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Genital perception and vulvar appearance after childbirth: a cohort analysis of genital body image and sexuality

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Abstract

Purpose The mode of delivery influences the genital image and perception, especially regarding the effects of delivery on sexual life and intercourse. The current literature has not adequately investigated the relationship between delivery and genital appearance. The aim of the study is to determine whether the mode of delivery changes the genital perception of the woman and, in doing so, influences their acceptance. The secondary aim is to analyze the impact of genital appearance on sexuality.

Methods A prospective survey regarding genital appearance and the impact of delivery mode on vulvar perception was conducted in patients 6 weeks after childbirth. We enrolled 365 women for evaluation, divided into three groups: spontaneous vaginal delivery (SVD 295 women 80.82%), operative vaginal delivery (OVD 36 women 9.86%) and cesarean section (CS 34 women 9.31%).

Results There was a statistically significant difference in the frequency of vulva inspection and in the perception of genital modifications among the groups ($p < 0.001$ and $p < 0.001$, respectively). The perception of overall genital modifications was significantly correlated with the frequency of inspection ($p = 0.004$) and the delivery mode ($p = 0.0002$).

Conclusion Mode of delivery may influence the genital perception and appearance of genitalia without a decrease of sexual life and daily activity in childbirth.

Keywords Childbirth · Body image · Genital appearance · Genital perception · Body appearance

What does this study add to the clinical work

In post-partum, the delivery mode may impact the genital perception and appearance of women. Vaginal delivery or cesaren section do not cause a decrease in sexual life or in daily activity in childbirth.

Introduction

There is an increasing interest regarding the influence of the genital perception and appearance after childbirth. During pregnancy a woman's body undergoes modifications of every anatomical area to support fetal development and to prepare herself for labor and delivery. Also vulvar and vaginal structures are involved in body adaptations suggesting a change in tissue characteristics, as a specific physiological impact of pregnancy on genital structures [1]. The effects of pregnancy and vaginal birth on the pelvic floor structures are characterized by stretching of the vaginal introitus, resulting in vaginal laxity, a decrease of sexual intercourse sensation and satisfaction and change in body image leading to difficulties in relationships. Vagina laxity is created by a change of connective tissue and urogenital matrix tissue, with a reduction of collagen formation and fibroblast activation [2]. The anatomical and functional modification of pelvic floor muscles and structures may lead to sexual dysfunction, with an incidence rate up to 30–50% [1]. In addition to post-birth changes of genitalia, episiotomy, obstetrical vulvovaginal

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lacerations, and pelvic floor damage could cause painful sexual intercourse and sexual distress and possibly lead to the interruption of sexual activity.

Nevertheless, the portrayal of birth may influence the image and perception of genitalia and sexuality in women, especially regarding the effects of delivery on sex life and intercourse. In previous studies, a pool of women was asked what method of delivery they would prefer, based on their idea of better preserving sexual function and prevent sexual discomfort; 20–50% of them preferred C section over vaginal delivery. This result reflects the opinion of the media, where cesarean delivery appears to provide a reason to preserve sex life and maintain attractive genitalia post childbirth, and how much it influences our lives. [3–6]

In opposition, several trails since 2006 have demonstrated that there is not a statistically significant difference between cesarean section and vaginal delivery regarding short- or long-term sexual satisfaction and function and the development of sexual distress after childbirth [7–10].

In addition, the growing attention to genital appearance from the media is creating a standard vulvar portrayal, which requires surgical and esthetical procedures aiming to restore the body image after delivery ("mommy makeover") [11, 12].

In our opinion, the current literature has not adequately investigated the relationship between delivery (cesarean or vaginal), genital perception, and sexuality. The aim of the study is to determine whether women accept the genital changes after childbirth and the differences among the mode of delivery (cesarean section or vaginal delivery). The secondary aim is to analyze whether perception of genitalia in childbearing may influence sexuality after delivery.

