A Comprehensive Review of Risk Factors, Treatments, and Prevention Strategies for Uterine Prolapse

Amanda Pricilla Santoso[a]*, Eighty Mardiyan Kurniawati[b], Pirlina Umiastuti[c],

Gatut Hardianto[b]

*email: amanda.pricilla.santoso-2020@fk.unair.ac.id
[a]Faculty of Medicine, Universitas Airlangga, Surabaya 60132, Indonesia
[b]Department of Obstetrics and Gynecology, Dr. Soetomo General Hospital-Universitas Airlangga, Surabaya 60132, Indonesia
[c]Department of Public Health and Preventive Medicine, Universitas Airlangga, Surabaya 60132, Indonesia

Abstract

Uterine prolapse is the descent of the uterus to vaginal cavity due to weakened supporting structures of the uterus. There are multiple factors that increase the risk of uterine prolapse occurrence, some of them are obstetric history (e.g. parity, vaginal delivery, high birth weight), menopause, chronic illness, obesity, congenital illness, and genetic. Reducing or eliminating risks is highly recommended to reduce the occurrence of uterine prolapse, such as modifying lifestyle and medicate any sign of illness. Pessaries and local estrogen therapy could be an option to treat uterine prolapse on mild degree. However, on higher degree of uterine prolapse, surgery intervention might be needed. This review article aims to evaluate and explore the risk factors, treatments, and prevention strategies based on prior study.

Keywords: pelvic organ prolapse; uterine prolapse; risk factor; woman

1. Introduction

According to The American College of Obstetrics and Gynecology (2019), pelvic organ prolapse is defined as the descent of pelvic structures, including the anterior and posterior vaginal walls, uterus, and the vaginal apex into the vaginal cavity or beyond, contingent upon the extent of prolapse. While uterine prolapse, part of pelvic organ prolapse, is the descent of the uterus into the vaginal cavity due to weakened supporting structures (Chen and Thompson, 2021). Epidemiologically, pelvic organ prolapse is acknowledged to affect approximately 50% of women who have undergone childbirth (Weintraub et al., 2020). Although the precise prevalence of uterine prolapse still remains ascertain, a study conducted at Dr. Soetomo general hospital Surabaya through 2007 to 2011 reported that among all cases of pelvic organ prolapse, uterine prolapse predominated constituting 66% of the total population studied (Nizomy et al., 2013).

Pelvic organ prolapse or uterine prolapse could occur due to the weakening of supporting tissues, and the causes of this tissue weakness may vary among individual patients. Therefore, a comprehensive understanding of various risk factors is essential to identify triggers for pelvic organ prolapse or uterine prolapse. According to Smith et al. (2014), the incidence of pelvic organ prolapse increases with factors such as higher parity, vaginal childbirth, menopausal status, obesity, and the presence of chronic diseases.

2. Risk Factors

a. Obstetrics factors
- Parity

    Parity refers to the number of pregnancies experienced by women with a gestational age of 24 weeks or more, regardless of whether the fetus is born alive or not (Galliard et al., 2014). Parity is identified as a risk factor for uterine prolapse due to its influence on anatomical and physiological changes in accommodating fetus needs (Soma-Pillay et al., 2016). Anatomical changes in parity involve increased tension on uterine anatomical support, as well as repeated muscle hypertrophy and muscle relaxation (Jelovsek et al., 2007). Physiological changes include elevated cortisol and progesterone hormones, posing a risk to collagen tissue weakness and soft tissue structure, resulting in pelvic organ susceptible to prolapse (Kurniawati et al., 2021).

- Method of delivery

    There are several ways of childbirth based on maternal capability, including spontaneous vaginal delivery or vaginal birth, instrument-assisted vaginal birth (e.g., vacuum or forceps), caesarean section, and vaginal birth after caesarean. During delivery process, especially in spontaneous vaginal delivery, stretching occurs in multiple anatomical structures such as levator ani muscles, endopelvic fascia, and pudendal nerve (Ostergard et al., 2008). This pose risk of functional impairment manifesting as permanent muscle weakness, urinary and fecal incontinence, sexual dysfunction, and pelvic organ prolapse (Kurniawati et al., 2021).

- Birth weight

    Birth weight is the total weight of baby measured one hour after birth. It is classified into three categories, which are low birth weight (<2,500gr), normal birth weight (2,500 – 3,999gr), and high birth weight (>3,999gr). Previous research shows that incremental increases in birth weight of 280 to 450 grams correspond to a 10% elevation in the risk of pelvic organ prolapse (Ostergard et al., 2008). Additionally, a birth weight equal to or exceeding 3,325 grams is linked to a significant augmentation in pelvic organ prolapse risk (Santoso et al., 2012).

b. Menopause

    Menopause is a physiological phenomenon which cause the halt of menstruation cycle for a full year or more in elderly woman with the mean of age is 51 years (Peacock and Ketvertis, 2018). Menopause occurs due to physiological deficit of estrogen hormone during elderly age. Estrogen hormone bears multiple responsibility in human body, one of them includes maintaining connective tissue integrity with collagen synthesis. Hence, deficiency of estrogen hormone could also cause deficiency of collagen and weakens the connective tissue integrity, causing the elevated risk of pelvic organ prolapse (Swift et al., 2001).

c. Chronic illnesses

    Chronic illness is an illness that stays within the course of eight weeks or more. Chronic illness such as obesity, chronic cough, chronic constipation, and chronic obstructive pulmonary

could potentially increase the intraabdominal pressure and also increase the risk of pelvic organ prolapse (Kurniawati et al., 2021).

