Original article

Parity and pelvic floor dysfunction symptoms during pregnancy and early postpartum

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Abstract: We studied the pelvic floor dysfunction symptoms in pregnancy and early postpartum and its association with parity and gestational age. Women who had been referred to low risk obstetric clinic for prenatal and early postpartum care, between January 2005 and August 2006 were recruited to the study. Women were invited to complete an anonymous, self-report questionnaire regarding pelvic floor symptoms (PFDI-20). Dataset of 733 women were available for analysis. Only in nulliparous women, urinary frequency (58.8% vs 80.8%, P 0.005) and stress incontinence (20.5% vs 50.6%, P 0.001) were significantly more prevalent in second half of pregnancy in contrast to first half. All symptoms except painful defecation and urge urinary incontinence were significantly more prevalent in antepartum period than early postpartum. Logistic regression analyses revealed that increase in number of previous vaginal delivery was independently associated with presence of painful void, urge urinary incontinence and urinary frequency in early postpartum period. Pelvic floor dysfunction symptoms are significantly more frequent during pregnancy in comparison with early postpartum period. Additionally, prevalence of most symptoms was the same during first and second half of pregnancy. Parity and history of prior vaginal delivery did not affect the frequency of most symptoms during pregnancy.

Keywords: Pelvic floor dysfunction symptoms; Pregnancy; Parity; PFDI- 20.

INTRODUCTION

The pelvic floor has a fundamental role in supporting the pelvic organs and in the mechanism of urinary continence and anal continence. Some factors may interfere in the mechanism of support, causing a prolonged increase of intra-abdominal pressure, overloading the pelvic floor muscle and its neural, fascial and fibromuscular structures. Among the main factors are obesity, constipation, senility, parity, chronic cough and pregnancy[1,2]. In the case of pregnancy, the supporting structures are believed to be overloaded due to the fetus weight and the progressive growth of the uterus, both in weight and size. Additionally, the pregnant uterus increases the angle between the vesical neck and urethra, which can contribute to urinary symptoms[3]. Hormonal changes due to pregnancy can also cause changes in tissue, in the support, and in the continence mechanism. The increased production of steroidal hormones such as estrogen and progesterone may contribute. Estrogen is known to potentiate α-adrenergic stimulation of the smooth muscle of the urethra in animals, thus probably having a continence-maintaining effect[4,5]. Progesterone dominance during pregnancy potentiates beta-adrenergic stimulation and antagonizes the estrogen effect[4].

Parity is believed to be an important risk factor in the development of pelvic floor trauma with predisposing women to pelvic floor dysfunction symptoms including urinary incontinence, anorectal symptoms and pelvic organ prolapse[1,3,6-8]. Given the role of prior birth-related trauma in multiparous women with history of vaginal delivery, and role of pregnant uterus and pregnancy related hormones during pregnancy, do multiparous pregnant women experience a more symptomatic pregnancy for PFD symptoms than nulliparous women?

To remedy this, we sought to investigate the pelvic floor dysfunction symptoms frequency and severity during pregnancy and early postpartum and the association of symptoms with parity, and number of prior vaginal delivery.

METHODS

This was an observational cross-sectional study. The institutional review board at Naval Medical Center, Portsmouth, VA (NMCP) reviewed and approved this study. Women who had been referred to our low risk obstetric clinic for prenatal and early postpartum care during January 2005 - August 2006 were recruited to the study. After arriving for scheduled appointments, women were invited to complete an anonymous, self-report questionnaire regarding pelvic floor symptoms, along with a brief survey of demographic and obstetrical characteristics after signing the informed consent. Pelvic Floor Distress Inventory- 20 (PFDI-20) was used as validated questionnaire. Participants were instructed to complete the survey only once during their outpatient experience for the current pregnancy. Study materials were regularly collected and returned to the primary author in large mailers at regular intervals. Our exclusion criteria were history of CNS diseases, pelvic floor reconstructive surgeries and severe medical disease including diabetes, cardiovascular disease, and pulmonary and renal diseases.

