Original contribution

PREVALENCE OF FECAL INCONTINENCE IN WOMEN DURING PREGNANCY: A LARGE CROSS-SECTIONAL STUDY

Running head: FECAL INCONTINENCE IN PREGNANCY

Authors

David Parés M.D., Ph.D.[1,3]; Eva Martinez-Franco M.D.,Ph.D.[2]; Nuria Lorente M.D.[2]; Jordi Viguer M.D.[2]; Jose-Luis Lopez-Negre, M.D.;Ph.D.[1]; Josep-Ramon Mendez M.D.[2]

Institution

[1] Department of General and Digestive Surgery. Parc Sanitari Sant Joan de Déu. Universitat de Barcelona. Sant Boi de Llobregat, Barcelona, Spain.

[2] Department of Obstetrics and Gynaecology. Parc Sanitari Sant Joan de Déu. Universitat de Barcelona. Sant Boi de Llobregat, Barcelona, Spain.

[3] Current post: Department of Colorectal Surgery. Queen Alexandra Hospital. Portsmouth NHS Trust. Southwick Hill Road. Cosham. Portsmouth. PO6 3OLY

Correspondence

David Parés MD, PhD

Department of Colorectal Surgery. Queen Alexandra Hospital. Portsmouth NHS Trust. Southwick Hill Road. Cosham. Portsmouth. PO6 3OLY

Phone: 0044 (0) 2392286710 Fax: 0044 (0) 2392286904

E-mail: dapares@gmail.com

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Author's contribution

David Parés MD;PhD: Designed, supervised and coordinated the study and wrote the manuscript.

Eva Martinez-Franco MD; PhD: Co-drafted the manuscript.

Nuria Lorente MD: Recruited the patients and managed the data.

Jordi Viguer MD: Recruited patients.

Jose-Luis Lopez-Negre: Managed data and co-drafted the manuscript.

Josep-Ramon Mendez MD: Designed the study and co-wrote the paper.

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ABSTRACT

BACKGROUND: Pregnancy and delivery are risk factors for urinary and fecal incontinence in later life. Although some studies have analyzed the prevalence of urinary incontinence during pregnancy, there are scarce data on the frequency and characteristics of FI during this period.

OBJECTIVE: The aim of this study was to determine the incidence and characteristics of women with fecal incontinence symptoms during early and late pregnancy, to evaluate its impact on quality of life, and to identify whether there is a specific clinical pattern that could identify patients at risk.

DESIGN: Cross-sectional observational study.

SETTINGS: Pregnant women undergoing obstetric follow-up.

MAIN OUTCOME MEASURES: A prospective cross-sectional study was conducted. All patients attending our maternity unit for obstetric ultrasound examination during the first trimester and third trimester were eligible for inclusion. Selected patients completed a self-reported questionnaire that included items on fecal incontinence symptoms, Wexner score, and stool consistency measured by the Bristol Stool Form Scale. Quality of life was assessed using the SF-36 questionnaire. The characteristics of patients with fecal incontinence were compared with those without symptoms.

RESULTS: The study included 228 consecutive pregnant women. Ninety-three patients (40.8%) had some episode of fecal incontinence in the 4 weeks prior to the survey, 15 patients with solid stool, 6 patients with liquid stools, and 72 with flatus.. In these patients, the mean Wexner score was 3.82 (range 2-13). In patients with incontinence, quality of life was significantly affected in most subscales of SF-36. There were no significant differences in the following variables between patients with fecal incontinence and those without, respectively: age (mean age 30.13 years vs. 31.41 years, p=0.090), body mass

index (mean 25.27 kg/m2 vs. 26.24 kg/m2, p=0.094), history of previous deliveries (nulliparous 38.3% vs. previous deliveries 43.1%, p=0.492), trimester of pregnancy (35.6% in the first trimester vs. 42.6% in the third trimester, p=0.361) and Bristol Stool Form Scale (p=0.388).

