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Technical Note

Scheduled maturation in low colorectal and coloanal anastomoses

Rubens Henrique Oleques Fernandes[a,b]

[a] *Sociedade Brasileira de Coloproctologia (SBCP), Rio de Janeiro, RJ, Brazil*
[b] *Hospital Pompeia, Departamento de Coloproctologia, Caxias do Sul, RS, Brazil*

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ABSTRACT

Introduction: Anastomotic dehiscence is the main complication after low colorectal and coloanal anastomoses. The techniques commonly used are the double-stapling and hand-sewn anastomoses, both are made with immediate maturation. These techniques do not prevent pelvic sepsis in many patients and are not feasible in all cases.
Objective: The study aim is to report the technical details and results with the use of scheduled maturation anastomosis in ten patients.
Surgical technique: The scheduled maturation anastomosis is done in two steps. The first step is the closure of colonic stump in a way that keeps the mucosa layer in everted position. The second step is the union of the colon and rectum ends by transanal access. All the sutures are made with 2/0 polyglactin. A diverting stoma must be done in all cases. After 30 days, begins spontaneous opening of the anastomosis.
Results: Ten patients underwent this technique. There were two cases of stenosis that were treated with digital dilatation in office. All patients had their diverting ostomy closed.
Conclusion: The scheduled maturation anastomosis is feasible in difficult cases and may prevent pelvic sepsis in low colorectal and coloanal anastomoses.

Maturação programada em anastomoses colorretais baixas e coloanais

Palavras-chave:
Câncer retal
Anastomose colorretal
Anastomose coloanal

RESUMO

Introdução: A deiscência anastomótica é a principal complicação após anastomoses colorretais baixas e coloanais. As técnicas comumente usadas são o duplo grampeamento e a anastomose manual, ambas são feitas com maturação imediata. Estas técnicas não impedem a sepse pélvica em muitos pacientes e não são exequíveis em todos casos.
Objetivo: O estudo mostra os detalhes da técnica e os resultados do uso da anastomose com maturação programada em dez pacientes.

E-mail: olequesfernandes@terra.com.br
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Técnica cirúrgica: A anastomose com maturação programada é feita em duas etapas. A primeira fase é o fechamento do coto cólico com pontos que mantém a mucosa evertida. A segunda fase é a união das extremidades do cólon e reto pela via transanal. Todas as suturas são feitas com poliglactina 00. Um estoma para derivação deve ser feito em todos os casos. Após 30 dias, inicia-se a abertura espontânea da anastomose.

Resultados: Dez pacientes foram submetidos a esta técnica. Ocorreram dois casos de estenose que foram tratados com dilatação digital em consultório. Todos pacientes tiveram fechamento de sua ostomia de derivação.

Conclusão: A anastomose com maturação programada é factível em casos difíceis e pode prevenir a sepse pélvica em anastomoses colorretais baixas e coloanais.

Introduction

Management of low rectal tumors remains a challenge. The morbidity and mortality of surgery are quite associated with anastomotic failure. The shortening of distal resection margin,[1] total mesorectal excision,[2] neoadjuvant therapy[3] and the intersphincteric resection technique[4] are the main factors to increase sphincter preservation in cancer of the distal rectum.

The most employed techniques for low colorectal and coloanal anastomosis are the double-stapling and transanal hand-sewn anastomoses. However, these techniques do not prevent that up to 25% of patients underwent sphincter-saving surgery for rectal cancer present with anastomotic failure and have a definite stoma.[5] After the failure of known anastomotic techniques in redo surgery we developed a new technique, named scheduled maturation anastomosis.

The aim of this study is to report our preliminary experience by using this technique in 10 consecutive patients.

Materials and methods

From June 2011 to February 2014, 10 patients were selected to this technique of anastomosis. The idea of using this technique arose during the surgery of the first case, a redo surgery in a 42 years old woman. In this case it was not possible to perform the techniques already known, due to adhesions, fibrosis and stricture of the rectal stump. The anastomosis was performed with scheduled maturation as a last option to reverse the colostomy. The postoperative outcome was very good, what motivated the indication of this technique to other selected cases.

