

MIKULICZ'S PROCEDURE WITH LEVATOR MUSCLE AND EXTERNAL ANAL SPHINCTER PLASTY IN THE TREATMENT OF RECTAL PROLAPSE

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Rectal prolapse is the partial or complete protrusion of the rectal wall into the anal canal. The most common etiology consists in the insufficiency of the diaphragm of the lesser pelvis and anal sphincter apparatus. Methods of surgical treatment involve perineal or abdominal approach surgical procedures.

The aim of the study was to present the method of surgical rectal prolapse treatment, according to Mikulicz's procedure by means of the perineal approach, based on our own experience and literature review.

Material and methods. The study group comprised 16 patients, including 14 women and 2 men, aged between 38 and 82 years admitted to the department, due to rectal prolapse, during the period between 2000 and 2012. Nine female patients, aged between 68 and 82 years (mean age-76.3 years) with full-thickness rectal prolapse underwent surgery by means of Mikulicz's method with levator muscle and external anal sphincter plasty. The most common comorbidities amongst patients operated by means of Mikulicz's method included cardiovascular and metabolic diseases.

Results. Mean hospitalization was 14.4 days (ranging between 12 and 17 days). Despite advanced age and poor general condition of the patients, complications during the perioperative period were not observed. Good early and late functional results were achieved. The degree of anal sphincter continence was determined 6-8 weeks after surgery showing significant improvement, as compared to results obtained prior to surgery. One case of recurrence consisting in mucosal prolapse was noted, being treated surgically by means of Whitehead's method. Good treatment results were observed.

Conclusion. Transperineal rectosigmoidectomy using Mikulicz's method with levator muscle and external anal sphincter plasty seems to be an effective, minimally invasive and relatively safe procedure that does not require general anesthesia. It is recommended in case of patients with significant comorbidities and high surgical risk.

Key words: rectal prolapse, levator muscle, external anal sphincter plasty, rectosigmoidectomy

Rectal prolapse is a difficult and rare clinical condition. The frequency of the above-mentioned is estimated at 0.04-1% (1), which consists between 2 to 5.6% of adult patients subject to treatment due to proctologic disorders (2). Rectal prolapse consists in the retroanal canal dislocation of one or all layers of

the large bowel wall. One may observe external rectal prolapse reaching below the anal sphincter or internal rectal prolapse-intussusception, when retroanal canal dislocation is not observed. Altmeier et al. (3) divided rectal prolapse into three types, according to the anatomy: mucous membrane prolapse, intussuscep-

tion with slip hernia, and „cul-de-sac” slip hernia. Beahrs et al. (4), distinguished two clinical types of prolapse: incomplete prolapse (limited only to the rectal mucous membrane) and full-thickness prolapse. Physicians from the University of Minnesota elaborated a classification considering the presence or lack of presence of gas and stool incontinence, in addition to rectal prolapse (5).

Peak incidence is observed between the 4-th and 7-th decades of life. Female patients are diagnosed with the above-mentioned pathology six times more often, as compared to male patients (5). Rectal prolapse is also observed in children under the age of three years. The incidence rate in these patients is similar, considering gender (6). Rectal prolapse is diagnosed in 20% of patients with cystic fibrosis, thus, perspiration chlorides levels should be determined (7). Such common rectal prolapse in case of the above-mentioned patients is probably associated with defecation disturbances (constipation, steatorrhea), and impaired alimentation, due to the course of the disease.

The main causes of rectal prolapse are as follows: pelvic floor muscle weakness with separation of levator muscles of the anus, weakening of rectum attachments to the sacrum, deep Douglas's sinus, as well as excessively long sigmoid and rectum. Rectal prolapse development is more often observed in case of patients with defecation disturbances, pregnancy, following spontaneous labor, with reduced estrogen levels during menopause, with coexistence of sigmoid and colon cancer, anal injuries, old age, and weakening of pelvic floor muscles, due to neurological conditions (2, 6).

The only effective method of rectal prolapse treatment is surgery, allowing too perform enterostomy if necessary, as well as improving the anatomical structures of the pelvic floor and anal sphincter apparatus. The procedure may be performed from the perineal or abdominal approach by means of classical surgery or laparoscopy.

The transperineal methods are considered as less invasive, being recommended in elderly patients with greater perioperative risk. However, in some centers the above-mentioned procedures are also performed in patients without concomitant diseases (8). Corrective operations from the perineal approach are considered as the main resection and constrict-

ing procedures: perineal rectosigmoidectomy, Delorme's method, Thiersch's method (historical value) and others (9).

