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Mini Review

Conventional Colectomy and Laparoscopic Colectomy in the Management of Colorectal Cancer: A Minireview

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Abstract

Colorectal cancer is the second most frequent cause of death due to oncological disease regardless of sex. The treatment of this entity is surgery, which are performed mostly for healing purposes leading to an estimated survival of 5 years.

The type of approach to be used is the decision with the most controversy in the surgical community due to the benefits that can be obtained individually with each of them.

For the development of this minireview, we took as a basis the updates on the management of this entity established by the Spanish and American oncology society as well as the results and references obtained in various studies conducted worldwide.

The objective of this review is to comment mainly on the beneficial effects of different approaches in the management of colorectal cancer, taking into account basic surgical aspects for each one, recurrence rate, and management of intraoperative metastases.

Keywords: *Cancer; Management; Laparoscopy; Metastasis*

Introduction

Colorectal cancer is currently considered one of the most important diseases in Western countries and in some Latin American countries, with an incidence rate of 450,000 new cases each year. It is the second most frequent cause of death due to oncological disease [1].

The role of surgery in the treatment of colorectal cancer is well established, taking into account that initially open or conventional colectomy was described as the Gold Standard for both benign and malignant diseases, and however, in the 20th century around the 90s Colectomy with a laparoscopic approach was described as a feasible but challenging option at the same time [2].

The fundamental and initial pillar in the treatment of colorectal cancer is surgery, which is performed mainly for curative purposes and leads to an estimated survival of 5 years. Most patients have a late diagnosis of the disease that goes from a resectable and "curative" state to an advanced state with little chance of survival, this is due to multiple factors, such as the lack of economic resources; the lack of knowledge of modifiable risk factors and the lack of timely diagnosis by health personal [2].

Regarding the type of technique, conventional colectomy was initially described as the standard for the management of this type of pathology, but at the end of the 90s the use of laparoscopy was introduced as a viable but challenging option within the therapeutic armamentarium [4].

Methods

The recent updates established by the Spanish Society and the American Society of Oncology will be taken as the basis for this minireview, however, different recent topics taken from experimental studies carried out worldwide with their results will be included.

Colorectal cancer: risk factors

One of the main factors that are described in almost all literatures is age taking into account that the incidence rate is higher in elderly people, however, there is a not so low number of cases in young people taking into account common as a factor in their lifestyle, especially in industrialized countries [2].

Therefore it must be understood that cancer responds to a joint action of multiple factors mainly environmental (including diet and low fiber levels), taking 80% of the responsibility for the development of the disease, leaving the genetic factor 20% remaining. This point is important because with the proper management or adequate promotion of information, the morbidity rate associated with this entity can be avoided or improved [3].

Surgical treatment of colorectal cancer: Conventional colectomy or laparoscopic colectomy.

As already mentioned, the role of surgery in this entity is very clear and for a better understanding there will be a brief description of each option separately taking into account benefits and survival rate.

Conventional colectomy

This was the first technique described for the treatment of this disease. It is more laborious, but perhaps it is the one that offers greater security to surgeons, especially when they do not have enough experience in the field, likewise, it is a technique that involves a greater number of intraoperative and postoperative factors to be considered as a longer hospital stay, a longer surgical time, a longer waiting period to initiate oral tolerance just to mention a few [4].

One aspect to consider with the use of this technique is the excessive manipulation of the target organ, since it has been described in multiple current literatures based on the lymphatic spread capacity of the tumor the principle of not touching or mobilizing the affected organ or the tumor. As necessary for risk of dissemination of neoplastic cells during the process but for this and especially in this type of technique have also been used abdominal washes with cytotoxic agents and protection of the edges of the colon and tumor throughout the intervention [5].

Laparoscopic colectomy

Minimally invasive surgery is considered as a new approach technique in the treatment of colorectal tumors, but maintaining the same principles and surgical foundations described in the conventional technique, based on this point of view, initially the surgical community generated a lot of enthusiasm in the process. However, this technique requires prior training by the surgeon to obtain good results and be prepared for any complications that may arise [5].