From there were three more cases of redo surgery, three intersphincteric resections and three low colorectal anastomosis. All patients were in treatment for rectal adenocarcinoma.

The study was approved by our local ethics committee. Informed consent was obtained from all patients, except the first.

Demographic and pathological data are summarized in Table 1.

Table 1 – Patient demographics and pathology.

Sex	
Male	6
Female	4
Age, mean, y	31–75, 54.6
Anastomotic distance from average, mean, cm	2.0–6.0, 3.6
Preoperative adjuvant therapy	8
Tumor stage	
I	1
II	5
III	4

Surgical technique

Patients underwent a routine mechanical bowel preparation and were placed in Lloyd-Davis position. The colon to be lowered must have enough length for a tension-free anastomosis. The scheduled maturation anastomosis is made in two steps. The first step is to close the colonic stump, this can be done by abdominal or transanal approach. The colon is closed with interrupted sutures of 2/0 polyglactin 910, the mucosa layer must be kept in everted position (Fig. 1). The sutures are made every 3–4 mm to ensure the absence of leakage (Fig. 2). The second step is always done by transanal access. The rectal

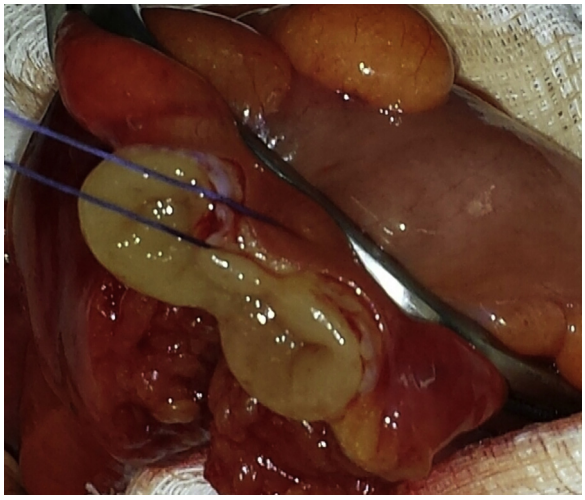

Fig. 1 – Suture technique to evert the mucosa.

Fig. 2 – Final appearance after colonic closure.

stump must be washed with saline. The colonic extremity is then pulled and positioned against the rectal stump (Fig. 3). The union of the stumps is made with 4 or 5 sutures, leaving them untied until they have been correctly placed. Each suture takes a deep bite of the posterior rectal border, traverse the full thickness of the colon and takes another bite of the anterior rectal border. To tie the sutures is necessary to pull the retractor slightly. Fig. 4 shows the last suture to be tied. When the rectum has a larger diameter than the colon, the surplus is closed. The leak test was not performed. After finishing the anastomosis, a diverting ileostomy or colostomy is performed.

Normally in 30–40 days after surgery begins spontaneous opening of the anastomosis.

The anastomosis surveillance is made by digital examination and anoscopy in the office. Fig. 5 shows the final appearance of this anastomotic technique.

Fig. 3 – Positioning the colon end.

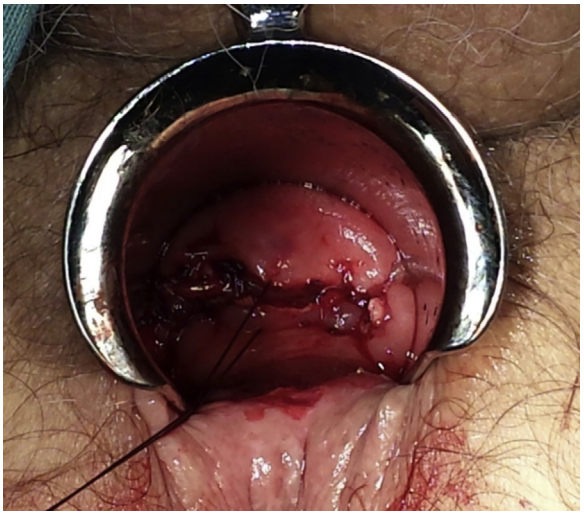

Fig. 4 – Tying the last suture.

