Retrospective review

The impact of birth history on pelvic floor function: a retrospective assessment of 10,125 patients

VITO LEANZA (*) - STEFANO DATI (**) - GIOVANNI PISAPIA CIOFFI (***) - MANUELA ACCARDI (*)

(*) Department of Obstetrics and Gynaecology, Catania University (Italy)
(**) Casilino Hospital, Urogynaecology Unit, Rome (Italy)
(***) Obstetrics and Gynaecology Unit, Ospedale Battipaglia Salerno

Abstract: Aim. To assess the importance of birth history in subsequent pelvic floor function. Patients and Methods. Between 1996 and 2006 the outcomes of 10,125 patients were evaluated and patients were divided into the following categories: vaginal deliveries, caesarian sections, or both caesarian section and vaginal delivery. Based on self-reported pregnancy and delivery experience, the patients were classified as having delivered 5 years (group A), 5-20 years (group B), and over 20 years before (group C). Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ) was used with questions about agreement or disagreement regarding the history of their delivery. The statistical analysis was performed with chi-squared test applied to a contingency table (2x2) and P value <0.001 was considered statistically significant. Results. The comparison between agreement and disagreement abou t specific modality of delivery failed to demonstrate significant difference in the first group while in the second and third group the difference was statistically significant. Conclusions. Disorders of the pelvic floor depend mainly on modality of delivery. Anatomic and functional alterations influence both the choice of the patients and their positive or negative perceptions of the birth experience. Pelvic floor disorders depend on many risk factors, but vaginal delivery seems to be one of the most important.

Key words: Perineal damage; Pelvic floor; Quality of life; Caesarean section; Delivery.

INTRODUCTION

The pelvic floor is a network of muscles, ligaments and tissues that act like a hammock to support the organs of the pelvis: uterus, bladder, and rectum. If the muscles become weak or the ligaments or tissues are stretched or damaged, the pelvic organs may fall down and protrude into the wall of the vagina. The result is prolapse, urinary incontinence and reduced sexual response. It is well known that pelvic floor disorders usually result from a combination of factors. Pregnancy and vaginal delivery (VD) may weaken or stretch some of the supporting structures. Pelvic floor disorders are common among women who have had several vaginal deliveries, and the risk may increase with each delivery. The birth itself may damage nerves, leading to muscle weakness. At least 11% of women will require a pelvic floor operation in their lifetime.[1] Many studies suggest that VD is associated with pelvic floor disorders (Fig. 1). Thus the route of delivery is a potentially modifiable risk factor. As a result the role of elective caesarean section (CS) in reducing the risk of pelvic floor disorders is being evaluated considering both the choice of delivery by the physician and the treatment of late post-partum effects. The understanding of the association between vaginal delivery and pelvic floor disorders is a controversial topic. However, an increasing number of women are requesting elective caesarean delivery despite obstetric practice guidelines developed over the past decade aimed at reducing the caesarean delivery rate.[2, 3]

Schindl et al.[4] found that the birth experience was significantly better in elective caesarean section (CS) compared with VD, but worse in women with emergency CS and worst in those with vacuum delivery. They found that 83.5% of women with VD would choose the same mode of birth again compared to 74.3% of women with CS on demand and 66% of women with medically necessary CS. Only 30.1% of women with emergency CS wanted to receive CS at the next birth. Another point to be considered is the difference between elective and emergency CS. Allen et al.[5] observed that of 18,435 pregnancies, 721 were elective caesarean deliveries. There were no maternal deaths or transfers for intensive care. There was no difference in wound infection, blood transfusion or intraoperative trauma. Women undergoing elective caesarean delivery were more likely to have puerperal febrile morbidity (relative risk [RR] 2.2; 95% confidence interval [CI] 1.1, 4.5; $P = .03$), but were less likely to have early postpartum haemorrhage (RR 0.6; 95% CI 0.4, 0.9; $P = .01$) compared with women entering spontaneous labour. Subgroup analyses of maternal outcomes in women delivering by spontaneous and assisted VD and emergency caesarean delivery were also performed. The highest morbidity was found in the assisted VD and emergency caesarean groups.

Another point to be considered is the perineal effect of the labor which reduces the protective role of caesarean section on the pelvic floor.[6-7]

The aim of this study was to evaluate the late perception of patients about their own mode of delivery.

MATERIALS AND METHODS

Between January 1996 and December 2006 a total of 10,125 patients were evaluated and enrolled in the following categories: vaginal deliveries, caesarian sections and history of both CS and VD. Women were categorized into one of

Fig. 1. – Vaginal delivery and genital prolapse.

