

Colorectal cancer (CRC) is the 3rd leading cause of cancer death in the United States, and in Brazil, according to the annual report available on the National Cancer Institute website (2020), it is the 2nd in incidence and the 3rd in mortality in both men and women. It has shown an increase in incidence in the last 15 years worldwide and it is believed that diets rich in animal fat, the increase in the consumption of processed and industrialized foods, associated with low fiber intake and sedentary lifestyle, contributed to this increase.[1]

Colonoscopy is certainly the most effective prevention method in the direct fight against pre-neoplastic lesions, which are colon and rectal polyps. The advent of image magnification, chromoscopy, and evolution of materials for endoscopic resections, associated with improved training of endoscopists, have contributed to prevention.[2]

After the implementation of the American guidelines (American Cancer Society 2018), which agreed to perform routine preventive colonoscopy from the age of 50 years, and in direct family members of patients with a history of CRC from the age of 40, it is believed that this incidence should fall in the coming years.[3]

Cancer of the rectum has slightly different characteristics from that of the rest of the colon, due to its more aggressive anatomopathological peculiarities, associated with higher morbidity and mortality.[4]

Thus, the relevance of this review comes from analyzing the prevalence, size, and distribution of rectal lesions resected by endoscopy with anatomopathological analysis, ascertaining the efficacy and safety of the treatment.

METHOD

It is a narrative review collecting information published on virtual platforms in Portuguese and English. The material for reading and analysis was selected from the SciELO, Google Scholar, Pubmed and Scopus platforms. Initially, a search was carried out for descriptors related to the theme, which were identified through DeCS using the following terms: "colorectal cancer, adenoma, mucosectomy, dysplasia, polyp with AND or OR search, considering the title and/or abstract. Afterwards, only those with the greatest similarity were chosen, and the full text of the works was read, inserting 41 articles.

DISCUSSION

Colorectal cancer

CRC is surpassed only by breast and prostate cancer. Currently, more than one million new cases are diagnosed per year worldwide, and in Brazil there are already more than 30,000 new cases annually.[5]

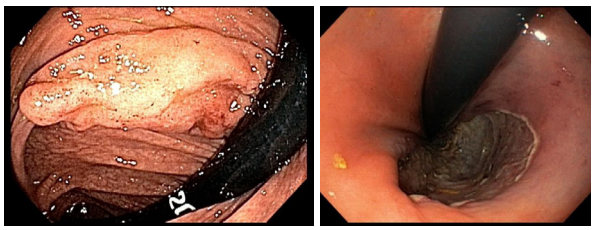
The symptoms are already well known to those who develop it, but they are not exclusive to it6 and include: 1) change in bowel habit; 2) constant or sporadic cramps; 3) bleeding during bowel movements, live or dark, with or without clots, mixed or not with feces; and 4) when in the rectum, there is a feeling of wanting to evacuate frequently, managing to eliminate only small amounts of fecal material, with or without blood and mucus. Although the patient may refer to all these symptoms, it is not uncommon to be asymptomatic.

The diagnosis of premalignant lesions with their consequent removal is recognized as the best strategy for secondary prevention of CRC.[7] Colonoscopy is considered the gold standard method to achieve this goal, and the adenoma detection rate is defined as the percentage of procedures in which at least one adenoma has been diagnosed, and thus considered an important indicator of quality.[8]

According to estimates available on the website of the National Cancer Institute5 there are number of 41,010 new cases of colorectal cancer, 20,540 in men and 20,470 in women.

Colonoscopy for colorectal cancer prevention

In recent years, there has been a fantastic evolution of advanced technology in colonoscopy equipment. This test was initially used to investigate symptoms (abdominal pain, diarrhea, bleeding, etc.) and later also to remove benign neoplasms or carcinomas in the early stages. Recently, it has been used to screen for CRC in patients without symptoms or with few symptoms. Several medical societies have established evidence-based guidelines in which colonoscopy is used as cost-effective in these screenings.[9] According to Cutait & Farias (2009)6, since then, colonoscopy has been the test of choice for diagnosing diseases of the large intestine, as it allows the visualization of the mucosa of the rectum, the entire colon and, if necessary, also the terminal ileum. Moreover, with colonoscopy it is possible to biopsy any lesion and remove vast majority of polyps by polypectomy (Figure 1).



