

Change in Deferring Time Correlate to Improved Female Sexual Function after Anal Sphincter Repair: A Prospective Study

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Abstract

Background: Many women suffer from sexual problems after anal sphincter tears due to obstetric trauma. **Aim:** The study aimed to assess changes in sexual function after anal sphincter repair. **Methods:** The study was a non-randomized prospective observational cohort study. Inclusion of the study was done at the University Hospital, Uppsala, Sweden, between 2002 and 2007. Thirty-nine consecutive female patients admitted for anal sphincter repair were invited to the study. Twenty patients accepted and were included, four were lost to follow up and one was unevaluable (due to the formation of a stoma) leaving a study group of 15 patients. The patients were assessed with questionnaires before surgery and at three and 12 months after surgery. **Outcomes:** Change in reported sexual activity and dyspareunia. **Results:** Before surgery, 12/15 patients reported that their sexual life was impaired due to anal incontinence. The corresponding figure at 12 months was 9/15 ($p = 0.43$). Three patients remained sexually inactive throughout the study, five patients increased their sexual activity and one had decreased activity. Out of the 12 who were active, four stated dyspareunia at baseline, and only one reported dyspareunia at 12 months. The mean Miller incontinence scores at baseline and 12 months were 10.1 and 8.7, respectively. The change in incontinence score did not differ between those with decreased, stable or increased sexual activity. However, there was a definite correlation ($r = 0.54 - 0.60$, $p < 0.05$) between change in sexual function and deferring time for stool. **Clinical Implications:** Operative management of anal sphincter tears alone is not curative for sexual problems due to anal incontinence but can be a part of the treatment. **Strengths and Limitations:** The study is a prospective study of sexual function. The limitations are that the questionnaires were not vali-

dated due to lack of such questionnaires at the time of the study and that the study population is quite small. **Conclusion:** Patients with a sphincter injury and fecal incontinence often have an impaired sexual function. Increased deferring time for stools after surgery increases the likelihood of improved sexual function.

Keywords

Sexual Function, Anal Sphincter Repair, Fecal Incontinence, Anal Sphincter Injury

1. Introduction

Obstetric trauma affects both urinary and anal continence as well as sexual function [1] [2]. Sexual function in relation to procedures for urinary incontinence has been studied extensively with more than 20 published studies to date [3] [4] [5]. In contrast, there are only five published studies of sexual function after surgical procedures for anal incontinence [6] [7] [8] [9] [10]. These studies all showed that sexual function was compromised in these patients and that surgery could improve sexual function. However, all studies were retrospective in nature with the risk of possible recollection bias. The aim of this study was to prospectively study sexual function before and after surgical repair for anal sphincter injury.

2. Materials and Methods

Patients

Patients were included prospectively when they were admitted for anal sphincter repair at the university hospital in Uppsala, Sweden. Inclusion was done from September 2002 until May 2007 and was done by a research nurse who personally interviewed every eligible patient. Altogether 39 consecutive female patients were invited to participate in the study. Twenty patients were included, corresponding to an inclusion rate of 51 percent. Five of these patients had undergone a prior sphincter repair at other hospitals. All of the patients had a defect of the external anal sphincter on anorectal ultrasound. Totally 19 patients had sustained the injury from an obstetric trauma and one patient had an injury of iatrogenic origin after repeated anal fistula surgery. Four patients did not attend the 12-month follow-up. One patient received a stoma due to a severe perineal infection and could not be evaluated concerning sphincter function leaving a study group of 15 patients. Mean age was 36.4 years. Duration of incontinence varied between 1 to 13 years. See **Table 1** for details.

Surgical technique

All patients underwent a mechanical bowel preparation preoperatively. The surgical procedure was performed in the jack-knife position under general or spinal anaesthesia. Preoperative antibiotic prophylaxis was routinely given.

Table 1. Patient demographics.

Sex	Female 15/15
Age at surgery	Mean 36.4 years (median 36, range 30 - 47)
Reason for sphincter defect	Obstetric injury 14 Surgical fistula repair 1
Prior sphincteroplasty performed	5 yes 10 No

The external and internal sphincters were first mobilized but not separated. The scar tissue was then incised in the midline (but left in place). Overlapping sphincteroplasty was then performed with four interrupted 3:0 Polydioxanone sutures. The wound was closed in a Y-fashion with interrupted 3:0 Polyglactin sutures. No diverting stomas were employed.