PFDI-20 questionnaire;

The questionnaire utilize was the Pelvic Floor Distress PFDI-Twenty (PFDI-20), the short version of the Pelvic Floor Distress Inventory developed by Barber et al. This concise, user-friendly, tool was chosen due to its comprehensive nature and the efficiency in which it is administered in a busy practice. The PFDI-20 consists of three subscales with a total of 20 questions, which address urinary, prolapse and anorectal symptoms, the Urogential Distress Inventory (UDI-6), the Pelvic Organ Prolapse Distress Inventory (POPDI-6), and the Colorectal-Anal Distress Inventory (CRADI-8). Each question asked if a specific symptom is present (yes or no), and if the answer is 'yes,' whether this symptom bothers the individual, 'not at all,' 'somewhat,' 'moderately,' or 'quite a bit.' Higher scores for each subscale and individual questions are indicative of greater bother by the symptom.

To create a clinical picture, symptoms were categorized into 11 groups by combining questions on questionnaire that refer to similar clinical situation.

Additionally, to evaluate role of parity and number of prior vaginal deliveries on frequency of symptoms during pregnancy, pregnant women were categorized to four groups of first pregnancy, second pregnancy with one prior vaginal de-

TABLE 1. Demographic summary.

All Cases(733)	
Age, years (Mean ±SD)	25.69±4.8
BMI (Mean ±SD)	28.81±5.8
Parity (Median, Min-Max)	2 (0-9)
Number of prior vaginal delivery (Median, Min-Max)	1(0-9)
Antepartum (436)	
Age, years (Mean ±SD)	25.75±0.2
BMI (Mean ±SD)	29.26±0.3
Parity (Median, Min-Max)	1(0-5)
Number of prior vaginal delivery (Median, Min-Max)	1(0-5)
Gestational Age<=24 (n)	82
Gestational Age >24 (n)	354
Postpartum (297)	
Age, years (Mean ±SD)	25.89±0.36
BMI (Mean ±SD)	27.7±0.4
Parity (Median, Min-Max)	2(1-9)
Number of prior vaginal delivery (Median, Min-Max)	2(0-9)
Vaginal delivery (n)	215
Unplanned C-Section(n)	37
Forceps assisted delivery(n)	12
Scheduled C-Section(n)	33
Push, min (Median, Min-Max)	20(1-240)
Tear (n)	35
Birth weight (gram) (Mean ±SD)	3402±533

livery, multiparous with prior CS deliveries, multiparous (more than 2 pregnancy) with prior vagina deliveries.

Statistical methods;

Continuous variables were reported as means (±SD) or medians. Groups were compared with the use of the t-test or the Wilcoxon test, accordingly. Categorical variables were analyzed with Fisher's exact test, chi square test. A multivariate logistic model was developed to predict the probability of PFD symptoms, based on obstetrics and demographic factors. A p value less than 0.05 was considered to indicate a statistical significance. Statistical analysis was performed with SPSS version 20.0.

RESULTS

Dataset of 733 women were available for analysis with the mean age and BMI of 25.7 (± SD 4.8) and 28.8 (± SD 5.8), respectively. All demographic data are summarized in table 1.

As described in methods, we categorized women in antepartum (n: 436) period based on their parity and history of prior vaginal delivery to four groups. In each group pregnancy was divided to GA<= 24 weeks and GA >24 weeks.

Antepartum

Group 1. During first pregnancy, the prevalence of pelvic floor dysfunction symptoms ranged from 12%-81%. Urinary frequency (58.8% vs 80.8%, P 0.005) and stress incontinence (20.5% vs 50.6%, P 0.001) were significantly more prevalent in second half of pregnancy. However, Obstructive defecatory symptoms (ODS) and stress incontinence were the most bothersome symptoms in first and second half of pregnancy, respectively.

Group 2. During second pregnancy with history of one prior vaginal delivery, the prevalence of pelvic floor dysfunction symptoms ranged from 9%-70%. There was no significant difference in prevalence of pelvic floor dysfunction symptoms between first and second half of pregnancy. ODS in first half and pelvic pressure and stress incontinence in second half of pregnancy were the most bothersome symptoms (Table 2).

Group 3. During pregnancy in multiparous women with history of 0-1 prior vaginal deliveries, the prevalence of pelvic floor dysfunction symptoms ranged from 0-63%. There was no significant difference in prevalence of pelvic floor dysfunction symptoms between first and second half of pregnancy. ODS and stress incontinence were the most bothersome symptoms in first half and second half of pregnancy, respectively.

Group 4. During pregnancy in multiparous women with history of 2-6 prior vaginal deliveries, the prevalence of pelvic floor dysfunction symptoms ranged from 6%-79%. There was also significant difference between the prevalence of pelvic pressure (44.4% vs 78.6%, P 0.004) in first and second half of pregnancy. While ODS was the most bothersome symptom in first half of pregnancy, this was true for stress incontinence in second half of pregnancy (Table 2).

