Sexual function after failed ileal pouch-anal anastomosis

Jonas Bengtsson a, *, Elisabet Lindholm a, Svante Nordgren a, Ina Berndtsson b, Tom Öresland c, Lars Börjesson a

a Department of Surgery, Sahlgrenska University Hospital, Gotenburg, Sweden
b Department of Nursing, Health and Culture, University West, Trollhättan, Sweden
c Akershus University Hospital, University of Oslo, Oslo, Norway

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KEYWORDS
Ulcerative colitis; IPAA; Sexual function; Body image; HQoL

Abstract

Background and Aims: Failure of ileal pouch-anal anastomosis (IPAA) occurs in around 10% of the patients. Compared to patients with functioning pouches, health related quality of life is deteriorated after failure. Sexual function in patients with pouch failure is however poorly studied. The aim was to study sexual function in patients with pelvic pouch failure; patients with functioning pouches were used as controls. The hypothesis was that patients with pouch failure have worse sexual function.

Methods: 36 patients with pouch failure were compared with 72 age and sex-matched controls with ulcerative colitis and functioning pouches. The patients answered a set of questionnaires concerning sexual function (Female Sexual Function Index [FSFI] and International Index of Erectile Function [IIEF]), body image (BIS-scale) and health-related quality of life (SF-36).

Results: Both women and men with pouch failure scored lower than controls in the FSFI and IIEF questionnaires. However, none of the observations were statistically significant. The scores in the failure group (for both sexes) were below the cut-off level for sexual dysfunction. Scores for the BIS instrument were significantly lower for both sexes in the failure group. Women and men in the failure group scored lower than the controls in all domains of the SF-36, however statistically significant only for the social function domain in men.

Conclusions: The hypothesis, that a failed IPAA is associated with worse sexual function, was not confirmed. Compared to patients with functioning pouches, patients with pouch failure have inferior body image.

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1. Introduction

Ileal pouch-anal anastomosis (IPAA) is the preferred alternative after proctocolectomy for ulcerative colitis (UC). Most patients with an IPAA are satisfied with the pouch function. However, in some patients the function is marred by a high frequency of pouch emptying, urgency and/or incontinence. About 10% of patients with an IPAA end up with a failure of the pouch, leading to excision of the pouch or permanent diversion with an abdominal ileostomy, or conversion of the pouch to a continent ileostomy. There are several reasons for failure: septic complications, anastomotic complications, irritable pouch syndrome (IPS) and pouchitis, being the most frequent. Data on health-related quality of life (HQoL) also show satisfactory results for a majority of pouch-operated patients. However, reported results regarding sexual function, i.e. impotence, impaired lubrication, pain during intercourse and desire, vary. This aspect of quality of life is poorly considered in standard instruments. Reported improvement of sexual function may be an effect of excision of the source of chronic inflammation and a better general health status. Deteriorated function is also reported and is probably multi-factorial; e.g. nerve damage during pelvic dissection, or associated with poor pouch function. Assessment of published results is difficult due to the variety of instruments used for evaluation of sexual function. For patients with poor pouch function and a potential pouch failure, HQoL is low. To our knowledge, there is only one study reporting on details of sexual function in patients with pouch failure. Since the majority of patients with IPAA are young and the failure rate is substantial, we consider this aspect to be important to explore.

Our hypothesis was that patients with pouch failure have an impaired sexual function. The aim was to compare patients with pouch failure to patients with functioning pouches regarding sexual function.

2. Patients and methods

2.1. Patients

Five hundred eighty-three patients with a preoperative diagnosis of UC and 10 with Crohn’s disease were operated on with IPAA in Gothenburg, Sweden, between 1982 and 2005. At follow-up in 2008, 54 patients were diagnosed with pouch failure. The pouch was removed in 29 patients, faecal diversion with a conventional or loop ileostomy, considered to be definitive, in 15 patients and converted to a continent ileostomy in 7 patients. Two patients in the failure group had moved abroad and one was dead. The remaining 51 patients were considered for inclusion in the study. Of the 539 patients with functioning pouches, 23 had died and 14 were living outside Sweden. For details regarding reasons for failure and fate of the pouches, see Table 1.

