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Delivery Mode and Pelvic Floor Disfunction

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Abstract

Introduction: Pelvic floor disorders compromise quality of life for a lot of women of all ages. The prevalence of urinary incontinence (UI) is thought to range from 17 to 45% among adult women. The etiology is thought to be multifactorial. Traumatic damage to fascial and muscular support structures during childbirth may be, an important contributor to the development of UI and prolapse of pelvic organ (POP). The aim of this study is to consider the association between delivery mode and pelvic floor disorders (POP and UI)

Materials and methods: A review of the literature was undertaken using the Medline and Popline CD Rom considering articles published from 1996 to 2011; additional sources were identified from references cited in relevant research articles. We studied articles concerning stress urinary incontinence, pregnancy, childbirth, pelvic prolapse were considered.

Conclusion: Literature research confirms that anatomic and functional damages are linked with obstetric factors. Pregnancy may cause urinary incontinence and prolapse. However vaginal delivery is associated with a significant higher risk of urinary incontinence and pelvic defects. Caesarean section may protect from perineal risk of delivery but not from the damage due to the pregnancy itself. During pregnancy UI ranges from 31 to 39%, in post-partum ranges from 24,5 to 29% and from 5 to 8% after vaginal and caesarean respectively. Pelvic floor disorders ranges from 21 to 36% after instrumental operative delivery and from 9 to 21% in vaginal spontaneous delivery. Forceps is found out the most dangerous instrument for pelvic floor, followed by vacuum and vaginal delivery with tears. The consequences of a traumatic delivery affect quality of life and increasing late damages have to be considered.

Introduction

Pelvic floor disorders compromise the quality of life for a lot of women of all ages throughout the world [1]. The prevalence of urinary incontinence (UI) is thought to range from 17 to 45% among adult women. Likewise 50% of parous women have pelvic organ prolapsed [2]. The etiology is thought to be multifactorial [3]. The traditional predisposing factors are thought to be advancing age, childbearing, obesity and menopause [4]. Pregnancy and delivery seem to be major risk factors among young and middle-aged women [5,6]. On reviewing the available evidence, it appears that vaginal delivery may cause damage to the pudendal nerve, the inferior aspects of the levator ani muscle and fascial pelvic organ supports. Traumatic damage to fascial and muscular support structures during childbirth may be, an important contributor to the development of UI and prolapse of pelvic organ (POP) [7]. The prevalence of stress urinary incontinence (SUI) and POP is greater in parous than nulliparous women [8,9] and increases during the pregnancy [10]. A series of risk factors involves both delivery mode and postpartum [11,12]. The aim of this study is to consider the association between operative vaginal birth and pelvic floor disorders (POP and SUI) (Figure 1).

Materials and Methods

Data sources: A review of the literature was undertaken using the Medline and Popline CD Rom considering articles published from 1996 to 2011; additional sources were identified from references cited in relevant research articles.

Methods of study selection: we studied articles concerning stress urinary incontinence, pregnancy, childbirth, pelvic prolapse.

Data on any incontinence, in addition to type, frequency, and amount of incontinence is reported.

Results

The impact of birth on the pelvic floor disorders is considered by lots of authors [13-19].

Solans [13] estimate the cumulative incidence rate during pregnancy 39.1% (95% CI 36.3-41.9) for UI and 10.3% (95% CI 8.3-12.3) for anal incontinence.

- Baydock [14], studied 632 patients four months after delivery and 145 (23%) had stress incontinence, 77 (12%) had urge incontinence, 181 (29%) had any urinary incontinence and 23 (4%) had fecal incontinence. Urge incontinence was increased in patients who had a forceps delivery (21%) compared with no forceps delivery (9%) (RR 2.2; 95% CI 1.4-3.6, P=0.005), an episiotomy (32.4%) compared with no episiotomy (18.7%) (RR 1.9; 95% CI 1.2-2.9, P<0.01) and a longer second stage of labour (108 min vs. 77 min, P=0.01). At three months postpartum 34.3% of 1505 women admitted by Wilson et al. [15] had urinary incontinence. The prevalence of incontinence following a vaginal delivery was 24.5%, following a caesarean section 5.2% P = 0.002. Leijonhufvud et al. [16] in a cohort study

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Figure 1: Relationship between Delivery and Genital Prolapse.

