ORIGINAL ARTICLE

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Does bowel function impacts on quality of life and sexual function in women with deep infiltrating endometriosis according kind of treatment?

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HIGLIGHTS

- Women with intestinal endometriosis may have impaired quality of life and altered bowel habits. Intestinal endometriosis can be treated medically or surgically. The bowel function of these women is directly correlated with sexual function and quality of life, regardless of the type of treatment.

ABSTRACT – Background – Women with intestinal endometriosis may have a higher incidence of constipation, which may influence their quality of life. **Objective –** To correlate bowel function with sexual function and quality of life in women with deep endometriosis according to the type of treatment. **Methods –** Cross-sectional study carried out with 141 women with bowel endometriosis from May 2020 to April 2021. Women were divided into two groups according to kind of treatment: 51 women with surgery treatment and 90 women with medical treatment. The Endometriosis Health Profile Questionnaire were used to assess quality of life e Female Sexual Function Index were used to assess sexual function. To access bowel function we used the following questionnaires: Gastrointestinal Quality of Life Index and Pelvic Floor Distress Inventory. **Results** – The mean age of women in the surgical group (37.98±5.91years) was higher than that of the medical group (35.68±5.45years) (*P*=0.006). There was no statistically significant difference between pain symptoms (*P*=0.905), water intake (*P*=0.573) or fiber (*P*=0.173) and physical activity (*P*=0.792) in both groups. There was no difference between quality of life and sexual function in both groups. There was a direct correlation of bowel function with quality of life and sexual function in both groups. **Conclusion –** Bowel function is directly correlated with sexual function and quality of life, regardless of the type of treatment.

Keywords – Endometriosis; quality of life; sexual disorder; constipation.

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INTRODUCTION

Endometriosis is a chronic and inflammatory disease defined by the presence of endometrial glandular and/or stromal tissue, with development outside the uterine cavity[1]. The treatment of endometriosis can be medical, surgical or combined. The indication of treatment must be individualized and its choice depends on the age of the woman, the desire for pregnancy, the severity of the symptoms, the type and location of the lesions and the stage of the disease[2].

Endometriosis has a wide variety of symptoms such as dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia, dysuria and infertility. As a result, endometriosis has a significant social and psychological impact, decreasing quality of life by affecting women's self-image, their personal and professional relationships, and their sexuality[3-5]. Studies show that both medical and surgical treatment can improve quality of life and sexual function[6-8].

Women with colorectal endometriosis may have changes in bowel function that can interfere with quality of life[9]. Some studies show worsening of bowel function with surgical treatment. Women with altered bowel function have worse quality of life and sexual function. Some studies have shown that women undergoing segmental resection have more intestinal dysfunction and consequently worsening sexual function[9-10]. But there is no study that correlate sexual function and quality of life in women with endometriosis according to the type of treatment. Thus, this study aims to correlate bowel function with sexual function and quality of life in women with deep infiltrating endometriosis (DIE) according to the type of treatment.

METHODS

A cross-sectional study was carried out with 141 women with bowel endometriosis followed up at the tertiary hospital from May 2020 to April 2021.Women included were 18 to 45 years old, and with surgical or clinical diagnosis of endometriosis (by imaging exams such as transvaginal ultrasound with intestinal preparation or magnetic resonance imaging)[11,12]. Women with cognitive impairment that makes it impossible to understand the instruments, were excluded.

Those women were divided into two groups according to kind of treatment: 51 women treated by surgery and 90 women with only medical treatment. Surgeries treatments were shaving, discoid resection or colorectal resection. After surgery, women were advised to use post-operative medical therapy with continuous estroprogestative therapy or a progestin with the objective of limiting the risk of symptom and lesion recurrence[13].

Those who participated in medical treatment were treated with hormonal therapy exclusively. Hormonal therapy was isolated progestin or continuous estroprogestative therapy. All women presented DIE with bowel impairment, some of them with more than one foci.

The variables evaluated were age, color (white or non-white), professional activity (employed or unemployed), marital status (with or without partner), number of pregnancies, parity, number of children, religion (yes or no), body mass index (BMI: calculated by weight in kilograms divided by the square of height in meters), smoking (yes or no), physical activity (yes or no), previous surgeries (laparotomy or laparoscopy), pain symptoms (dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia and dysuria), fiber intake (portions per week), water intake (water glasses per day), normal or altered bowel habits (diarrhea and/or constipation), quality of life, sexual function and bowel function.