The design was a case control study. Fifty-one patients with pouch failure were contacted and questionnaires concerning demographic/background data and for assessment of sexual function, body image, and health-related quality of life, were sent by mail. Patients who did not respond to the second reminder were contacted by telephone. Altogether, 36 of 51 patients with a failed pouch (71%) responded. From the available 502 patients with functioning pouches two age and sex-matched controls were identified for each subject in the failure group. Eighty-three patients were contacted to enrol 72 responding controls.

2.2. Questionnaires

2.2.1. Background characteristics

Details regarding educational level, marital status, employment status/pensioner, disease (i.e. heart and lung disease, hypertension, diabetes, neurological disease, musculoskeletal disorders, depression/anxiety and gynaecological disease), ongoing medication (including hormonal replacement and medication for erectile dysfunction) and menopause were assessed with a questionnaire.

2.2.2. Sexual function

a. The Female Sexual Function Index (FSFI) was used to evaluate female sexual function. This is a validated instrument that includes 19 items that assess sexual function over the past 4 weeks in six domains (desire, arousal, lubrication, orgasm, satisfaction and pain); items are totalled to give a score (0–36; 36 best). A score of ≤26.0 was considered to represent sexual dysfunction.

b. The International Index of Erectile Function (IIEF) was the validated instrument used for evaluation of male sexual function. It consists of 15 items that assess sexual function over the past 4 weeks in five domains (erectile and orgasm function, sexual desire, intercourse and overall satisfaction); the items are totalled to give a score (5–75; 75 best). A score less than 26.9 was considered to be sexual dysfunction.

Both instruments have been used in previous studies on patients with IPAA. Hormonal replacement therapy (HRT) for women and injection or oral therapy for erectile dysfunction for men were also recorded.

Table 1 Failure. Causes to pouch failure and fate of the pouch after failure. Poor function: no specified complication as reason for failure.

<table>
<thead>
<tr>
<th>Causes to failure</th>
<th>Responders</th>
<th>Non-responders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor function</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Fistula/abscess</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Pouchitis</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Stenosis (anal)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Fissure</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fate of the pouch</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Excised</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Permanent division</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Continent ileostomy</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>
2.2.3. Body image
Body image has been shown to be related to sexual function.27,28 Body image was assessed using a 10-item scale, the Body Image Scale (BIS), consisting of affective items (e.g. feeling feminine/masculine and feeling attractive), behavioural items (e.g. finding it hard to look at oneself naked and avoiding people because of appearance), and cognitive items (e.g. satisfied with appearance, or with scar/stoma). This instrument was originally tailored and validated for other conditions.28 Patients with cancer,29 although used and validated for patients with cancer,28 were not one of the conditions validated and was therefore used and validated also for other conditions.30–32 Responses were graded at 4 levels; “not at all” (score 0), “a little” (score 1), “quite a bit” (score 2) and “very much” (score 3). A summary score was used (0–30; 0 best).

2.2.4. Pouch function
Pouch function for the controls was evaluated using the Öresland score.33

2.2.5. Health-related quality of life (HQoL)
HQoL was evaluated using the Swedish version of the SF-36 Health Survey version 2.0.34,35 The 36-item questionnaire measures 8 different health domains: physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE), and mental health (MH). Each subscale contains 2 to 10 items, giving a total of 35 questions. Subscale scores are computed according to standardised procedures and normalised to range from 0 to 100; higher scores indicate better health status.34,36

For further comparisons, an age and gender-matched sample (161 women and 129 men) was extracted from the Swedish SF-36 norm database.35

2.2.6. Management of missing items and forms
Missing items in the questionnaires were handled, if applicable, by simple mean imputation.37

2.3. Statistics
Data is presented as median (range). Non-parametric methods (Chi-square or Fisher’s exact test, Mann–Whitney U test and Spearman rank correlation test) were used. For the SF-36 comparisons, one sample t-test was used.

