



RESEARCH ARTICLE

THE "TAILORED SURGERY", IN THE PRESERVATION OF THE ANAL SPHINCTER IN THE TUMOR OF THE RECTUM

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ABSTRACT

**Indroduction:** surgical radicality in rectal tumors is synonymous with local neoplasm control with increased survival. In the name of these objectives the quality of life has been sacrificed in the past, but with the evolution of surgical techniques and the greater knowledge of the mechanisms that regulate neoplastic disease, today we have arrived at a culture that places integrity in the foreground. and the psychophysical equilibrium as irremocratic elements in the complete realization of the present man. (Ferlay, *et al.*, 2012; Smith *et al.*, 2013; Brenner *et al.*, 2012; Hewitson, *et al.*, 2008.)

**Materials and methods:** From January 2010 to December 2017 consulted the database of the AOU "G Rodolico" University of Catania Department of surgical and specialist medical sciences II 111 patients suffering from rectal neoplasia and undergoing surgery were treated. Surgical therapy implemented was a "tailored surgery", (treatment in relation to the stage) Stage 0 (carcinoma in situ) The treatment consisted of local resection to remove all the tumor. In cases of recovery, the patient must perform serious CHRONIC checks every 3 months in the first two years, Stage I (T1 / N0 / M0) local resection external radiotherapy with or without chemotherapy if the neoplasm resists treatment with external radiotherapy, radiotherapy was performed internal in case of failure we proceed to the abdominal-perineal resection sec. Miles

**Results:** From the 111 patients underwent surgery. In 18 cases (17%) there was a complete histological response (pT0). In 95 patients (95.5%) an operation was performed with the preservation of the sphincter apparatus.

**Discussion:** Only surgery in cancer has healing effect exclusively in the initial stages, historically the abdomino-perineal amputation sec. Miles was the choice therapy with survival of 50-70% at 5 years. Great progress has been made in the surgical treatment of ultra-low rectal tumors with a more widespread tendency to techniques to preserve the sphincter function avoiding the final ostomy packaging.

**Conclusion:** The technical and scientific progress achieved in recent years has shown that neoadjuvant therapy offers the possibility of complete responses with total regression of the neoplasm with the aim of obtaining an effective cure of the disease without resorting to surgery. mesorectal excision have led some authors to question the routine use of RT in reference to the initial forms even if the RT Endocavitary used for tumors with a diameter of less than 3 cm has achieved successes around 95%.

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INTRODUCTION

surgical radicality in rectal tumors is synonymous with local neoplasm control with increased survival. In the name of these objectives the quality of life has been sacrificed in the past, but with the evolution of surgical techniques and the greater

knowledge of the mechanisms that regulate neoplastic disease, today we have arrived at a culture that places integrity in the foreground. and the psychophysical equilibrium as irreconcilable in the complete realization of the present man. (Ferlay *et al.*, 2012; Smith *et al.*, 2013; Brenner *et al.*, 2012; Hewitson *et al.*, 2008) Miles's intervention has improved survival but with the advent of anterior resection in the 80's the compromise quality and quantity of life has increased, due to the possibility that in lesions of the lower rectum to obtain an oncological radicality at only 2 cm from the anal rhyme. (von

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Karsa *et al* 2008, Majumdar SR *et al* 2008, . Van Gijn W *et al* 2010) The possibility also to ascertain the limited lymph node MTS in tumors T1, T2a, and the definition of the small size of the lesion, not ulcerated and mobile. Indications for sphincter conservation are not well defined at this time because the first clinical experiences with preoperative radiotherapy oriented on the possible preservation of sphincter in patients who are candidates for resection of the abdomen and perineal were reported at the beginning of the 90s with the percentage of complete remissions were 10-17% prospective studies in the absence of multicentricity include adequate number of patients and their homogeneity but still limited Even the introduction of the adjuvant therapy protocols in cancer of the target involves, especially in the low, an increase in the number of conservation interventions compared to the initial diagnosis. (Brawley, 2011; van de Velde *et al.*, 2014; Bipat *et al.*, 2004; Graziano *et al.*, 2017). It is undeniable that preoperative radiological and chemotherapy therapies reduce the volume, and the risk of intraoperative neoplastic diffusion. However, in literature there is no unanimity in defining the criteria for the conversion of a Miles versus an intervention with the preservation of the anal sphincter. This is due to the diversity of the results achieved and to the different surgical schools, because the different techniques set up collide with the need to ensure adequate distance from the neoplasm and affect the determination of the limit level of the tumor that allows a radical surgery. (Graziano *et al.*, 2017). Further progress has been achieved in the TNM classification, since with the definition of histological grading, and identifying factors that determine a high or low risk of local recurrences or neoplastic progression, it has been possible to define their tumors in stage T1NoMo real lymph node and parietal invasiveness followed by radical local excision. The aim of the present study is to select and analyze the factors that influence both the quality of life and to improve the selection of cases to be treated with sphincter conservative therapy in relation to our clinical experience.

