DOES COLOSTOMY RESTORATION INCREASE THE RISK OF DEVELOPING A SUBSEQUENT RECTAL CANCER?

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ORIGINAL PAPER

Résumé

La restauration de la colostomie augmente‑t‑elle le risque de développer un cancer rectal postérieur?

Introduction. Au cours des cinq dernières années (du 1er janvier 2013 au 31 décembre 2017), nous avons observé 7 cas de cancer du rectum, développés chez des patients ayant subi une inversion du stoma il y a deux ans, pour différentes affections.

Méthodes. Nous avons étudié tous les patients présentant une inversion de la colostomie hospitalisés à la
**Introduction**

There are lots of particular situations that require, at the first time of operation, colostomy diversion instead of colic anastomosis, with high risk of dehiscence. The colostomy is often a temporary procedure, those patients being re-operated to re-establish the normal digestive continuity, at a variable time interval. It is well known that permanent colostomy affects the quality of life and social reintegration. Self-management support is broader than health services alone. Thus, the wish of reversal is justifiable. But is this costless?

In literature, stoma reversal itself has not been reported as a risk factor for rectal cancer. There is a recent article that shows an increased risk of infection with *Clostridium difficile* after stoma restoration.

**The objective of the study** was to analyze whether the restoration of a total digestive diversion, well-known to improve life quality, also increases the risk of malignancy.

**Material and methods**

The study took place in the Sf. Pantelimon Clinical Hospital, Bucharest, Romania. After obtaining approval from the Ethical Committee of „Sf. Pantelimon Clinical Hospital“, Bucharest, Romania, we retrospectively analyzed 83 patients who underwent stoma reversal in the Surgery Clinic of our hospital over a 10 years period, between January 2008 and December 2017 (cohort A). All the patients signed an informed consent.

The inclusion criteria were represented by all patients who underwent colostomy restoration in our centre, between January 2008 and December 2017, no matter the primary diagnosis was, except rectal cancer. We excluded patients with rectal cancer who underwent Hartmann procedure, followed by restoration, because a late development of rectal cancer could be interpreted as a local recurrence in these patients.

We compared the data with those of a similar cohort of 72 patients from the same period, who underwent only Hartmann procedure, without restoration (cohort B). For the similarity of the cohorts, we neither included in cohort B patients with rectal cancer. The lack of reversal was due to several reasons: age, a short rectal remnant segment, other important co-morbidities, the evolution of malignant disease itself.

Regarding the method, our study is retrospective, observational. We collected the data from the patient charts, laboratory results, supplemental imaging studies (abdominal ultrasound, computed tomography - CT), surgery recordings, histological results.

**Results and discussion**

Cohorts A and B are relatively similar regarding sex ratio and age distribution. The medical cause for primary surgical procedure was mostly neoplastic disease for cohort B.

Thus, sex ratio (M:F) was 1.08 for cohort A, respectively 1.11 for B. The mean age was 60.6 years for group A and 64.7 years for group B.

The age distribution of patients is shown in Figure 1. We can notice a slightly higher prevalence of elder ages in group B, that being the very reason of no-reversal plan in some cases. Associated diagnosis, with high anesthetic and operative risks, also determined us to keep some colostomy as definitive, as it was for some patients with impaired renal function. The other causes for a definitive colostomy...
were: patient refuse for a reintervention, metastatic
disease, colostomy for fistula, malignant adhesion
syndrome.

The optimal time for stoma reversal is dis-
cussed in literature. Our time was 3-9 months for
non-neoplastic disease, respectively 12-36 months
for neoplastic disease. Time to stoma closure is
often nearly doubled when patients underwent adju-
vant chemotherapy.