LIMITATIONS: The cross-sectional design hampered identification of the week time at which the impact of pregnancy occurred.

CONCLUSIONS: The prevalence of fecal incontinence is high during pregnancy with a notable impact on quality of life. There was no specific clinical pattern during pregnancy that could define patients at risk for fecal incontinence during this period of life. A prospective follow-up has been designed to determine whether there are any changes in fecal continence after delivery in this cohort of patients.

KEYWORDS: Fecal incontinence; pregnancy; quality of life.

INTRODUCTION

Fecal incontinence (FI) is a significant healthcare problem in women with more than 5% of community-dwelling adults reporting symptoms that restrict their lives.[1] Pregnancy and mainly delivery are risk factors for urinary and fecal incontinence in women, especially in later life.[2-4]

Although some studies have analyzed the prevalence of urinary incontinence during pregnancy, there are scarce data on the frequency and characteristics of fecal incontinence during this period. In these studies, between 3 and 10%[5,6] of pregnant women experienced fecal incontinence that affected quality of life and led to associated Depression symptoms.[7] These figures focused on later pregnancy and less information is known regarding this clinical problem at the beginning of pregnancy.

The aim of this study was to determine the incidence and severity of fecal incontinence during the first and third trimester of pregnancy, to evaluate its impact on quality of life, and to identify whether there is a specific clinical pattern that could identify patients at risk.

MATERIAL AND METHODS

A cross-sectional study was designed to identify the prevalence and characteristics of women with fecal incontinence symptoms among consecutive pregnant women who attended our hospital from March 2012 to May 2012. This study was approved by the Research Ethics Committee of our institution and all participants gave explicit informed consent for their data to be used in this study.

Inclusion and exclusion criteria

All patients attending our maternity unit for obstetric ultrasound examination during the first trimester (less than 13 weeks of pregnancy) and third trimester (up to 28 weeks of pregnancy) were eligible for inclusion. The only exclusion criteria were patients with difficulties in understanding or reading Spanish and a clinical history of previous symptoms of fecal incontinence prior to enrollment.

Study variables

Age, previous obstetric history and comorbidities were assessed prospectively.All subjects completed a self-reported questionnaire that included items on urinary incontinence, detailed questions based on the Rome III classification of bowel habit[8], fecal incontinence symptoms, severity of fecal incontinence using the Wexner score[9] and stool consistency measured by the Spanish validated version of the Bristol Stool Form Scale.[10] Quality of life was assessed using the validated Spanish version of the SF-36.[11]

Fecal incontinence

A patient was considered to have FI after responding positively to the following entry question: “Have you suffered any recurring episodes of involuntary loss of stool or flatus in

the last 4 weeks?"[15] Patients with FI were classified according to the type of leakage (solid, liquid stool or flatus incontinence).[9]

Stool consistency

To evaluate stool consistency, the BSFS, a widely used clinical tool in functional digestive problems was used.[10] The scale comprises a simple visual chart accompanied by a text description that classifies stools in seven forms. The description differentiates among the following: Type 1: separate hard lumps, like nuts; type 2: sausage-shaped but lumpy; type 3: like a sausage or snake but with cracks on its surface; type 4: like a sausage or snake, smooth and soft; type 5: soft blobs with clear cut edges; type 6: fluffy pieces with ragged edges, a mushy stool and, finally, type 7: watery, no solid pieces. This description is accompanied by a bowel record with diagrams of all types of stools. For this study, the Spanish validated scale was used.[12]

Quality of life assessment

Health-related quality of life was evaluated by using the validated Spanish version of the 36-item Short Form Health Survey (SF-36).[11] This questionnaire generates scores from the following eight health domains or subscales: limitations in physical activities because of health problems (physical functioning), limitations in usual role activities because of physical health problems (role-physical), bodily pain, general health perceptions (general health), vitality (energy and fatigue), limitations in social activities because of physical or emotional problems (social functioning), limitations in usual role activities because of emotional problems (role-emotional) and finally psychological distress and well-being (mental health).