## MATERIAL AND METHODS

From January 2010 to December 2017 consulted the database of the AOU "G Rodolico" University of Catania Department of surgical and specialist medical sciences II were treated 111 patients affected by neoplasms of the colon rectum and underwent surgery (only 25 cases for neoplasm rectum).

The clinical signs that emerged in patients observed at the clinical examination were: the retrieval of blood in the stool accompanied or not by diarrhea and constipation, asthenia, malaise, rapid weight loss and anemia without apparent reasons. All the patients performed the occult blood in the stool. Digital exploration of the rectum. The colonoscopy (fig. 1,) and echo endoscopy (Fig. 1. bis)



Fig. 1. bis echo endoscopy

which allowed the identification and removal of all polyps as well as the possibility of biopsies on the neoformation. virtual endoscopy which, through the digital reconstruction of images collected by CT scan or magnetic resonance imaging (fig. 3,4),

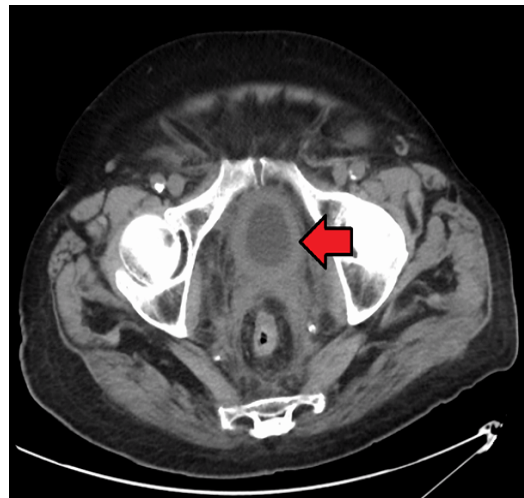


Fig. 2. CT tumor rectum



Fig. 1. colonoscopy neoformation rectus

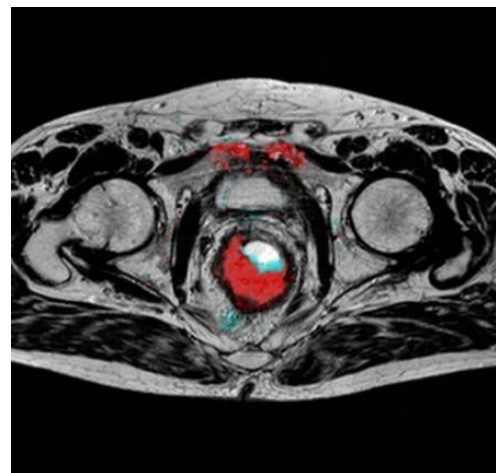


Fig. 3. RNM tumor rectum



**Fig. 4. RNM tumor rectum**

Has allowed to visualize the entire lumen of the colorectal, in order to identify a possible pathology present inside the same with sensitivity for all lesions above the centimeter. finally, PET was used above all in the localization of occult MTS. The surgical therapy implemented was a "tailored surgery", (treatment in relation to the stage) Stage 0 (carcinoma in situ) The treatment consisted of local resection to remove all the tumor. In cases of recovery, the patient must perform serious CHRONIC checks every 3 months in the first two years, Stage I (T1 / N0 / M0) local resection external radiotherapy with or without chemotherapy if the neoplasm resists treatment with external radiotherapy, radiotherapy was performed internal in case of failure we proceed to the abdominal-perineal resection sec.

Miles Stage II (T2-T3 / N0 / M0) Local resection External radiotherapy with chemotherapy. (in cases of non-response we will proceed to a further cycle of chemotherapy and radiotherapy) internal radiotherapy In case of persistence we proceed to resection abdominal-perineal sec. Miles. Stage III. Stadium IIIA: (T1-T2-T3 / N1 / M0) or (T4 / N0 / M0) External radiotherapy with chemotherapy. In case of persistence an additional cycle of chemotherapy and radiotherapy will be carried out. Internal radiotherapy Abdominal-perineal resection sec. Miles in case of persistence. Stage IIIB (T1-T2-T3 / N2-N3 / M0) (T4 / N1-N2-N3 / M0) External radiotherapy with chemotherapy Local resection or abortion-perineal resection sec. Miles. Stadium IV (T1-T2-T3-T4 / M1) Palliative surgery aimed at relieving symptoms and improving quality of life Palliative radiotherapy; Palliative chemotherapy and radiotherapy.