Pain symptoms were assessed using the visual analogue pain scale (VAS), which scores from 0 to 10, where 0 is painless and 10 is the highest pain intensity experienced by women.

Sexual function was assessed using the Female Sexual Function Index (FSFI) questionnaire. The FSFI consists of 19 questions grouped into 6 domains: desire, arousal, lubrication, orgasm, satisfaction and pain. Final scores can vary from 2 to 36. Sexual dysfunction is characterized by a score less than or equal to 26.55[14].

Quality of life was assessed using the Endometriosis Health Profile Questionnaire (EHP-30). The EHP-30 questionnaire consists of 30 items that assess five domains: pain, control and powerlessness, emotional well-being, social support and self-image, and a modular questionnaire with 23 items distributed in

six scales: sexual relations, work, medical profession, infertility, relationship with children and treatment. Each scale is transformed into a score from 0 to 100, where the lowest score means better quality of life[15].

To access bowel function were considered the following questionnaires: Gastrointestinal Quality of Life Index (GIQLI), Pelvic Floor Distress Inventory (PFDI-20).

The GIQLI is a self-administered 36-item gastrointestinal specific health-related quality of life instrument designed to assess health-related quality of life in clinical practice and clinical trials of patients with gastrointestinal disorders. It has five subscales (Gastrointestinal Symptoms, Emotion, Physical Function, Social Function, and Medical Treatment) as well as a Total Score. Higher scores represent better health-related quality of life and subscores range from 0–4 while the total score range from 0–144[16].

PFDI-20 is a health-related quality of life questionnaire for women with pelvic floor conditions to fill out is comprised of three scales, which include the Urinary Distress Inventory-6 (UDI-6), Pelvic Organ Prolapse Distress Inventory-6 (POPDI-6), and the Colorectal-Anal Distress Inventory-8 (CRADI-8). The scale scores are found individually by calculating the mean value of their corresponding questions and then multiplying by 25 to obtain a value that ranges from 0 to 100. The sum of the three scales is added together to get the PFDI-20 summary score, which ranges from 0 to 300. Higher scores are related with worse quality of life[17].

All questionnaires were validated to Portuguese language and self-administered questionnaires. All women signed an informed consent before their participation in the study. This research was approved by the Research Ethics Committee of the institution under the number: 29789619.9.0000.5404.

Statistical analysis

Descriptive analysis expressed in relative frequencies was used for statistical analysis of the categorical variables. For continuous variables, the analysis data were expressed as mean ± standard deviation. Chi-square or Fisher's exact tests were used to compare categorical variables. The Mann-Whitney test was used to compare numerical variables. To correlate intestinal function with quality of life and sexual function, the Spearman correlation index was used. The Spearman Coefficient can have a value between +1 and -1 where: value of +1 in P means a perfect rank association; value of 0 means no rank association and value of -1 means a perfect negative association between intervals. If the value approaches 0, the association between the two ranges is weaker. The level of significance adopted for the statistical tests was 5%.

The sample size was for convenience, using a ratio of 2:1, that is, for each woman treated surgically, we would have two women treated medically. After study data, we calculated the power of the sample. Sample power was calculated to compare the proportion of bowel function (normal or altered) between both groups of treatment and estimates obtained from actual sample, with significance fixed on 5%. Based on the results, we achieved power of 81.2% to dysfunctional bowel.

RESULTS

Age in the surgical group (37.98±5.91) was higher than the medical group (35.60±5.50) (P=0.006). Surgery group had 58% of nulliparous and the other group 37% (P=0.016). All other variables did not show statistically significant differences between the two groups, including symptoms of pain, water or fiber intake, physical activity and BMI. Constipation was similar between both groups (P=0.088), but the women treated surgically reported having more changes in their bowel habits than the women in clinical treatment group (P=0.006) (TABLE 1).

Quality of life and sexual function of women were also similar in both groups. Women with medical and surgical treatment had sexual dysfunction (FSFI 21.06±7.75 and 20.16±9.11 respectively). There was no distinction in intestinal function between the groups in relation to the GIQLI (95.14±24.55 and 92.19±29.11 respectively) and PDFI-20 (81.17±56.25 and 78.12±58.34 respectively) scores (TABLE 2).

It was observed that the worse the intestinal function, the worse the quality of life and sexual function of women in both groups, especially in the medical group (TABLE 3).

TABLE 1. Clinical and demographic characteristics of women with deep infiltrating endometriosis according to surgical or medical treatment.

