# Laparoscopic surgery for complex and recurrent Crohn's disease

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EDITORIAL

# Laparoscopic surgery for complex and recurrent Crohn's disease

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## Abstract

Crohn's disease (CD) is a chronic inflammatory disease of digestive tract. Approximately 70% of patients with CD require surgical intervention within 10 years of their initial diagnosis, despite advanced medical treatment alternatives including biologics, immune suppressive drugs and steroids. Refractory to medical treatment in CD patients is the common indication for surgery. Unfortunately, surgery cannot cure the disease. Minimally invasive treatment modalities can be suitable for CD patients due to the benign nature of the disease especially at the time of index surgery. However, laparoscopic management in fistulizing or recurrent disease is controversial. Intractable fibrotic strictures with obstruction, fistulas with abscess formation and hemorrhage are the surgical indications of recurrent CD, which are also complicating laparoscopic treatments. Nevertheless, laparoscopy can be performed in selected CD patients with safety, and may provide better outcomes compared to open surgery. The common complication after laparoscopic intervention is postoperative ileus seems and this may strongly relate excessive manipulation of the bowel during dissection. But additionally, unsuccessful laparoscopic attempts requiring conversion to open surgery have been a major concern due to presumed risk of worse outcomes. However, recent data show that conversions do not to worsen the outcomes of colorectal surgery

in experienced hands. In conclusion, laparoscopic treatment modalities in recurrent CD patients have promising outcomes when it is used selectively.

**Key words:** Crohn's disease; Laparoscopic surgery; Complex disease management; Recurrent Crohn's disease



**Core tip:** Despite advanced medical treatment alternatives including biologics, immune suppressive drugs and steroids, approximately 70% of patients with Crohn's disease (CD) require surgical intervention within 10 years of their initial diagnosis. Forty percent to 50% of patients who had an index surgery for CD require a reoperation for recurrent disease in 10 years. Index surgical treatment type and medications used after index surgery appears to be factors related to recurrence risk of CD. In experienced hands, laparoscopic approach has promising outcomes in patients with recurrent CD when it is used selectively.

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Crohn's disease (CD) is a chronic inflammatory disease that can develop any part of the digestive tract. CD usually arises at the terminal ileum[1]. Despite advanced medical treatment alternatives including biologics, immune suppressive drugs and steroids, approximately 70% of patients with CD require surgical intervention within 10 years of their initial diagnosis[2,3]. Surgery is warranted for management of medically refractory CD. Surgical treatment overcomes emergent issues, improves symptoms and patient's quality of life. Unfortunately, there is no cure for CD and it tends to recur during the disease course. Recurrent CD is described based on treatment type including medical, endoscopic or surgical.

Endoscopically documented recurrent CD can be up to 93% within one year following intestinal resection[4], while clinically symptomatic recurrence is usually around 30% at first 3 years after surgery[5]. Forty percent to 50% of patients who had an index surgery for CD require a reoperation for recurrent disease in 10 years[6,7]. Index surgical treatment type and medications used after index surgery appears to be factors related to recurrence risk of CD[2,8-10]. CD patients can be good candidates for minimally invasive treatment modalities due to the benign nature of the disease especially at the time of index surgery. However, use of laparoscopy in patients with complex CD such as extensive fistulizing or recurrent disease requiring surgical treatment is controversial.

Majority of the surgical indications for recurrent CD are also the conditions complicating application of laparoscopic surgery such as intractable fibrotic strictures with obstruction, fistulas with abscess formation and hemorrhage[11,12]. Based on the extension and severity of disease, surgical options including strictureplasty, small bowel resection, ileocolectomy, internal bypass, partial/total colectomy and proctectomy may be performed laparoscopically[11,13]. In selected CD patients, laparoscopic surgery is safe, feasible and provides better outcomes compared to open surgery[14-17]. While operative times have decreased with increased experience, operative mortality is almost none and morbidity rates ranged from 10% to 40% in patients undergoing laparoscopic surgery for recurrent CD[17-19]. Postoperative ileus seems as the most common complication which may strongly relate excessive manipulation of the bowel during dissection[13]. Some surgeons believe that laparoscopic approach may also provide the well-known advantages of minimally invasive surgery such as reduced postoperative pain, lower morbidity, shorter hospital stay, earlier return to daily activity, and improved quality of life in patients with recurrent CD (Table 1).