2.4. Ethics
Ethical approval for the study was obtained from the Research Ethics committee of Göteborg University, Sweden.

3. Results
3.1. Non-respondents
3.1.1. Failures
Fifteen patients (six women) with failure did not respond to the invitation to participate in the study (Fig. 1; 1 Familial adenomatous polyposis, 1 Crohn’s disease and 13 UC). The pouch was excised in 9 patients, indefinitely diverted in 5 and converted to a continent ileostomy in one. Median age at pouch surgery was 35 years (19–50), and at the time for the present study it was 55 years (39–66), consistent with the entire study group.

3.1.2. Controls
Eleven patients (seven women) of the eligible 83 for inclusion in the control group did not answer any of the questionnaires. In this group, the median age at pouch surgery was 27 years (range 20–55). All had UC.

Pouch functional scores for the non-respondents were available from our pouch registry, and did not differ from the final control group.

3.2. Incomplete responders
7 patients (4 women) in the pouch failure population did not complete the sexual functioning questionnaires (Fig. 1). No background characteristics distinguished them from the study group.

3.3. Background and demographic characteristics
Demographic details are presented in Table 2. There were no significant differences between the study and the control groups regarding age at the time for IPAA. Four women in the study group had a possible diagnosis of Crohn’s disease without signs of ongoing disease activity; all patients in the control group had UC. There was no difference in median pouch function, between the control group and the background IPAA population in Gothenburg.

There were no significant differences between the groups regarding educational level or marital status/partner. Men in the failure group were significantly more on sick leave or sickness pension compared to men in the control group: 3/13 compared to 0/32 (p=0.020).

There were no significant differences between the groups regarding comorbidities or ongoing medication.

3.4. Sexual function
The study group scored lower than controls both on the FSFI and IIEF questionnaires, and this was also the case for each domain within the instruments. However, no statistically significant differences could be recorded for summary score or for individual domains. Median summary scores (FSFI) for women in the study group were 24.8 and for the control group it was 33.0 and IIEF questionnaires, and this was also the case for each domain within the instruments. However, no statistically significant differences could be recorded for summary score or for individual domains. Median summary scores (FSFI) for women in the study group were 24.8 and for the control group it was 33.0 (p=0.360). Thus, the median summary score for women in the study group was below the defined cut-off score, compared to 33.0 (32.5%) in the control group (p=0.103) (Fig. 2).

The median summary score (IIEF) for men in the study group was 33.0 and for the control group it was 64.0 (p=0.229). Thus, the median summary score for men in the study group was below the defined cut-off score for sexual dysfunction (26.0). Nine out of 16 (56%) had a summary score below the cut-off score, compared to 13/32 (31%) in the control group (p=0.161) (Fig. 2).

6/29 patients (3 women) in the study group and 12/72 patients (6 women) in the control group reported no sexual
intercourse for the last 4 weeks. Female: p=0.710 and male: p=0.700.

3.5. Body image

The BIS summary score for the female study group was higher than for the control group, indicating a worse perception of body image, (median 10 and 3, respectively; p=0.001). The figures for men showed similar differences (median 6.5 and 1, respectively; p=0.002; Fig. 3). No difference was recorded between the groups for the item evaluating dissatisfaction with scar and/or stoma; the result was consistent for both genders (female: p=0.534, male: p=0.177).

A possible correlation between the FSFI/IIEF and BIS summary scores was evaluated. The result for women in the study group was −0.183 (p=0.497) and for women in the control group it was −0.106 (p=0.514). Corresponding results for the men in the study group were −0.435 (p=0.137) and for the control group were −0.137 (p=0.464).