Statistical analysis

All results and variables were introduced in a specially designed database. The continuous variables are presented as absolute numbers, median or mean ± standard deviation and range in between parenthesis. Categorical variables are presented as an absolute number and/or percentage. The Chi square test was used to compare differences in categorical variables (Fisher's Exact test was performed when needed), and Student's T-test was used for continuous variables. Statistical analyses were performed using the SPSS 20.0 statistical package (SPSS™, Chicago, Illinois). Differences were considered to be significant at the 5% level. All p-values reported were two-sided.

RESULTS

During the study period, 228 consecutive pregnant women (121 of them nulliparous) were included. The mean age in the overall sample was 30.78±5.64 (range 16-42) years. Of all included women, 59 (25.9%) were on the first trimester and the remaining on the last trimester of pregnancy. None of the patients were excluded for any of the exclusion criteria.

Fecal incontinence

Table 1 shows the figures of pelvic floor symptoms in the overall series. Interestingly, 19.2% have some episode of pelvic pain during defecation, 19.7% fecal urgency and 40.8% some episode of fecal incontinence.

The symptoms of fecal incontinence included 15 patients mainly to solid stools, 6 patients to liquid stools, and 72 flatus incontinence. The mean Wexner score was 3.82 (range 2-13) and for this clinical problem 5.2% used a pad on a daily basis (Table 1).

Quality of life

Mean values of health-related quality of life were lower in patients with symptoms of fecal incontinence (Table 2). Thus, these differences were statistically significant in 5 of 8 subscales: Bodily pain (p=0.006), General health (p=0.004), Vitality (p=0.009), Role-emotional (p=0.014) and Mental health (p=0.013) (Figure 1).

Determinants of fecal incontinence

There were no significant differences in the following variables between patients with fecal incontinence and those without, respectively: age, body mass index, history of previous deliveries, trimester of pregnancy and Bristol Stool Form Scale. (Tables 3 and 4).

Table 5 shows the characteristics and pelvic floor symptoms according to the stage of pregnancy. There were no clinical differences between the two groups. Although FI was more common in the third trimester of pregnancy, differences of characteristics and type of symptoms between third trimester and early pregnancy were not statistically significant (35.6% vs. 42.6%, p=0.361).

DISCUSSION

In the present study, the prevalence of fecal incontinence was high during early and late pregnancy with a notable impact on quality of life. However, we did not find a specific clinical pattern during pregnancy that could define patients at risk for fecal incontinence during this period of life. A prospective follow-up is ongoing to determine whether there are any changes in fecal continence after delivery, and to determine the pathways of this clinical problem, mainly in the early pregnancy.

This study has some strength. It is a large cohort study aiming to analyze the presence of fecal incontinence symptoms during pregnancy. To our knowledge, this is one of the isolated studies looking at these symptoms in a very early pregnancy, as well as in late pregnancy. This gives us some information regarding a potential hypothesis on the genesis of these pelvic floor symptoms rather than the pressure from the increasing weight of the fetus, placenta and uterus on the abdominal cavity. However, our study also has several limitations. One of the possible limitations is the small number of first-trimester pregnant women included on the study. Finally, the cross-sectional design hampered identification of the week time at which the impact of pregnancy occurred and also this design does not allow any conclusions on causality.

There is little information regarding the impact of pelvic floor symptoms, as well as fecal incontinence on the quality of life of women in pregnancy.[13] In a recent study performed in a large cohort of women in late pregnancy, 37% reported a symptom of FI, with some impact on quality of life measured using FIQL.[7,14] Specifically, the results of this study suggested that problems of fecal continence and the embarrassment or stigma of being unable to control this function may impact quality of life domains, and Depression in particular.[7] In our experience, 40.8% had some episode of fecal incontinence including

flatus incontinence, with a significant impairment on quality of life in patients with symptoms of fecal incontinence compared to those without these symptoms, considering that the differences reached statistical significance on 5 of 8 subscales of the SF-36 questionnaire. Unfortunately, in our study we decided to use only a generic health quality of life assessment rather than a specific-disease quality of life test.