Abdominal methods, although considered by some authors as more effective, are associated with the risk of developing significant complications (10). The choice of the method depends on the patients' clinical condition, as well as knowledge and experience of the operating physician. In case of elderly patients and those with coexisting diseases, minimally invasive methods are recommended, being burdened with a low perioperative risk. Perineal rectosigmoidectomy, according to Mikulicz's method is such a procedure (5, 11, 12, 13).

Perineal rectosigmoidectomy was first described in 1889 by a Polish surgeon- Jan Mikulicz-Radecki (14). It was then propagated by Miles (15) and Altemeir (3).

Although considering Polish medical literature Jan Mikulicz-Radecki was considered as the founder of rectosigmoidectomy, foreign literature attributed the method to Altemeir.

The aim of the study was to present the method of surgical rectal prolapse treatment, according to Mikulicz's procedure by means of the perineal approach, based on our own experience.

MATERIAL AND METHODS

During the period between 2000 and 2012, 16 patients with rectal prolapse were admitted to the Department of General and Gastroenterological Surgery, Silesian Medical University in Bytom, including 14 women and two men, aged between 38 and 82 years. Nine female patients with high risk of general anesthesia, aged between 68 and 82 years (mean age-76.3), with full-thickness rectal prolapse were subject to Mikulicz's operation with levator muscle and external anal sphincter plasty. Insufficiency of the anal sphincter apparatus was determined on the basis of Miller's incontinence point scale (16): six patients were diagnosed with III degree incontinence (stool and gas incontinence), two with II degree incontinence (watery stool and gas incontinence), and one with I degree incontinence (gas incontinence). The majority of patients before surgery were not subject to manometric examinations, while preoperative per rectum ultrasound

examinations of the anal sphincters were only performed in the latter three hospitalized patients. All patients before surgery were examined by one experienced surgeon, who on the basis of the “per rectum” examination determined the tension of the sphincter system and its contractile function. The same assessment was performed after the surgical procedure, determining the subjective, although comparable functional result following surgery. Considering patients subject to perineal rectosigmoidectomy by means of Mikulicz’s method, seven were burdened with cardiovascular system disturbances. Five patients were diagnosed with metabolic disorders, such as obesity and diabetes mellitus. Neurological disturbances were also often observed, including head dizziness, dementia, and passive and volitional tremor, speech disturbances, and slight paresis. One observed a dependency between the occurrence of rectal prolapse and number of births: 8 of the 9 patients underwent spontaneous labor with the mean number of births amounting to 2.75. These patients were also diagnosed with urine (3 patients) and stool (8 patients) incontinence or chronic constipation (6 patients). One patient two years after rectosigmoidectomy was subject to hysterectomy, due to uterine prolapse.

Preparing the patient for transperineal rectal resection includes a low residual diet, enema on the day of planned surgery, anti-thrombotic prophylaxis, and perioperative antibiotics therapy. Surgery was performed in the lithotomy position under spinal anesthesia.

The first stage of the operation consisted in the mobilization of the rectum and placement

of directional sutures (fig. 1). Afterwards, the mucous membrane was subject to a circular incision, 3 cm above the pectiniform line. The remaining peripheral segment of the mucous membrane serves to maintain the sensory functions, in order to control defecation after the procedure (fig. 2). The following stage consists in the incision of the muscular and serous layers. After incision of the peritoneal recess, excess amounts of bowel, together with the mesentery are removed (fig. 3). Depending on the extent of rectal prolapse a segment of 6-10 cm or longer was removed, together with the distal part of the sigmoid. In order to close the peritoneal recess, interrupted sutures were placed. The intestinal walls are anastomosed end-to-end using interrupted sutures (fig. 4).

