EVALUATION OF THE EARLY RESULTS OF A LOOP STOMA WITH A PLASTIC ROD IN COMPARISON TO A LOOP STOMA MADE WITH A SKIN BRIDGE

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Loop stoma allows reducing the percentage of anastomotic leak and re-operation caused by this complication. Our department has performed the loop stoma on a skin bridge since 2011.

The aim of the study was to evaluate the early results of treatment after the skin bridge loop stoma creation in comparison with the stoma made on a plastic rod. Both groups had 20 patients.

Material and methods. The study involved 40 patients with ileostomy, operated 2010-2013. We evaluated 20 patients with a loop ileostomy on a plastic rod, compared to 20 other patients with a skin-bridge ileostomy. The study included 24 men and 16 women. Median age was 68.3. All evaluated patients were previously operated due to rectal cancer.

Results. It has been shown that the surgical site infection is more common in the group with a plastic rod (5 vs 1 patient). Inflammation of the skin around the stoma occurred in 18 patients (90%) in the first group, while no such complication was found in patients in the second group. The average number of exchanged ostomy wafers was 2.9 per week in the first group of patients, and 1.1 in the second group (p < 0.05).

Conclusions. The creation of the skin bridge stoma allows for tight fit of the ostomy appliance immediately after surgery completion. The equipment has stable and long-lasting contact with the skin, no skin inflammatory changes occur. Also, the surgical site infection rates are lower in this group of patients. As perioperative patient does not require an increased number of ostomy appliance, the cost of treatment can be considered as an important aspect.

Key words: ileostomy, complications, skin patch, rectal cancer

Anastomotic leakage is one of the most important complications in colorectal surgery. It is associated with a significant rate of complications and mortality as well (1). In addition, a leak can lead to anastomotic narrowing and causes a higher incidence of local recurrence. Protective ileostomy has its permanent place in the intestinal surgery. It is most commonly performed in case of protection of anastomosis created below (2, 3, 4). In some cases, it is performed to establish the healing conditions for the fistula formed below. Unfortunately, created loop stoma is not free from complications arising in the postoperative period (5, 6). The goal of the surgeon is to perform a stoma in a way that will not lead to the collapse of the so-called spur and thus will not lead to the passage of intestinal contents to drain loop. For this purpose, until now, plastic drains were used or specially designed rods which were routed under the spur and maintained for about 10 days until stoma was healed. Nowadays it is thought that each stoma shall be provided with ostomy appliance immediately after the operation. Introduced drain or plastic rod do not allow the tight fitting of appliance. It is not rare for badly fit appliance enabling intestinal contents leakage to be a reason of a surgical site infection, as well as bad stoma acceptance by the patient and reduction of the life quality. Loop stoma on a skin bridge recently proposed and de-
scribed by us, gives the possibility of a very accurate and tight fit of the ostomy appliance (7). Thereby the risk of surgical site infection and stress in patients is reduced.

The aim of the study was to evaluate the early postoperative complications of loop stoma created on a plastic rod and loop stoma created on a skin bridge.

MATERIAL AND METHODS

The study involved 40 patients with a protective loop ileostomy, operated on due to low rectal cancer in the Department of General and Colorectal Surgery, Medical University of Łódź, over the period of 2010–2013.

Evaluation included 20 patients with the loop ileostomy performed on a plastic rod, and 20 patients with the loop ileostomy performed using a skin bridge. Since 2011, only skin bridge loop stomas have been performed in our clinic. Plastic rod has been removed on the 10th day after the operation. Therefore, the study compares stomas performed until 2010 and thereafter. The average age of patients was 68.3 years and it ranged from 43 to 84 years, with 24 men and 16 women. In all patients, stomas were formed on the ileum after low anterior rectal resection due to cancer. All patients underwent neoadjuvant therapy. Stoma placement was designated in all patients before surgery. The study assessed the percentage of surgical site infections, stoma complications (skin inflammation, stoma necrosis, prolapsed stoma, retracted stoma), number of ostomy wafers changed daily. The observations relate to the 30-day post-operative period. Data were obtained from the records of patients admitted to the hospital and surgical outpatient clinic records.

The results were statistically analysed with the U Mann-Whitney test for independent variables on the interval scale and the χ² test for variables on the nominal scale. The result was considered statistically significant at the significance level of p < 0.05.

RESULTS

The results were related to the early postoperative period covering 30 days after the operation. In the first group of patients with an ileostomy formed on a plastic rod, leakage of intestinal contents from under the wafer occurred more often, as the wafer never closely adhered to the skin due to the presence of a rod. This fact strongly influenced the occurrence of the analysed factors. However, the introduction of ileostomy formed on the skin bridge allowed the tight fit of stoma appliance.

Surgical wound infection was observed in 5 patients (20%) in the first group and only in 1 patient (5%) in the second group.

Skin inflammation around the stoma occurred in 18 patients (90%) in the first group and in patients from the second group no such complication was observed.

In both groups, that is, in 40 patients, no cases of prolapsed or retracted stoma were found.

The average number of ostomy wafers exchanged per week was 2.9 in the first group of patients. In the second group of patients, the number of wafers exchanged per week was 1.1 (p=0.031). Only 10 days later, with the plastic rod removal, the number of exchanged wafers was 1.3/week in the first group. The results are shown in tab. 1.

