Right colectomy for cancer: validity of laparoscopic approach

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Introduction

The laparoscopic (or video-assisted) approach, for right colectomy is considered, today, a surgical procedure with wide demonstration of feasibility and full safeness (19, 22, 24). The phases of the learning curve are also well defined (2).

Instead, there are still a lot of controversies as to the reliability of the procedure in relation to the results in the distance about the neoplastic pathology.

The aims of the study are: confirming the feasibility and the validity of the procedure through the relevant aspects of the postoperative course, the morbidity and the mortality; evaluating the possible influence on the results at a distance in the neoplastic pathology, through the personal data, and, above all, the literature examination but also through some references about the immunological alterations.

Material and method

In the period 1998-2002 we treated 17 patients with carcinoma of the right colon, subdivided into two groups: 7 patients were operated with mininvasive approach (Laparoscopic-Assisted Right Colectomy: LARC) and the other 10 were treated in a traditional way.
Abstract

Aim: Laparoscopic assisted right colectomy for carcinoma is a procedure with demonstrated feasibility. We want to evaluate the advantages.

Material: In the period 1999/2002 we have executed 7 laparoscopic right colectomy for carcinoma. We have compared the results with one group of 10 patients traditionally operated in the period 1998/2002. In both groups the oncologic staging was almost the same.

Results: Immediate results: operative time was 240’ for laparoscopy vs. 150’ for open operation; no anastomotic dehiscence for laparoscopy vs. 1/10 for open; no broncho-pulmonary-thrombotic complications for laparoscopy vs. 2/10 for open, but there was 1/7 wound infection for laparoscopy vs. 1/10 for open; the return to mobilization and normal diet was 3 days for laparoscopy vs. 7 days for open; the postoperative stay was 7 days for laparoscopy vs. 12 days for open.

Discussion: The two procedures did not condition differences neither in the extension of the resection and of the lymphectomy nor a different incidence of the anastomosis dehiscences. Differences were noted, in the operative time, in a more precocious mobilization with a minor use of analgesics, in a more rapid renewal of peristalsis and of feeding with a lower postoperative stay. These advantages are remarkable in our study, by reducing the postoperative morbidity. The very brief follow-up of almost 6 months, did not show a relapse of the disease in patients of both series.

Conclusion: In our experience, laparoscopic-assisted right colectomy confirmed evident advantages in the immediate postoperative period for the treatment of the colonic cancer. Key words: Right colectomy, cancer, laparoscopy.

In the data of these patients, it is evident the non prevalence of one sex over the other and their concentration in the VI and VII life decade.

The patients’ general conditions (cardiopulmonary and metabolic status) and above all, the subdivision into stages of the neoplastic disease (Tab. I) were similar in both groups.

We report the detailed technical aspects of the video-assisted laparoscopic surgical treatment: the dissection starts from the right parietocolic region, then there is the mobilization of the cecum and of the ascendent colon and of the last ileal loop. In this phase the cure is to respect the Toldt lamina to preserve the retroperitoneum and not to involve the right ureter in the operative field. The section of the hepatocolic ligament, the mobilization of the hepatic flexure, the separation of the gastrocolic ligament from the transverse colon complete the mobilization of the right colon and allow its separation from the duodenum, finishing, in this way, all the phase of the preparation of the operative field according to the criteria of the oncologic surgery.

The second phase correspond to the vascular section, by starting from the ileocolic vessels and proceeding with the vessels for the right flexure of the colon.

By tightening the mesentery, the vessels must be identified, isolated and linked.

In the same way the medium colic vessels can be prepared and dissected.

In our experience, in a few cases, we have also executed, the extracorporeal section of the ileocolic and colic vessels by means of the service mini-laparotomy (5-7 cm) in order to achieve a more accurate lymphatic dissection along the superior mesenteric vein.

In this way the surgical procedure is completed with a service mini-laparotomy (5-7 cm) in the right superior abdominal quadrant that allows the extraction of the operative specimen, the intestinal section and the extracorporeal ileocolic anastomosis, side to side manual, or end to lateral with stapler EEA n. 25.

The mininvasive surgical intervention, so codified, certainly offers the full warranty of the respect of all the rules of the traditional oncologic surgery: minimal touching of the tumour, correct section of the vessels, en bloc removal of the mesenteric nodes.

The laparotomic interventions were executed according to the standard technique.