Study design

Patients were evaluated before surgery with questionnaires and clinical investigation. Follow-up comprised a visit to the outpatient clinic three months post-operatively with completion of questionnaires and clinical investigation whereas the questionnaires were sent to the patients twelve months after surgery.

Questionnaires

The patients completed two questionnaires at each follow-up: A validated bowel function questionnaire [11] and a sexual function questionnaire specifically designed for the present study, the validated bowel function questionnaire consisted of 47 questions including information about type and amount of incontinence, deferral time, ability to discriminate between gas/stool and how incontinence affects daily life. From the questionnaire Miller's incontinence score [12] was calculated. The sexual function questionnaire consisted of 17 questions regarding different aspects of sexual function including frequency of intercourse, dyspareunia and satisfaction with sexual function and how it affected quality of life (QoL). At the time of the study, no validated sexual function questionnaire existed translated to Swedish.

Statistical methods

Values are presented as proportions or means and range. The Wilcoxon's test was used for paired comparisons of means. McNemar's test was used to compare proportions. Spearman rank correlation test was used to analyse correlations. A P-value below 0.05 was considered statistically significant. Statistica® 10 software (StatSoft, Tulsa, OK, USA) was used for statistical analyses.

Ethical considerations

The study was approved by the local Ethics committee at Uppsala University (UPS_DNR_02_394). All patients also provided written informed consent.

Funding

The study has received no funding from external sources and was funded exclusively through internal funding at the institution.

3. Results

Bowel function

Deferring time to loose stool was almost doubled from 2.2 (0 - 10) to 4.2 (0 - 10) minutes but the difference was not statistically significant ($p = 0.06$). Deferring time for solid stool was also increased from 7.9 (1.5 - 20) to 10.8 (0 - 20, $p = 0.11$). Neither were there any changes in number of leaks, need to rush to the toilet, sensibility, ability to discriminate between gas and stool, use of underwear protection or diet observed when comparing preoperative data with 3 months and 12-months postoperatively. Mean Miller score was 10.1 preoperatively, 8.3 ($p = 0.37$) at 3 months and 8.7 ($p = 0.36$) at 12 months (**Table 2**).

Fourteen patients stated preoperatively that bowel function impaired their general well being. At 12 months, there was a reduction to 10 patients ($p = 0.06$). In a similar manner, the number of patients experiencing negative impact on social life was reduced from 13 to 9 ($p = 0.07$) and on travelling/vacations from three to two. Although a tendency towards improvement in these parameters, there were no significant changes in these parameters.

Sexual function

The reported incidence of negatively affected sexual function caused by anal incontinence decreased during the study. Before surgery, 12 out of 15 patients reported that their sexual life was impaired due to their anal incontinence. The corresponding figure at 12 months was 9 out of 15 ($p = 0.43$, **Table 3**). Three

Table 2. Bowel function in 15 patients before and after sphincteroplasty. There were not any statistically significant changes at 3 or 12 months compared to preoperative data. Figures are number of patients or mean (range). ^aMissing data at 3 months for 1 patient.

	Before surgery	3 months	12 months
Incontinence for solid stool (Yes/No)	6/9	4/11	5/10
Miller score	10.1 (3 - 18)	8.3 (1 - 18)	8.7 (0 - 18)
Antidiarrheal medication (Yes/No)	2/13	2/13	3/12
Rush to toilet Yes/No	11/4	9/6	9/6
Deferring time loose stool (min)	2.2 (0 - 10)	3.2 (0 - 10)	4.2 (0 - 10)
Deferring time solid stool (min)	7.9 (1.5 - 20)	10 (2.5 - 20)	10.8 (1 - 20)
Sense stool in anal canal (Yes/No)	11/4	14/1	10/5
Discriminate gas from stool (Yes/No)	6/9	3/12	5/10
Pad nighttime (Yes/No)	8/7	9/6	7/8
Pad daytime (Yes/No)	8/7	9/6	7/8
Diet for bowel function (Yes/No)	6/9	7/8	7/8
Type of leakage			
Passive	6	4	5
Urgency	4	5	3
Soiling	5	4	6
Total incontinence	0	1	1

Table 3. Sexual function parameters before and after sphincteroplasty for fecal incontinence.