Materials and methods

This study included all consecutive women with singleton pregnancies, who attended the Obstetric and Gynecology Department for post-partum examination (on average 6 months after delivery) between January 2020 and December 2020. The study was approved by an Institutional review board of IRCCS Fondazione Policlinico San Matteo of Pavia. The eligible criteria were the followings: 18 years of age or over, primiparous women, singleton pregnancy, delivery at term (> 37 weeks of gestational age), able to complete a study questionnaire and to speak the Italian language correctly. Participants completed a 20-item survey. The survey was created by the authors and it was composed of the following items: one item about the frequency of vulvar inspection, two items about the perception of vulvar and vaginal modification after childbirth, one item about the satisfaction of vulvar appearance after childbirth, one item about the importance of genital appearance due to the delivery, one item about genital esthetic surgery, one item about the impact of genital appearance in childbirth on sexuality and daily activity, one item about the source of information about vulva and vaginal appearance in childbirth, one item about the emotionality of vulvar appearance after childbirth, one item about the sexual satisfaction in childbirth, and one item about genital self-perception. Finally, nine items regarded the obstetrics and delivery characteristics. Multiparous women, with a diagnosis of pelvic organ prolapse, vulvodynia or previous pelvic floor damage, and III or IV grade obstetrics lacerations were excluded from this study as possible confounding variables regarding genital perception. Participants provided information about demographic characteristics, age, Body Mass Index (BMI), weight gain during pregnancy, obstetric history, delivery variables, neuraxial anesthesia during labor and neonatal weight. The survey collected information referring to perceptions of their genitalia, interest in cosmetic vulvar surgery, image and appearance of the vulva after childbirth, relationship between genitalia appearance and sexuality, emotional context derived from genital perception in the post-partum phase, interference with daily activity and sources of information about genitalia appearance. This questionnaire-survey was inspired by the trial of Yurteri et al. [12] and it was adapted for childbirth patients. Women were divided into three groups: group 1 with spontaneous vaginal delivery, group 2 with operative vaginal delivery, and group 3 with cesarean section. All women provided informed, written consent.

Statistical analysis

Categorical variables were described as counts and percentages and compared between the three groups with chi square test. Quantitative variables are described as mean and standard deviation (SD) if normally distributed (Shapiro–Wilk's test), as median and interquartile range (IQR) otherwise. They were compared between groups with one-way analysis of variance or Kruskal–Wallis test. Nonparametric test for trends across ordered groups was used to assess the association between ordinal and quantitative variables [13].

Results

We enrolled 501 consecutive primiparous women who delivered at the Obstetric and Gynecology Department, Fondazione IRCCS Policlinico San Matteo of Pavia from January 2020 to December 2020. 71 patients were excluded for non-acceptance of the study or difficulties in the Italian language comprehension, 65 women were excluded for the following reasons: obstetrical lacerations of grade ≥ 3 or women lost during follow up, leaving 365 patients for evaluation. These

last were divided into three groups: spontaneous vaginal delivery 108 (SVD 295 80.82% women), operative vaginal delivery (OVD 36 women 9.86%) and cesarean section (CS 34 women 9.31%).

Demographic characteristics of the three groups are reported in Table 1. There were no statistically significant differences between three groups with respect to initial BMI and weight gain.

Table 2 reports the vulvar perceptions and appearance after childbearing in the three groups: there was a statistically significant difference in the frequency of vulva inspection and in the perception of genital modifications among the groups ($p < 0.001$ and $p < 0.001$, respectively).

In addition, the perception of overall modifications of genitalia post-partum was significantly correlated with the frequency of inspection ($p = 0.004$) and the delivery mode ($p = 0.0002$). Frequency of genital observation is also directly correlated with BMI (Fig. 1, $p = 0.04$). The three groups were similarly satisfied with their genital appearance after delivery ($p = 0.898$) and did not report any detected changes in elasticity of vaginal tissue before and after childbirth. The three groups reported in a similar way the importance of genital appearance and its impact on daily and sexual activity ($p = 0.514$ and $p = 0.056$, respectively). The changes of genital appearance after childbearing did not interfere with emotional status ($p = 0.282$) and sexual satisfaction was not significantly different among the three groups ($p = 0.043$). 53.9% of women delivered with vaginal mode and did not report any vaginal symptoms such as pain or itching, in opposition to the OVD and CS groups where the patients without symptoms where 86.11% and 82.35%, respectively ($p = 0.0002$). Secondary dyspareunia was reported in 33.89% (100/295) in SVD group, in 25% (9/36) in group 2, and in 8.22% (3/34) in group 3.

