

Colon

# **Extracorporeal Versus Intracorporeal Anastomosis for Laparoscopic ~~btomosis~~**

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**Table 2.**  
Operative Data

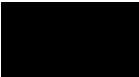
|                          | IA*<br>n = 23 | EA*<br>n = 57 | P Value |
|--------------------------|---------------|---------------|---------|
| Division of mesentery    |               |               |         |
| Intracorporeal           | 23            | 26            |         |
| Extracorporeal           | NA            | 16            |         |
| Intra/extra combined     | NA            | 15            |         |
| Operative time (min)†    | 190 (100–340) | 180 (60–320)  | NS      |
| EBL (mL)†                | 50 (20–300)   | 100 (25–700)  | 0.09    |
| Incision length (cm)†    | 4 (3–5)       | 5 (4–8)       | 0.004   |
| Number of nodes removed† | 18 (8–35)     | 17 (3–40)     | NS      |
| Length of stay (days)†   | 4 (2–14)      | 4 (2–17)      | NS      |

\*IA = intracorporeal anastomosis; EA = extracorporeal anastomosis.

†Median values.

## RESULTS

Between September 2004 and May 2008, eighty patients underwent successful laparoscopic right hemicolectomies. Demographic and pathologic data for the study cohort are listed in **Table 1**. In 57 patients, an extracorporeal anastomosis was performed, while 23 patients had an intracorporeal anastomosis. Short-term outcomes includimes



initially discharged on postoperative day #7, but readmitted on postoperative day #12 for acute abdomen. A significant amount of ischemic small bowel proximal to the anastomosis due to vascular compromise was found, and the patient developed multisystem organ failure. Injury to the SMA/SMV during the dissection or forceful stretching of the mesentery may have caused this fatal bowel ischemia; however, we cannot conclude whether this was related to the anastomotic technique.

One patient in the IA group was converted from an extracorporeal approach due to a short mesentery and a high BMI of 32 kg/m<sup>2</sup>, but was counted in the IA group.

Late complications consisted of 4 (7%) incisional hernias in the EA group, 2 (8.7%) in the IA group, and 1 internal hernia requiring reoperation 6 months after surgery in the EA group. The 2 incisional hernias in the IA group occurred in the only 2 patients in whom the specimen was not removed through a Pfannenstiel incision.

## DISCUSSION

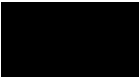
The literature is limited comparing outcomes between the different surgical techniques in laparoscopic colon resections. Bernstein et al<sup>15</sup> compared laparoscopic-assisted versus completely laparoscopic colectomies and found no difference in the length of hospital stay or the duration of postoperative ileus. However, no right hemicolectomies were included in the completely laparoscopic group. Only 4 studies describe their experience with intracorporeal ileocolonic anastomosis.<sup>7,8,16,17</sup> The series by Franklin et al<sup>8</sup> is the largest series comparing intracorporeal anastomosis for right colon resections (n=82) with 10 cases with extracorporeal anastomosis. Their intracorporeal approach was found to be safe and feasible with similar operative times and complication rates. These findings are confirmed by Bergamaschi et al<sup>17</sup> who recently described the short-term outcomes of 111 intracorporeal right colectomies.

However, the most commonly applied technique for creation of an anastomosis after laparoscopic right colectomy remains an extracorporeal, stapled ileocolonic anastomosis. In this laparoscopic-assisted technique, the mesentery and ileocolic vessels can be either divided intra- or extracorporeally. Some authors<sup>18</sup> argue that, once mobilized, the right colon is a midline structure and can be easily exteriorized through a 4-cm to 6-cm midline incision that directly overlies the base of the ileocolic pedicle, allowing

for easy proximal ligation. The limitations of this approach include poor exposure of the ileocolic pedicle in obese patients through a small incision as well as limitations in regards to the location of the incision. Difficult exposure of the base of the mesentery could lead to compromise of a high mesenteric ligation necessary for optimal oncologic outcome. Therefore, many series describe the technique of intracorporeal high-vessel ligation combined with an extracorporeal anastomosis.<sup>4,5,9-13</sup> We did not see a difference in the number of lymph nodes in either group; however, our numbers may be too low to detect any significant difference.

The creation of the anastomosis in an obese patient may be facilitated by an internal approach, because this technique eliminates the need to exteriorize heavy mesentery and large specimens through a small incision in a thick abdominal wall. Raftopoulos et al<sup>16</sup> compared laparoscopic right hemicolectomies with intracorporeal anastomosis.





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