	Preoperative	3 months	12 months
Sexually active (Yes/No)	12/3	12/3	12/3
Bowel function affects sexual function (Yes/No)	12/3	11/4	9/6
Frequency of intercourse			
>once a week	2	4	4
once a week	3	4	5
>once a month	5	1	1
<once a month	2	3	2
never	3	3	3
Frequency of dyspareunia			
Never	6	5	5
Almost never	2	2	6
Seldom	2	5	1
Often	1	0	0
Always	1	0	0

patients were sexually inactive before the study and remained so throughout the study. Before surgery these three stated that they were sexually inactive because of their anal incontinence. At twelve months two of them maintained that statement whereas the third patient stated lack of partner as reason for sexual inactivity. Of the twelve sexually active patients five increased and one decreased their frequency of sexual intercourse during the course of the study.

The twelve patients who were sexually active reported how often they had dyspareunia on a 5-graded scale (always, often, seldom, almost never and never). Preoperatively four patients reported dyspareunia always, often or seldom. At three months 5 patients reported dyspareunia whereas at 12 months only one patient reported dyspareunia as occurring seldomly (**Table 3**).

Six patients decreased in Miller's incontinence score during the course of the study. Three of these patients stated that bowel function did no longer have a negative effect on their sexual life at 12 months.

There was no association between improvement in Millers incontinence score and dyspareunia.

Neither was there any clear connection between Miller's incontinence score and the frequency of sexual intercourse (**Figure 1**). On the other hand, there was a correlation between the change in frequency of intercourse and the change in deferral time of stools. An increased frequency of intercourse related to increased deferral time for loose stools ($r = 0.54$, $p < 0.05$) and solid stool ($r = 0.60$, $p < 0.05$, **Figure 2**). Five patients had increased their frequency of intercourse at 12 months. Their mean Miller score was essentially unchanged (6.6 vs 6.4). Two

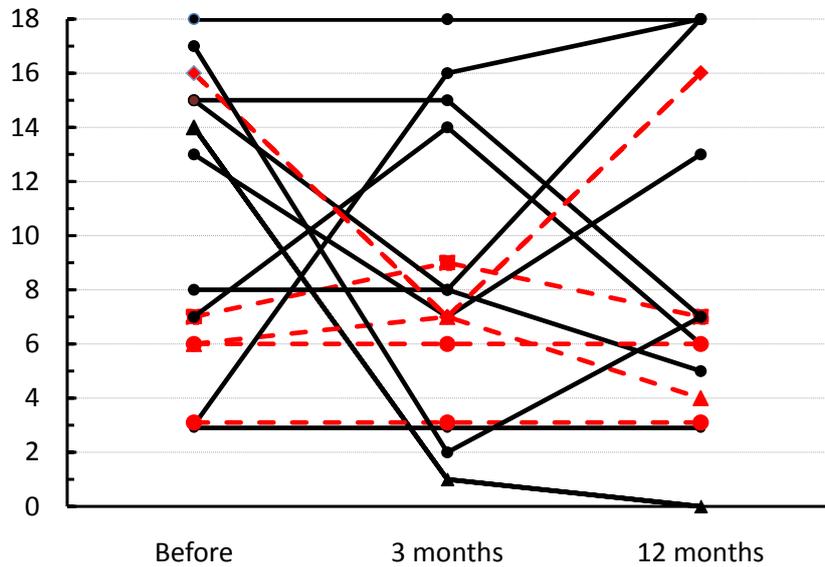


Figure 1. Miller incontinence score pre- and post-operatively related to the change in frequency of sexual intercourse for individual patients. Dotted lines represent patients who increased their frequency of intercourse.