3.6. Health-related quality of life

Both women and men in the study group scored lower than the controls in all domains of the SF-36. However, statistical significance was reached only in the social function (SF) domain for men. Furthermore, the female control group scored significantly better in the physical function (PF) and

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Background characteristics. Background characteristics for patients in study and reference groups. UC: ulcerative colitis and CD: Crohn’s disease. Data are presented as median (range).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study group</strong></td>
<td><strong>Male</strong></td>
</tr>
<tr>
<td>N</td>
<td>16</td>
</tr>
<tr>
<td>Age (UC/CD)</td>
<td>53 (31–70)</td>
</tr>
<tr>
<td>Age at IPAA</td>
<td>12/4</td>
</tr>
<tr>
<td>Years with functioning pouch</td>
<td>31 (17–48)</td>
</tr>
<tr>
<td>Menopause N (%)</td>
<td>7 (1–15)</td>
</tr>
<tr>
<td>Hormone replacement N (%)</td>
<td>8 (50)</td>
</tr>
<tr>
<td>Medication for erection N (%)</td>
<td>4 (25)</td>
</tr>
</tbody>
</table>

Figure 1 Patients. Study flow diagram.
bodily pain (BP) domains, compared with the sample from the Swedish norm database. There were no significant differences between the male control group and the norm sample (Fig. 4).

4. Discussion

Our hypothesis was that pouch failure, associated with additional surgery, formation of a stoma and possible change in body image could lead to a deterioration of sexual function. A tendency towards inferior sexual function was observed, but there was no support for the hypothesis in terms of conventional statistics.

The groups were comparable regarding background factors, except for working capacity. Furthermore, in the context of sexual function, there were no differences regarding hypertension, diabetes or depression/anxiety disorders between the groups.

Limitations of the current study are the design (not prospective), the small sample size and the low response rate for the FSFI/IIEF instruments in the failure group. However, the response rate (71%) is in accordance with previous studies (on sexual function) in this field and could be explained by the sensitive nature of the subject.

4.1. Sexual function

The literature on sexual function among patients with pouch failure is scarce. To our knowledge, only the study by Das et al. has addressed the issue. Twenty-two ninety-seven patients (56 women) with pouch failure were included in that study; focus was on potential differences between patients undergoing pouch excision or definitive diversion. Fifty-three patients (36 women) answered the posted questionnaires on HQoL (e.g. SF-36) and other variables, including sexual function/restrictions (questions not specified). Three out of seven of the men with their pouch excised reported difficulty maintaining erection compared to 0/10 with permanent diversion. The authors concluded that the difference could be explained by the pelvic dissection during pouch excision.

Figure 2  Sexual function. a. Summary scores for the Female Sexual Function Index (FSFI)<sup>23</sup>. Vertical lines represent the level for sexual dysfunction<sup>24</sup>. b. Summary scores for the International Index of Erectile Function (IIEF)<sup>25</sup>. Vertical lines represent the level for sexual dysfunction<sup>26</sup>.
There was no evaluation of female sexual function. In the present study, 3/11 men with pouch failure reported erectile dysfunction. Interestingly, all of them have their pouch in situ.

No statistically significant differences in sexual function were recorded between the groups in the present study and the initial hypothesis was not confirmed. However, both men and women in the failure group scored lower than controls. Furthermore, the median summary scores for patients with pouch failure were below the cut-off level for sexual dysfunction and the proportion of patients with a score below the cut-off score was larger in the study group compared with the control group; however, again without statistically significant differences between the groups. We consider this as a tendency to worsen sexual function in patients with pouch failure.

In this context, it seems important to emphasise that sexual function should be evaluated against background sexual function in the general population. Sexual dysfunction in women is reported from a few percent to over 50%, depending on definition, the instrument used for measurement, age, cultural context, etc.38 The similar broad range in prevalence, together with methodological considerations, is also valid for men. Thus, it is possible that sexual function for both women and men with functioning, as well as with failed pouches, actually is within, or close to the range among the general population.