Recurrent anal cancer Radiotherapy with chemotherapy in case of postoperative recurrence Surgery in case of relapse after radiotherapy and / or chemotherapy. In the resection resection of the anterior rectum (RA) (Fig 4) the operative times were 1) The anterior resection and section of the rectum and of the intermediate rectum at least 5 cm from the inferior border of the lesion, when this is possible; alternatively, removal of the rectum and of the whole intermediate rectum, up to the plane of the anus elevators, 2) ligation of the inferior mesenteric vein below the inferior border of the pancreas.3) ligation or less of the mesenteric artery inferior to the origin 4) optional lymph node sample at the origin of the inferior mesenteric artery 5)

preservation of the anal canal, equipped with its sphincter apparatus 6) package of anastomosis between colon and residual rectum, avoiding the definitive colostomy: the operation is usually performed by pure abdominis (anterior resection) with mechanical suture.7) package of anastomosis between colon and anal canal or anus, avoiding definitive abdominal colostomy. The operation is performed by combined abdominal and perineal. The technical alternatives are related to the anatomical-surgical conditions and mainly to the distance of the tumor from the anal margin. The risk of anastomotic dehiscence with sphincter salvage interventions is quite considerable (> 15%), so much so that temporary colostomy was appropriate.

In the Amputation of the rectus sec. Hartmann the operating times were 1) the resection by anterior, as before 2) the colostomy, leaving intact the defunzionalized sphincter. the intervention was carried out in patients in poor general conditions, in cases where the eventual anastomosis does not offer sufficient guarantees, in urgent resections. The conditions of healing resection of rectal cancer have changed over time. The main change concerns the distal clearance margin below the tumor. Classically established in 5 cm, it is clear today that microscopic intramural invasion is rare and limited below the tumor, usually not exceeding 2 cm. intermediate rectum excision is considered to be an oncologically correct maneuver that, combined with mechanical ultra-low colorectal anastomosis or with coloanal anastomosis, avoids, in many patients, the use of the Amputation of the rectum via the abdominal -Perineal sec. Miles (AAP) with permanent colostomy.

## RESULTS

For the 111 patients underwent surgery. In 18 cases (17%) there was a complete histological response (pT0). In 95 patients (95.5%) an operation was performed with the preservation of the sphincter apparatus. 50 out of 72 patients (75.5%) were carriers of a low rectal tumor located in the last 5 cm. In particular, it was possible to carry out an operation with preservation of the sphincter apparatus in 18 of the 39 pieces (47%) with ultra-low tumor located between 0 and 30 mm. the sphincter salvage surgery, even if technically possible, was performed only after careful risk / benefit assessment profiling more and more the necessity of a "tailored surgery". It is clear that it is now unacceptable to perform a resection of the colon or rectum that does not respect the oncological criteria of resection according to the mesenchymal planes, preserving the integrity of the intermediate colon or intermediate rectum and with an adequate removal of the lymph nodes for this purpose.

Reason stiff criteria were compiled for the compilation of a correct anatomy pathological report which must evaluate the tumor stage according to the TNM classification, the integrity of the operative piece, the distal and proximal margin of the piece, the circumferential margin corresponding to the intermediate colon or intermediate rectum, depending on the tumor, the lymph node count and the lymph node positivity rate with the search for a minimum of 12 lymph nodes. In the case in which the total number of lymphosis less than 10, the patient should be considered at high risk and sent to adjuvant treatment even in the absence of lymph node positivity (9). In this sense, more experiences reported in the literature show that the target of 12 lymph nodes is insufficient in order to obtain a correct lymph node staging.

In the anterior resection of the rectum, the removal of part of the colon and rectum and also of the fat tissue surrounding the rectum: the intermediate rectum, represents an important condition for the best maintenance of continence, and has contributed to reducing the rate of local recurrences to 4-5%, surgical time predicted 1) for high rectal tumors, intermediate rectum excision at least 5 cm below the apparent distal margin of the neoplasm.2) For low and medium rectal tumors, total intermediate rectum excision, with skeletonization of the rectal abutment that was sectioned on the plane of the elevators. The rescue of the sphincters with the execution of ultra-low resections with mechanical rectal anastomosis or manual anal colic allowed the rescue of the natural sphincter in cases where this was not involved by the tumor disease without compromising oncological radicalness. The anastomosis was in turn directed: both when the colic stump is joined directly to the anal canal or to the residual rectum.