	Surgery (N=51) mean±SD	Medical (N=90) mean±SD	*P*-value
Age	37.98±5.91	35.60±5.50	0.006*
Nulliparous	30 (58.82)	34 (37.78)	0.016**
Caucasian	21 (41.18)	52 (57.78)	0.058**
Physical activity	18 (35.29)	33 (37.08)	0.833**
Fiber intake/per week	2.25±0.87	2.03±0.92	0.153*
Water intake (glasses of water)	7.44±3.67	7.15±3.68	0.583*
BMI	27.94±5.36	28.32±4.77	0.322*
Occupation (yes)	42 (82.35)	70 (77.78)	0.931**
Partner	39 (76.47)	72 (80.00)	0.623**
Smoking	4 (8.00)	8 (8.99)	1.000**
Dysmenorrhea	1.80±2.48	2.35±3.08	0.403*
Dyspareunia	2.64±3.61	3.35±3.47	0.162*
Pelvic Pain	2.22±2.71	2.31±2.90	0.905*
Dyschezia	2.16±3.45	2.40±3.41	0.606*
Dysuria	0	0.44±1.70	0.085*
Constipation	28 (54.90)	36 (40.00)	0.088**
Intestinal habit altered (constipation and/or diarrhea)	43 (84.31)	56 (62.22)	0.006**

SD: standard deviation; BMI: body mass index; *Mann-Whitney test; **Chi-square test.

TABLE 2. Evaluation of quality of life of women with deep infiltrating endometriosis according to treatment.

		Surgery (N=51) mean±SD	Clinical(N=90) mean±SD	*P*-value
EHP 30	Total score	38.78±23.88	37.64±24.94	0.746
	Pain	38.64±30.70	37.18±29.32	0.673
	Control and capacity to cope	44.04±33.29	42.78±34.18	0.786
	Social well-being	45.02±25.70	46.57±2.13	0.612
	Social support	42.65±33.35	47.01±32.70	0.517
	Self-image	40.03±33.29	38.24±35.44	0.621
	Work	37.08±35.22	26.75±27.72	0.151
	Children	17.71±25.78	25.94±31.28	0.264
	Sexual intercourse	46.51±30.66	48.84±32.16	0.689
	Doctor x patient relationship	16.67±25.02	13.40±22.71	0.686
	Treatment	33.33±30.09	31.94±31.04	0.724
	Infertility	46.15±31.95	37.50±36.98	0.167
FSFI	Total score	20.16±9.11	21.06±7.75	0.597
	Desire	3.16±1.37	3.10±1.22	0.882
	Arousal	3.10±1.63	3.30±1.44	0.535
	Lubrication	3.48±1.91	3.87±1.73	0.277
	Orgasm	3.26±1.91	3.60±1.77	0.340
	Satisfaction	3.89±1.77	4.05±1.57	0.749
	Pain	3.27±2.10	3.13±1.81	0.691
	GIQLI	95.14±24.55	92.19±29.11	0.581
	PFDI-20	81.17±56.25	78.12±58.34	0.619
	CRADI8	31.25±23.82	26.68±21.68	0.298
	POPDI 6	23.28±18.41	25.05±21.13	0.819
	UDI 6	26.63±24.48	26.39±24.69	0.861

SD: standard deviation; EHP 30: Endometriosis Health Profile Questionnaire; FSFI: Female Sexual Function Index; GIQLI: Gastrointestinal Quality of Life Index; PFDI-20: Pelvic Floor Distress Inventory; CRADI-8: Colorectal-Anal Distress Inventory-8; POPDI-6: Pelvic Organ Prolapse Distress Inventory-6; UDI-6: Urinary Distress Inventory-6; Mann-Whitney test.

TABLE 3. Correlation between outcome bowel with quality of life and sexual function of women with endometriosis colorectal according to treatment.

	Pain	Control and power-lessness	Emotional well-being	Social support	Self-image	Total	Desire	Arousal	Lubrica-tion	Orgasm	Satis-faction	Pain	Total
Medical group													
GIQLI													
R	-0.69	-0.69	-0.65	-0.72	-0.76	-0.77	0.10	0.12	0.23	0.15	0.18	0.46	0.26
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.316	0.236	0.023	0.135	0.075	<0.001	0.013
CRADI -8													
R	0.49	0.52	0.41	0.48	0.47	0.52	-0.19	-0.23	-0.28	-0.18	-0.27	-0.36	-0.32
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.066	0.024	0.007	0.074	0.010	0.004	0.002
Surgery group													
GIQLI													
R	-0.60	-0.64	-0.56	-0.54	-0.42	-0.65	0.19	0.05	0.18	0.22	0.24	0.50	0.31
P	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.184	0.688	0.209	0.116	0.083	0.002	0.027
CRADI -8													
R	0.53	0.35	0.33	0.43	0.33	0.48	-0.11	-0.06	-0.21	-0.18	-0.25	-0.34	-0.24
P	<0.001	0.010	0.014	0.001	0.017	0.004	0.431	0.661	0.201	<0.001	0.078	0.013	0.086