of 33,167 cesarean and 63,229 vaginal deliveries between 1973 and 1983 demonstrated that the women having only vaginal childbirths were associated with a significantly increased risk of stress urinary incontinence (hazard ratio, 2.9; 95% confidence interval, 2.4-3.6) and pelvic organ prolapse surgery(hazard ratio, 9.2; 95% confidence interval, 7.0-12.1) later in life compared with cesarean deliveries ones. An agreement persists between a greater risk of SUI and POP for operative deliveries (forceps or vacum) in comparison with spontaneous childbirth, however it is very difficult to establish the entity of the phenomenon. Mason et al. [17] and Patel et al. [18] found a correlation between POP, SUI and vaginal births, yet the real impact of vaginal delivery mode was not investigated. Meyer et al. [19], in 1998 studying the effects of delivery on bladder and anorectal functions, found out a major risk following forceps vaginal operative delivery. 149 nulliparas were evaluated during pregnancy and 9 weeks after delivery. SUI was discovered in 31% patients during pregnancy and in 10% during the post-partum. Women suffered from urinary and fecal incontinence in a percentage of 36% and 4% after forceps and 21% and 5.5% after spontaneous birth, respectively. Bladder neck mobility was increased after vaginal births and more after forceps. In accordance to Meyer, Detz and Bennett [19,20] evaluated the effect of child birth on pelvic organ mobility on a total of 200 women. Peripartal changes in the mobility of urethra, bladder, cervix, and rectal ampulla were correlated with labor and delivery data. The most significant increase in pelvic organ mobility were found after forceps vaginal operative delivery. They concluded that vaginal births has a negative effect on the statics of pelvic floor; the damage involves the whole vaginal compartments. Handa [21] investigated pelvic floor disorders by mode of delivery. He classified 1,011 births as follows: cesarean without labor, cesarean during active labor, cesarean after complete cervical dilation, spontaneous vaginal birth, or operative vaginal birth. Spontaneous vaginal birth was associated with a significantly greater risk of SUI and POP (odds ratio [OR] 2.9, OR 5.6, respectively). Operative vaginal birth, significantly increased the odds for all pelvic floor disorders (OR 7.5) ,putting in evidence the most dramatic risk associated (Level of evidence II). Leanza et al. [22,23] in a sample of 1,125 patients demonstrated that the obstetric impact of pelvic floor disorders increases yearly and the quality of life gets worse. Patients were enrolled and classified in the following categories:the first one: either one or more vaginal deliveries;

- the second one: either one or more caesarian sections;
- the third category: patients with history of both caesarian section and vaginal delivery.

Women were categorized into one of three groups based on self-reported pregnancy and delivery experience.

- A-group (12%, n°=1215) were patients having delivery 5 years before;
- B-group (36%, n°=3645) were patients having delivery between 5-20 years before;
- C-group (52%, n°= 5265) were patients having delivery over 20 years before.

On comparing the perception of agreement and disagreement about specific modality of delivery between the first group (vaginal delivery and caesarian section 5 years before), a not significant difference was found (vaginal delivery 92.9%, caesarian section 90.1%, p=0.12645), other that a significant difference among the second group (vaginal delivery 84.9%, caesarian section 89%, p=0.00439), and in the third group found too (vaginal delivery 77%, caesarian section 92%, p=0.0001). The results of this investigation showed the disorder of pelvic floor depends on the main modality of delivery. Anatomic and functional alterations influence both the choice of the patients and either positive or negative perception about birth experience. Agreement or disagreement are interaction with a series of disturbs following the traumatic consequences of the birth, either early or late on pelvic floor. A woman who delivers an infant vaginally has a risk of a pelvic floor disorder that is significant higher than a woman who delivers all infants by caesarean delivery. Development of pelvic floor disorders may be dependent on multiple risk factors, where the most important factor is the modality of delivery. The most usual reasons of disagreement with vaginal delivery were genital prolapse (30%), genital prolapse associated with UI end or anal incontinence (38%), sexual dysfunctions following vaginal birth (29%) and other pelvic disturbances appearing with time [22]. The correlation between delivery mode and pelvic floor alteration were found, in order of severity as following:

1. operative vaginal delivery with or without episiotomy but with perineal lacerations
2. spontaneous delivery with episiotomy and without lacerations
3. spontaneous delivery without episiotomy and lacerations
4. Caesarian section in expulsive phase
5. Caesarian section in labour
6. programmed Caesarian section [23]

Conclusion

Literature research confirms that anatomic and functional damages are linked with obstetric factors. Pregnancy may cause urinary incontinence and genital prolapse. However, Caesarean delivery is associated with a significant lower risk of urinary incontinence and pelvic defects. Caesarean section may protect from perineal risk of delivery but not from the damage due to the pregnancy itself. Forceps is found out the most dangerous instrument for pelvic floor, followed by vacuum and vaginal delivery with tears. The consequences of a

traumatic delivery affect quality of life and increasing late damages have to be considered.