The function can be affected by an increase in the frequency of the evacuations, with the presence of both fragmentation (repeated evacuations in several moments), and of continence in the faeces. This is essentially because the normal rectal reservoir is replaced by a colonic tract (sigma or descending colon) with less elasticity and a different sensitivity. This problem has been addressed both by performing a J-pouch with the construction of a new rectal reservoir with residual tract. The aim is to increase the compliance and the volume of the new rectum, in order to improve the frequency of the evacuations. The current evidence is that a 5 cm pouch increases reservoir function without compromising evacuation, but also reduces the incidence of anastomotic dehiscence. The greatest benefits are for the anastomoses to <4 cm from the anal edge Often patients complain of an inadequate Evacuation with the Need for suppositories or enemas 7% up to 1 month, and 30% up to 1 year. To remedy the latter problem, another alternative was implemented that was plastic Colon, with the aim of avoiding problems of remote evacuation and of maintaining early functional results. The literature shows that the plastic colon is safe where the creation of a J-pouch could be difficult, plastic colon and J pouch have a better function of the anastomosis directed at a follow-up of 2 years, the plastic Colon has the same results as the J-pouch . A recent possibility to preserve intestinal continuity in patients with low rectal cancer while guaranteeing the oncological radicality of surgery, was "sphincter saving" surgery fig. 5.

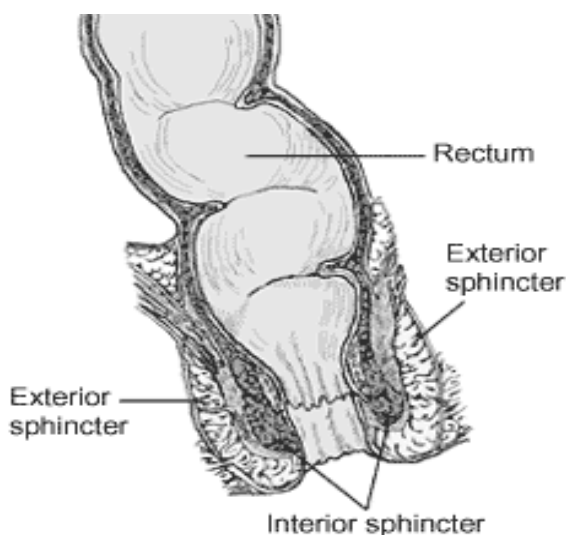


Fig. 5. Inter sphincter resection for rectal cancer

With the preservation of the sphincters in the cancer of the rectum the technique provides for the total or partial removal of the internal sphincter following the anatomical plane between internal and external sphincter, in order to guarantee an adequate distal margin and to conserve in this way the natural anus with its sphincter function. the inter sphincter resection is proposed, for selected patients, as a surgical technique oncologically safe and able to avoid a definitive stoma ensuring the patient a better quality of life. Finally, the use of adjuvant chemo-radiotherapy protocols has obtained functional results that are not always satisfactory. This led to a careful assessment of the quality of life of this category of patients

## DISCUSSION

Only surgery in cancer has healing effect exclusively in the initial stages, historically the abdominal -perineal amputation sec. Miles was the choice therapy with survival of 50-70% at 5 years (Graziano *et al.*, 2017; Buunen *et al.*, 2009; Baek, *et al.*, 2013). Great progress has been made in the surgical treatment of ultra-low rectal tumors with a more and more widespread tendency to techniques to preserve the sphincter function avoiding the packaging of definitive stomas. In the anterior resections of the rectum the intestinal continuity with the package of the anastomosis, after a resection with complete removal of the intermediate rectum, will be between the rectum and the anal canal. (Pigazzi *et al.*, 2014; Graziano *et al.*, 2017) This may be mechanical (at the apex of the anal canal, with preservation of the transition zone, for the easiest cases with the anastomosis near the dentate line) or manual (at the dentate line, with mucosal proctectomy for more difficult cases (Graziano *et al.*, 2017; Hallet *et al.*, 2009). In the surgical treatment of rectal cancer, robotic surgery is proposed for a more accurate dissection of the intermediate rectum in terms of nerve preservation and integrity of the intermediate rectum fascia with a lower conversion rate compared to the laparoscopy Currently, if a radicalization with standard resection of the rectum with TME is necessary, it should be performed within 30 days to obtain results comparable to a radical intervention performed in the first instance the possibility of a conservative surgery in rectal tumors staged as T2 for which local excision has been proposed after radiotherapy treatment for now only in of experimental protocols. (Graziano *et al.*, 2017) The AA in the literature agree on the use of radiotherapy as neoadjuvant treatment of stage III extra peritoneal rectum tumor in association or not with chemotherapy administered with long or short protocol (Nascimbeni *et al.*, 2002; Levic *et al.*, 2013; Digennaro *et al.*, 2013; Graziano *et al.*, 2017).