Figure 2 represents the satisfaction of genital self-perception with a range from 1 to 10 after childbirth; the picture illustrates that satisfaction was lower in OVD than in SVD. In opposition CS women reported the better degree of satisfaction ($p < 0.001$). Among the three groups 16.5% in SVD, 19.44% in OVD, and 14.71% in CS considered cosmetic surgery to restore genital function after delivery ($p = 0.513$).

Sources of information concerning the appearance and aspect of genitalia after childbirth did not differ among the patients in regard to the mode of delivery ($p = 0.122$). Gynecologists and physicians represent the most important source of information about vulvar changes derived from delivery (58.64% in group 1 vs. 72.22 in group 2 and 60.61% in group 3), followed by internet information and friends, especially among women of group 1.

Discussion

There is an increasing interest regarding the perception of vulvar modifications after childbirth. Women were generally satisfied with the appearance of their vulva, nevertheless the frequency of vulvar inspection among the three groups is different ($p < 0.0001$).

We proved that vaginal delivery impacted the perception of vulvar modification after childbirth, but not on vaginal elasticity and genital appearance. Instead, sexual satisfaction was different between mode of delivery: in fact, in vaginal delivery group (spontaneous or operative) there was a large percentage of women that reported dyspareunia, probably due to an increase in vaginal dryness, as the previous authors reported, or vulvar pain after episiotomy [14].

Despite the large percentage of women who did not report any symptoms, there is a statistical difference

Table 1 Demographic characteristics of the patients

Variables	Group 1 spontaneous vaginal delivery $N = 295$ (%)	Group 2 operative vaginal delivery $N = 36$ (%)	Group 3 cesarean section $N = 34$ (%)	p value
Age (years; mean ± SD)	33.21 ± 5.35	33 ± 4.11	36.18 ± 5.42	**0.007**
Weight (kg; mean ± SD)	65.1 ± 11.8	63.3 ± 10.8	65.7 ± 12	0.63
BMI (kg/m^2; mean ± SD)	23.99 ± 4.33	23.62 ± 3.91	24.9 ± 4.61	0.43
Previous miscarriage	61 (20.67)	8 (22.22)	15 (44.11)	**0.009**
Weight gain (kg; mean ± SD)	11.72 ± 4.34	12.8 ± 3.66	11.62 ± 3.95	0.34
Gestational age (weeks, mean ± SD)	39 ± 2	40 ± 1	38 ± 1	**0.0053**
Episiotomy	75 (24.42)	27 (75)	–	**< 0.001**
Obstetrics lacerations	184 (62.71)	6 (16.66)	–	**< 0.001**
Infant weight (g; mean ± SD)	3248 ± 573	3079 ± 638	3447 ± 260	**0.024**
Labor induction	99 (33.55)	19 (52.77)	–	**< 0.001**
Labor analgesia	161 (54.57)	27 (75)	–	**< 0.001**