The procedure was extended by levator muscle and external anal sphincter plasty, in

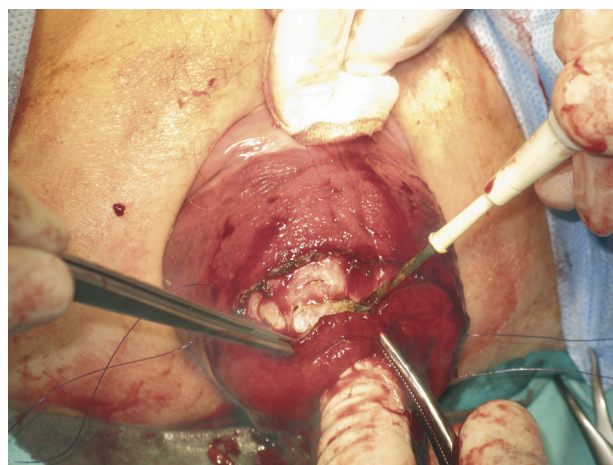


Fig. 2. Circular incision of the rectal mucous membrane

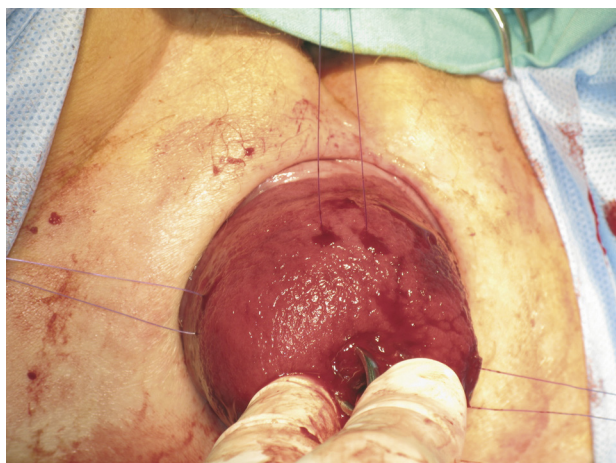


Fig. 1. Mobilization of the rectum and suture implantation

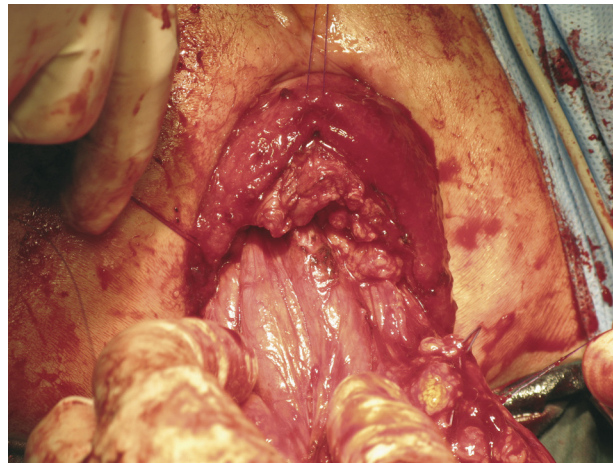


Fig. 3. After incision of the peritoneal recess removal of excess bowels together with the mesentery



Fig. 4. End-to-end rectal stump anastomosis after excision of excess bowels

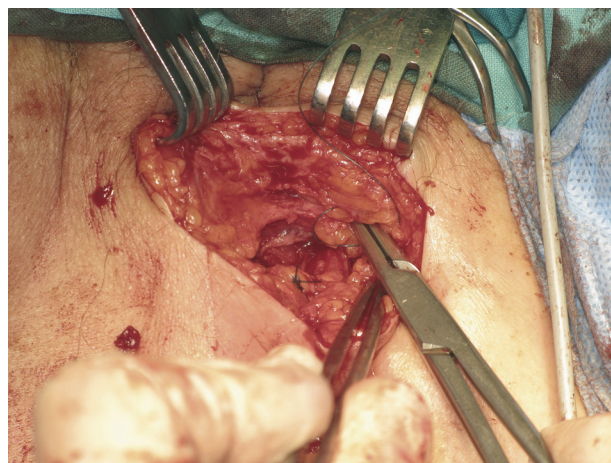


Fig. 5. Transverse perineal incision, and levator muscle and external anal sphincter plasty

order to improve the sphincter function of the anus (fig. 5).

RESULTS

Despite the elderly age of patients and co-existence of many concomitant diseases, the surgical procedures were without complications. Perioperative mortality was not observed. Average hospitalization was 14.4 days (ranging between 2-17 days). The postoperative period proved uneventful. Good early and distant functional results were obtained. The degree of anal sphincter apparatus efficiency determined on the basis of Miller's scale and subjective proctologic examination performed by the surgeon 6-8 weeks after surgery showed improvement, as compared to preoperative results. Sphincter contractility and tension at rest showed significant improvement. Prior to surgery 8 of 9 patients presented with fecal incontinence, including 6 diagnosed with full-thickness incontinence. After surgery 3 patients complained of fecal incontinence. One of these patients already complained of complete incontinence before surgery, while two reported significant improvement after the procedure. Thus, one patient was diagnosed with III degree incontinence, according to Miller's point scale, two with II degree, and two with I degree incontinence. We observed recurrence of rectal prolapse in one patient 2.5 years after the initial surgical procedure. Reoperation was performed by means of Whitehead's method. A good effect was obtained.

