

Sexual activity after ileal pouch-anal anastomosis in Japanese patients with ulcerative colitis

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Abstract

Purpose The aim of this study was to evaluate the sexual activity after restorative proctocolectomy with ileal J-pouch-anal anastomosis (ileoanal anastomosis) in Japanese patients with ulcerative colitis.

Methods Sixty-one patients who had undergone ileoanal anastomosis and were followed for at least 6 months after surgery were randomly selected. Their quality of life was assessed using the Japanese version of the Inflammatory Bowel Disease Questionnaire. Scores of three or less for the item “Sex life” were predetermined to represent poor sexual activity. The medical staff then asked them the reasons for this using a non-structured interview and open-ended questions.

Results Overall, 19 patients reported poor sexual activity. There was a significant difference in the scores for “Social functions” other than Sex life between individuals with poor and good sexual activities (21.6 ± 4.6 vs. 24.1 ± 4.2 , $P = 0.016$). Ileoanal anastomosis after the age of 40 (OR 22, $P = 0.02$) and a total preoperative corticosteroid dose ≥ 15 g (OR 7.4, $P = 0.04$) were significant risk factors for poor sexual activity after ileoanal anastomosis.

Conclusion Our results suggest that ileoanal anastomosis results in relatively poor sexual activity, which was associated with other social functions, older age and a higher

dose of corticosteroids administered to Japanese patients with ulcerative colitis.

Keywords Sexuality · Ulcerative colitis · Total colectomy · Ileal pouch

Introduction

Reconstructive proctocolectomy with ileal J-pouch-anal anastomosis (RP-IPAA), which was first described in 1980, is now the gold standard surgical procedure for ulcerative colitis [1]. It has been shown that the long-term quality of life (QOL) after RP-IPAA is excellent and the level of fecal continence is satisfactory [2–4].

Some investigators have also evaluated sexual activity after RP-IPAA in patients with ulcerative colitis [5–11], and about 20 % of such patients were reported to suffer from sexual dysfunction, such as dyspareunia or retrograde ejaculation [5, 12]. However, no studies in Japan have evaluated the sexual activity after RP-IPAA because of the low response rates to such questionnaires in Japan [4]. The characteristics of Japanese individuals are thought to be the main reason for this low response rate, along with the methods applied, namely self-administered questionnaires delivered by regular mail [4].

The aim of this study was to evaluate the sexual activity after restorative proctocolectomy with ileal J-pouch-anal anastomosis (ileoanal anastomosis) in Japanese patients with ulcerative colitis.

Patients and methods

Overall, 98 patients underwent two-stage RP-IPAA at Mie University Hospital between 2005 and 2008 and were

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followed for at least 6 months after ileostomy closure. Between April 2009 and December 2009, 72 of 98 patients aged ≥ 18 years and in clinical remission without pouch-related complications, such as pouchitis and perianal sepsis, for the previous 6 months, and who were followed-up routinely at the outpatient clinic, were eligible for this study. Sixty-one patients were recruited from the 72 eligible patients who visited our out-patient clinic, but since it was not possible to evaluate all of these patients because of the time-consuming process required for our interviews, we randomly selected patients by drawing, and enrolled them in this study.

We prospectively investigated the QOL after RP-IPAA using the Japanese version of the Inflammatory Bowel Disease Questionnaire (IBDQ-J), translated from the original IBDQ [13] into Japanese by standard translation/back-translation methods. The IBDQ-J consists of 32 items distributed across four subscales: bowel symptoms (10 items), systemic symptoms (five items), emotional status (12 items) and social functions (five items) [14]. The validity of the IBDQ-J has previously been assessed in Japanese patients with ulcerative colitis who had undergone RP-IPAA [4]. The patients were given the IBDQ-J sheet directly by female medical staff members at an outpatient visit after the clinical examination. The IBDQ-J was completed by the patients and collected on the same day.