DISCUSSION

Loop ileostomy was first described by Turnbull and Weakley in 1966 and was accepted as a method to protect distal anastomosis. At the beginning, the ostomy appliance was very primitive and caused a number of complications. In subsequent years, advances in technology allowed the creation of a perfect appliance which significantly influenced the reduction of complications and improved the quality of patients’ life. All round adherence of the stoma appliance is the condition which determines that the equipment fulfils its role. In some cases, this is not possible. Patients having a plastic rod cannot precisely adjust the appliance. Also, other factors, such as bad positioning of the stoma (e.g., in the skin fold), obesity and extensive scar tissue, do not allow for the ostomy appliance to be tight finished (8, 9). In case of a leak, escaping intestinal contents is the cause of skin inflammation around the stoma and may cause infection of the surgical site, especially in the case of ileostomy. In our study, surgical wound infection occurred
Loop stoma with a plastic rod and with a skin bridge

Table 1. Comparison of results in both groups of patients

<table>
<thead>
<tr>
<th></th>
<th>Stoma on a plastic rod</th>
<th>Stoma on a skin flap</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Average age of patients</td>
<td>68.3 (43-84 years)</td>
<td>65.9 (41-81 years)</td>
<td></td>
</tr>
<tr>
<td>Number of men in both groups</td>
<td>11 (55%)</td>
<td>13 (65%)</td>
<td></td>
</tr>
<tr>
<td>Number of women in both groups</td>
<td>7 (35%)</td>
<td>9 (45%)</td>
<td></td>
</tr>
<tr>
<td>Surgical wound infections</td>
<td>5 (20%)</td>
<td>1 (5%)</td>
<td>0.076*</td>
</tr>
<tr>
<td>Peristomaldermatitis</td>
<td>18 (90%)</td>
<td>1 (5%)</td>
<td></td>
</tr>
<tr>
<td>Amount of wafers exchanged/week</td>
<td>2.9</td>
<td>1.1</td>
<td>0.031**</td>
</tr>
<tr>
<td>Neoadjuvant therapy</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
<td></td>
</tr>
<tr>
<td>Stoma prolapse</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Stoma retraction</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Necrosis of the stoma edges</td>
<td>1 (5%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
</tbody>
</table>

* χ² test, ** U Mann-Whitney test

In 5 patients with ileostomy performed with a plastic rod. Intestinal contents flooding from beneath the stoma wafer was the possible cause of this complication. Ileostomy expels a substantial amount of content liquid, which easily passes the vicinity of the surgical wound. Surgical site infection in patients who underwent protection ileostomy ranges from a few to several percent. In our study, the percentage was higher (3, 10). An important technical problem is the maintenance of intestine spur at the skin level. Skin bridge easily handles this, but a plastic rod must have proper hardness and hence the larger diameter. This is the reason for the impossibility of an ostomy appliance tight fit. Surgical site infection may also have a different cause, but infection may be induced in the case where in the early post-operative period intestinal contents spilled into a dressing.

In none of the patients in both groups stoma prolapse or retraction were observed. Ileostomy prolapse occurs extremely rare and even much less in the first 30 days after surgery. The stoma retraction occurs when the intestine is not sufficiently mobilized. This complication was not found in the both groups studied.

Necrosis of the stoma edges can occur when it comes to compressing or vascular thrombosis. In one patient of the first group in the loop stoma formed on a plastic rod necrosis occurred around small intestine spur supported on the rod. The pressure of the crossbeam on the intestine spur and ischemia were the probable causes of this complication. The patient did not require surgery, the rod was removed earlier and conservative treatment led to the stoma edges healing. Necrosis of the loop stoma edges occurs in 5%.

The amount of disposable wafers or ostomy pouches that patient must use during the day is an important problem especially in countries with inadequate health care financing. If the stoma appliance is not tightly fitted, pouring out intestinal contents detaches the wafer/pouch remainder. Emanating intestinal content also results in the skin inflammation around the stoma. In the number of cases, as a result of these inflammatory changes, it is very difficult to adhere ostomy appliance and even if it is possible this equipment persists for a shorter period of time than usual. In almost all patients with stoma formed using the plastic rod, after 10 days when the rod is removed, skin ulceration was found under the rod. This fact also significantly impeded the proper adjustment of the ostomy appliance. The economy and costs associated with the increased number of wafers needed for proper ostomy are the important aspects. In the hospital, the problem is not so pressing, but patient leaving the hospital receives only a well-defined number of wafers/pouches free of charge. Often there is a need to buy additional equipment at patients’ own expense, but some of them simply cannot afford it. In the first group, the average number of wafers/pouches used daily during the first 7 days after surgery was 2.9, whereas at a later period 1.3 and in the second group 1.1. The problem of the costs associated with the purchase of addi-
CONCLUSIONS

A new technique for forming skin bridge stoma that we implemented has completely changed the quality of patients’ life. This technique allows for a tight fit of the ostomy appliance immediately after the completion of surgery. The equipment has stable and long-lasting contact with the skin, no skin inflammatory changes are observed. Also the surgical site infection rates are lower in this group of patients. Other important aspects are the cost of treatment and that perioperative patient does not require an increased number of ostomy appliance.

REFERENCES