Source: Parada (2016)10

FIGURE 1 – Colonoscopy images: high-grade laterally spreading tumour (LST) in the rectum

Colonoscopy reduces the incidence of CRC by removing the lesions that would be its precursors (secondary prophylaxis). However, there are diagnostic failures that would be directly related to the quality of the examination, inadequate preparation, the examiner's experience, anatomical difficulties of the right colon, which, among other aspects, has an increased caliber in relation to the left, and the difficulty in diagnosing superficial lesions.[11] Patients operated on for RCC are followed up with periodic examinations that include clinical evaluations, CEA dosage (its elevation suggests recurrence) and control CT scans. Colonoscopy should be performed at regular intervals, which depend on the individual history and possible

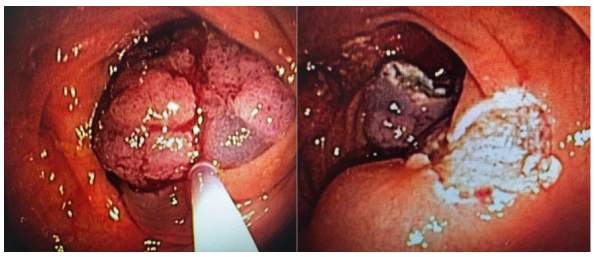
genetic predisposition in order to diagnose new lesions that may appear over the years.

There are 2 types of CRC prevention6: 1) primary, which consists essentially of healthy habits from childhood, especially regarding the diet, rich in vegetable fibers and moderate in animal fats and carbohydrates, in addition to regular physical exercise; 2) secondary, which is to recognize the specific risks of each individual, defined by their personal and family medical history. Screening for both its prevention and early diagnosis vary according to the risk, but are mainly based on periodic colonoscopies, intervals that must be defined by the doctor.

Polypectomy and mucosectomy

Mucosectomy is defined as an endoscopic technique that allows the removal of gastrointestinal lesions present in the superficial layers of the wall of the digestive tract (mucous layer and part of the submucosa

According to the American Society for Gastrointestinal Endoscopy (2015), several accessories and techniques are used to perform it, diathermic loops of denser and more resistant material. The deepest resection plane is achieved through endoscopy with suction and saline injection to elevate the lesion.



Source: Parada (2016)10

FIGURE 2 — A) Mucosecomy with loop of LST rectum; B) mucosa with margin

A transparent device can be used, adapted to the end of the endoscope to improve lifting and suction power, as well as being performed with elastic ligation (in which a pseudopolyp is formed by the application of an elastic ring). Mucosectomy allows, in many cases, the resection of a wide surface area, ensuring complete removal of the lesion.

World Health Organization classification

Polyps are classified as hyperplastic (PH) or adenomas, and these are subclassified into: serrated sessile/polyps and without dysplasia - ASS/P–SD; serrated/polyp sessile and with dysplasia - SS/P–CD; traditional serrations - AST with or without dysplasia; and unclassified serrations – PS–NC.

The most important serrated lesion is ASA/P, as it is relatively common and has the potential for malignancy. Traditional serrated adenoma (AST) is rare, and hyperplastic polyp (PH) has no potential for malignancy.[12]

Source: Parada (2016)10

FIGURE 3 — Serrated sessile adenoma: swollen fold lesion - superficially elevated,finely granular IIa in ascending colon pigmented with indigo carmine

Patients who have a hyperplastic polyp are 2 times more likely to develop adenomas than those who did not have any polypoid lesion at the initial examination. Regarding the risk of malignancy, it is known that factors such as size, architecture, and degree of dysplasia and location influence its appearance. Although the size of the polyp is related to dysplasia, small polyps can also have a high degree of dysplasia, and thus, every polyp must be removed.[13]

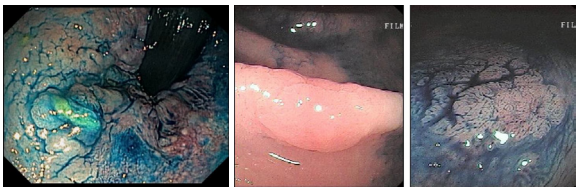
Paris classification

In this classification, colorectal lesions were separated, by macroscopic criteria, into the following types:

Type I - protrudes: Is = sessile, Ip = pediculated, Isp = subpedicled

Type II – superficial: IIa = superficially elevated, IIb = superficially flat, IIc = superficially depressed

Superficial images include those in which the predominant heights do not exceed 2.5 mm and those of the lateral spreading type (LST) that present accentuated lateral growth and with more than 1.0 cm in diameter. In addition, there are mixed forms, such as IIa+IIc, Is+IIc, LST+Is, and others14 (Figure 3).



Source: Parada (2016)10

FIGURE 3 — Serrated sessile adenoma: A) superficial, flat, sigmoid IIb/IIa lesion; B) superficial, flat, slightly elevated sigmoid IIb/IIa lesion with indigo carmine, serrated lesion with low-grade cytoarchitectural atypia; C) rectum LST in chromoscopy

Vienna classification

The lesions were histopathologically classified into 5 types: 1) negative for dysplasia/neoplasia (includes reactive lesions); 2) undefined for dysplasia/neoplasia; 3) non-invasive low-grade intraepithelial neoplasia (NIE-BG), non-invasive (equivalent to

low-grade dysplasia and corresponds to mild and moderate dysplasia in the 3-grade system – low-grade adenoma/dysplasia); 4) high-grade intraepithelial neoplasia (UAN), non-invasive (equivalent to high-grade dysplasia, adenoma with high-grade dysplasia or severe dysplasia in the 3-grade system, non-invasive carcinoma in situ and intramucosal carcinoma that invades the lamina propria); 5) invasive neoplasm (NI), which invades up to the submucosa or deeper.[15,16]