DISCUSSION

Overall, it was assumed that the method of perineal rectosigmoidectomy (Mikulicz's procedure) is recommended in elderly and high-risk patients. Other indications mentioned in literature data include acute conditions, such as incarcerated rectal prolapse, irreducible rectal prolapse (11, 17), ASA III, IV degree operative risk, mental diseases, and young male patient age (18).

It seems that the treatment of rectal prolapse by means of Mikulicz's method was the best alternative for this group of elderly patients, burdened with numerous concomitant diseases. The study group comprised patients aged between 68 and 82 years. However, surgery by means of the above-mentioned method was also performed in patients after the age of 90 years (10, 19-22).

The perineal approach is less invasive, as compared to the transabdominal approach. It does not require general anesthesia, and the limitation of the surgical field shortens hospitalization, as well as restores more quickly the functioning of the anal sphincter apparatus. As shown, patients experience less postoperative pain, one may observe smaller blood loss, and the duration of the procedure and hospitalization are shorter, as compared to abdominal operations (23). Oral intake of fluids can be resumed in 24-48 hours after the procedure, and bowel functions return to normal within several days. This is all the more important because the disease occurs mainly in elderly patients.

Some authors suggest that surgery by means of the perineal approach is beneficial also in younger patients, because it allows to avoid abdominal wall scarring and neural damage within the pelvis, and thus, reduces the risk of sexual dysfunctions in male subjects (8, 24).

The results of our analysis demonstrate the high efficiency of the described method, due to good early results, no perioperative mortality and significant complications, as well as low recurrence rate.

Although many authors reported the high rate of recurrence as a disadvantage of the method (23), our experience differs concerning the matter. Amongst the operated patients only one case of rectal prolapse recurrence was observed. Considering the study group clinically significant complications were not observed.

In literature data there is a large discrepancy concerning treatment results in case of patients subject to surgery by means of Mikulicz's method. The recurrence rate, according to various authors ranges between 0% and 58%, but mostly was approximately 10% (1, 3, 10, 19-22, 25, 26). Most studies concern operations of women with an average age of 70-80 years, burdened with concomitant diseases, and yet the mortality rate is very low (10, 19, 27).

It was noticed that the recurrence rate may be affected by both the length of the resected bowel (25), and performed levatorplasty (10, 20, 26, 27). The experience of our department confirmed the beneficial effect of levator muscle and external anal sphincter plasty on the improvement of anal sphincter functions. It was shown that the treatment of rectal prolapse from the perineal approach by means of Mikulicz's method extended by levatorplasty is the most effective method, due to the lowest recurrence rate, longest average time from surgery to recurrence, and greatest improvement considering constipation and fecal incon-

tinence (6). External anal sphincter plasty was performed on the assumption that in all patients with diagnosed rectal prolapse, the above-mentioned had lasted for several weeks, which lead to disease-related functional paralysis of the sphincter system (specific divulsion), and weakening of the sphincter contractile function. This condition was confirmed in all patients during the proctologic examination before the surgical procedure.

Literature data also showed cases of perineal rectosigmoidectomy extended by graciloplasty (28). Levatorplasty was also performed with the use of two porcine collagen prostheses fixed to the descending colon, running through the obturator canal – TOCS (Trans-Obturator Colonic Suspension) (26).

Efforts are also attempted to obtain better treatment results through the introduction of novel techniques. Research is ongoing concerning the possibility of supplementing Mikulicz's method by strengthening the pelvic floor using a biological mesh (29). Short-term results indicate reduced risk of rectal prolapse recurrence.

Other publications also showed that the use of a harmonic scalpel and stapler was associated with lower blood loss during surgery, as well as shorter duration of the procedure and hospitalization (20, 26). Differences in equipment used and type of anastomosis did not translate on long-term functional results.

CONCLUSION

Perineal rectosigmoidectomy by means of Mikulicz's procedure together with levator muscle and external anal sphincter plasty seems to be an effective, minimally invasive, and safe method, and does not require general anesthesia. The method is recommended for patients with many pathological disease entities and high surgical risk.

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