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Pelvic Organ Prolapse: Prevalence and Risk Factors

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ABSTRACT

The uterus is an organ of the female reproductive system. It is approximately the shape and size of the pear, located inside the pelvis. The bladder, uterus and bowel are supported by a hammock of muscles slung between the coccyx and pubic bone. If these tissues are weakened or damaged, the uterus can slip down in to the vagina which is known as uterine prolpase. It is estimated that the lifetime risk of requiring at least 1 operation to correct incontinence or prolapse is approximately 11%. Common causes of uterine prolpase include obesity, straining on the toilet and hormonal change after menopause. Treatment includes strengthening exercise of pelvic floor muscle. A vaginal pessary for uterine prolapsed during pregnancy was first used in 1949, it can be inserted to support the uterus and reduce the symptoms associated with the prolapsed. Surgery may be needed in many cases.

Keywords: Prolapse, Uterine prolapse, Cystocele, Rectocele, Vaginal Prolpase, Pelvic surgery, Kegel exercise

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INTRODUCTION

The gradual increase in life expectancy in developed countries over the past century has produced an increased demand on the health care system[1]. Health care system provides the line of action, through which the prevention, diagnosis and treatment of any illness or impairment of human body can be managed. Pelvic organ prolapse (POP) is an uncomfortable condition affecting many adult women today. POP leads to abnormal descent or herniation of the pelvic organs from their normal attachment sites or their normal position in the pelvis. The article presents the pathophysiology and management of the uterine prolapse. A prolapse is a protrusion of an organ or structure beyond its normal confines. Pelvic organ prolapse is the descent of genital organs beyond their normal anatomical confines. It is caused due to weaknesses or deficiency in the musculature and nerve supply to the pelvic organs. Consecutive management involves the use of pessaries, but surgery is the most appropriate option. The connective tissues and intact nerve supply are important for the maintenance of the position of pelvic structure, which are highly influenced by the pregnancy, childbirth and ageing. Pelvic organs include bladder, uterus (womb) and rectum. These organs are held in place by tissues called "fascia" and "ligaments"[1]. These tissues help in joining pelvic organs to the bony side walls of the pelvis and hold them inside the pelvis. Pelvic floor muscles also hold up pelvic organs from below. If the fascia and ligaments are stretched by any reason or if pelvic floor muscles become weak, then pelvic organs (bladder, uterus, or rectum) might not be held in their right place then they may bulge down into the vagina (birth canal). This condition is known as Pelvic organ prolapsed. Prolapse is very common. Mild prolapse causes no symptoms and the treatment is not always necessary. It affects quality of life by causing symptoms such as discomfort or a feeling of heaviness[3]. It can cause bladder and bowel problems and sexual activity may also be affected. Prolapse can be reduced by change in lifestyle such as stopping smoking, weight loss, exercise, avoiding constipation and rigorous weight lifting. Treatment options include physiotherapy, pessaries and surgery. Not everyone needs surgery but may consider it if other options have not dequately helped. Surgery cannot always cure the problem completely. It is common to have more than one type of prolapse at the same time. The most common types of prolapses are Anterior wall prolapse (cystocele) – when the bladder bulges into the front wall of the vagina, This may lead to urinary frequency, retention or incomplete voiding of urine. Posterior wall prolapse (rectocele) – when the rectum bulges into the back wall of the vagina, this makes bowel movement difficult, to the point that the person need to push on the inside of vagina to empty bowel. Uterine prolapse – when the uterus hangs down into the vagina. