Modern Surgery: Technical Innovations

Laparoscopic Ileogastrostomy for Morbid Obesity

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This paper describes the technique of laparoscopic ileogastrostomy which we developed during the summer of 1993. The procedure is identical to that of our 'open' ileogastrostomy except that it is performed laparoscopically. The aim of the surgery is to increase ambulation of the patient, while reducing pain, morbidity, and the chance of apnea (due to impaired breathing in the first 24 h following conventional surgery), by carrying out surgery for the morbidly obese person through a laparoscope. This form of laparoscopic surgery may be completed within 4 h and, as our staff gains more experience with laparoscopic ileogastrostomy, we expect patient stays to be 2-3 days in length. Pulmonary function tests at 24 h show a great advantage in favor of the laparoscopic approach. Response of the medical team to this procedure was that it was more time-consuming and demanding than open surgery.

Key words: Laparoscopy, ileogastrostomy, morbid obesity

Introduction

In this paper we examine the place of laparoscopic surgery for the morbidly obese. As we are all well aware, the advent of minimal access surgery has triggered the reassessment of widely accepted 'open' procedures, and obesity surgery is no exception. Today, several laparoscopic procedures have proven more efficacious (ie. reduce morbidity, costs associated with length of stay, recuperative time) than long-standing approaches.

Ileogastrostomy has been performed at our institu

Figure 1. Jejunoileal bypass, with drainage of the by-passed small bowel into upper stomach.

tion for over a decade (Figure 1) and is recognized as an acceptable operation for morbid obesity. Follow-ups of large patient groups have examined postoperative complications, biochemical changes, putative mechanisms for weight loss, liver function and quality of life changes. Due to our significant experience with this procedure, we felt that we should investigate the potential benefits and drawbacks associated with laparoscopic surgery. Such potential benefits include improved pulmonary function (reduced apnea), lower incidence of deep vein thrombosis, and lower verotral
herniation. On the other hand, increased intraoperative complications, potential for joining wrong ends of bowel, and higher initial cost per procedure represent possible negative factors.

**Surgical Procedure**

In all previous 'open' procedures, a jejunoileal bypass with drainage of the bypassed small bowel into the upper stomach, was performed. In our laparoscopic ileogastrostomy procedure three 1.2 cm ports and three 0.5 cm ports, in the pattern of a horizontal chevron are inserted for access. (Figure 2) The initial port is always in the left para-umbilical area. The caecum should then be identified and 50 cm of stretched bowel should be measured off on the ileum from the ileocaecal valve using a 12.5 cm length of silk as a ruler. The bowel is scarred at this point with cautery and a window formed in the mesentery using bipolar cautery and scissors. Thickness of the bowel is measured, appropriate staple selection made and the bowel divided with a 2.5 cm triple staple device at this point. The distal end is marked 5 cm from the cut end similarly marked with one staple 5 cm from the end. Attention should then be turned to the mesentery which is divided almost to the base using the bipolar cautery and scissors, catching and cauterizing small pumpers with forceps and monopolar cautery. Any blood is quickly washed and rinsed away before it clots.

Next, the bowel at the ligament of Trietz is identified and confirmed by visualizing the inferior mesenteric vein shining through the peritoneum at the fourth part of the duodenum. Stretched small bowel is measured off 25 cm distal to the ligament of Trietz using the 12.5 cm length of silk as a ruler, and a scar created on the bowel with cautery to mark the spot. A small window is made in the mesentery, the width of the bowel determined using the measuring device, appropriate size of staples selected and the bowel stapled and divided (three rows of staples) at this point. The proximal bowel is marked with two tacking staples 5 cm from its end, and no mark put on the distal end. The proximal jejunum and distal ileum (each with two tacks on them for confirmation of identity), are then lined up in parallel and a small opening made in each with cautery, the width of the bowel determined visually, and the 2.5 cm staple gun applied and fired, checking that no other tissue is included in its grip and that the anastomosis is on the anti-mesenteric side. After a check for bleeding the 2.5 cm gun is fired again to create a longer anastomosis, and after a check for bleeding the end of the bowel is closed completely with two other staple firings. The proximal end of the defunctioned bowel (no marker tack on it) is then tacked to the front of the anastomosis to prevent later intussusception, which also closes the small mesenteric defect.

The defunctioned small bowel is manipulated over to the patient’s right to prevent an internal hernia, and the distal end of the defunctioned bowel identified (one staple tack) and brought up to the stomach. The anastomosis there is anterior, high up on the greater curve of the stomach, lining the bowel up with care, using two staple firings for the length of the anastomosis and closing the remaining hole with two layers of running suture with 3 '0' chromic catgut. After a check for soundness of anastomosis and haemostasis, the operation is concluded by skin suturing with intracuticular 3 '0' vicryl. Usually no fascial sutures are required.

**Subjects and Methods**

All patients were morbidly obese (at least 45 kg above ideal weight). Full informed consent was obtained, as was permission for possible conversion to an open procedure. Staffing levels were comparable to an 'open' procedure and included two surgeons and a nurse with experience in laparoscopic surgery. Anaesthetics were increased due to the length of the procedure (4 h), low dose heparin was administered, and metronidazole 500 mg IV was given 1 h before surgery. A nasogastric tube was introduced during surgery and removed afterwards. Feeding was permitted.