SD standard deviation, *BMI* body mass index

Table 2 Genital appearance after childbearing

Variables	Spontaneous vaginal delivery $N=295$ (%)	Operative vaginal delivery $N=36$ (%)	Cesarean section $N=34$ (%)	p value
Frequency in vulvar inspection in childbearing				
Never	59 (20)	12 (33.33)	1 (2.94	**< 0.001**
< 5 times	43 (14.58)	7 (19.44)	3 (8.82)	
> 5 times	13 (4.41)	1 (2.78)	1 (2.94)	
1 time/months	53 (17.97)	9 (25)	6 (17.65)	
1 time/week	66 (22.37)	6 (16.67)	25 (73.53)	
I perceive vulvar modifications after childbirth				
Agree	140 (47.46)	15 (41.67)	9 (26.47)	**< 0.001**
Disagree	95(32.20)	10 (27.78)	23 (67.65)	
Neutral	60 (20.34)	11(30.56)	2 (5.88)	
I perceive a decrease in vaginal elasticity after childbirth				
Agree	127 (43.05)	20 (55.56)	14 (41.18)	0.292
Disagree	128 (43.49)	14 (38.89)	18 (52.94)	
Neutral	40 (13.56)	2 (5.56)	2 (5.88)	
I am satisfied of vulvar appearance after childbearing				
Agree	158 (53.56)	20 (55.56)	20 (58.82)	0.898
Disagree	84 (28.47)	9 (25)	10 (29.41)	
Neutral	53 (17.97)	7 (19.44)	4 (11.76)	
I think is important genital appearance after childbearing				
Agree	131(44.41)	16 (44.44)	20 (58.82)	0.514
Disagree	117 (39.66)	16 (44.44)	10 (29.41)	
Neutral	47 (15.93)	4(11.11)	4 (11.76)	
I may consider esthetic surgery of genitalia				
Agree	36 (12.2)	7 (19.44)	4 (11.76)	0.513
Disagree	245 (83.05)	29 (80.56)	29 (85.29)	
Neutral	14 (4.75)	0 (–)	1 (2.9)	
I perceive significant the impact of genitalia appearance on daily and sexual activity after childbearing				
Agree	70 (23.73	10 (27.78)	3 (8.82)	**0.056**
Disagree	192 (65.08)	21 (58.33)	22 (64.71)	
Neutral	33 (11.19)	5 (13.89)	9 (26.47)	
Source of information about vulva and vagina appearance after childbearing				
Female journals	5 (1.69)	0 (-)	3 (9.09)	0.122
Internet	65 (22.03)	6 (16.67)	7 (21.21)	
Books	14 (4.75)	0 (–)	2 (6.06)	
Friends	38 (12.88)	4 (11.11)	2 (6.06)	
Gynecologist/doctors	173 (58.64)	26 (72.22)	20 (60.61)	
Emotional development for vulvar appearance after childbearing				
Embarrassment	40 (13.56)	5 (13.89)	1 (2.94)	0.282
Satisfaction	70 (23.73)	4 (11.11)	9 (26.47)	
Indifference	181 (61.36)	27 (75)	24 (70.59)	
Anger	4 (1.36)	0 (–)	0 (–)	
Satisfaction of sexuality in childbearing				
Inadequate	38 (12.88)	7 (19.44)	2 (5.88)	**0.043**
Middle	105 (35.59)	16 (44.44)	14 (41.18)	
Good	140 (7.46)	12 (33.33)	52 (52.94)	
Excellent	12 (4.07)	1 (2.78)	0 (–)	

Table 2 (continued)

Variables	Spontaneous vaginal delivery $N=295$ (%)	Operative vaginal delivery $N=36$ (%)	Cesarean section $N=34$ (%)	p value
Post-partum genital perception				
No upset	159 (53.9)	31 (86.11)	28 (82.35)	**< 0.001**
Burn	20 (6.78)	3 (8.33)	2 (5.88)	
Itch	9 (3.05)	1 (2.78)	0 (–)	
Inflammation	15 (5.08)	2 (5.56)	0 (–)	
Dispareunia	100 (33.89)	9 (25)	3 (8.22)	
Everyday distress	2 (0.68)	0 (–)	1 (2.94)	

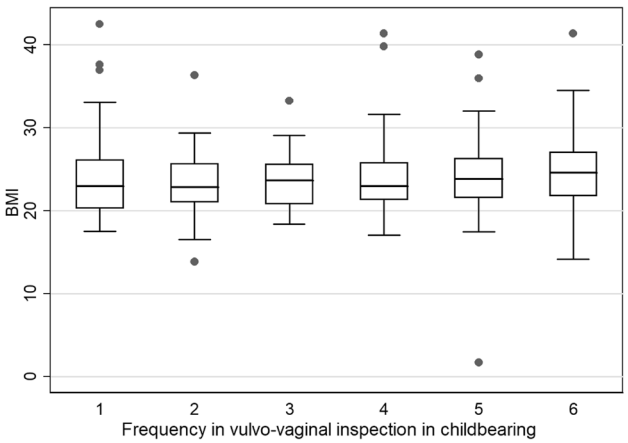

Fig. 1 Frequency of genital observation is also directly correlated with BMI. Legend: 1: never; 2: < 5 times; 3: > 5 times; 4: time/months; 5: time/week; everyday