We could say that all types of interventions can be performed, either in a complete laparoscopic or assisted manner (through a minimal incision in the abdominal wall, where the intestine can be externalized, facilitating its management), in what we could call minimally invasive surgery. But the true controversy of this type of technique in the management of colorectal cancer is its association with the presence of metastases in the trocar orifices, taking into account the latter it has been established that this risk is developed by 3 main mechanisms: the technique of surgeon based on the least possible manipulation of the target organ and tumor, tumor biology since the more aggressive the more difficult they are in their extraction, and last but not least the intraperitoneal environment generated by laparoscopy, that is, modifications in the flow of CO_2 which in turn modify the behavior of neoplastic cells [4].

Among the advantages that can be obtained with this approach are: shorter time of hospital stay, lower probability of intraoperative bleeding, shorter time of onset of oral tolerance, lower rate of complications and less postoperative pain, its disadvantages would be mainly associated with the Lack of experience on the part of the surgeon, which can lead to a technical impossibility, based on difficulties to locate the tumor, as well as to detect the presence of metastasis, guarantee margins of safety at the time of resection, among others, for this reason It is emphasized that this technique can have many advantages over the traditional technique but will depend directly on the experience and training of the surgeon involved [5].

Recurrence rate

The majority of patients with this pathology are taken to surgery with curative intent but in general, 40% of them present recurrences mainly at the locoregional level between the first 2 and 5 years after surgery. This risk is directly proportional to multiple factors that can be divided into 2 groups: factors that depend on the tumor, such as the stage at the time of surgery, degree of dissemination, presence of lymphatic metastases and factors dependent on the surgeon associated with poor technique that entails subsequently to inadequate margins of resection [2].

Currently there has been great controversy about whether there is a relationship between the recurrence rate and the type of approach used: laparoscopy or conventional and even have been based on this point to support more the use of one technique over the other, however, the reality is that the percentage of probability of recurrence is the same for both techniques since it will depend directly on the 2 groups of factors mentioned above, so the decision of which technique produces more recurrence or not or which is better will be determined by the scenario of each patient individually and the stage of their disease [4].

Management of metastasis

At the moment of intervening a patient with this pathology, a series of previous complementary studies should have been carried out in order to have an established surgical plan, however, in some of the cases it happens that the patients are emergency surgery or the lesions were simply not detected [6]. Therefore with regard to the management of these injuries will depend on multiple factors such as:

- Anatomical location of the lesions
- Size of injuries
- Total number of injuries present
- Resectable or non-resectable conditions of the primary tumor.

Based on this context, if the lesion is located in an easily accessible anatomical site, there are less than 3 in total, they measure less than 3 centimeters and at the same time the primary tumor is resectable, we could choose to perform the resection of both lesions in a single time, otherwise in which the primary tumor was not resectable at the time of the primary intraoperative evaluation, resection of the metastasis, neoadjuvant chemotherapy and resection of the tumor could be performed in a second time; that the primary tumor is resectable but the metastatic lesion is not, it is possible to proceed to resection of the primary tumor and systemic chemotherapy for metastatic lesions.

Regardless of the behavior to be taken in these cases, no significant difference is found between the two approaches except that, as mentioned, it will depend on the skill of the main surgeon and his knowledge in the area [6].

Conclusion

The management of colorectal cancer is a multidisciplinary management that begins with the surgical intervention, this can be done by different approaches within which highlight the conventional approach and laparoscopic, however, currently has been betting on the greater use of the laparoscopic approach due to which has more advantages in favor of the patient.

Regarding the existing controversies about the recurrence rate, it has been shown that it is not directly related to the employed approach, but rather to other factors specific to the tumor and the surgeon, however, in order to decrease this recurrence rate, the performance of more sensitive methods to detect these lesions, starting with a good anamnesis and ruling out important symptoms such as the reappearance of abdominal pain or changes in the evacuation pattern, among others.

The risk of metastasis associated with the use of laparoscopy is also a great controversy, but as can be seen, it does not depend directly on the trocars, but on the excessive manipulation of the anatomical piece and the changes that can be caused in the neoplastic cells by the changes in the flow of CO_2.

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