Scores of three or less for the item “Sex life” were predetermined to represent poor sexual activity (Table 1). The medical staff then asked patients about the reason(s) for this in a non-structured interview using open-ended questions. The interviews were recorded and interpreted later by medical staff. The reasons for poor sexual activities were classified into subgroups. The patients’ regular clinical staff members were not actively involved in their recruitment or interviews. The medical charts of all patients were reviewed to confirm the treatment characteristics, including age at onset, duration and extent of ulcerative colitis, total corticosteroid dose and organ/space surgical site infections as postoperative complications. Poor anal function was

Table 1 Assessment of the Sex life item in the IBDQ-J

To what extent has your bowel problem limited sexual activity during the last 2 weeks? Please choose an option from		Sexual activity
1	No sex as a result of bowel disease	Poor
2	Major limitation as a result of bowel disease	
3	Moderate limitation as a result of bowel disease	
4	Some limitation as a result of bowel disease	Good
5	A little limitation as a result of bowel disease	
6	Hardly any limitation as a result of bowel disease	
7	No limitation as a result of bowel disease	

defined as a score of <3 on one or more of the following items: frequent bowel movements, loose bowel movements, gas passage and accidental soiling. This study was approved by the Research Ethics Committees of Mie University School of Medicine, Mie, Japan.

All data were entered into a database and analyzed using the JMP 7 software program (SAS Institute, Cary, NC, USA). Values are given as mean \pm standard deviation. The relationships between the IBDQ-J scores and clinical factors were evaluated by Wilcoxon/Kruskal–Wallis tests and Fisher’s exact test, as appropriate. A multivariate logistic regression was conducted to identify factors associated with poor sexual activity. In all analyses, values of $P < 0.05$ were considered to be statistically significant.

Results

All 61 patients (31 females and 30 males) included in this study agreed to answer the questionnaire and completed it at outpatient visits. The characteristics of the patients are shown in Table 2. The mean age at the time of RP-IPAA, the mean preoperative disease duration and the mean time between surgery and completing the questionnaire were similar in males and females.

The response rates and scores for the 32 items of the IBDQ-J are shown in Table 3. The response rates ranged from 98.4 % (60/61) to 100 %, except for the item “Worried about surgery,” which had a response rate of 93.4 % (58/61). For the items “Rectal bleeding” (6.0 ± 1.3 vs. 6.3 ± 1.2 , $P = 0.02$) and “Tearful/upset” (6.4 ± 1.0 vs. 5.6 ± 1.8 ,

Table 2 Patient characteristics

	All patients (<i>n</i> = 61)	Males (<i>n</i> = 30)	Females (<i>n</i> = 31)	<i>P</i>
Age at onset of ulcerative colitis	30.0 ± 15.5	28.4 ± 15.1	31.3 ± 15.9	0.47
Duration of ulcerative colitis (years)	8.3 ± 8.5	7.2 ± 9.0	9.3 ± 8.0	0.14
Age at RP-IPAA (years)	41.5 ± 15.3	38.6 ± 14.9	44.3 ± 15.3	0.11
Total dosage of corticosteroid (g)	16.9 ± 16.8	20.0 ± 20.9	13.7 ± 8.7	0.93
Postoperative pelvic sepsis (yes/no)	12/49	8/22	4/27	0.21
Duration after stoma closure (months)	42.5 ± 31.1	49.4 ± 37.1	35.9 ± 22.4	0.24