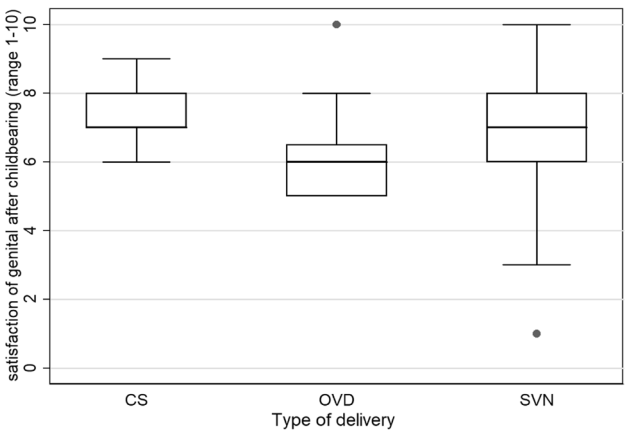

Fig. 2 Satisfaction of genital self-perception with a range from 1 to 10 after childbirth. *CS* cesarean section, *OVD* operative vaginal delivery, *SVN* spontaneous vaginal delivery

between the groups regarding the vulvar symptoms (burning, itching and sexual distress), and several patients reported embarrassment about vulvar appearance after vaginal delivery.

Post-partum sexual activity may be influenced by the changes of body image, genital appearance, and hormonal variation with difficulty in recovering a healthy sex life, with a range of 22–86% after delivery [15, 16]. In our population, satisfaction of sexuality in childbearing was considered good/excellent in 11.53% of vaginal delivery vs. 52.94% in cesarean section group.

A review by Yeniel and Petri, states that nowadays there is no clear evidence regarding the impact of the mode of delivery and the changes in sexual function; the author reported, in the first 3 months after delivery, a decrease of sexual desire and of the ability to reach orgasm with a concomitant increase of pain and sexual distress. An improvement of sexual quality was reported within 6 months after childbirth. There are several independent risk factors which could influence post-partum sexuality such as urinary tract infections, body image, depression, socio-cultural conditions, emotional status, and hormonal changes during the post-partum period [7]. The results of this work appear consistent with our data. Barbara et al. underlined that a possible source of sexual distress was operative vaginal delivery; this mode of delivery was associated with poor arousal, lubrication, difficulty in searching an orgasm, and poor overall sexual quality when compared to cesarean sections, and lower ability to reach an orgasm compared to spontaneous vaginal delivery, but it is not conclusive, due to the increased numbers of episiotomy [17]. Zielinski et al. sustained that 84% of the women enrolled reported vaginal and rectal changes associated with delivery which did not cause a negative impact on sexual health and self-esteem [18]. The authors also attested that sexual function after childbirth is negatively related to episiotomy and to sexual pain caused by vaginal dryness for breast feeding amenorrhea. In our population, the frequency of episiotomy was 24.42% in spontaneous vaginal delivery and 75% in operative vaginal delivery, and in this category, we reported a more frequent incidence of secondary dyspareunia, in according with Cattani et al. [19].

Nowadays the literature data are not conclusive about the role of cesarean section, compared to vaginal delivery, as a protective method to prevent dyspareunia, sexual distress, and genital pain. As Cappell and Pukall reported, there is no

clear evidence that cesarean sections is an harmful method to prevent future sexual life distress compared to vaginal birth [20]. In addition Cattani et al. underlined how cesarean section may reduce dyspareunia, in comparison with vaginal birth, but it was not associated with sexual dysfunction [19]. Pregnancy and delivery change perineal body dimensions, significantly. Cesarean section does not completely protect against changes in perineal body morphology as Buyuk demonstrated [21].

