

## Intact Mucosa Coloplasty Pouch (IMCP) – a modification of colonic coloplasty pouch

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*Background.* There have been several types of intestinal pouches described so far, the one most commonly used is the so-called J-pouch. There is still research going on to find new technical solutions for reconstruction, as for example Transverse Colonic Pouch (TCP) or Coloplasty Colonic Pouch (CCP) pouches.

*Aim.* The aim of this paper was to describe our own modification of the later two pouches and assessment of the complications and early results.

*Method.* The comparative analysis was carried out on two subgroups of mid and low rectal cancer patients in whom IMCP (21 patients) or J-pouches (19 patients) were performed.

*Conclusions.* The pouch in our modification seems to be a good, simple alternative of reconstruction of distal large bowel, especially in cases with a narrow pelvis and in obese patients. Elucidation of the final indications and functional outcomes requires further studies.

### Zbiornik z zachowaniem ciągłości błony śluzowej – modyfikacja własna zbiornika z okrężnicy

Dotychczas opisano wiele typów zbiorników jelitowych, spośród których najczęściej używany jest tzw. zbiornik „J”. Nadal trwają jednak poszukiwania nowych rozwiązań technicznych rekonstrukcji, jak np. zbiorniki TCP: Transverse Colonic Pouch – poprzeczny okrężniczy zbiornik jelitowy, czy CCP: Coloplasty Colonic Pouch - okrężniczy zbiornik jelitowy.

*Cel.* Celem pracy jest opis własnej modyfikacji zbiorników TCP i CCP, wytwarzanych z jelita grubego i ocena powikłań oraz wczesnych wyników leczenia. Zbiornik ten nazwano IMCP: Intact Mucosa Coloplasty Pouch - okrężniczy zbiornik jelitowy bez przecięcia błony śluzowej.

*Metoda.* Ocenie porównawczej poddano dwie grupy chorych na raka dolnej i środkowej części odbytnicy, u których wykonano IMCP (21 chorych) lub J-pouch (19 chorych).

*Wnioski.* Własna modyfikacja zbiornika jelitowego wydaje się być prostą, dobrą alternatywą odtworzenia ciągłości dystalnego odcinka jelita grubego, zwłaszcza w przypadkach osób otyłych i/lub z wąską miednicą małą. Ustalenie ostatecznych wskazań jak i ocena wyników odległych wymagają dalszych badań.

**Key words:** TCP – Transverse Coloplasty Pouch, CCP – Colonic Coloplasty Pouch, IMCP - Intact Mucosa Coloplasty Pouch, rectal cancer

**Słowa kluczowe:** TCP – poprzeczny okrężniczy zbiornik jelitowy, CCP – okrężniczy zbiornik jelitowy, IMCP – okrężniczy zbiornik jelitowy bez przecięcia błony śluzowej, rak odbytnicy

### Introduction

Colon and rectal cancer are currently the most common malignancy of the digestive tract in the developed countries, out of which the rectal cancer constitutes 35%. In the oncological centers specialized in treatment of the rectal cancer various techniques of the restoration of the

continuity of the digestive tract are used [1]. The local recurrence rate and the overall survival of patients treated in those centers are stable and are, respectively, 4-11% after 3-5 years [2] and above 50% 5-year survival depending on the local stage of the disease [3]. The most important aspects requiring further improvement are in the functional outcome of the rectal surgery, as in almost 30% of patients the anterior resection syndrome is observed which impairs quality of life and has social impact [4-7].

The lower rate of surgical complications as well as improvement of the functional outcome of the neo-rectum after formation of the intestinal pouch compares favorably with anterior resection and straight colorectal