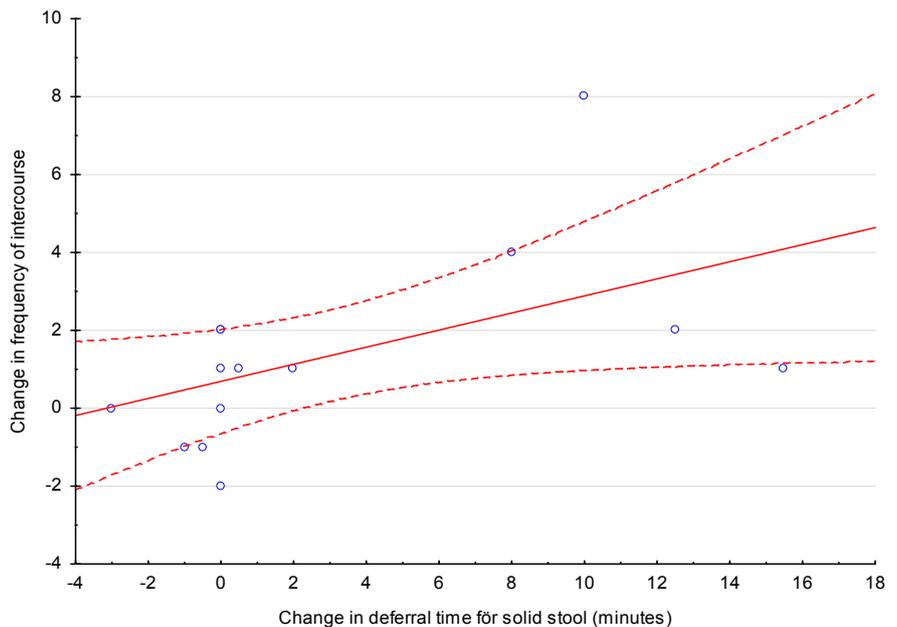


Figure 2. Relationships between change in the frequency of intercourse and change in deferral time for solid stools (Spearman rank correlation test, $r = 0.60$, $p < 0.05$).

patients had an increase in Millers incontinence score during the course of the study. One remained sexually inactive whereas the other reported both an increase in dyspareunia and a decrease in sexual activity.

4. Discussion

Our results regarding improvement of continence and sexual function after anal sphincter repair is inferior to those reported by other authors [6] [7] [8] [9] [10].

We think that there are two possible explanations for this: First our clinic is a tertiary referral center which leads to our patient material being selected towards a more complicated group. This is reflected in that five patients in our study group had been operated with an anal sphincter repair at another institution, and re-do sphincteroplasty has been shown to have worse functional outcome than primary surgery [13] [14]. Second, this study is prospective in its design which might reduce patient recall bias and give a more truthful picture.

Our study indicates that female patients who are operated with anal sphincter repair have a very high incidence of sexual problems. Even if the more complicated patients are excluded the reported incidence of sexual problems is still high. This problem is with great certainty underdiagnosed and probably a cause of suffering in this group of patients. However, studies of sexual function are difficult since it is often troublesome to enroll patients in such studies. Selection bias might therefore have an impact on the results. We tried to address this problem through a female research nurse who did the inclusion of patients by a personal interview. Even so, we still had a problem to include patients and also had a significant drop-out rate.

We observed that sphincteroplasty had a potential to decrease the problem of dyspareunia. Our study gives no clear answer to the underlying mechanism, but we think that the reason might be the restored anatomy of the perineal body. Therefore, we believe that pain during intercourse could strengthen the indication for surgery in patients with defects of the anal sphincters and incontinence.

It is interesting to note that a satisfactory result with improvement of incontinence symptoms is no guarantee for improvement of sexual function. On the other hand, deterioration of incontinence symptoms seems to predispose for worsening or lack of improvement. Interestingly, there seemed to be an association between change in deferring time for stool and improved overall sexual function. This might be explained by that improved external sphincter function reflected by an increased capacity to retain stool is accompanied by less embarrassment, less pain, and regained interest for sexual relations and activity.

5. Conclusion

Our results show that the solution to the sexual problems that patients with anal sphincter injuries suffer is complex and that a successful surgical repair increasing deferral time for stools can be a part of solving those problems.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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