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SHORT COMMUNICATION

Skin bridge loop stoma: outcome in 45 patients in comparison with stoma made on a plastic rod

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Abstract

Background Loop stoma reduces the complications related to anastomotic leak. The skin bridge loop stoma is a recently described technique with many potential advantages over the current technique involving a plastic rod. Our experience shows early results (3 weeks after surgery) comparing skin bridge and plastic rod stoma creation.

Methods In 45 patients operated from January 2016 to December 2018, a loop ileostomy was performed with the skin bridge technique. We compared functional results with a prospective series of 45 patients on which ileostomy was performed on a plastic rod. The report of the routine stoma care visit at 7 and 15 days was compared, as well as the "Stoma quality of life" questionnaire when available.

Results We observed more inflammatory changes of the skin around the stoma in the group with a plastic rod (33 vs 10 patients). The patient-reported evaluation of quality of life showed a better quality of life in skin bridge group. The rate of exchanged stoma wafers was 2.6 vs 5.2 per week in the skin bridge group ($p < 0.05$).

Conclusions The skin bridge stoma creation resulted in better early management of the stoma, better adhesion of the stoma appliances, and better quality of life of the patient. As an increased number of stoma appliances are required in the early postoperative period, the economic burden of this treatment is relevant in relation to the major number of medical equipment used in the early period.

Keywords Ileostomy · Complications · Skin bridge · Rectal cancer

Background

Anastomotic leakage is one of the most feared complications in rectal surgery, with a reported incidence of 12–39% and an associated risk of mortality of 2–24% [1]. Loop stoma is effective in reducing the severity of the complications related to anastomotic leak [2]. Performing stoma is often associated after low anterior resection, complex pelvic dissection, complicated anastomotic construction [2], and in patients treated with neoadjuvant RCT. The diverting stoma can be constructed either using the colon proximal to the anastomosis or using a distal ileal loop. A loop colostomy or ileostomy is usually temporary and can be reversed as soon as the anastomosis has healed. An ileostomy is usually located in the right abdomen, and the output is characterized by high volume and liquid form, while colostomy is usually performed in the lower left abdomen and produces solid stools [3].

Diverting loop enterostomy (both colostomy and ileostomy) is usually performed using a plastic rod in order to prevent retraction of the stoma: maintained about 10 days after surgery. Plastic rod interferes with the stoma appliance placement, making it more difficult, are a good protection of the peristomal skin. Sometimes, after the rod removal, a retraction of the stoma due to the loss of support can be observed [4, 5].

Skin bridge stoma creation was first described by Milner and colleagues in 2001 [6] for colostomy and was described in 2014 by Delrio and colleagues for ileostomy [7]. Both papers addressed technical issues but did not analyze the results.

Our non-randomized controlled prospective study in patients who underwent ileostomy placement compares short-term results (the first 20 days after the surgical treatment) and long-term results between skin bridge loop stoma and stoma made on a plastic rod.

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Material and methods

The study involved 90 patients with stoma, affected by colorectal cancer or bowel inflammatory disease at the Department of Geriatric Surgery of University Campus Bio Medico of Rome, from January 2016 to December 2018. Stoma placement was drawn in all patients before surgery. In group A, the stoma was constructed in the standard fashion, using a plastic rod. It was taken out on the 10th day after the surgery is performed; in group B, a skin bridge ileostomy was performed. We enrolled 64 men and 26 women. The median age was 62.3 for the skin bridge ileostomy group and 66.2 for the other. The characteristics of patients of the two groups are summarized in Table 1.

All ostomies were closed within 1 year with no complications. Stoma care was provided in both groups with detailed instructions and training before the discharge of the patient, followed by a weekly visit to a stoma nurse, who removed the plastic rod in the group A patients before the 15th postoperative (p.o.) day. The rate of surgical site infections; stoma complications like skin inflammation, stoma necrosis, prolapsed stoma, and retracted stoma; and the number of stoma wafers changed daily was recorded for all patients, as well as patient-reported outcome evaluated with the "Stoma quality of life" questionnaire, administered at p.o. day 10 and 20 [8]. Data analysis has been performed on 3 weeks follow-up, and all patients have been followed till stoma closure. We performed a statistical analysis using the Mann-Whitney U test for independent variables on the interval scale and the χ^2 test for variables on the nominal scale. We considered statistically significant results level of $p < 0.05$.