Comparison of pelvic floor dysfunction prevalence in first and second half of pregnancy among all groups

In comparison between different groups during pregnancy of <= 24, stress incontinence was significantly more prevalent in Group 2 (59%) with the next close prevalence in group 4 (56%) in comparison with group 1 (20.5%) and 3 (25%). In second half of pregnancy, primigravid women were the most symptomatic group for urinary frequency and voiding dysfunction in comparison with multiparous women, and group 2 was the most symptomatic group for painful void (Table 2).

Postpartum

297 women in their early postpartum period entered the study with the mean age of 25.89±0.36 and median parity of 4 (range 1-9). Two hundreds and fourteen patients had

TABLE 2. Comparison of pelvic floor dysfunction prevalence in first and second half of pregnancy among all groups.

	First half of pregnancy (GA<=24)					Second half of pregnancy (GA>24)				
	Group1 N:34 (%)	Group2 N:22 (%)	Group3 N:8 (%)	Group4 N:18 (%)	p	Group1 N:146 (%)	Group2 N:97 (%)	Group3 N:40 (%)	Group 4 N:71 (%)	p
1-Pelvic pressure	19 (55.8%)	10 (45.4%)	1 (12.5%)	8 (44.4%)	0.17	90 (61.6%)	63 (65.9%)	25 (62.5%)	55 (77.4%)	0.11
2-Bulge	11 (32.3%)	8 (36.3%)	1 (12.5%)	8 (44.4%)	0.43	74 (50.6%)	38 (40.2%)	12 (30%)	31 (43.6%)	0.067
3-ODS	14 (41.1%)	9 (40.9%)	2 (25%)	4 (22.2%)	0.76	58 (39%)	36 (38.1%)	14 (35%)	29 (40.8%)	0.88
4-AI	7 (20.5%)	5 (22.7%)	1 (12.5%)	4 (22.2%)	0.64	39 (26.7%)	16 (16.8%)	6 (15%)	14 (19.7%)	0.16
5-Painful defecation	6 (17.6%)	4 (18.1%)	1 (12.5%)	2 (11.1%)	0.8	22 (15%)	14 (15.4%)	2 (5%)	8 (11.3%)	0.35
6-Urge AI	6 (17.6%)	4 (18.1%)	2 (25%)	7 (38.9%)	0.39	19 (12.3%)	18 (18.5%)	6 (15%)	16 (22.5%)	0.34
7-Frequency	20 (58.8%)	14 (63.3%)	3 (37.5%)	9 (50%)	0.38	118 (80.8%)	67 (70.1%)	21 (52.5%)	49 (69%)	0.008
8-Urge incontinence	4 (11.7%)	5 (22.7%)	0	5 (22.2%)	0.23	39 (26.2%)	32 (34%)	12 (30%)	29 (40.8%)	0.54
9-Stress incontinence	7 (20.5%)	13 (59%)	2 (25%)	11 (55.6%)	0.006	74 (50.6%)	58 (60.8%)	19 (47.5%)	46 (64.8%)	0.23
10-Voiding dysfunction	4 (11.7%)	2 (9%)	0	1 (5.6%)	0.74	32 (21.9%)	10 (11.3%)	3 (7.5%)	4 (5.6%)	0.002
11-Painful void	9 (26.4%)	5 (22.7%)	0	2 (22.2%)	0.56	35 (23.2%)	33 (35%)	1 (2.5%)	23 (32.4%)	0.001

TABLE 3. Prevalence of pelvic floor dysfunction symptoms in early postpartum period categorized by model of delivery.