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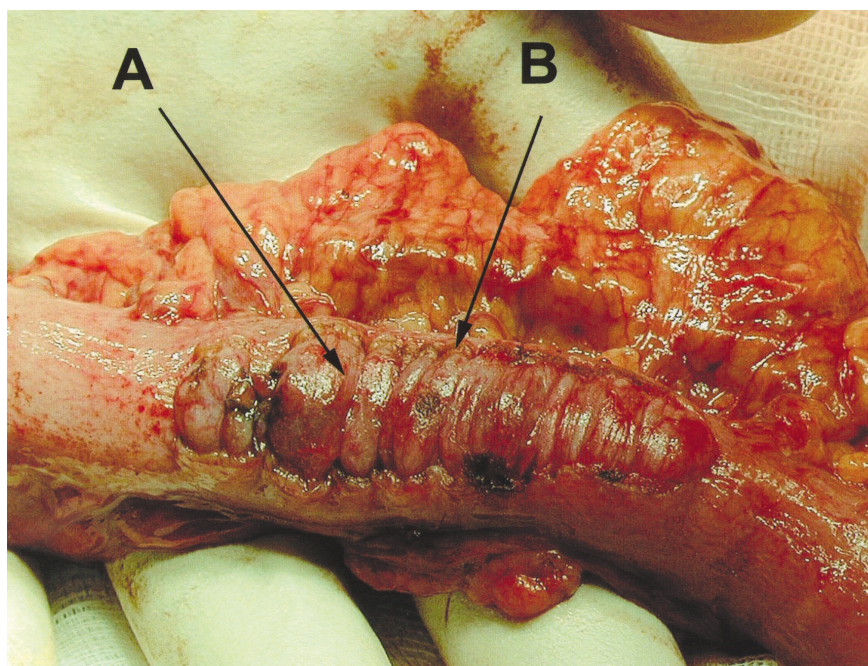
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anastomosis and was confirmed by numerous prospective studies [8-10]. It has to be born in mind that colonic J pouch formation is not possible in all patients and carries almost 30% risk of morbidity and pose problems with pouch emptying, chronic constipation and even pouchitis [5, 11]. That is why we decided to search for new solutions and as a result to present our own modification of the intestinal pouch.

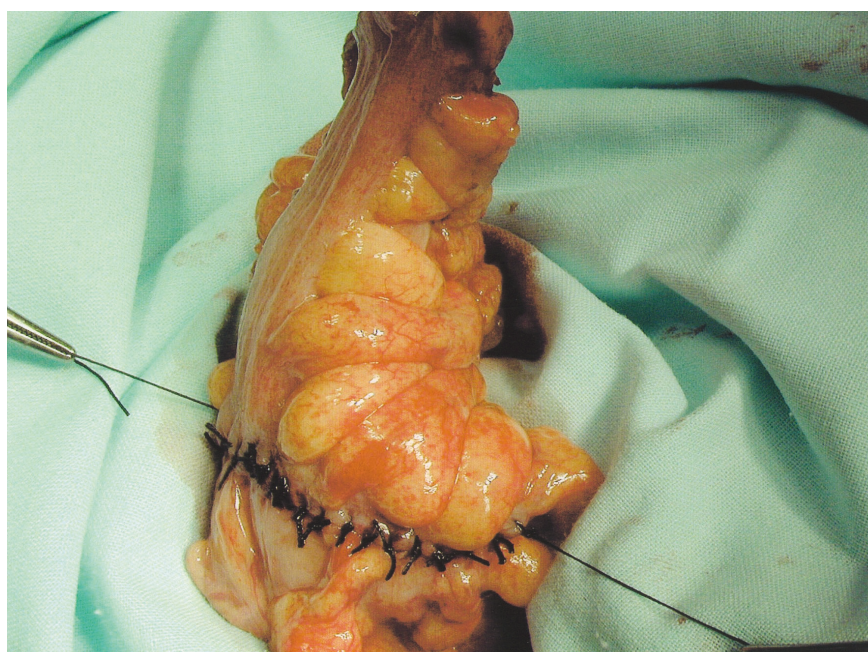
### Technique

The Technique of IMCP resembles the Heineke-Mikulicz pyloroplasty of the duodenum. In our modification of

the pouch originally proposed by Maurer CA et al [12, 13] we do not fully dissect the colon wall. The longitudinal dissection of the serosa and muscular layer is done and particular attention is paid to avoid opening of bowel lumen. The incision of 8-10 cm starts 4 cm from the planned anastomotic line on the taenia opposite to the mesentery in caudal direction (Figure 1). Subsequently the intestine is perpendicularly sutured using single polyglactone (Monocryl®) sutures of 3-0 thickness placed every 3-4 mm (Figure 2). The colo-rectal anastomosis is carried out using end-to-end two-stapled technique, and the colo-anal anastomosis is carried out manually from the perineal access using 4-6 Vicryl 2-0



**Figure 1.** Own modification of colonic coloplasty pouch



**Figure 2.** Own modification of colonic coloplasty pouch

sutures. The tube drain (28 – 32 French) is then placed in the small pelvis for 24–48 hours due to the fact of copious lavage of the abdominal cavity with 2% solution of the Povidone Iodine and 0.9% NaCl following anastomosis formation.

## Methods

The paper is based on two groups of patients subjected to rectal cancer surgery. In all patients low or ultra low anterior resection of the rectum with J pouch or IMCP or TCP pouch were performed. The patients were not randomized, as not in all patients the formation of the J-pouch is possible. In 21 patients the own modification of the coloplasty pouch was employed and in 4 patients TCP. In 19 consecutive patients J pouch was performed. The assessment covered the rate and type of intra- and post-operative complications, average surgery time, mean hospital duration and the type of preoperative treatment in both groups.