RP-IPAA restorative proctocolectomy with ileal J-pouch anal anastomosis

Table 3 Response rates and results for individual items of the IBDQ-J

Question no.		Response rate (%)	All patients (mean \pm SD, <i>n</i>)	Males (mean \pm SD, <i>n</i>)	Females (mean \pm SD, <i>n</i>)	<i>P</i>
1	Frequent bowel movement (B)	100	5.8 \pm 1.5 (61)	6.0 \pm 1.4 (30)	5.7 \pm 1.7 (31)	0.73
2	Fatigue/tiredness (S)	100	4.5 \pm 1.6 (61)	4.9 \pm 1.3 (30)	4.2 \pm 1.8 (31)	0.51
3	Frustrated (E)	100	4.8 \pm 1.6 (61)	5.2 \pm 1.2 (30)	4.4 \pm 1.8 (31)	0.23
4	Unable to work/study (SF)	100	6.0 \pm 1.8 (61)	5.8 \pm 2.0 (30)	6.2 \pm 1.6 (31)	0.92
5	Loose bowel movement (B)	100	4.4 \pm 1.7 (61)	4.5 \pm 1.7 (30)	4.4 \pm 1.7 (31)	0.70
6	Energy (S)	100	4.1 \pm 1.3 (61)	4.2 \pm 1.3 (30)	4.0 \pm 1.4 (31)	0.59
7	Worried about surgery (E)	93.4	6.3 \pm 1.3 (57)	6.5 \pm 0.9 (29)	6.1 \pm 1.6 (28)	0.19
8	Social engagement (SF)	100	6.5 \pm 1.0 (61)	6.4 \pm 1.1 (30)	6.6 \pm 1.0 (31)	0.99
9	Abdominal cramp (B)	98.4	6.3 \pm 1.0 (60)	6.3 \pm 1.1 (30)	6.3 \pm 1.0 (30)	0.90
10	Generally unwell (S)	98.4	5.1 \pm 1.4 (60)	5.2 \pm 1.4 (30)	4.9 \pm 1.5 (30)	0.48
11	Afraid of not finding the bathroom (E)	100	5.5 \pm 1.7 (61)	5.6 \pm 1.4 (30)	5.3 \pm 2.0 (31)	0.77
12	Leisure/sports (SF)	98.4	5.0 \pm 1.4 (60)	4.9 \pm 1.5 (30)	5.1 \pm 1.4 (30)	0.62
13	Abdominal pain (B)	98.4	6.1 \pm 1.3 (60)	6.1 \pm 1.2 (30)	6.0 \pm 1.4 (30)	0.73
14	Sleep (S)	98.4	4.4 \pm 1.9 (60)	4.1 \pm 1.8 (30)	4.6 \pm 2.0 (30)	0.26
15	Depressed (E)	98.4	5.0 \pm 1.6 (60)	5.3 \pm 1.2 (30)	4.6 \pm 1.9 (30)	0.10
16	Events without bathroom (SF)	98.4	5.9 \pm 1.4 (60)	5.9 \pm 1.3 (30)	5.8 \pm 1.5 (30)	0.38
17	Gas passage (B)	100	5.3 \pm 1.7 (61)	5.4 \pm 1.7(30)	5.1 \pm 1.7 (31)	0.31
18	Weight (S)	100	5.1 \pm 1.7 (61)	5.6 \pm 1.0(30)	4.6 \pm 2.0 (31)	0.12
19	Anxious about illness (E)	100	5.1 \pm 1.5 (61)	5.3 \pm 1.1 (30)	4.9 \pm 1.9 (31)	0.31
20	Abdominal bloating (B)	100	5.5 \pm 1.4 (61)	5.7 \pm 1.0 (30)	5.3 \pm 1.7 (31)	0.45
21	Relaxed (E)	100	4.2 \pm 1.8 (61)	4.4 \pm 1.7 (30)	4.1 \pm 1.9 (31)	0.22
22	Rectal bleeding (B)	100	6.1 \pm 1.2 (61)	5.8 \pm 1.3 (30)	6.4 \pm 1.2 (31)	0.02*
23	Embarrassed (E)	100	5.9 \pm 1.3 (61)	6.2 \pm 1.1 (30)	5.7 \pm 1.5 (31)	0.25
24	Urge to go to the bathroom (B)	100	5.3 \pm 1.5 (61)	5.4 \pm 1.4 (30)	5.2 \pm 1.7 (31)	0.83
25	Tearful/upset (E)	100	6.0 \pm 1.4 (61)	6.4 \pm 1.0 (30)	5.6 \pm 1.8 (31)	0.04*
26	Accidental soiling (B)	100	4.6 \pm 1.7 (61)	4.8 \pm 1.5 (30)	4.5 \pm 1.9 (31)	0.99
27	Angry (E)	100	6.1 \pm 1.0 (61)	5.8 \pm 1.0 (30)	6.3 \pm 1.0 (31)	0.05
28	Sexual activity (SF)	98.4	4.5 \pm 2.5 (60)	5.1 \pm 2.3 (29)	4.0 \pm 2.6 (31)	0.09
29	Nausea/feeling sick (B)	100	6.1 \pm 1.1 (61)	6.1 \pm 1.0 (30)	6.2 \pm 1.2 (31)	0.76
30	Irritable (E)	100	4.9 \pm 1.5 (61)	4.9 \pm 1.3 (30)	4.9 \pm 1.6 (31)	0.95
31	Lack of understanding (E)	100	5.4 \pm 1.4 (61)	5.5 \pm 1.2 (30)	5.4 \pm 1.5 (31)	0.99
32	Happy/satisfied with life (E)	98.4	4.4 \pm 1.2 (60)	4.3 \pm 1.2 (30)	4.5 \pm 1.3 (30)	0.28

B bowel symptoms, *S* systemic symptoms, *E* emotional status, *SF* social functions

* $P < 0.05$

$P = 0.04$), there were significant differences between males and females. The response rate for the item “Sex life” was 98.4 %; one male did not reply to this item. There were no significant differences in the sexual activity scores between males and females (5.1 \pm 2.3 vs. 4.0 \pm 2.6, respectively, $P = 0.09$).