Symptoms	Vaginal delivery (215) (%)	Scheduled CS repeat (33) (%)	Unplanned CS (37) (%)	Forceps assisted delivery (12) (%)	P
1-Pelvic pressure (54)	36 (16.7%)	3 (9.1%)	12 (32.4%)	3 (25%)	0.056
2-Bulge (48)	34 (15.9%)	1 (3.2%)	8 (21.6%)	4 (33.3%)	0.062
3-ODS (74)	55 (25%)	6 (18.2%)	8 (21.6%)	5 (41.7%)	0.4
4-AI (29)	23 (10.5%)	1 (3%)	4 (10.5%)	2 (16.7%)	0.48
5-Painful defecation (55)	43 (19.7%)	4 (12.1%)	5 (13.2%)	3 (25%)	0.53
6-Urge AI (49)	37 (17%)	3 (9.1%)	8 (21.6%)	1 (8.3%)	0.47
7-Frequency (46)	34 (15.6%)	3 (9.1%)	6 (15.8%)	3 (25%)	0.59
8-Urge incontinence (28)	21 (9.6%)	0	5 (13.2%)	2 (16.7%)	0.18
9-Stress incontinence (68)	51 (23.6%)	4 (12.1%)	8 (21.6%)	5 (45.5%)	0.14
10-Voiding dysfunction (7)	5 (2.3%)	0	2 (2.8%)	0	0.47
11-Painful void (40)	26 (11.9%)	3 (9.1%)	7 (18.4%)	3 (25%)	0.30

TABLE 4. Comparison of pelvic floor dysfunction symptoms prevalence between antepartum and early postpartum periods.

Symptoms	Antepartum (436) (%)	Post-Partum (297) (%)	P Value
1-Pelvic pressure (321)	278 (63.2%)	43 (14.4%)	<0.0001
2-Bulge (224)	187 (43.4%)	37 (12.4%)	<0.0001
3-ODS (236)	171 (38.6%)	65 (21.8%)	<0.0001
4-AI (120)	96 (21.5%)	24 (8%)	<0.0001
5-Painful defecation (111)	60 (13.7%)	51 (17.1%)	0.104
6-Urge AI (120)	79 (17.8%)	41 (13.8%)	0.258
7-Frequency (138)	309 (69.8%)	32 (10.7%)	<0.0001
8-Urge incontinence (148)	128 (28.8%)	20 (6.7%)	<0.0001
9-Stress incontinence (293)	238 (54.3%)	55 (18.5%)	<0.0001
10-Voiding dysfunction (64)	58 (13%)	6 (2.1%)	<0.0001
11-Painful void (154)	121 (27.2%)	33 (11.1%)	<0.0001

history of vaginal delivery (Table 1). Categorizing patients based on their mode of delivery showed no significant differences in prevalence of pelvic floor dysfunction symptoms in early postpartum (Table 3).

Comparing pelvic floor dysfunction symptoms prevalence during antepartum period vs. early postpartum, all symptoms except painful defecation and urge urinary incontinence were significantly more prevalent in antepartum ($p<0.0001$) (Table 4).

Logistic regression analysis:

Multivariate logistic regression analysis was used to evaluate the prediction of symptoms in antepartum and postpartum groups, separately. Age, parity, number of prior vaginal delivery, BMI, birth weight, tear, and mode of delivery entered the model as variables. Our logistic regression analyses revealed that increase in number of previous vaginal delivery was independently associated with presence of painful void, urge urinary incontinence and urinary frequency in early postpartum period with odds of 3.5, 4 and 3.5, respectively (P: 0.028, P: 0.036, P: 0.013). No interaction was noted between the remaining other covariates in antepartum and remaining postpartum cases. (Age, Parity, Type of delivery, BMI, History of Tear, Birth weight).

DISCUSSION

Pelvic floor dysfunction symptoms are significantly more frequent during pregnancy than early postpartum. While it seems that hormonal change and enlarged uterus are the main reasons for pelvic support system malfunction, the prevalence of most symptoms did not differ significantly during first and second half of pregnancy; additionally, parity and history of prior vaginal delivery as an indicator of prior pelvic floor trauma did not affect the frequency of symptoms during pregnancy. Increasing number of prior vaginal delivery is associated with presence of urinary urgency during early postpartum period.

In an attempt to identify the role of pregnancy on pelvic floor support apparatus, in a case- control study, O'Boyle et al. compared the pelvic organ support in nulliparous pregnant women with non-pregnant women who were matched for age and BMI[9]. They reported nulliparous pregnancy is associated with increased POP-Q stage compared with non-pregnant control group. In 2004, they further investigated the pelvic support status during each trimester of nulliparous pregnancy and early postpartum period. They revealed that overall POP-Q stage and points Aa, Ap, Ba, and Bp significantly descend relative to the hymen in the third trimester and early postpartum period compared to the first trimester. However, there were no difference between third trimester and postpartum period[10].