Results

Our results are shown in Table 1. Surgical site infection did not occur in any patient. We observed in both groups (90 patients) no cases of retracted or prolapsed stoma. Peristomal inflammatory changes, defined as peristomal dermatitis, included small peristomal ulcer occurrence even under the plastic rod, were recorded at the weekly stoma nurse visit, and occurred more frequently in the group with a plastic rod (30 vs 9 patient). The average number of exchanged stoma wafers was 2.4 per week in the skin bridge ileostomy group of patients, and 5.1 in the second group, with a statistically significant ($p < 0.05$) correlation.

The evaluation of the "Stoma quality of life" questionnaires showed that the skin bridge ileostomy group had a better quality of life compared to the other group.

Discussion

Loop ileostomy was first described in 1966 [9] to protect distal anastomosis, especially in low rectal anterior resection. The identification of the proper stoma appliance reduces the occurrence of post-operative complications. In the first post-operative period, the incidence of complications leads to a severe impairment of the quality of life in a high proportion of patients. Healing of the wound improves patients' quality of life. When the stoma appliance is perfectly adherent all around the skin, it is effective both for collecting stools and for the protection of the skin. This perfect adherence to the skin can be impaired in some cases

Table 1 Patient's characteristics and comparison of results in both groups of patients

	Stoma on a plastic rod	Stoma on a skin bridge	p
Number of patients	45	45	n.s.
Average age of patients	66.2	62.3	n.s.
BMI (kg/m^2)	25.2	24.5	n.s.
Male	36	28	n.s
Female	9	17	n.s
Cancer	34	37	n.s
Benign	11	8	n.s
Emergent surgery	6	5	n.s
Elective surgery	39	40	n.s
Curative surgery	37	39	n.s
Palliative surgery	8	6	n.s
Surgical wound infections	0	0	n.s.
Peristomal dermatitis	30	9	0.08
Amount of wafers exchanged/week	5.1	2.4	0.004
Stoma prolapse	0	0	n.s.
Stoma retraction	0	0	n.s

due to bad positioning of the stoma, obesity, and extensive scar tissue [10]. In the first post-operative period, the presence of a plastic rod requires a larger hole in the appliance, causing escape of intestinal contents, contact with the skin, and subsequent inflammation around the stoma. The skin inflammation can cause a spillage of serum from the skin, thus further improving the appliance adherence to the skin. This problem is greater in the case of ileostomy due to the chemo-physical characteristics of the stools. The plastic rod was associated with the major rate of skin ulceration [11, 12].

Another important determinant of patient's quality of life is the quantity of disposable wafers or stoma pouches that the patient needs to use, which means how many times the patient needs to spend time for stoma care. The number of changes affects also the cost of the stoma maintenance.

After 10–15 days the plastic rod is usually removed, and the major differences between the two types of surgery techniques rapidly disappear.

Skin bridge loop stoma is a simple surgical technique which could allow in the immediate post-operative period a perfect correspondence between intestinal size and appliance hole. Our study demonstrates the positive impact of this technique on early complications and quality of life of these patients.

Regarding the stoma closure, it doesn't seem to be a difference between these two types of loop stoma, in particular, for technical procedure and surgical complications. Our study does not investigate this aspect; therefore, other studies are needed to confirm this suggestion.

Conclusions

Our experience shows that the skin bridge loop ileostomy is a feasible and safe procedure. The skin bridge seems to be a more natural support compared to plastic rods, reducing the risk of stoma retraction after the removal of the rod. The advantages offered by this technique seems to be related to a reduced incidence of early postoperative complications of diverting stoma construction, thus allowing a better quality of life of these patients which are severely bothered by this surgical approach.

These data need to be confirmed in a more powerful study, and the economic impact of these patient-recorded outcomes should be investigated as well.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest.

Ethics approval and informed consent This study was reviewed and approved by the ethics committee of Campus Bio-Medico, University of Rome. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in this study

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