In our study, the appearance of the vulva during pregnancy and after delivery (especially after vaginal delivery) was not perceived as abnormal and did not interfere with sexuality or personal well-being. The personal acceptance and satisfaction of genitalia are mirroring women's ideal aspects of vulva: in each group women are satisfied about their genital appearance and the majority of women did not consider cosmetic and esthetical surgery. A possible explanation of this may be the relative young age of the women and their desire for future pregnancies. In addition, these women probably did not consider their vulvar as abnormal, even after childbirth, and they did not feel the need of surgery to be sexually satisfied. Eventually, regarding women's physical and psychological wellbeing, especially concerning depression and anxiety developed after cesarean section, literature data suggested that mode of delivery influences it. Women who underwent forceps assisted vaginal delivery or unplanned cesarean section reported a significant risk of reduction of postnatal health and wellbeing and an increased risk for developing post-traumatic-type symptoms several months after childbearing, especially in case of forceps-assisted vaginal delivery [22].

In addition, in case of planned cesarean section, women more frequently decided to not start breastfeeding in comparison with vaginal delivery. In case of unplanned or emergency cesarean section women reported more difficulties in breastfeeding and often they discontinued it before twelve weeks post-partum, and they used more resources before and after hospital discharge in comparison with vaginal delivery [23]. The unplanned delivery mode correlates with an increased risk of development of anxiety, post-traumatic stress disorders, and pain intensity. For this reason it is important to support this women with medications, by promoting positive childbirth experience, by involving patients in the decisional process of delivery, and providing a psychological support during pregnancy, especially in patients at high risk of developing a post-partum stress disorder [24].

The sources of information regarding genital appearance after childbirth and pregnancy did not different in the three groups and the main educational source was the gynecologist; for this reason, it is important to take into account the different social contexts, age and educational and marital status in the counseling.

The concern of women regarding the possible effects of mode of delivery on genital aspect and body image is influenced by media but the literature data are scarce and inconclusive. Nowadays, several women think that vaginal delivery may cause a decrease in sexual satisfaction and a change in body perception with consequent difficulties in relationship and for this reason they require cesarean section. It is of primary importance that the gynecologist and the other sources of information explain to the women that the changes induced by pregnancy and childbirth are physical and must not interfere with partner relationship and not became an obstacle to the image that the woman has of her body. Multiple efforts are needed to address the barriers that the media create between the idealized image of the female body and the natural changes that age, personal characteristics and pregnancy induce on the body.

A possible bias of our work was the sample considered, because the three groups were not equal for number. In addition, all the patients of our study come from a single center; probably the involvement of more hospital centers in different Italian regions could be useful to analyze regional changes in the genital appearance after childbirth and the cultural influence on sexuality and genital perception related to the delivery mode. The inter-regional variation regarding personal interests after childbirth of considering cosmetic surgery may be a possible field to investigate to evaluate the impact of pregnancy and childbirth in general population. Further studies will be needed to evaluate genital perception and sexual function after childbirth in different ages to evaluate how age could influence the image and appearance of vulva and its influence on sexuality. Eventually, it is interesting to report that our analysis was conducted during the first years of COVID-19 pandemic. This may constitute a possible limitation of our results because, during the general condition of uncertainty and restriction, it may influence the number of possible sample of women enlistable and the post-partum self-wellbeing and self-confidence, and couple cohesion, creating a new vision of self-image and future perception. In according to available literature data, COVID-19 caused an increased high rate of depressive symptoms, such as anxiety, during pregnancy and breastfeeding, and elevated level of post-partum traumatic stress symptoms, due to the absence of partner during and after childbearing [25, 26]. In addition, the pandemic causes a decrease of healthcare, social and economic incomes in women, but especially in working mother, to guarantee the childcare demands [27].

In conclusion delivery mode may influence the genital perception and appearance of genitalia without a decrease in sexual life and daily activity in childbirth. Further studies are needed to investigate if genital perception after vaginal delivery or cesarean section is connected with the educational status of patients or generational changes in cultural substratum.

Author contributions MD: manuscript writing. AG: other formal analysis. CB: other formal analysis. MFP: data collection. ALS: data collection. ADS: data analysis. BG: project development.

Declarations

Conflict of interest The authors have no conflicts of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

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