Early closure of temporary stoma of the small bowel

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SUMMARY
Aim — Transient small bowel stoma is usually closed 9-12 weeks after initial operation (late closure). Since these stoma have a poor physiological and psychological impact with frequent social consequences, we wanted to estimate feasibility and results of early closure of small bowel stoma.

Patients and method — From January 1998 to December 2001, 39 patients (21 women and 18 men, mean age: 64 years) with a transient small bowel stoma were elected for early closure. Early closure was performed only if the patient was in good condition, and without developing wound or general sepsis. In the other patients, the stoma was closed in the usually recommended delay (> 8 weeks). Fifteen patients had an early closure of their stoma in a mean delay of 10.0 ± 0.8 days after the initial procedure. Twenty-four patients had a late closure of their stoma in a mean delay of 11.4 ± 3.7 weeks.

Results — There were no postoperative deaths and no intestinal fistula. Four (10%) wound abscesses occurred and were managed without any surgical procedure, 3 in the early closure group (20%) and 1 in the late closure group (4%) (P = 0.85, NS). Time to recovered bowel activity and to resumed oral feeding were equivalent in the two groups. The mean length of hospital stay was longer in the delayed group (34.5 ± 18.6 days) than in the early group (23.1 ± 4.6 days) (P < 0.01).

Conclusion — Early closure of bowel stoma can be performed without major complications in elective patients. This procedure shortens hospital stay.

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Introduction
If the local or general conditions are unfavorable, a transient small bowel stoma may be required to protect a distal anastomosis or avoid intraperitoneal intestinal suture. This temporary stoma is usually closed 9 to 12 weeks later [1]. However since some patients tolerate the temporary stoma poorly (extracellular dehydration, difficult pouch fitting, requirement for parenteral nutrition if the stoma is very proximal, psychological or social impact), it might be advisable to opt for early closure [2]. In order to assess the feasibility of early closure and its results, we defined a minimal delay considered as optimal for closing small bowel stomas. We took into account the risk of fistulization of the protected intestinal anastomosis and acute peristomal inflammatory reactions leading to adhesions which could compromise dissection and the quality of the bowel anastomosis. After defining this optimal delay, we conducted a non-randomized prospective study in 39 patients, 15 with early closure and 24 with late closure.

Patients and methods
From January 1998 to December 2001, we closed a temporary small bowel stoma in 39 patients, 21 women and 18 men, mean age 64 years (range 24-83). Twenty-six patients had a planned closure. When early closure was considered possible and the temporary stoma had been fashioned to protect an anastomosis, the anastomosis was checked with a barium study the day before the planned closure.

Closure was performed under general anesthesia with antibiotic prophylaxis (cephalozaine) at the time of the incision. The elective incision was always associated with resection of the stoma and bowel anastomosis using two extramucosal overcast sutures performed manually with a knipt polyglactin acid thread or mechanical stapling (TLC75® and TL60®, Ethicon™). The operator determined the appropriate method. The aponeurotic planes were sutured with a knipt polyglactin acid thread and the skin was closed with a loose suture.

Results are expressed as mean ± standard deviation. The exact Fisher test was used for non-parametric data and Student's t test for parametric data. P less than 0.05 was considered significant.
Results

Early closure was performed in 15 patients, 8 women and 7 men, mean age 62 years (range 24-83) 10.0 days after the first operation. The closure was performed on day 10 (N = 13), day 8 (N = 1) and day 12 (N = 1). Nine of these patients had a loop ileostomy bridged on the last loop to protect a distal anastomosis. Six patients had a double-end stoma because of generalized peritonitis (N = 4, including 3 cases of postoperative peritonitis after gynecological surgery with recto-sigmoid resection) or small bowel wounds (N = 2 multiple trauma patients with severe hemorrhagic shock).

Late closure was performed in the other 24 patients (13 women, 11 men, mean age 65 years, age range 40-81) 11.4 3.7 weeks after the initial operation. Seventeen of these patients had bridged loop ileostomies (N = 17) for anastomosis protection. Seven had double-end stomas for bowel perforation with peritonitis (N = 5) or mesenteric infarct (N = 22). The reasons for delaying closure were varied: long-term corticosteroid therapy (N = 5), unexplained fever (N = 2), persistent multiple organ failure (N = 4), wound abscess (N = 2), occlusive syndrome (N = 3), pulmonary embolism (N = 1), cardiac dysrhythmia (N = 5), bowel resection because of mesenteric infarct (N = 2).