d. Obesity

Body mass index (BMI), a pivotal anthropometric tool, categorizes individuals based on height and weight characteristics (Nuttall, 2015). Based on Harvard School of Public Heath (2012), different BMI standards exist for the Asia-Pacific region, reflecting disparities in body fat composition between Asians and non-Asians. In Asia-Pacific, BMI is used to categorize people into four categories, which are underweight (<18,5), normal (18,5 – 22,9), overweight (23 – 24,9), and obese (>25). Whereas in the international standard of BMI, it is categorized into underweight (<18,5), normal (18,5 – 24,9), overweight (24 – 29,9), and obese (>30). BMI serves as a risk factor determinant for various health conditions (Nuttall, 2015). BMI od over 25 or obese could cause the increase of intraabdominal pressure and weakens the muscle also fascia of the pelvic wall, hence increasing the risk of pelvic organ prolapse (Lee et al., 2017).

e. Congenital illnesses

Pelvic organ prolapse or uterine prolapse can manifest at a young age with advanced stages in individuals presenting congenital anomalies leading to disruption in collagen metabolism, such as Marfan syndrome and Ehler-Danlos syndrome (Carley et al., 2000). Both congenital disorders result in diminished collagen levels, weakening the supportive tissues for pelvic organs and consequently causing pelvic organ prolapse (Kurniawati et al., 2021). In Marfan syndrome, a mutation in Fibrillin-1, a crucial component of both hard and connective tissues, significantly contributes to an elevated risk of pelvic organ prolapse or uterine prolapse (Eser et al., 2015).

f. Genetic

In comparison to African-American women, Caucasian and Hispanic ethnicities exhibit a 1,4 times higher risk of experiencing pelvic organ prolapse (Whitecomb et al., 2009). This discrepancy arises from the broader upper and lower pelvic openings and diminished pelvic mobility observed in Caucasian women compared to their African-American counterparts (Handa et al., 2008). Additionally, a higher prevalence of posterior compartment prolapse occurs in the Caucasian population compared to individuals of East Asian descent. East Asian ethnicity demonstrates the lowest prevalence of pelvic organ prolapse, attributed to elevated collagen levels relative to other racial groups (Kurniawati et al., 2021).

3. Treatment

In light of the fact that not all cases of uterine prolapse exhibit significant symptoms, particularly in stages I and early stage II, operative therapy is not universally indicated for all uterine prolapse patients. The management of uterine prolapse is typically reserved for patients presenting clinical symptoms with the objective of improving their quality of life. According to Kurniawati et al. (2021), the principles guiding the management of pelvic organ prolapse or uterine prolapse involve preventing the progression of prolapse, reducing complaints regarding symptoms, and enhancing the strength, endurance, and support of pelvic floor muscles. The management of uterine prolapse encompasses both non-operative or conservative measures and operative interventions.

Non-operative management of mild uterine prolapse involves lifestyle adjustment, pelvic floor muscle training, and the use of vaginal pessaries, particularly for patients planning childbirth or averse to surgery (Kurniawati et al., 2021). Lifestyle modifications, including weight loss and addressing constipation, are recommended for stage I uterine prolapse (Junizaf, 2011). Symptom-directed therapy incorporates behavioral interventions, dietary adjustments, and targeted medications. Pessaries, favored by 77% of American Urogynaecologic Society members, offer significant improvements in prolapse symptoms, bladder function, and sexual well-being (Cundiff et al., 2000). Pelvic floor muscle training, such as Kegel exercises, effectively addresses prolapse and incontinence while enhancing sexual satisfaction. Local estrogen therapy in postmenopausal women is also known to strengthen vaginal tissues (Decherney et al., 2007).

Operative management of pelvic organ prolapse is divided based on uterus preservation. Procedures preserving the uterus for upper vaginal prolapse include McCall culdoplasty, uterosacral suspension, iliococcygeus suspension, sacrospinosus fixation, sacrocolpopexy, and kolpokleisis. Alternatively, procedures without uterus preservation involve hysterectomy or uterus removal (Kurniawati et al., 2021).

4. Prevention

Preventing uterine prolapse involves recognizing and addressing modifiable risk factors. Factors such as parity or pregnancy, vaginal childbirth, parity, large infant delivery, chronic cough, constipation, and obesity are modifiable. While congenital conditions, age, menopausal status, and genetic are non-modifiable factors. Nevertheless, proactive measures could be done by focusing on minimizing or eliminating factors that could be altered. Daily intervention through adjusting obstetric practices, managing chronic conditions by curing chronic cough or constipation, and weight loss. By targeting changeable factors through daily interventions, there will be a potential to significantly reduce the occurrence of uterine prolapse.

In addition to modifying risk factors, implementing pelvic floor muscle training (PFMT), such as Kegel exercise, has proven effective in preventing and treating pelvic organ prolapse, including uterine prolapse (Li et al., 2015). For postmenopausal women, estrogen therapy is a viable preventive measure against urogenital atrophy, which may lead to prolapse, by strengthening supportive ligaments, muscles, and vaginal mucosa (Ismail et al., 2010).

5. Conclusion

Uterine prolapse stems from multiple risk factors, causing trauma to supportive muscles, nerve damage, and diminished collagen levels, resulting in the weakening of the uterus supporting structures. Daily interventions targeting modifiable risks, along with pelvic floor muscle training offer potential for reducing uterine prolapse occurrences. For mild cases, pessaries or local estrogen therapy provide non-surgical options. Severe cases may require surgical intervention to restore structural integrity.

Acknowledgements

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