In the present study, 6/29 patients (3 women) in the study group and 12/72 patients (6 women) in the control group reported no sexual activity. These results should be compared to the frequency of sexual inactivity and/or lack of sexual interest in the background population; previous studies have demonstrated a wide range in this parameter (5–50%).39–43

### 4.2. Body image

Sexual function is a complex entity, involving biological, psychological and social aspects. Among the factors that influence sexual function is body image, which could be defined as the perception of one’s own physical appearance and function.44

Some previous studies have shown a correlation between body image and sexual function. Weaver et al.27 showed, in a study on 214 healthy university women, that a positive body image was associated with better sexual function. Da Silva et al.28 performed a prospective study of sexual function, body image and HQoL in 93 women undergoing colorectal surgery for mainly benign conditions. In contrast to the findings in the present study, a strong correlation was demonstrated for body image and sexual function.

In the present study, both men and women in the study group scored significantly worse in BIS. Interestingly, this was not reflected by worse sexual function and sexual function was not significantly correlated with body image scores in any of the groups.

### 4.3. Health-related quality of life

The results concerning HQoL in the present study indicated inferior scores after pouch failure. Furthermore, patients in the control group had an HQoL, well in range with the reference population.

Health-related quality of life for patients with IPAA, assessed by SF-36 and other similar instruments, has been addressed in several previous studies.7,45–47 In most studies, patients with IPAA do not differ from the background population.
population. However, there are only a few reports on HQoL for patients with pouch failure.\textsuperscript{7,48} In the study by Das et al.,\textsuperscript{22} both patients with excised pouches and patients with diverted pouches showed lower scores than the UK norm in all domains of the SF-36; there was however no difference between the groups. In a study by Lepisto et al.,\textsuperscript{48} 18/21 patients with pouch failure answered the SF-36 instrument and were compared with controls and with 19 persons from the Finish norm database. The control group did not differ from the norm population except in the vitality (VT) domain. Patients with failure on the other hand, had significantly lower scores compared with non-failures for the physical function (PF), vitality (VT) and the role-physical (RP) domains. A previous study from our institution confirms these results.\textsuperscript{7}

4.4. The presence of a stoma

It could be argued that this study actually is a comparison between patients with or without a stoma, although complicated by the fact that the control group had a surgical procedure that in itself could affect sexual function. The literature suggests that the presence of a stoma affects sexual function in a negative direction (for a recent review, see Brown and Randle).\textsuperscript{49} A stoma could also affect body image and therefore affect sexual function.\textsuperscript{22,49,50}

Several previous studies report that the presence of a stoma has a negative impact on the quality of life.\textsuperscript{49} Comparisons on this aspect for patients with IPAA (or continent ileostomy) and patients with ileostomy are scarce in the literature, but available results seem to point in the same direction.\textsuperscript{51–53} Interestingly, in the present study, the item in the BIS instrument that focused directly on dissatisfaction with scar (control group) and/or stoma (study group) was the only item in the instrument that did not differ between the groups. This observation does not support the hypothesis that the tendency towards a worse sexual function is related to the presence of stomas. A possible explanation to this result could be activation of coping mechanisms, an effect previously demonstrated for patients with stomas.\textsuperscript{54}

5. Conclusion and final remarks

The hypothesis that a failed IPAA is associated with impaired sexual function was not confirmed by the present study. However, patients with pouch failure have worse body image. The potential risk for poor function and manifest failure must be communicated during the counselling process before surgical reconstruction. In this context, issues concerning sexual function are essential, as the majority of patients are young.

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JB participated in the design of the study, collection of data, carried out the studies, data analyses and wrote the manuscript.

EL participated in the design of the study, collection of data and helped to draft the manuscript.

IB participated in the design of the study and helped to draft the manuscript.

TO participated in the design of the study and helped to draft the manuscript.

SN participated in the design of the study and helped to draft the manuscript.

LB participated in the design of the study and in writing of the manuscript.

All authors read and approved the final manuscript.

References