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References

1. Hunskaar S, Lose G, Sykes D, Voss S (2004) The prevalence of urinary incontinence in women in four European countries. BJU Int 93: 324-330.
2. Leanza V, Palma P, Garaventa M, Accardi M (2007) Correlation between Obstetric Factors and Pelvic Floor Alterations.(Original article) *Urovirt - First Urology virtual magazine from Latin America vol. 11 # 5 - ISSN 1808-7574.*
3. Wilson PD, Herbison RM, Herbison GP (1996) Obstetric practice and the prevalence of urinary incontinence three months after delivery. Br J Obstet Gynaecol 103: 154-161.
4. Wesnes SL, Rortveit G, Bo K, Hunskaar S (2007) Urinary incontinence during pregnancy. Obstet Gynecol 109: 922-928.
5. Chiarelli P, Brown WJ (1999) Leaking urine in Australian women: prevalence and associated conditions. Women Health 29: 1-13.
6. Rortveit G, Hannestad YS, Daltveit AK, Hunskaar S (2001) Age- and type-dependent effects of parity on urinary incontinence: the Norwegian EPINCONT study. Obstet Gynecol 98: 1004-1010.
7. Swift SE, Pound T, Dias JK (2001) Case-control study of etiologic factors in the development of severe pelvic organ prolapse. Int Urogynecol J 12: 187-192.
8. Hvidman L, Foldspang A, Mommsen S, Bugge Nielsen J (2002) Correlates of urinary incontinence in pregnancy. Int Urogynecol J Pelvic Floor Dysfunct 13: 278-283.
9. Wesnes SL, Rortveit G, Bo K, Hunskaar S (2007) Urinary incontinence during pregnancy. Obstet Gynecol 109: 922-928.
10. Sampselle CM, DeLancey JOL, Ashton-Miller J (1996) Urinary incontinence in pregnancy and postpartum. Neurourol Urodyn 15: 329-330.
11. Burgio KL, Zyczynski H, Locher JL, Richter HE, Redden DT, et al. (2003) Urinary incontinence in the 12-month postpartum period. Obstet Gynecol 102: 1291-1298.
12. Rortveit G, Daltveit AK, Hannestad YS, Hunskaar S (2003) Urinary incontinence after vaginal delivery or cesarean section. N Engl J Med 348: 900-907.
13. Solans-Domènech M, Sánchez E, Espuña-Pons M; Pelvic Floor Research Group (Grup de Recerca del Sòl Pelvià; GRESP) (2010) Urinary and anal incontinence during pregnancy and postpartum: incidence, severity, and risk factors. Obstet Gynecol 115: 618-628.
14. Baydock SA, Flood C, Schulz JA, MacDonald D, Esau D, et al. (2009) Prevalence and risk factors for urinary and fecal incontinence four months after vaginal delivery. J Obstet Gynaecol Can 31: 36-41.
15. Wilson PD, Herbison RM, Herbison GP (1996) Obstetric practice and the prevalence of urinary incontinence three months after delivery. Br J Obstet Gynaecol 103:154-161.
16. Leijonhufvud A, Lundholm C, Cnattingius S, Granath F, Andolf E, et al. (2011) Risks of stress urinary incontinence and pelvic organ prolapse surgery in relation to mode of childbirth. Am J Obstet Gynecol 204: 70e1-77e1.
17. Mason L, Glenn S, Walton I, Appleton C (1999) The prevalence of stress incontinence during pregnancy and following delivery. Midwifery 15: 120-128.
18. Patel PD, Amrute KV, Badlani GH (2007) Pelvic organ prolaps and stress urinary incontinence: a review of etiological factors. Indian J Urol 23:135-141.
19. Meyer S, Schreyer A, De Grandi P, Hohlfeld P The effects of birth on urinary continence mechanisms and other pelvic-floor characteristics. Obstet Gynecol 92: 613-618.
20. Detz HP, Bennett MJ (2003)The effect of childbirth on pelvic organ mobility. Obstet Gynecol 102: 223-228.
21. Handa VL, Blomquist JL, Knoepp LR, Hoskey KA, McDermott KC, et al. (2011) Pelvic floor disorders 5-10 years after vaginal or cesarean childbirth. Obstet Gynecol 118: 776-784.
22. Leanza V, Dati S, Cioffi GP, Accardi M (2008) *The impact of birth hystory on pelvic floor function: a retrospective assessment of 10,125 patients. Perineology 4: 26.*
23. Leanza V, Vecchio M, Longo L (2006) Perineum and birth: obstetric, clinical and emg links. *Urogynaecologia Int J 20: 223-229.*