Unsuccessful laparoscopic attempts requiring conversion to open surgery have been a major concern due to presumed risk of worse outcomes and conversion rates tend to be higher in laparoscopic operations for recurrent CD[20]. Conversion to open surgery rates varies between 6.7% and 42.3% in recurrent CD cases[21,22]. The most common cause of conversion was adhesions[13,23]. Having multiple resections, intraabdominal abscess and phlegmon are the other factors leading conversion in CD patients[22]. This clinical situation raises concerns on conversion related postoperative morbidity[24]. However, recent data show that conversions do not to worsen the outcomes of colorectal surgery in experienced hands[25]. The data regarding to operation type and disease characteristics especially related to index resection for CD are heterogeneous in the previous reports[26,27]. Outcomes after laparoscopic surgery for recurrent CD vary due to selection bias and experience of the surgeon[27,28]. Laparoscopic surgery showed better outcomes with shorter length of hospital stay compared to open surgery in selected cases[28], while laparoscopic approach did not provide expected benefits over open surgery in some series[13,27]. Although wound complications are reduced, the benefits of laparoscopic surgery in patients with a history of previous open intestinal resection through midline laparotomy seem questionable[13]. As an emerging technique, single incision laparoscopy can be performed for recurrent CD[29,30]. Single incision laparoscopy can be promising in complex cases by minimizing overall wound size, decreasing unnecessary adhesiolysis for secondary port placements and it affords the surgeon the opportunity to inspect the density of adhesions through port site and lead the surgeon to convert the operation preemptively if laparoscopic surgery seems unfeasible[31].

**Table 1 Perioperative outcomes laparoscopy for complex and recurrent Crohn's disease**

| Ref. | Year | Patients surgery (*n*) | Conversion to open surgery (*n*) | Operative duration (min) | Hospital stay (d) |
|---|---|---|---|---|---|
| Wu *et al*[17] | 1997 | CL: 14 | 1 | 152 | 4.8 |
| | | RL: 10 | 2 | 144 | 3.9 |
| | | PL: 22 | 2 | 139 | 4.5 |
| | | O: 70 | (-) | 202[a] | 7.9[a] |
| Hasegawa *et al*[28] | 2003 | RL: 16 | 2 | 210[a] | 6.0 |
| | | PL: 45 | 3 | 180 | 8.0 |
| Moorthy *et al*[22] | 2004 | RL: 26 | 11 | 118 | 8.0 |
| | | PL: 31 | 4 | 127 | 7.0 |
| Goyer *et al*[32] | 2009 | Comp: 54[b] | 20[a] | 214[a] | 8.0 |
| | | Uncomp: 70 | 10 | 191 | 7.0 |
| Chaudhary *et al*[21] | 2010 | RL: 30 | 2 | 125[a] | 3.0 |
| | | PL: 29 | 3 | 85 | 3.0 |
| Brouquet *et al*[27] | 2010 | L: 29 | 9 | 215 | 9.0 |
| | | O: 33 | | 226 | 9.0 |
| Pinto *et al*[18] | 2011 | RL: 50 | 16 | 201 | 7.4 |
| | | PL: 80 | 15 | 182 | 6.7 |
| Aytac *et al*[13] | 2012 | L: 26 | 3 | 169 | 6.4 |
| | | O: 26 | | 158 | 6.9 |
| Huang *et al*[20] | 2012 | RL: 48 | 10 | 100 | ND |
| | | PL: 82 | 14 | 106 | ND |

[a]Bold: Statistically significant; [b]27 of these patients had recurrent disease. CL: Laparoscopic surgery for complicated disease (phlegmon, abscess); PL: Laparoscopic surgery for primary disease; RL: Laparoscopic surgery for recurrent disease; L: Laparoscopic surgery; O: Open surgery; Comp: Complicated; Uncomp: Uncomplicated.

In experienced hands, laparoscopic approach has promising outcomes in patients with recurrent CD when it is used selectively. There is a need for new studies which focus on identification of proper patients who may benefit from laparoscopic surgery for recurrent and complex CD.

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