Based on previous clinical experiences, symptoms of FI during pregnancy is one of the predictors of post delivery symptoms, and early intervention and information may aid in reducing and preventing this clinical disorder.[7,15,16] A recent randomized control trial was published evaluating the effect of a standardized 12-week exercise program to evaluate its effect on the rate of urinary and fecal incontinence in pregnancy, the Trial showed a decrease in percentage of fecal incontinence symptoms in the exercise group (3% versus 5%), though these clinical differences were not statistically significant.[17] Interestingly the effect is highly beneficial and significant (p=0.003) on the group of multiparous women. This last finding indicates that in women with possible previous birth-related injury to pelvic floor, preventive exercises might prevent fecal incontinence in a later pregnancy and possibly on the time after delivery, even long term.

Other defecatory problems are well reported during pregnancy, mainly in the last trimester[5]. The reported prevalence of constipation ranges from 11% to 38%.[18] The weight of the uterus presses against the large bowel, and progressively rising progesterone and estrogen levels have been suggested as a cause of these problems.[19,20] In the present study 19.2% of women had some episode of pelvic pain during defecation and 19.7% fecal urgency.

Our group demonstrated in a previous study a relationship between fecal incontinence symptoms and stool consistency in obese patients.[21] In this cohort of patients, even though the pregnancy increased the BMI between the first and third trimester (Table 5), this did not have a straight effect on changes of stool consistency between the two stages of the pregnancy.

Our group did some previous studies focusing on hormonal changes and fecal incontinence, mainly in the menopause.[22,23] And therefore we would like to investigate other stages of women's life that seem to be of paramount importance to the understanding of the development of functional bowel disorders. Many factors have been described as contributors to pelvic floor disorders in pregnancy, including fecal incontinence, such as increased abdominal pressure due to uterine volume or hormonal variations during pregnancy time.[16] Interestingly there are some studies focusing on the occurrence of pelvic floor disorders in late pregnancy, but none or scarce in the first weeks of pregnancy.[7] These studies report 3-14% of patients suffering fecal incontinence.[5,6] There is scarce information in this area, but and interestingly theories focused on urinary incontinence.[18] The large increase in stress and urge incontinence in early pregnancy is consistent with alterations in collagen as the last cause of this clinical problem.[24,25] It was suggested that relaxin, a hormone that is produced in the first trimester by corpus luteum, causes depolymerisation of the inter and intramolecular collagen bonds participating on the genesis of this clinical problem.[26] Thus, stress urinary incontinence is explained by loosening of the collagen within pubourethral ligaments.[27] We believe that these findings contribute to a greater understanding of the development of fecal incontinence in this group of patients and therefore an ongoing study has been designed to investigate this hypothesis.

In conclusion, the prevalence of fecal incontinence is high during early and late pregnancy with a notable impact on quality of life. A prospective follow-up has been designed to determine whether there are any changes in fecal continence after delivery.

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LEGENDS

Table 1. Pelvic floor disorders according to Rome III classification[3] in all surveyed patients.

Table 2. Results of health-related quality of life subscales assessment (Spanish validated SF-36 test [6]) in pregnant women with and without symptoms of fecal incontinence.

Table 3. General characteristics of surveyed pregnant women according to the presence of fecal incontinence symptoms.

Table 4. Previous obstetric history of non-nulliparous surveyed women (N=107) according to the presence of symptoms of fecal incontinence.

Table 5. Characteristics and pelvic floor symptoms in early (1st trimester) and late pregnancy (3rd trimester) in all surveyed women.

Figure 1.

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