Prevalence of pelvic floor dysfunction symptoms with advancing gestational age;

After identifying the pregnancy-induced pelvic support changes throughout pregnancy, the investigation of pelvic floor dysfunction symptoms during pregnancy is required. Urinary symptoms are the most investigated symptoms among all pelvic floor dysfunction symptoms in literature. Van Brummen et al. reported that among 515 nulliparous pregnant women, 74% experienced urinary frequency and 63% experienced urgency by 12 weeks' gestation, increasing to a prevalence of 81% and 68% by 36 weeks, respectively[11]. Similar to the onset of other urinary symptoms, incontinence can begin early and increase significantly during pregnancy in nulliparous women[11,12].

Our study showed that urinary frequency and urinary stress incontinence are significantly more prevalent in second half of pregnancy in nulliparous women; interestingly, this difference did not observed in multiparous women.

Prevalence rates for fecal or flatus incontinence before, during, and after first pregnancy of 0-1%, 0-8%, and 2-26% have been reported[13,14]. A prospective cohort study included 487 nulliparous pregnant women evaluated the anorectal symptoms during pregnancy, 3 months and 12 months postpartum[15]. Obstructive defecatory symptoms (ODS) had been significantly more prevalent at 12 weeks of pregnancy compared to 36 weeks; however, prevalence of fecal incontinence did not differ significantly during pregnancy. It is also has been reported flatus and fecal incontinence, constipation, and painful defecation in early pregnancy, were notable predictor for pelvic floor dysfunction symptoms after delivery, except for fecal incontinence[15].

Our study showed that there was not significant difference in prevalence of obstructive defecatory symptoms and anal incontinence between first vs. second half of pregnancy in nulliparous and multiparous women but ODS was the most bothersome symptoms in first half of pregnancy in all women.

We specifically addressed the pelvic organ prolapse symptoms in our study as well. Only in multiparous women with history of more than 2 vaginal deliveries, pelvic pressure was more prevalent in second half of pregnancy compared to first half of pregnancy.

Role of parity and number of prior vaginal deliveries in prevalence of PFD symptoms during pregnancy

Birth- related pelvic floor trauma due to childbirth is one the proposed etiologies for the development of PFD symp-

toms. There are scarce data in literature regarding the prevalence and severity of PFD symptoms during pregnancy in multiparous women while most studies had been focusing on first pregnancy. Our study signified that parity and number of prior vaginal deliveries does not have a role in almost all PFD symptoms during pregnancy and nulliparous women complain of PFD symptoms during pregnancy in same frequency as multiparous women.

Antepartum versus postpartum

Urinary incontinence is markedly lower in postpartum patients in contrast to antepartum as reported earlier in literature. (44% vs. 9%)[16-19]. According to Fitzgerald and Graziano, the function of the urinary system usually returns to normal soon after childbirth[20]. Tarazi et al. evaluated 343 women in their pregnancy and postpartum period and showed that urinary incontinence is more prevalent during pregnancy vs. postpartum. Moreover, they reported that urinary incontinence is associated with multiparty and reduction in vaginal pressure in postpartum[19]. In agreement with aforementioned studies, our study showed significant decrease in prevalence of all PFD symptoms postpartum. Higher number of prior vaginal deliveries increases the odds for presence of painful void, urge urinary incontinence and urinary frequency in early postpartum period.

Our study is limited by lack of pre-pregnancy screening for PFD symptoms; however, we eliminated the recall bias in that way. Also, women did not undergo pelvic exam with POP-Q measurements, but they have been screened for the symptom of vaginal bulge. Our study has certain strong points. This is the first study using the validated PFDI-20 questionnaire in pregnancy in both nulliparous and multiparous women investigating all PFD symptoms during pregnancy. Large population number and minimal missing data increased the study power.

In conclusion, PFD symptoms are moderately prevalent during pregnancy with ODS being the most bothersome symptom in first half of pregnancies in nulliparous and multiparous women. Despite to role of enlarge uterus with advancing gestational age and history of prior vaginal deliveries as an indicator of preexisting pelvic floor trauma, the prevalence of PFD symptoms mostly did not differ significantly between multiparous and nulliparous women. Delivery brings immediate relief for most symptoms with higher number of prior vaginal deliveries as a risk factor for postpartum painful void, urge urinary incontinence and urinary frequency.