There were no deaths. No revision procedures were required and there were no intestinal fistulizations. Time to renewed transit and oral nutrition was equivalent in patients with early and late closure (mean 2 days and 3 days respectively). An abscess developed on the stoma wound in four patients (10%), three after early closure (20%) and one after late closure (4%) (P = 0.85) and was treated with local care.

The average hospital stay after closure was comparable between the two groups: 13.0 9.8 days after late closure and 12.4 5.0 days after early closure. Total hospital stay, calculated from the date of the initial stoma operation, was longer in the late closure group (34.5 18.6 days for two stays, 21.3 13.6 days and 13.0 9.8 days) than in the early closure group (23.1 4.6 days in one stay) (P < 0.01).

Discussion

Progress in anastomotic techniques has greatly reduced the number of indications for temporary small bowel stomas. Stomas are however still needed if there is a high risk of fistulization of the bowel anastomosis. This situation is encountered after low colorectal, coloanal, or ileoanal anastomosis procedures [3, 4] or when the local (ruptured abscess, generalized peritonitis, distended colon) or general (long-term corticotherapy) conditions dictate further protection of the anastomosis. Ileostomy is generally preferred over colostomy since it provides excellent deviation of the fecal matter without creating a risk of injury to the pericolic vascular arcade [5].

A stoma may also be needed in other situations, e.g. after emergency bowel resection if immediate anastomosis is too hazardous or because of other problems (generalized peritonitis, mesenteric ischemia, prolonged shock, major malnutrition) [6]. The position of the temporary stoma is variable in these patients, sometimes fashioned very close to the duodenojejunal junction.

Classically, temporary small bowel stomas are closed about 8 weeks later. However, despite improvements in pouch devices, a bowel stoma is still a major psychological handicap (altered body schema, odor, uncontrolled emissions) and causes significant physical stress (risk of severe dehydration and electrolyte imbalance). Furthermore, it may be very difficult to fit a pouch on a stoma fashioned in an emergency operation. Pouches are also difficult to adapt for obese patients, particularly in the presence of peritonitis with a retracted mesenterium. Local care may have to be prolonged, sometimes in an intensive care unit, to avoid secondary skin burns caused by the very corrosive digestive juices. Parenteral nutritional support may also be needed if the stoma is very proximal, with the infectious and other risks related to insertion of a central venous catheter. The different problems encountered in these patients prompted us to undertake this study of early stoma closure in selected patients.

A few teams have previously evaluated this approach in specific populations: trauma victims with colostomies [8], pediatric patients with small bowel stomas [9], proctectomy patients with low ileoanal or colorectal anastomosis [10]. These reports have provided very little information because the studies included small numbers of patients and closure times were very variable, sometimes within the same study, ranging from 10 days to 4 weeks. There has been only one randomized prospective study which examined early closure of colostomies in a population with abdominal contusions or wounds involving the colorectal region [11]. The time to closure was “within the first 15 postoperative days”, but the results of this study, like those of the previous studies, only enabled the conclusion that early closure is possible without significant increase in morbidity, but in a selected population.

This is the first prospective study on early closure of small bowel stomas. Choosing a standard time for closure was essential for our study. Two prerequisites had to be met. First the closure had to be performed late enough to allow the anastomosis to heal (protective role of the stoma). The risk of fistulization is maximal from day 5 to day 7 postoperatively [12]. Likewise, the stoma had to be closed early enough to avoid excessive postoperative inflammatory reactions which could compromise peristomial dissection. This situation develops on average starting 15 days after the operation.

We thus chose 10 days as the average delay before stoma closure. Using this time, we found that, despite the selection bias which excluded patients with a high risk of fistula, early closure of small bowel stomas is feasible and that it reduces the total duration of hospitalization without major morbidity. However, like Velmahos et al. [11], we found a higher rate of wound abscesses after early closure than after late closure. This difference was not significant in our study, but probably only because of the small number of patients in each group.

These results are encouraging, but the two study populations were not strictly comparable because of the patient selection. A randomized prospective study would be necessary to confirm our results. This study is currently being conducted in France to evaluate the usefulness of early closure of protective transient small bowel stomas at eight days in comparison with late closure at two months.

REFERENCES