Neoadjuvant therapy has highlighted the possibility of complete responses with total regression of the neoplasm that have opened a new study, introducing the concept of "wait and see" (Graziano *et al.*, 2017). This consists of a close follow-up in patients with rectal cancer and a complete response to neoadjuvant therapy in order to achieve effective treatment of the disease without resorting to surgery. The results, with follow-up over 10 years, are encouraging but there are no randomized trials that can define it as a standard of care as the definition of complete response and its documentation through imaging techniques remains strongly debated (Graziano *et al.*, 2017). In the literature a debate is also open about the indication to perform a "standard" or "extended" perineal abduction to ensure a lower rate of recurrence.

A multi-center randomized trial is currently underway. In rectal reservoir the rectal ampoule is constantly in contact with the walls due to mechanical factors (sigmoid-rectal angulation and Houston valves) and its peculiar functional activity. Furthermore, two important sensorial actions: contributes to the perception of rectal relaxation and is the site of certain reflexes. The rectal ampoule has a high compliance both for its natural elasticity and for the presence of the adaptation reflex (Marilyne M. Lange *et al.*, 2008; Graziano *et al.*, 2016). If rectal compliance is reduced (rectal reservoir resection) the volume necessary to trigger the "need" to defecate and therefore more difficult to control the continence will be reduced by the construction of a new rectal reservoir with the residual colonic tract. has the purpose of increasing the compliance and the volume of the new rectum, in order to improve the frequency of the evacuations.

In our experience the packaging of a J-pouch or plastic Colon have maintained functional results in time. (Graziano *et al.*, 2016) External RT, both primary and adjuvant, contributed to the decrease in local recurrences, although the decrease in their incidence following the introduction of intermediate rectum excision techniques led some authors to question their routine use ; Indications: were neoadjuvant or primary (preoperative), the indication to preoperative radiotherapy were for T3 neoplasms, in which the tumor has exceeded the intestinal wall ( ). The recommended treatment involves the use of doses varying between 35 and 45 Gy in several fields for 5 days out of 7 and for 3-5 weeks. After this treatment one should wait for one to three weeks and then proceed with the operation. In the adjuvant or postoperative phase in T3 - T4 and N +. In the treatment of inoperable or inextinguishable local relapses, in selected patients with low rectal tumors, primary high-dose radiation therapy allowed the resection of the primary tumor with the preservation of the sphincters (Graziano *et al.*, 2016). This therapeutic approach continues to be evaluated by numerous trials RT Endocavity As exclusive therapy of the initial forms; this technique has been used for tumors with a diameter of less than 3 cm, well differentiated, mobile, without lymph nodes to exploration or trans rectum ultrasound.

The total dose is 90-120 Gy. The failure rate is reported to be less than 5%. The radiochemotherapy Adjuvant the most used treatment scheme for carcinomas of the rectum Dukes B2, C is represented by the combination of chemotherapy + radiotherapy. The scheme is as follows: 5FU - AF by RT 45Gy + boost 540 Gy, with 5FU bolus just before the RT in the first 3 days (Graziano *et al.*, 2016; Ruo, *et al.*, 2002) of the first and last week and then 2 cycles of chemotherapy. With this protocol a reduction of the disease recovery of 34% was achieved. Follow-up was important. A control visit program guarantees the detection of recurrence or the development of a new neoplasm, with the possibility to intervene immediately. The visits include a physical examination, a test to check the presence of occult blood in the stool, a colonoscopy, chest radiography and laboratory tests, CT and marker

## Conclusion

The technical and scientific progress achieved in recent years have shown that neoadjuvant therapy offers the possibility of complete responses with total regression of the neoplasm with the aim of obtaining an effective cure of the disease without resorting to surgery. intermediate rectum have led some authors to question the routine use of RT in reference to the initial forms even if the RT Endocavitary used for tumors with

a diameter of less than 3 cm has achieved successes around 95%. The real challenge that awaits us are the screening programs, and the uniform extension of treatment standards. the need for a multidisciplinary treatment is also indispensable, in addition to the importance of lymph node luting in centers with documented experience to obtain a significant increase in absolute and disease-free survival at 5 years

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