Results

In all operated patients the anastomosis was performed successfully. Patients were discharged between the fourth and eighth postoperative day. There were no septic complications. The first six patients were evaluated with abdominal X-ray to investigate possible gaseous distention of the colon without drainage through the ileostomy, in all, the presence of small amount of gas in the colon was noticed. Some patients reported small gas elimination after the 30th postoperative day. There was no readmission.

Two of the patients, who underwent intersphincteric resection, had moderated stenosis of the anastomosis and were treated with digital dilatation in the office. All patients had their diverting stoma closed.

Discussion

There was suspicion that the closed colon could distend by gas in patients with diverting ileostomy, in this series the colonic content remained inert, this confirms the theory that, without

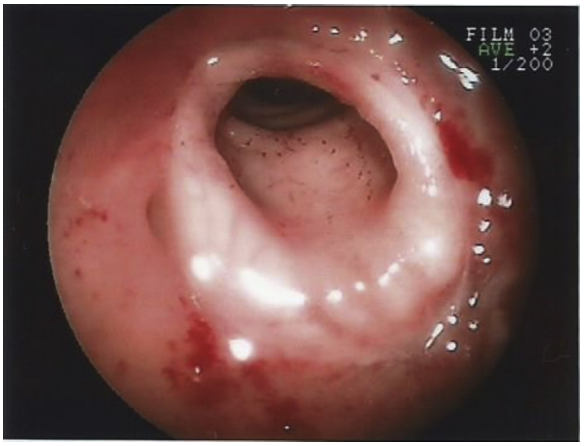

Fig. 5 – Final aspect after spontaneous opening.

the supply of substrate, the bacterial growth and the production of gas are ceased.[6]

This new technique may not be done without diversion, but, even if a stapled anastomosis is performed, a temporary diverting stoma must be formed during rectal excision and low colorectal anastomosis, as suggested in a randomized study.[7] After low anastomosis dehiscence, some patients are left with permanent ostomy, because the techniques currently used are not feasible in all cases. Lefevre et al.[8] studied redo surgery in 33 patients, the rate of pelvic sepsis was 27%, in two patients the redo surgery was impossible to perform due to multiple adhesions and difficulties with the pelvic dissection leading to a bladder injury. In our four cases of redo surgery, the way to open the rectum stump was using a bougie, we did not need to dissect totally the bladder from the rectal stump. The dissection must be done until the colonic and rectal stumps have similar widths. This new technique appears to be feasible in any circumstance because the union of the two ends is made with a few sutures, just for positioning. The maneuvers that ensure no pelvic sepsis are the proper closure of the colonic stump and cleaning of the rectal stump.

In very low-lying rectal cancers the distal resection margin is best given by sectioning the rectum under transanal approach and the anastomosis is made in a hand-sewn manner. The techniques we have already used are the Park's technique[9] and the simple suture without mucosectomy. The new technique seems easier to do and works well when the two extremities have different diameters. If using colonic pouch or coloplasty, the anastomosis may be done in the same way as straight anastomosis.

The two cases of stricture in this series were in anastomosis at the pectin line, the prompt improvement with digital dilatation suggest that no sepsis occurred in the anastomotic area.

The technique with maturation delay, described by Turnbull[10] and Cutait,[11] was evaluated by many authors. It demands splenic flexure dissection, a longer hospital stay and a reoperation. The incidence of complications, like septic and colonic necrosis, may have caused its little use currently. The impossibility of pulling the colon through a fibrotic anal canal in our first case was what inspired me to do the technique I am describing here.

Conclusion

The use of scheduled maturation in low colorectal and coloanal anastomosis is feasible in difficult cases. This technique seems to prevent pelvic sepsis by maintaining colonic contents without contact with the healing area of the two ends. Surely this study has the limitation of small number of patients. There is a need for other series to validate the feasibility and results of this technique.

Conflicts of interest

The author declares no conflicts of interest.

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