Tab. I – LARC FOR CANCER. PATIENTS AND PROCEDURES UTILIZED

<table>
<thead>
<tr>
<th>17 carcinomas of the right colon overlappable for stadium</th>
<th>17 carcinomas of the right colon overlappable for stadium</th>
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<tbody>
<tr>
<td>Laparoscopic assisted right colectomy</td>
<td>Traditional right colectomy</td>
</tr>
<tr>
<td>(for carcinoma)</td>
<td>(for carcinoma)</td>
</tr>
<tr>
<td>7 patients (5 females - 2 male)</td>
<td>10 patients (6 females - 4 males)</td>
</tr>
<tr>
<td>Mean age 76 years</td>
<td>Mean age 73 years</td>
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<td>No conversions</td>
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<td></td>
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<td>Stadium I</td>
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<tr>
<td>Stadium II</td>
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</tbody>
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Ann. Ital. Chir., LXXV, 6, 2004
Results

The immediate postoperative results of the two groups of patients (treated one with the traditional laparotomic approach and the other with the video-assisted procedure) were compared. It is in evidence the longer time length of the laparoscopic procedure than the laparotomic intervention (240 minutes vs. 150 in mean), but this is well balanced by a shorter postoperative stay and by a better comfort.

The patients who underwent a LARC, had a more rapid resumption of the intestinal activity, of the alimentation, and, on the whole, a shorter hospital stay.

The differences between the two procedures about the postoperative morbidity were not very meaningful: a prevalence of bronchopneumonic and/or thrombotic complications (20% vs. 0%) was obvious in the patients that underwent the laparotomic access, because of a longer postoperative bed rest.

The differences in the anastomotic dehiscences and in the infections of the laparotomy were not so evident, and, however, not waited, because of the equality of the two procedures.

The operative mortality was absent in both groups (30 days) (Tab. II).

The medium term results about the supposed possibility of changing the evolution of the neoplastic disease, in case of laparoscopic approach can represent a better point of discussion.

We can consider the following criteria: local relapse of the neoplastic disease, lymphatic and distant metastasis, disease related to neoplasia; the possibility of port-site metastasis must be also added for the laparoscopic approach.

All the precautions were applied at the moment of the extraction of the operative specimen from the service laparotomy: slow desufflation through the trocars, toilet of the mini-laparotomy with iodopovidone solution, protection of it with laparotomic towels.

In this experience we did not report port-site metastasis.

The least follow-up was 24 months, up to 5 years in some cases. We register one decease related with the neoplasia in a patient undergoing an open intervention, 10%, 14 months later after the intervention.

One case (10%) of local relapse of the disease appeared in a patient operated in a traditional way. Among the patients treated with mininvasive procedure, one case of hepatic metastasis (14.2%) (Tab. III) must be included.

The two surgical procedures are essentially overlappable on the basis of the analysis of these medium term results.

Discussion

The immediate results, related to the control of the postoperative pain, to the precocious resumption of peristalsis and of alimentation, to the mobilization and, so, in favourable cases, to a possible precocious hospital dismissal of the patient, are really and completely favourable to the video-assisted approach in the treatment of the right colon neoplasia.

The analysis of the numerous and old literature, about this subject, widely confirms the so favourable results (23, 6, 21).

We can believe that a more comfortable and shorter postoperative course is an unquestionable advantage for the patient.

The risk and the prevalence of bronchopneumonic and thrombotic postoperative complications related to a lengthened bed rest, are reduced.

The shorter hospital stay and the minor number of postoperative complications help reduce the total cost of the therapeutic treatment.

There is also the postoperative morbidity of the intervention: technical problems in tying and cutting the ileocolic and right colic vessels, such as haemorrhages, haematomas, lesions of the superior arterious-venous mesenteric axis, anastomotic dehiscences, infections of the surgical wound.

Besides it must be added the operative mortality.

Also for these aspects of surgical technique, the available data in literature widely confirm the overlap of the results in both procedures (14, 10, 26).