Table 4 shows the correlations between the scores for subscales of the IBDQ-J and those for the item Sex life. The scores for social functions other than Sex life were

Table 4 Correlations between the subscales of the IBDQ-J and the item Sex life

	Coefficient	<i>P</i>
Bowel symptoms	0.24	0.064
Systemic symptoms	0.18	0.17
Emotional status	0.18	0.16
Social functions except for Sexual life	0.28	0.031*

* $P < 0.05$

Table 5 Reasons for poor sexual activity in the patients

Reasons	<i>n</i>
Male (<i>n</i> = 7)	
Erectile dysfunction	3
No partner	2
Decreased sexual desire	2
Soiling	2 ^a
Female (<i>n</i> = 12)	
No intercourse since before IPAA	4
Soiling	3 ^b
Decreased sexual desire	2
No partner	2
Decreased physical strength	1
Partner's reticence	1
Genital discharge	1 ^c

RP-IPAA restorative proctocolectomy with ileal J-pouch anal anastomosis

^a Two male patients listed decreased sexual desire simultaneously

^b A female patient listed decreased sexual desire simultaneously

^c A female patient listed decreased sexual desire simultaneously

significantly correlated with the score for Sex life (coefficient = 0.28, $P = 0.031$); however, the scores for the subscales “Bowel symptoms,” “Systemic symptoms” and “Emotional status” were not correlated with the Sex life scores.

Overall, 19/60 patients (7/29 males and 12/31 females, $P = 0.23$) had scores of 1–3 for sexual activity; they were classified as having poor sexual activity. Table 5 lists the reasons for poor sexual activity in these patients.

Figure 1 shows the scores on the IBDQ-J subscales in patients with poor or good sexual activity. There was a significant difference in the scores for Social functions other than Sex life (21.6 ± 4.6 vs. 24.1 ± 4.2, $P = 0.016$) between individuals with poor and good sexual activity; however, there was no significant differences in the scores for Bowel symptoms, Systemic symptoms and Emotional status.

The factors associated with poor sexual activity after RP-IPAA were determined by a multivariable logistic regression analysis, and are shown in Table 6. RP-IPAA after the age of 40 [odds ratio (OR) 22, $P = 0.02$] and a

