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Alimentary Tract

Transabdominal salvage surgery after pouch failure in a tertiary center: A case-matched study☆

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ABSTRACT

Background: Salvage surgery after failure of ileal pouch–anal anastomosis (IPAA) could be offered to selected patients. However, the results vary widely in different centers.
Aims: To assess the outcomes of salvage surgery by comparison with a control group matched for confounding variables.
Methods: From a prospective database of 1286 IPAA, patients undergoing transabdominal salvage surgery were compared for perioperative and functional outcomes and quality of life (QOL) to a 1:3 control group of primary IPAA cases.
Results: Salvage surgery patients (30) had a higher rate of hand-sewn anastomoses (80 vs 20%, $p < 0.0001$) and reoperations (10 vs 2.2%, p 0.02) than control group (90). A higher number of daytime and nighttime bowel movements (7.4 vs 4.1, $p < 0.0001$, and 2.6 vs 1.8, $p = 0.002$), a lower median CGQL score (0.7 vs 0.8, $p = 0.0001$) and a higher rate of pouch fistulae (13.3 vs 1.1%, $p = 0.003$) were reported after salvage surgery. Pouch failure rate after salvage surgery was 10.1%, 18.7% and 26.8% at 1, 5 and 10 years (vs 0%, 3.5% and 8.4% in control group, $p = 0.0085$).
Conclusions: Although worse functional outcomes and decreased QOL have to be expected, salvage surgery after pouch failure is associated with acceptable outcomes when performed in a referral center.

1. Introduction

Proctocolectomy and formation of an ileal pouch–anal anastomosis (IPAA) has been proven to be the treatment of choice for patients undergoing surgery for ulcerative or indeterminate colitis and familial adenomatous polyposis [1,2]. However, the long-term results of the procedure can be frustrated by morbidity which could eventually lead to pouch failure [3–5]. Despite the adherence to the correct indications to surgery and well established operative techniques, the cumulative risk of having a permanent stoma is up to 24% in the long term [6], and it is associated with several risk factors [7,8].

A definitive ileostomy could have a major negative impact on the life of those usually young and motivated patients. In order to avoid that, salvage surgery could be offered in most of those cases with acceptable morbidity and healing rates shown in observational studies [9–14].

However, there is a lack of evidence regarding the comparison of the patients' characteristics and outcomes between the primary pouch formation and the transabdominal salvage surgery in a tertiary center.

2. Materials and methods

All patients who underwent transabdominal salvage surgery for a failed IPAA were identified from a prospectively maintained database which was approved by the Institutional Ethical Committee. Patients who had perineal or endoscopic procedures were

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excluded from the study. Other exclusion criteria included the lack of data regarding the original IPAA surgery or the follow-up and any revision or redo performed within 90 days from the index IPAA operation.

The salvage surgery group contained patients who had their initial pouch formation both in our center or somewhere else.

Salvage surgery procedures were classified in three groups: redo pouch (including all patients who underwent the excision of the old pouch and the formation of the new one), pouch revision (any procedure which involved a manipulation/repair of the pouch, with or without a new IPAA) and partial ileal pouch resection (the resection of the afferent limb and the most proximal tract of the pouch, and a subsequent ileal pouch anastomosis).

After the application of the exclusion criteria, the salvage surgery cases were matched 1:3 to a control group of patients who had primary IPAA at our center for age, American Society of Anesthesiologist (ASA) score, gender, length of follow-up. All patients who had a primary IPAA in our database (over 1200 cases) were considered for potential inclusion in the control group. Patients lacking an updated follow-up were excluded. The patients were first divided in groups according to the time of surgery (by 5 years). From each period group, patient were subsequently divided according to the ASA score (I–II and III) and gender. Patients in the control group were selected following a random sequence in order to maintain a distribution of period of surgery, gender and ASA score which was statistically similar to the study group.

Pouch failure was defined as the need for construction of a permanent stoma with or without excision of the pouch.

The primary aim of the study was the comparison of the long-term outcomes between the salvage surgery group and the control group, in particularly regarding the rate pouch failure. The secondary aim included the analysis and comparison of the short and long-term morbidity, the functional outcomes and the quality of life (QOL) between the groups.