In the field of the immediate results, the data that we had, are widely confirmed by the literature. The mininvasive approach allows a sure and ready resumption of the intestinal function by eliminating and/or reducing...
the exposition of the peritoneal cavity and of the visce-
ra, and the absence of a wide laparotomy reduces the
postoperative pain significantly. Moreover, the laparosco-
pic and/or video-assisted surgical times reproduce the
operative phases of the traditional approach: so, the spe-
cific postoperative morbidity will not be different from
the laparotomic intervention.
In fact, in both procedures, the following parameters are
the same: the extension of the resection, the oncologi-
cally corrected lymphectomy, the safeness and the reli-
bility of anastomosis (extracorporeal, so identical in both
procedures), the possibility to utilize the no-touch tech-
nique, and its validity should be still demonstrated. The
consensus on these aspects is wide in literature (18, 14,
8, 1, 15, 25).
The problems of an equivalent radicality of resection
between the two procedures are strictly connected with
these technical aspects.
The opinion of radicality is based on the distance of the
resection lips from the tumour, on the lymphatic dis-
section and on the contamination for diffusion of neo-
plastic cells in the intestinal lumen or on the surroun-
ding organs.
In both our groups the distance from the resection lips
from the tumour was always wider than 5 cm; the num-
ber of the isolated and examined mesenteric nodes was
the same.
The control of the third parameter, that is the intrape-
ritoneal and/or intraluminal diffusion of neoplastic cel-
s, is surely very problematic and uncertain because it is
also caused by the advanced stage of the neoplasia
(tumour invading the sierosa).
In application of all the prescribed precautions to avoid
the intraperitoneal diffusion of the neoplastic cells (care-
ful manipulation of the operative specimen, cleanliness
of the operative field with iodopovidone solution and
also intraperitoneal chemotherapy after laparoscopic
access) the laparoscopic techniques do not show an
increased risk of diffusion of neoplastic cells (12).
The possibility of port-site metastasis in the laparosco-
pic approach is argument under discussion. We can belie-
ve that the event is possible but the preventive methods
and the accurate application of all the procedures widely
described in literature are very effective (2, 4, 3); in this
way the additional risks of the laparoscopic approach are
cancelled in comparison with the traditional operation
where neoplastic implantation on the laparotomic wound
are also described (15).
The central problem of the laparoscopic approach in the
treatment of the colon carcinoma is surely referred to
the results in the distance. In fact confirmations are nee-
ded that in the treatment of the neoplastic disease the
mininvasive and laparoscopic approaches produce an
effect that modifies its natural history, improving the
results in terms of survival. In our not numerous and
only retrospective experience the available medium term
results are similar in both forms of approach. In fact,
the data communicated in literature at the moment,
widely confirm the same medium and long term results
between the two procedures.
Moreover, favouable data for the laparoscopic approach
are present in many studies: however, there are no con-
nclusive evaluations at the moment (3, 15, 16, 17, 18,
19, 20, 13) and further control studies are needed.
The motivation of differentiated results in the distance
between the mininvasive and open procedures was sear-
ched in a different immunological response to the sur-
gical intervention. This problem is surely very compli-
cated in its completeness.
In particular the most difficult but the most significant
phase is represented by the passage from evaluating a dif-
ferent immunological answer to singling out the few and
favourable specific modifications of the entire immunolo-
gical order induced by the mininvasive approach, with the
effect of a better control of the neoplastic disease.
At present, a few points of the immunological modifica-
tions in mininvasive approaches are partly defined. The
systemic immunity seems more conserved, or, at least dif-
fences were not found in the systemic immunologic
response in course of laparoscopic approach compared with
the open procedure, the cell-mediated immunity is less
altered with the laparoscopic approach and the activity of
the cytokines is reduced, whereas the intraperitoneal cell-
mediated immunity is influenced by the pneumoperito-
neum with CO2 (11, 21, 22, 23, 24). After all these
results are still incomplete and not univocal.

Conclusions

In the treatment of the carcinoma of the right colon,
both the video-assisted and the traditional laparotomic
procedure are to be considered overlappable as to the
operative technique, the extension of the resection, the
lymphectomy and the specific postoperative morbidity
(anastomatic dehiscences, problems connected with the
surgical technique).
Instead, the differences are obvious in the operative times
(much longer in the laparoscopic approach), in the use of
analgesics, in the resumption of the intestinal function, in
the mobilization of the patient and in the postoperative
stay (all favourable elements for the laparoscopic approa-
ch). In our experience, the LARC is a safe and feasible
procedure, the obvious advantages are confirmed in the
immediate postoperative period in the treatment of the
colon carcinoma. A more rapid and comfortable posto-
perative course with minimal complications is surely very
advantageous mostly for the elderly patients.
In this laparoscopic series, the results in the distance are
favourable with no local relapse of disease, even if they
are retrospective and with few patients.
The utilization of the LARC in the treatment of the
colon carcinoma does not close the discussion on the
distant results that are favourably influenced by the
minimvasive approach, above all awaiting further evaluations and confirmations.

Bibliography


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