

Influence of Abnormal Pelvic Floor in Vaginal Childbirth

Abstract

A woman's life is not complete without giving birth to a child. The most typical method of delivery is vaginal, and it has been linked to a higher incidence of pelvic floor diseases later in life. Vaginal births and parity are substantially related with stress urine incontinence and pelvic organ prolapse. Although the precise mechanism of harm linking vaginal birth to pelvic floor diseases is unknown, it is most likely complex and may involve both mechanical and neurovascular damage to the pelvic floor. Certain obstetrical exposures have been recognized as risk factors for pelvic floor diseases by observational research. These variables frequently coexist in groups, which accounts for their exclusive impact on the pelvic floor.

Keywords: Pelvic floor • Vaginal childbirth • Neurovascular damage • Pelvic organ prolapse

Introduction

Pelvic organ prolapse, overactive bladder syndrome, stress urinary incontinence, and faecal incontinence are all referred to as "Pelvic Floor Disorders" (PFDs). Adult women are more prone to these diseases. For instance, 16% of women in the USA have urine incontinence, 3% have pelvic organ prolapse, and 9% have faecal incontinence, making up the 24% of women who are affected by one of these disorders. These illnesses are substantially more common as people get older: 10% of women between the ages of 20 and 39 and 50% of women over the age of 80 have at least one of these disorders. According to estimates, there will be 43.8 million American women with at least one PFD by 2050, up from 28.1 million in 2010 [1].

Risk associated with pelvic floor disorder

Age, vaginal childbirth, and obesity have all been recognized as risk factors for PFDs. Other research suggests that some PFDs may be related to neurological problems connective tissue disorders and diabetes. PFD development is genetically predisposed in some women. Given that the biological origins of PFDs are yet unknown, research into the link between delivery and PFDs may shed light on the pathophysiology of these conditions and pave the way for the creation of preventive measures. The authors of this review concentrate on the mounting data between obstetrical events

and the prevalence of PFDs later in life. Since prolapse, faecal incontinence, and stress urinary incontinence are the more prevalent PFDs, this review concentrates on the relationship between them [2].

Mechanism of pelvic floor injury

The muscles of the pelvic diaphragm, endopelvic fascia and its lateral condensations (arcus tendentious fascia pelvis and pelvic ligaments), and their bone attachments offer mechanical support to the pelvis. The largest pelvic floor muscle and a vital part of the pelvic floor support system is the levator ani muscular complex, which comprises of the pubococcygeus, puborectalis, and iliococcygeus muscles. These tissues are supported by this muscle complex, which wraps a U-shaped sling around the urethra, distal vagina, and rectum. The levator ani muscle functions normally at rest to prevent the urogenital hiatus from opening due to intra-abdominal pressure. The vaginal closure force is increased by 46% by the strongest voluntary contraction of the levator ani muscles, which results in more compression [3].

Denervation injury

Since the external urethral and external anal sphincters are innervated by the pudendal nerve, it is crucial for preserving continence. The pudendal nerve is susceptible to harm during vaginal injury because of its relatively superficial anatomical placement in the female pelvis. 38-42% of vaginal births have been observed to result

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in pudendal nerve stretching and compression injuries. Concentric needle electromyography has revealed pelvic floor transient denervation in women with a history of vaginal birth. The majority of pelvic floor injuries are recoverable, and reinnervation, as shown by an increase in neurofilament density, results in the postpartum return of continence. Return of function could be postponed, nevertheless, if the pudendal nerve suffers a total transection or a severe crush injury. Pudendal nerve damage caused by childbirth has been linked in a number of studies (both human and animal) to postpartum urine and faecal incontinence. To study the impact of pudendal nerve crush injury on the anatomy and operation of the external urethral sphincter, Kerns et al. created a rat model. They found that the pudendal nerve crush lesion causes mild urine incontinence. Faecal incontinence in women after pudendal nerve injury during childbirth is also linked to this condition. 31% of primiparous women who were being assessed for postpartum faecal incontinence in a research had neurophysiologic signs of pudendal nerve dysfunction [4].

Mode of delivery in PFDs

In a recent research of parous women, women who had previously given birth vaginally had a twice as high likelihood of experiencing troublesome signs of stress incontinence compared to those who had just caesarean sections. The follow-up study of the randomised, multicenter Term Breech trial, which compared maternal outcomes two years after planned caesarean section with planned vaginal birth for breech presentation at term, revealed no differences in the incidence of urinary incontinence between the two delivery groups (17.8% in the planned caesarean section group and 21.8% in the planned vaginal birth group). This finding is in contrast to that finding. Additionally, there was no difference between the two groups in the level of discomfort brought on by urine incontinence [5].

Other modes of child delivery

Operative vaginal delivery

Operative vaginal delivery, also known as a “instrumental vaginal delivery,” is the term for the use of traction devices to support uterine contractions and the mother’s efforts to expel the foetus during the second stage of labour. The tools that are most frequently employed for this purpose are forceps and vacuums. Operational vaginal birth can serve as a surrogate indicator

for challenging labour since indications for operational delivery include a prolonged second stage of labour or the requirement to shorten the second stage of labour due to unsettling foetal state or maternal comorbidities. PFD risk is greatly increased by surgical vaginal delivery. History of surgical vaginal birth was linked to a fourfold increase in the adjusted odds for stress in a sample of parous women 5–10 years after delivery [6, 7].

Perineal laceration

The female perineum is cut right before the foetal head crowns in order to enhance the diameter of the pelvic outlet and hasten the delivery of the foetus. It is among the most frequent surgical procedures that women undergo. Episiotomy occurs in 30–35% of vaginal deliveries in the USA while it occurs in 46% of low-risk nulliparous women in the UK. Episiotomy was first used as a method to prevent foetal trauma and maternal perineal injury in the early 1900s. As its frequent use became more accepted, it gained popularity. However, studies on the relative advantages and disadvantages of common episiotomies have produced inconsistent findings [8].

The function of spontaneous lacerations in the development of PFDs and whether lacerations are less stressful to the perineum than episiotomies are additional intriguing and pertinent topics. There were no statistically significant variations in the reported degrees of urine incontinence and other pelvic floor symptoms between women with an episiotomy and women who had first- or second-degree perineal injuries, according to a retrospective cross-sectional assessment of women conducted 12 months following vaginal childbirth. According to this study’s findings, women who have undergone an episiotomy have similar perineal morbidity to those who have experienced a spontaneous laceration. According to Milsom et al., neither an episiotomy nor a second-degree laceration was linked to an elevated incidence of symptomatic pelvic organ prolapse in a cohort analysis of singleton primiparous women 20 years after childbirth [9, 10].

Conclusion

PFDs are widespread illnesses that place a heavy financial and emotional strain on sufferers and the healthcare system. According to recent research, prolapse and stress urine incontinence are strongly linked to vaginal birth. Certain obstetrical exposures, including forceps delivery,

a longer second stage of labour, and sphincter lacerations, have been found by observational studies as being more stressful to the pelvic floor. It is impractical to conduct randomised controlled trials to examine the impact of certain variables. Some possible risk factors, like maternal age, the location of the occiput posterior and foetal weight, cannot be changed.

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