GIQLI: Gastrointestinal Quality of Life Index; CRADI-8: Colorectal-Anal Distress Inventory-8; Spearman correlation coefficient.

DISCUSSION

We found no difference between quality of life, sexual function and intestinal function between clinically and surgically treated women. When asked about bowel habits, women in the surgical group showed more changes than those in the medical group. In both groups the women had sexual dysfunction. Our study showed that there is a positive correlation between sexual function, quality of life and bowel function. The correlation of bowel function with quality of life was strong to moderate, and the correlation of bowel function with sexual function was weak to moderate. Thus, the better the intestinal function, the better the quality of life and sexual function.

Our study revealed that women submitted to surgical treatment were older. One reason that may explain the age difference is the longer follow up time comparing to women with isolated clinical therapy. A second explanation concerns that women may chose surgery after years of clinical treatment due to enhanced bleeding rates, frequently caused by adenomyosis[18].

Women who chose long-term medical therapy were satisfied with their treatment after a median follow-up of more than 2 years, a proportion similar to that observed in women who chose surgery. Quality of life was similar to both groups. Satisfactory pain control can be a reason for this uniform response, with mean pain scores below three. Recent data shows that both categories of treatment are effective improving quality of life[18,19].

In our study, we found no difference in sexual function between the groups. The literature shows that both treatments are effective in improving sexual function[20]. Both groups had sexual dysfunction. A study shows that women with DIE have altered sexual function and that surgical treatment can improve sexual function but not make it normal. An explanation for the sexual dysfunction would be the involvement of nerves by endometriosis[21]. Studies have evaluated the consequence of surgery and hormonal treatment on profound dyspareunia and overall sexual function. However, sexual function is affected in different domains by endometriosis and sexual health is not only influenced by dyspareunia in these women. Chronic pelvic pain, advanced stages of the disease, and the presence of physical and mental comorbidities affect sexual function, as well as women's personality traits and expectations. Therefore, despite treatment, many women maintain sexual dysfunction[22].

A study compared medical and surgical treat-

ment for DIE with bowel lesions and showed that women who chose surgery presented with more bowel dysfunction symptoms, including diarrhea and constipation, than the medical group[18]. In our study, women in the surgical treatment group reported more changes in bowel habits than women treated medically. A recent study showed that surgery for deep endometriosis improves bowel function and defecation symptoms[23]. A review shows that bowel surgery improves pain symptomatology and bowel symptoms and may improve bowel function when neurologically preserved[24].

Some degree of sexual dysfunction is also correlated to many gastrointestinal disorders, either functional or organic. This occurrence can be explained by the disease itself causing fatigue, anxiety or depression with a potential alteration of self-esteem; alteration of the endocrine mechanisms which are mandatory for normal sexual responses and endothelial dysfunction and abnormal vascular responses originated from chronic inflammatory environment[25]. Sexual function may be worse in women with inflammatory bowel disease[26]. Sigmoid resection for the treatment of neoplasia is associated with an increased risk of long-term bowel dysfunction; and thus, it is associated with a significant impairment of quality of life[27]. These results are similar to ours which shows a positive correlation between bowel function with sexual function and quality of life.

This study has some limitations, such as the absence of a control group without endometriosis which does not allow conclusions of cause and effect because it is a cross-sectional study. The study was not randomly assigned, selection bias and confounding are likely. The small sample size exposes to the risk of errors; however, it is sizeable enough to reveal statistically significant differences in bowel function between two groups.

The strength of this study is that there are no studies comparing medical and surgical treatment in relation to sexual function, quality of life and bowel function in women with DIE.

CONCLUSION

In conclusion, medical and surgical treatment are important choices of treatment for those women that suffers from dysfunctional symptoms. Both alternatives lessen pain symptoms and can improve quality of life and sexual function. Bowel function is directly correlated with sexual function and quality of life, regardless of the type of treatment.