## Results

The results are listed in tables:

The characteristics of the patients in Table I.

The postoperative complications in IMCP group in Table II.

The postoperative complications in „J“-pouch group in Table III.

**Table I. Patient characteristics**

	IMCP n=21	J-pouch n=19
Mean age	58	54
Male/female	5/16	11/8
Preoperative radiotherapy 5x500cGy	13 (62%)	9 (47.4%)
Conventional preoperative chemoradiation	5 (24%)	3 (15.8%)
No preoperative radiotherapy	3 (14%)	7 (36.8%)
Preventive stoma	9 (43%)	3 (15.8%)
Time of surgery range	120-80	150-210
median	150 min	180 min
Surgical reintervention	1 (4.8%)	3 (15.8%)
30-days hospital mortality	0	0
Postoperative hospital stay (days) range	6-37	6-34
median	8	10
Mean follow-up (months)	16	18
Range	7-18	6-22

**Table II. Postoperative complications in IMCP groups**

Early complications	IMCP number
Perioperative mortality	0
Ileus:	
treated conservatively	1 (4.8%)
requiring laparotomy	0
Anastomotic leakage requiring surgical intervention	1 (4.8%)
Bleeding from the anastomotic line	0
Intraabdominal bleeding	0
Recto-vaginal fistula	0
Wound infection with evisceration	0
Total	2 (9.5%)
Late complications	IMCP
Local recurrence	1 (4.8%)
Distant metastases	1 (4.8%)
Cancer related deaths	0
Total	2 (9.5%)

**Table III. Postoperative complications in „J“-pouch groups**

Early complications	Number
Perioperative mortality	0
Ileus:	
treated conservatively	0
requiring laparotomy	1 (5.3%)
(in course of acute post-operative pancreatitis)	1 (5.3%)
Pelvic sepsis in course of pouch fistula or anastomotic leakage requiring surgical intervention	1 (5.3%)
Bleeding from the anastomotic line	0
Intraabdominal bleeding	1 (5.3%)
Postoperative pneumonia	1 (5.3%)
Recto-vaginal fistula requiring surgical intervention and ileostomy or colostomy	1 (5.3%)
Other-pelvic abscessus with segmental necrosis of the left urether requiring surgery, drainage and nephrostomy	1 (5.3%)
Wound infection with evisceration	0
Total	6 (31.6%)
Late complication	
Chronic ileus:	
treated conservatively	1 (5.3%)
treated surgically	0
Pouchitis	0
Erection and ejaculation dysfunction	1 (5.3%)
Local recurrence	0
Distant metastases	0
Cancer related deaths	0
Total	2 (10.5%)

## Discussion

The low anterior resection of the rectum with total mesorectal excision and transverse coloplasty of the sigmoid or descending colon possibly provides good alternative of reconstruction of large bowel resection of the mid- or low rectal cancer. Stressing the fact, that in patients with colonic J-pouch the rate of complications in form of anastomotic leakage or recto-vaginal fistula is lower than in patients with straight colo-rectal or colo-anal anastomosis [16%], J pouch technique seems to be standard method of restoration of large bowel continuity, however not always possible. TCP, CCP and proposed IMCP seems very promising alternatives, reducing intra- and postoperative morbidity. Our particular interest is in reduction of morbidity in patients irradiated pre-operatively, especially, as J-pouches are not as commonly used, as it could have been expected. Review of literature reveals only scattered information about colonic J-pouch reconstruction in post-irradiation cases of rectal cancer. Formation of a colonic J-pouch results in prolongation of surgery about half an hour. It has to be also stressed that formation of „J” pouch is not always possible due to the technical difficulties in obese patients, in patients with short mesentery or narrow pelvis. Thus, the recently proposed TCP or CCP [15] and IMCP is in our opinion the solution ensuring formation of the pouch in every patient in whom the low or ultra-low anterior resection of rectum is possible. It's worth to mention that IMCP is constructed manually and pouch-anal anastomosis is hand – sawn. This method, on the basis of our experience, seems to be at least as safe as formation of the J-pouch. In patients, in whom during IMCP formation the mucosa was cut through, TCP pouch was done and patients were excluded from the study. Among 4 of them in one, pouch leakage was observed.

Presented modification offers alternative to well established methods of the reconstruction, particularly when J-pouch is contraindicated or difficult to construct.

## Conclusions

1. In cases of low anterior resection when construction of colonic J-pouch is not possible, IMCP could be good alternative of reconstruction.
2. Preliminary assessment is promising however IMCP needs further evaluation in prospective clinical trial.

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