Between 1992 and 2001, a total of 27 patients underwent PSH repair with relocation of the stoma to the opposite side of the abdominal wall. Of these, the operation was performed without a midline laparotomy in 11 patients (41%). There were no significant differences in age, gender, body mass index, and the duration of hernia between the non-laparotomy and laparotomy groups. Prior abdominal surgery was recorded for 3 patients in the group without a laparotomy and for 9 patients in the group with a laparotomy (p=NS). Although not quantified, patients in the non-laparotomy group were less likely to have significant intraabdominal adhesions. Conversely, patients in the laparotomy group had more advanced adhesions. The operative time was longer in the group with a laparotomy than in the group without [96.8 (50–220) minutes vs. 123.9 (45–360) minutes; (p=NS)], and the mean hospital stay was significantly less in patients without vs. with a laparotomy [5.5 (SD=1.6) days vs. 9.5 (SD=3.8) days, respectively; (p<0.05)]. There was only one recurrence in the group without a laparotomy compared to 3 in the group with a laparotomy. The mean follow-up periods were 36.8 and 56.6 months in the groups without and with a laparotomy, respectively. Postoperative complications included wound infection that occurred in 3 patients in each group.

Conclusions PSH repair with relocation without laparotomy was associated with a significantly shorter hospital stay, possibly due to the lack of a midline abdominal wound. It may not be feasible in patients with significant intraabdominal adhesions.

Key words Parastomal hernia • Stoma • Hernia

Introduction
Advances in sphincter-saving surgery have not eliminated the need for a permanent stoma. Parastomal hernia (PSH)
is an incisional hernia that occurs in the gap between the intestinal segment forming the stoma and the surrounding tissue. This is the most frequent complication following stoma construction [1]. Abdominoperineal resection with a permanent colostomy is still necessary in at least 11% of patients suffering from rectal carcinoma [2]. Nine to 58% of patients with a colostomy reportedly develop a parastomal hernia [3–8], while the incidence following ileostomy is 28% [9]. Indeed, Goligher [10] noted that because this complication is so commonly seen, it should be considered almost inevitable. Risk factors associated with PSH include obesity, prostatism, malnutrition, urinary obstruction, and chronic cough [1]. A large fascial incision and its localization with respect to the rectus muscle are important factors in the development of a hernia [11]. Several authors have observed a relationship between a stoma created in the transmuscular position (2.8%) or in a lateral position (26.1%) with respect to the muscle, and the subsequent development of a PSH [11–13].

PSH may be asymptomatic or induce symptoms that are mild or life threatening [14]. Indications for surgery can be emergent, such as in the case of strangulation, or elective for peristomal discomfort, difficulty with appliance application, and, rarely, cosmesis. The ideal surgical approach to PSH repair is still controversial. The available options include fascial repair, stoma relocation, and positioning of synthetic mesh. For initial PSH repair, stoma relocation is superior to primary fascial repair [9]. However, relocating a stoma to the contralateral side of the abdominal wall involves a laparotomy with its potential complications. Mesh repairs have better results than primary repairs, but are associated with potential mesh-related complications [9]. For these reasons, we prefer relocation to mesh repair.

Therefore, the aim of this study was to assess the outcome of PSH repair and relocation to the opposite side of the abdominal wall, with or without a midline laparotomy.

**Materials and methods**

All patients who underwent PSH repair with relocation between 1992 and 2001 were identified from a clinical database. Data were collected by the retrospective review of medical records including age, gender, body mass index, American Society of Anesthesiology (ASA) score, number of previous abdominal operations, number of hernia recurrences, type of operation, duration of surgery, antibiotic use, postoperative complications, and duration of follow-up.

The study received institutional review board approval.

**Technique**

Preoperative preparation included routine full sodium phosphate mechanical bowel preparation and oral antibiotic preparation. Patients received deep vein thrombosis prophylaxis with pneumatic compression stockings and subcutaneous heparin. Cefotetan (2 gm IV) was administered to patients on call to operating room and was continued 24 hours postoperatively. All procedures were performed under general anesthesia with the patient in a supine lithotomy position.

The stoma was intraperitoneally mobilized until it was free from adhesions and a sufficient length could be delivered through the original stoma site without tension (Fig. 1a). The end of the stoma was closed using a linear cutting stapler (Ethicon Endosurgery Inc., Cincinnati, Ohio), to avoid intraperitoneal spillage of gastrointestinal contents (Fig. 1b). At this stage, if significant adhesions were encountered, a midline laparotomy was

![Fig. 1a-e Parastomal hernia repair and relocation.](image)