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Authors' contribution

Yela DA has conceptualized and designed the study. She has also involved in the interpretation of results and she has written and reviewed the manuscript. Villa NAC have conceptualized and designed the study and helped in the acquisition of the date, interpretation of results and writing the manuscript, Benetti-Pinto CL has reviewed the manuscript.

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Villa NAC, Benetti-Pinto CL, Yela DA. Função intestinal impacta na qualidade de vida e na função sexual de mulheres com endometriose profunda de acordo com o tipo de tratamento? Arq Gastroenterol. 2023;60(2):257-63.

RESUMO – Contexto – Mulheres com endometriose intestinal podem apresentar maior incidência de constipação o que influencia na qualidade de vida**. Objetivo –** Correlacionar a função intestinal com a função sexual e qualidade de vida de mulheres com endometriose profunda de acordo com o tipo de tratamento. **Métodos –** Estudo transversal realizado com 141 mulheres com endometriose intestinal no período de maio de 2020 a abril de 2021. As mulheres foram divididas em dois grupos de acordo com o tipo de tratamento: 51 mulheres com tratamento cirúrgico e 90 mulheres com tratamento médico. O Questionário de Qualidade de Vida em Endometriose foi utilizado para avaliar a qualidade de vida e o Índice de Função Sexual Feminina foi utilizado para avaliar a função sexual. Para avaliar a função intestinal foram utilizados os seguintes questionários: Índice de Qualidade de Vida Gastrointestinal e Inventário de Estresse do Assoalho Pélvico. **Resultados** – A média de idade das mulheres do grupo cirúrgico (37,98±5,91 anos) foi maior que a do grupo médico (35,68±5,45 anos) (P=0,006). Não houve diferença estatisticamente significativa entre sintomas de dor (P=0,905), ingestão de água (P=0,573) ou fibra (P=0,173) e atividade física (P=0,792) em ambos os grupos. Não houve diferença entre qualidade de vida e função sexual em ambos os grupos. Houve uma correlação direta da função intestinal com qualidade de vida e função sexual em ambos os grupos. **Conclusão** – A função intestinal está diretamente correlacionada com a função sexual e qualidade de vida, independentemente do tipo de tratamento.

Palavras-chave – Endometriose; qualidade de vida; desordem sexual; constipação.