The causes of primary intervention with termi-
nal colostomy are mentioned in Table 1 (neoplastic
and non-neoplastic causes). The neoplastic disease
(sigmoid or descending colon adenocarcinoma) was
present in 45 patients of group B (62.5%), compared
to 37 patients from cohort A (44.5%). The main rea-
son of no-reversal was the malignant disease. A free
disease interval of minimum 12 months is the best
timing for colostomy restoration. Our option for all
the 83 reversals was laparotomy, the rate of laparo-
scopic stoma reversal after Hartmann procedure be-
ing low in literature, as well.

Among the rare cases of temporary colostomy,
followed by restoration, there were two cases of sig-
moid invagination in elderly, which is a rare condi-
tion. Women pelvic surgery has definitely some par-
ticularities. In one case of non-reversal cohort (B),
we confronted with a uro-vaginal fistula, a condition
hard to manage. A vulvar squamous carcinoma was
noted in a patient, that required adjacent surgical
treatment.

All the patients with stoma reversal were sched-
uled for follow up visits at 1 year, 2 years, 3 and 5
years intervals. We diagnosed 6 cases of new de-
veloped rectal cancer between 2013 and 2017. The mean
interval of primary diagnosis after reversal time was
43 months (with limits 24 and 60 months).

All the 6 cases underwent preoperative radio-
therapy. 3 cases achieved complete clinical remission
(clinic and at magnetic resonance imaging – MRI)
after radiation, from which one of them underwent
an anterior rectal resection with colostomy; the other
two refused the surgical treatment. Thus, for those
two we proposed the “watch and wait” management.
All the patients had a good evolution at one year and
two years follow up.

Another three cases achieved only partial remis-
sion after radiotherapy. They were referred to surgical
interventions: one low anterior rectal resection and
two abdominoperineal resections, all followed by co-
lostomy.

From cohort B, we encountered only one case of
rectal cancer at 16 months after a primary sigmoidec-
tomy with terminal colostomy for acute diverticulitis.

Comparing the results of developing rectal can-
cer – 6 cases in cohort A (7.2%) vs. one case in cohort
B (1.38%), the difference we found is statistically sig-
nificant.

The main limits of this study are related to the
lack of long time follow-up of several patients.

We could not establish whether the onset of sub-
sequent rectal cancer in these patients was preceded
by the existence of rectal adenomatous polyps that
transformed. It would be a valuable issue in a fu-
ture prospective study.

**Conclusions**

We noticed an increased risk of subsequent rec-
tal cancer in patients with stoma reversal. This could
be related to aggressive substances from stool (free radicals), maintaining of alimentary habits that led
also to primary neoplasm, or malignant degenera-
tion of a pre-existent rectal adenomatous polyp. We
The mean time of onset of rectal cancer after stoma reversal was 43 months. All the patients developed rectal cancer after a minimum two years free time interval from restoration. That excludes either a local recurrence, or a synchronous rectal neoplasm from the very first time.

We strongly recommend annual control by recto-sigmoidoscopy both in patients with terminal permanent colostomy and in those with stoma reversal, in order to early discover a subsequent rectal cancer. As well, both after colostomies in emergency conditions for different diagnosis, and before reversal procedures, we recommend to perform a rectoscopy or a rectosigmoidoscopy to diagnose and endoscopically resect the polyps eventually present.

### Compliance with Ethics Requirements:

"The authors declare no conflict of interest regarding this article"

"The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study"

"No funding for this study"

### REFERENCES


### Table 1. Diagnosis at the time of the first intervention

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Cohort A</th>
<th>Cohort B</th>
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<tbody>
<tr>
<td>Sigmoid/descending colon neoplasm</td>
<td>37</td>
<td>45</td>
</tr>
<tr>
<td>Acute diverticulitis</td>
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<td>16</td>
</tr>
<tr>
<td>Sigmoid volvulus</td>
<td>7</td>
<td>4</td>
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<tr>
<td>Infectious colitis, ulcerative colitis</td>
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<td>1</td>
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<tr>
<td>Colic perforation</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Another rare causes</td>
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<td>6</td>
</tr>
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