TABLE 1. – *Statistical evaluation and satisfaction reports among the three groups of patients comparing vaginal delivery (VD) versus caesarean section (CS).*

Groups	*Mode of delivery*	*Satisfaction agree/disagree*	χ^2	*p Value*
A: 5 years	VD: 70.9% (861)	92.9%(800) / 7.1%(61)	2.34	0.12645 NS
12% (n. = 1215)	CS: 29.1% (354)	90.1%(319) / 9.9%(35)		
B: 5-20 years	VD: 78% (2843)	84.9%(2416) / 15.1%(427)	8.11	0.00439
36% (n. = 3645)	CS: 22% (802)	89%(714) / 11%(88)		
C: >20 years	VD: 85% (4475)	77%(3446) / 23%(1029)	91.23	0.0001
52% (n. = 5265)	CS: 15% (790)	92%(727) / 8%(63)		

three groups based on self-reported pregnancy and delivery experience.

The patients were classified in three groups: group A (12%, n = 1215) having delivery 5 years before, group B (36%, n = 3645) having delivery between 5-20 years before and group C (52%, n = 5265) having delivery over 20 years before. Differences between cesarean and vaginally parous groups were identified with a comparison between proportions (chi-square test) applied to a contingency table (2×2); $p < 0.001$ was considered statistically significant. A logistic regression analysis was performed to control covariates that differed in our two groups despite randomization.

Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ) was used, adding two more questions about agreement or disagreement regarding the history of their delivery.[8] In cases of urinary stress incontinence, urodynamic evaluation was requested. Pelvic defects were classified according to the Baden and Walker HWS (degree 0-1-2-3-4). The prolapse was quantified according to the POP-Q system. Severity of SUI was graded according to Ingelman-Sundberg.[9]

RESULTS

In the first group 70.9% (n = 861) of patients have had spontaneous delivery and 92.9% (n = 800) were happy with this mode of delivery; 29.1% (n = 354) have had an elective caesarian section and 90.1% (n = 319) were happy. In the second group 78% (n = 2843) of patients have had spontaneous delivery and 84.9% (n = 2416) were happy; 22% (n = 802) have had an elective caesarian section and 89% (n = 714) were happy. In the third group 85% (n = 4475) of patients have had spontaneous delivery and 77% (n = 3446) were happy; 15% (n = 790) have had an elective caesarian section and 92% (n = 727) were also happy.

The reasons for dissatisfaction with VD were genital prolapse (30%), genital prolapse associated with UI and/or anal incontinence (38%), sexual dysfunction following vaginal birth (29%) and others (3%). The most important reason for dissatisfaction with caesarean section was postoperative pain (58%) and/or general anaesthesia (40%). We also investigated the reasons which influenced the patients' choices.

On comparing the satisfaction and dissatisfaction following delivery between the first group (VD and caesarian section 5 years before), an insignificant difference was found (VD 92.9%, caesarian section 90.1%, p = 0.12645), wheras a significant difference was found within the second group (VD 84.9%, caesarian section 89%, p = 0.00439), and in the third group (VD 77%, caesarian section 92%, p = 0.0001). These results are summarized in table 1.

CONCLUSIONS

Our investigation shows that disorders of the pelvic floor are influenced by the mode of delivery. The anatomic and functional alterations that follow also influence the satisfaction or dissatisfaction of the patients. Disagreement between patients and physicians as to mode of delivery is related to the occurrence of early and late symptoms due to the traumatic consequences of the birth on the pelvic floor.

A woman who delivers an infant vaginally has a risk of a pelvic floor disorder higher than a woman who delivers all infants by caesarean delivery. Development of pelvic floor disorders is dependent on multiple risk factors, where the most important one is the modality of delivery.

Current therapies for pelvic floor disorders are frequently invasive and yield incomplete restoration of function. This makes prevention of these disorders a priority. However, the risks of CS must be evaluated as well, considering that is an operation. It appears reasonable to counsel nulliparous women that prophylactic caesarean delivery could reduce the risk of developing a pelvic floor disorder by up to 85%. However, because these conditions affect only approximately 40% of women delivered vaginally 5-7 women would need to deliver by caesarean delivery to prevent one from developing a pelvic floor disorder.[2] This study has shown that mode of delivery has a significant impact on future pelvic floor function.

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Correspondence to:
VITO LEANZA
Via Antonello da Messina, 83
95021 Acicastello (Catania) Italy
E-mail: leanza@tiscalinet.it