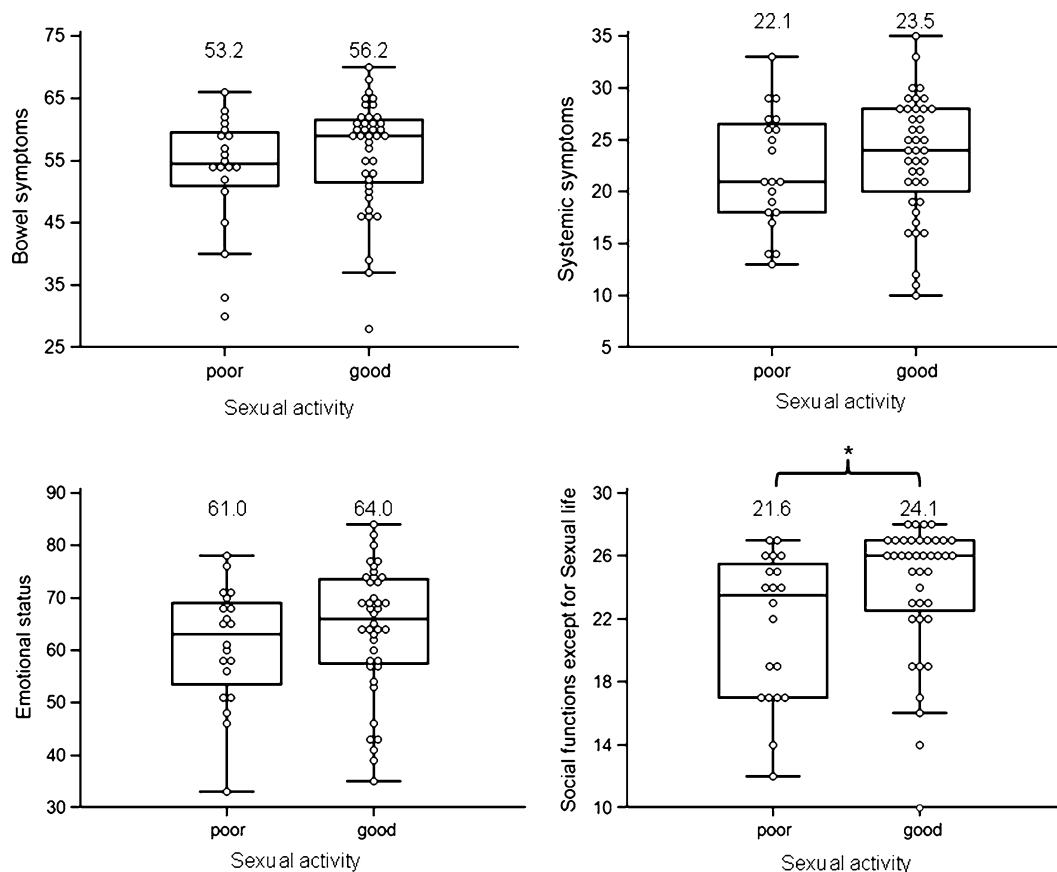


Fig. 1 Scores on the IBDQ-J subscales in patients with poor/good sexual activity. There was a significant difference in the scores for Social functions other than Sex life between patients with poor and

good sexual activity levels (21.6 ± 4.6 vs. 24.1 ± 4.2, $P = 0.016$); however, there were no significant differences in the scores for bowel symptoms, systemic symptoms and the emotional status. * $P < 0.05$

Table 6 The factors associated with poor sexual activity after RP-IPAA as determined by a multivariable logistic regression analysis

	OR	95 % CI	P
Male	1.1	0.22–5.7	0.90
Age at onset of ulcerative colitis ≥ 30 years old	3.2	0.48–21	0.29
Duration of ulcerative colitis ≥ 5 years	2.3	0.33–15.5	0.40
Age at RP-IPAA ≥ 40 years old	22	1.8–270	0.02*
Total preoperative corticosteroid dose ≥ 15 g	7.4	1.1–49	0.04*
Postoperative pelvic sepsis	2.5	0.40–16	0.33
Duration after stoma closure < 36 months	2.7	0.55–13	0.22
Poor anal function	2.8	0.82–9.8	0.10

RP-IPAA restorative proctocolectomy with ileal J-pouch anal anastomosis, OR odds ratio, CI confidence interval

* $P < 0.05$

total preoperative corticosteroid dose > 15 g (OR 7.4, $P = 0.037$) were associated with an increased risk of poor sexual activity after RP-IPAA.

Discussion

It has been reported that the anal function after RP-IPAA recovers to a plateau level within 12 months [15]. Some studies have reported that sexual satisfaction improves in parallel with general health after RP-IPAA [5, 6, 11, 16, 17]. Based on our analysis (shown in Table 6), there was no significant relationship between sexual activity and the duration after stoma closure; however, poor anal function was not associated with poor sexual activity after RP-IPAA, which indicates that improvements in sexual activity may not be related to the improvements in anal function. We excluded unstable patients from this study by establishing strict selection criteria, because patients in the active phase of pouchitis scored significantly lower on all subscales than patients without pouchitis [18]. It seems that a patient's preoperative status influences their sexual activity, improvements of which follow improvements in bowel function over time after RP-IPAA [19].

The IBDQ has been shown to be reliable in the clinical setting, and is sensitive to changes over time; it has also been validated after translation into several languages [7, 11, 16]. The IBDQ-J has shown good reliability and validity for assessing disease-specific QOL in Japanese patients with IBD [14]. Moreover, the IBDQ has been validated in ulcerative colitis patients after RP-IPAA [4, 18]. Therefore, we used the IBDQ-J to investigate the impact of RP-IPAA on sexual activity in Japanese patients with ulcerative colitis. However, there is a limitation, because the study lacks a control group, such as patients without surgery or age-matched healthy controls, resulting

in the descriptive nature of the study and superficial analysis of the data.