REFERENCES

1. Schweppe KW, Rabe T, Langhardt M, Woziwodzki J, Petraglia F, Kiesel L. Endometriosis – Pathogenesis, Diagnosis, and Therapeutic Options for Clinical and Ambulatory Care. J Reprod Endokrinol. 2013;10:102-19.
2. Zondervan KT, Becker CM, Koga K, Missmer SA, Taylor RN, Viganò P. Endometriosis. Diseases Primer. 2018;4:1-25.
3. Culley L, Law C, Hudsen N. The social and psychological impact of endometriosis on women's lives: a critical narrative review. Hum Reprod Update. 2013;19: 625-39.
4. Fritzer N, Haas D, Oppelt P. More than just bad sex: sexual dysfunction and distress in patients with endometriosis. Eur J Obstet Gynecol Reprod Biol. 2013;169:392-6.
5. Van Poll M, Van Barneveld E, Aerts L, Maas JWM, Lim AC, de Greef BTA, et al. Endometriosis and sexual quality of life. Sex Med. 2020;8:532-44.
6. Roman H, Tuech JJ, Huet E, Bridoux V, Khalil H, Hennetier C, et al. Excision versus colorectal resection in deep endometriosis infiltrating the rectum: 5-year follow-up of patients enrolled in a randomized controlled trial. Hum Reprod. 2019;34:2362-71.
7. Leonardo-Pinto JP, Benetti-Pinto CL, Cursino K, Yela DA. Dienogest and deep infiltrating endometriosis: the remission of symptoms is not related to endometriosis nodule remission. Eur J Obstet Gynecol Reprod Biol. 2017;211:108-11.
8. Caruso S, Iraci M, Cianci S, Casella E, Fava V, Cianci A. Quality of life and sexual function of women affected by endometriosis-associated pelvic pain when treated with dienogest. J Endocrinol Investig. 2015;38:1211-8.
9. Roman H, Bridoux V, Tuech JJ, Marpeau L, da Costa C, Savoye G, et al. Bowel dysfunction before and after surgery for endometriosis Am J Obstet Gynecol. 2013;209:524-30.
10. Scheepers WFW, Maas JWM, van de Kar MMA. Bowel function and quality of life following surgery for deep endometriosis J Psychosom Obstet Gynaecol. 2021;26:1-6
11. Guerriero S, Ajossa S, Orozco R, Perniciano M, Jurado M, Melis GB, et al. Accuracy of transvaginal ultrasound for diagnosis of deep endometriosis in the rectosigmoid: systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2016;47:281-9.
12. Medeiros LR, Rosa MI, Silva BR, Reis ME, Simon CS, Dondossola ER, et al. Accuracy of magnetic resonance in deeply infiltrating endometriosis: a systematic review and meta-analysis. Arch Gynecol Obstet. 2015;291:611-21.
13. Seracchioli R, Mabrouk M, Manuzzi L, Vicenzi C, Frascà C, Elmakky A, et al. Post-operative use of oral contraceptive pills for prevention of anatomical relapse or symptom-recurrence after conservative surgery for endometriosis. Hum Reprod. 2009;24:2729-35.
14. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. 2000;26:191-208.
15. Minson FP, Abrão MS, Sardá Júnior J, Kraychete DC, Podgaec S, Assis FD. Importance of quality of life assessment in patients with endometriosis. Rev Bras Ginecol Obstet. 2012;34:11-5.
16. Posegger KR, Maeda CT, Taveira JP, Caetano EM Jr, Ferraz MB, de Brito Rocha MJA, et al. Brazilian-Portuguese Validation Assessment of the Gastrointestinal Quality of Life Index for Patients After Laparoendoscopic Cholecystectomy, J Laparoendosc Adv Surg Tech A. 2022;32:125-31.
17. Arouca MA, Duarte TB, Lott DA, Magnani PS, Nogueira AA, Rosa-E-Silva JC, et al. Validation and cultural translation for Brazilian Portuguese version of the Pelvic Floor Impact Questionnaire (PFIQ-7) and Pelvic Floor Distress Inventory (PFDI-20). Int Urogynecol J. 2016;27: 1097-106.
18. Vercellini P, Frattaruolo MP, Rosati R, Dridi D, Roberto A, Mosconi P, et al. Medical treatment or surgery for colorectal endometriosis? Results of a shared decision-making approach. Hum Reprod. 2018;33:202-11.
19. Arcoverde F, Andres MP, Souza CC, Neto JS, Abrão MS. Deep endometriosis: medical or surgical treatment? Minerva Obstet Gynecol. 2021;73:341-6.
20. Vercellini P, Somigliana E, Consonni D, Frattaruolo MP, De Giorgi O, Fedele L. Surgical versus medical treatment for endometriosis-associated severe deep dyspareunia: I. Effect on pain during intercourse and patient satisfaction. Hum. Reprod. 2012;27:3450-9.
21. Lermann J, Topal N, Renner SP, Beckmann MW, Burghaus S, Adler W, et al. Comparison of preoperative and postoperative sexual function in patients with deeply infiltrating endometriosis with and without bowel resection. Eur J Obstet Gynecol Reprod Biol. 2019;239:21-9.
22. Pluchino N, Wenger JM, Petignat P, Tal R, Bolmont M, Taylor HS, et al. Sexual function in endometriosis patients and their partners: effect of the disease and consequences of treatment Hum Reprod Update. 2016;22:762-74.
23. Bray-Beraldo F, Pellino G, Ribeiro MAF Jr, Pereira AMG, Lopes RGC, Mabrouk M, et al. Evaluation of Bowel Function After Surgical Treatment for Intestinal Endometriosis: A Prospective Study Dis Colon Rectum. 2021;64:1267-75.
24. Ferrero S, Stabilini C, Barra F, Clarizia R, Roviglione G, Ceccaroni M. Bowel resection for intestinal endometriosis. Best Pract Res Clin Obstet Gynaecol. 2021;71:114-28.
25. Romano L, Granata L, Fusco F, Napolitano L, Cerbone R, Priadko K, et al. Sexual Dysfunction in Patients With Chronic Gastrointestinal and Liver Diseases: A neglected Issue. Sex Med Rev. 20221;10:620-31.
26. de Silva PS, O'Toole A, Marc LG, Ulysse CA, Testa MA, Julsgaard M, et al. Development of a Sexual Dysfunction Scale for Women with Inflammatory Bowel Disease. Inflamm Bowel Dis. 2018;24: 2350-9.
27. Elfeki H, Larsen HM, Emmertsen KJ, Christensen P, Youssef M, Khafagy W, et al. Bowel dysfunction after sigmoid resection for cancer and its impact on quality of life. Br J Surg. 2019;106:142-51.