From the point of view of treatment, patients who have lesions restricted to the mucosa are considered cured. The risk of lymph node metastases increases with the depth of submucosal invasion.[14,17]

Resections can be considered practically curative, with minimal risks of lymph node or distant metastases, when invasions go up to 1000 µm of the submucosa (SM s – slight, or discrete). With more than 1000 µm, invasions are considered massive (SM m - massive) and significantly increase the risk of lymph node metastases.[17] The submucosa can also be subdivided into 3 levels – sm1, sm2 and sm3.[14,18]

There is growing evidence that there are differences not only from a clinical point of view, but also from a molecular and treatment strategy point of view between carcinomas of the right and left colon.[19-21]

"Intraepithelial neoplasia" is the name given by the Vienna consensus (2002) that came to replace the terms adenoma and dysplasia, subdivided into high and low grade. According to the World Health Organization, carcinoma in situ and intramucosal carcinoma should be classified as dysplasia or high-grade NIE, because the repercussion of the lesions are exactly the same, that is, neither of them has the potential to send metastases to other organs and lymph nodes.[22] The literature indicates that flat lesions have a higher chance of progressing to UAE, predominantly in the right colon and generally measuring less than 1 cm, including a higher risk of infiltrative growth than sessile adenomas of the same size, especially in depressed lesions.[22]

Colorectal lesions

RCC has been occupying a prominent position in relation to all other types of tumors.[23] Together with lung and pancreatic cancer, there has been an increasing incidence in recent years, being the most common malignant tumor of the gastrointestinal tract in developed countries.[24]

Superficial lesions, which are usually flat or slightly raised, tend to spread laterally, while in depressed lesions, growth progresses deep into the colon wall, thus increasing submucosal invasion (sm1) even in smaller lesions.[25]

In recent years, serrated lesions, which present crypts with a sawtooth pattern, reflecting the decrease in apoptosis of epithelial cells, and which constitute a heterogeneous group of lesions, have been much discussed due to the growing evidence that they may be precursors of some cases of colorectal adenocarcinomas associated with microsatellite instability, BRAF gene mutation and hypermethylation of the promoter gene (CIMP – CpG Island methylator phenotype), although there are still some disagreements and difficulties in diagnosis on the part of endoscopists and pathologists.[26,27]

The route of serrated lesions has come to be considered an important pathway of colorectal carcinogenesis, and may represent, according to several authors, 15 to 30% of the total CRC, but it is not yet known for sure what percentage of each pathway is in this carcinogenesis.[28-31] According to a study published in this regard, serrated adenocarcinomas correspond to 7.5% of all carcinomas and up to 17.5% of proximal carcinomas.[32]

Lateral spreading lesions or LST are generally defined as superficial lesions equal to or greater than 10 mm in diameter, which exhibit significant lateral horizontal growth in the colon wall relative to polypoid or vertical growth.[33] They and larger polyps have an increased frequency of dysplasia and greater local invasion when compared to pedicled lesions of the same size.[4] LST according to endoscopic aspect are divided into 2 types, granular and non-granular, which have 2 subtypes, homogeneous granular LST or with glomerates of nodules, and non-granular LST, elevated flat or with areas of depression or pseudodepression.[34-36]

Granular lesions of the homogeneous subtype have a low risk (less than 2%) of invading the submucosa (sm1) regardless of their size, while granular lesions with nodules increase the risk to 7.1% for lesions smaller than 20 mm and to 38% for lesions equal to or greater than 30 mm.[37-40] As for non-granular lesions, the risk of submucosal invasion is higher, especially those with pseudodepression, which show 12.5% when smaller than 20 mm and 83.3% when larger than 30 mm.[36]

Granular lesions account for 60-80% of cases, non-granular lesions for 20-40%, and depressed lesions for 1-6% of all superficial colorectal lesions.[37,41]

CONCLUSION

With the evolution of concepts and technological improvements, endoscopists have increasingly begun to diagnose non-polypoid or superficial lesions (superficially raised, flat or depressed) and lesions or tumors of lateral spreading or growth (LST, Laterally Spreading Tumor) that tend to grow laterally in relation to the surface of the colon or rectum and that by definition have a diameter greater than 10 mm. This aspect, considering CRC screening, is important to indicate minimally invasive treatment, mucosectomy, or prevention in cases that are not yet advanced and can be cured endoscopically.

Authors' contributions

Conceptualization: Marcos Onofre Frugis
Formal analysis: Marcos Onofre Frugis
Methodology: Paulo Afonso Nunes Nassif
Writing (original draft): Ronaldo Mafia Cuenca, Rafael Dib Possiedi
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