In terms of privacy, anonymity and credibility, a self-administered questionnaire is more accurate than face-to-face interviews for evaluations of sexual activity [20], however, a previous study had to abandon the evaluation of sexual activity because of the low response rate to the IBDQ-J item Sex life by Japanese patients with ulcerative colitis who had undergone RP-IPAA by self-administered questionnaires sent by mail [4]. Therefore, we introduced a face-to-face interview to improve this response rate. Moreover, since we were evaluating female sexual function in approximately half of the patients, a female medical staff member did the face-to-face interviews in this study.

Although a low response rate to the IBDQ-J item Sex life was reported in Japanese patients with ulcerative colitis who had undergone RP-IPAA [4], we obtained a much higher response rate by giving the patients the questionnaire at outpatient visits. This suggests that the low response rate to questions about sexual activity among Japanese individuals may be due to the method of delivering questionnaires by post, rather than their characteristics.

Although sexual activity is often compromised by social anxiety [21], the poor sexual activity in this study was associated with social functions, but not the emotional status. Moreover, we found that RP-IPAA after the age of 40 and a total preoperative corticosteroid dose > 15 g were significantly associated with poor sexual activity after RP-IPAA, irrespective of the development of pelvic sepsis after RP-IPAA. Although some studies have shown that sexual function is lower in older patients who have undergone RP-IPAA than in younger patients [7, 22], it is interesting to note that preoperative steroid administration, which is often given at high doses in Japan [23], is associated with postoperative pelvic sepsis [24–28]. It has been reported that patients who develop pelvic sepsis in association with preoperative steroid use had significantly worse sexual function compared with patients without pelvic sepsis [29]. On the other hand, the QOL and satisfaction after RP-IPAA were good and were not associated with the functional results [29]. In this study, poor sexual activity was associated with steroid use, but not with postoperative pelvic sepsis, as shown in Table 6. Generally, testosterone deficiency is highly prevalent in aging males, and reflects a poorer sexual status [30], so an imbalance between testosterone and cortisol, or the effects of cortisol itself [31] due to the high dose use, may induce the poor sexual activity in males. With regard to females, high-dose and long duration exposure to prednisolone may cause menstrual disorders or hormone imbalance, and this may lead to sexual symptoms.

A previous study revealed that females were more likely to have a worse QOL after RP-IPAA [32], while another

study revealed that the sexual function after RP-IPAA was more adversely affected in females than in males [8, 9]. We found no significant differences in the scores for the item Sex life between males and females in the present study.

No patients listed dyspareunia or retrograde ejaculation as the reason for poor sexual activity, although previous studies have shown that about 20 % of patients with ulcerative colitis undergoing RP-IPAA suffer from these sexual dysfunctions [5, 12]. It was also reported that female urinary incontinence and urgency negatively affected sexual activity in almost half of the females and in one-fifth of the females' partners [33]. It is known from studies of rectal cancer excision that damage to the urogenital autonomic nerves during pelvic dissection may result in urinary and sexual dysfunction [34]. Moreover, urinary incontinence disturbed the sexual functions after IPAA for ulcerative colitis [35]. Fortunately, there was no voiding dysfunction after IPAA in this study, which is likely related to our dissection inside of the total mesorectal excision line, preserving the pelvic autonomic nerves. As shown in Table 5, fecal soiling was a common reason for poor sexual activity, consistent with earlier studies [12, 36, 37]. However, poor anal function was not associated with poor sexual activity after RP-IPAA. It is also surprising that the staff involved in the treatment of these patients did not recognize the presence of erectile dysfunction, another common reason for poor sexual activity after RP-IPAA. Nevertheless, the incidence of erectile dysfunction in this study seemed to be higher than that reported in other studies [6, 11, 12].

In conclusion, we achieved a high response rate for a questionnaire on sexual activity recorded using the IBDQ-J among Japanese patients with ulcerative colitis who had undergone RP-IPAA. The patients' sexual activity was significantly associated with other social functions. It is likely that RP-IPAA offers a relatively poor sexual outcome for older patients and those who have received high-dose corticosteroid administration. Our findings should be confirmed in further studies with a larger number of patients using other instruments specialized for the evaluation of sexual activity.

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Conflict of interest K. Yoshida and co-authors have no conflict of interest.

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