Postoperative complications were grouped according to the Clavien–Dindo classification [15]. A grade I complication includes any deviation from the normal postoperative course that does not require any pharmacological or surgical intervention (allowed treatments include antiemetics, antipyretics, analgetics). A grade II complication requires pharmacological treatment with drugs other than such allowed for grade I complications (such as blood transfusion or parenteral nutrition). A grade III complication requires a surgical, endoscopic or radiological intervention (IIIb or IIIa, requiring or not general anesthesia), while a grade IV represents a life-threatening complication requiring intensive care management. Grade V is the death of the patient.

The QOL was assessed using the Cleveland Global Quality of Life score [16].

Variables were presented as median (range) or number (%). Comparison of categorical variables was analyzed with Chi-square or Fisher's exact test as appropriate, and Wilcoxon rank sum test was used for quantitative and ordinal variables. The analysis of the long-term pouch failure rate was performed using the Kaplan–Meier method and the log rank test was used to compare the curves. A p value <0.05 was considered significant. Statistical analyses were performed using JMP version 11 (SAS Institute, Cary, NC, USA).

3. Results

Between 1989 and march 2016, 1286 patients underwent an IPAA formation in our center. After the application of the exclusion criteria, 30 patients who had a transabdominal operation for a pouch failure were included in the salvage surgery group and compared to 90 matched patients in the control group.

Table 1
Perioperative variables at the time of primary pouch and salvage surgery.

	N or median	% or range
Characteristics at pouch primary surgery		
Median age	29	18–63
J pouch design	30	100%
Hand-sewn anastomosis	8	26.7%
Postoperative complications	9	30%
Clavien–Dindo classification		
Grade IIa	1	3.3%
Grade IIIa	1	3.3%
Grade IIIb	7	23.4%
Median length of hospital stay (days)	10	5–52
Histopathology		
Ulcerative colitis	23	76.7%
Crohn's disease	3	10%
Indeterminate colitis	1	3.3%
Familial polyposis	2	6.7%
Cancer on familial polyposis	1	3.3%
Characteristics at pouch salvage surgery		
Median time from original pouch (months)	38	4–236
Main cause of pouch failure		
Fistula	13	43.3%
IPAA stenosis	8	26.7%
Pouch or pre-pouch stenosis	3	10%
Chronic pouchitis	3	10%
Chronic cuffitis	2	6.7%
Pre-pouch ileitis	1	3.3%
Type of salvage procedure		
Redo pouch	18	60%
Pouch revision	6	20%
Partial ileal pouch resection	6	20%
Type of redo pouch design		
J pouch	16	88.9%
S pouch	2	11.1%
Redo ileal pouch anal anastomosis	20	66.7%
Type of redo ileal pouch anal anastomosis		
Hand-sewn anastomosis	16	80%
Stapled anastomosis	4	20%

The characteristics of the salvage surgery patients at the time of the index IPAA are summarized in Table 1.

As shown in the table, the main cause of pouch failure was pelvic sepsis sustained by a fistula (43.3%). Most of the fistulae (61.5%) originated from the pouch–anal anastomosis (forming a chronic pelvic sinus in 30.8%, a pouch vaginal in 23.1% and a perianal fistula in 7.6% of cases), 23.1% from the body of the pouch and 15.4% from the tip of the J pouch. Stenosis represented the second cause of pouch failure (36.7% of total), and affected more commonly the IPAA (72.7%) than the pouch itself or the afferent small bowel limb (37.3%).

The salvage procedure was performed at a median of 38 months from the original operation. The majority of patients (60%) underwent a redo pouch operation. The rest of the patients underwent a pouch revision (20%) or a partial ileal pouch resection (20%). In 66.7% of cases (all redo pouch patients and 10% of patients who had a pouch revision) a new IPAA was performed, mainly hand-sewn (80%).

Table 2 reported a comparison of patient's characteristics, reason for pouch failure, postoperative and long-term outcomes among patients who had salvage surgery sorted by the type of surgical treatment (redo pouch, pouch revision and partial ileal pouch resection).

The comparison of the long-term success rate between patients who underwent a redo pouch and those who had a revision or a partial resection revealed a higher rate of pouch failure when a new pouch was performed, although the difference was not statistically significant (25.9 vs 8.3%, p = 0.1). A higher risk of postoperative morbidity affected the redo pouch subgroup (44.4 vs 16.6%, p = 0.05). Of the complications occurred in patients who had a redo pouch, 37.5% were Clavien–Dindo grade IIIb.

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