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Multidisciplinary UroGyneProcto Editorial Comment

To improve the integration among the three segments of the pelvic floor, some of the articles published in *Pelviperineology* are commented on by **Urologists, Gynecologists, Proctologists/Colo Rectal Surgeons** or **other Specialists**, with their critical opinion and a teaching purpose. Differences, similarities and possible relationships between the data presented and what is known in the three fields of competence are stressed, or the absence of any analogy is indicated. The discussion is not a peer review, it concerns concepts, ideas, theories, not the methodology of the presentation.

Uro... Reporting the results of an observational study in 733 women on pelvic floor dysfunction symptoms in pregnancy and early postpartum and their association with parity and gestational age, the authors conclude that urinary frequency and urinary stress incontinence are more prevalent in the second half of pregnancy in nulliparous women compared to multiparous women, and that in the latter changes of PFD symptoms during pregnancy are not observed.

We know that different connective tissues are associated with various pelvic floor symptoms[1,2], and periurethral biopsies in nulliparous women with and without urodynamic stress incontinence have shown significantly less collagen in the tissues of those without urinary stress incontinence. Probably in nulliparous women the changes in the connective tissue that occur in the second part of the pregnancy are reversible and they disappear after childbirth. In multiparous women however connective tissue changes are likely to be permanent and this could explain the absence of a significant difference in PFD symptoms during all the stages of pregnancy. From an anatomical point of view this finding justifies the association between pelvic prolapse and multiparity.

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Gyne... I congratulate the authors on an excellent observational study. The purpose of this comment is to expand on their hypothesis of a role for hormones in the causation of these symptoms.

Disappearance of pregnancy induced bladder symptoms immediately after delivery was reported by Francis in 1948[1] and this coincides with removal of the placenta, which of course produces the relaxin hormone.

Connective tissue in the area of the urogenital organs is sensitive to hormones. During pregnancy, collagen is depolymerized by placental hormones, and the ratios of the glycosaminoglycans change[2].

The vaginal membrane becomes more distensible, allowing dilatation of the birth canal during delivery. There is a concomitant loss of structural strength in the vagina and its suspensory ligaments. This was first reported by Zarrow in 1948, and attributed to increased levels of the hormone relaxin[3].

Degradation of the collagen and an increase in the special dermatan sulfate proteoglycans can at least partly explain the pregnancy-associated softening of this connective tissue; relatively high estrogen levels seemed to be an absolute condition for the process even when it is induced pharmacologically[4].

Laxity in the uterosacral ligaments explains the uterovaginal prolapse so often seen during pregnancy[5]. According to the integral theory[5], uterosacral ligament laxity may also cause USI, pelvic pain, urgency, ODS and fecal incontinence, owing to collagen depolymerization induced by relaxin. Loss of vaginal membranous support may cause gravity to stimulate the nerve endings at the bladder base, causing premature activation of the micturition reflex. This is expressed as symptoms of 'bladder instability', perceived by the pregnant patient as frequency, urgency and nocturia[5].

Removal of the placenta restores connective tissue integrity, and the symptoms rapidly disappear in a large percentage of patients[1]. The hypothesis that this group of symptoms (urgency, nocturia and abnormal bladder emptying ODS pelvic pain) is associated with uterosacral ligament laxity was tested prospectively in a group of 67 gynecology patients in a urodynamically controlled study[6]. A substantial cure rate for these symptoms was achieved by reinforcement of the uterosacral ligaments, even in many patients who did not have major uterine/apical prolapse.

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Procto... About half of pregnant women have to deal with constipation, but only few need medical attention, the problem usually beginning at the 11-12th week to become more pronounced after the sixth month and it may be cause and consequence of symptomatic hemorrhoids (prolapse, edema) and anal fissures. These quite annoying conditions often have a triggering moment in the effort required for a difficult evacuation. Among of the numerous factors affecting defecation (and likewise fecal continence) i.e. sphincters' relaxation, pelvic ligaments integrity, peristalsis, stool consistency, anorectal sensitivity, emotions) also the intestinal bacterial flora seems to play a very important role. Furthermore in pregnancy-constipation we must consider several causes of bowel malfunctioning: *progesterone*, that prevents uterus contractions, favors the growth of the myometrium and promotes placental activity, it slows down the intestinal motor activity and the transit, worsening a pre-existing constipation or causing a new problem; the *compression* from the pregnant uterus; an increased *water demand* reducing the amount needed to soften intestinal contents; a frequent intake of *iron supplements* often necessary during pregnancy; a reduced *physical movement*, variations in *diet*. All the above conditions need to be considered and in pregnancy the type of constipation should always be analyzed for an appropriate treatment.

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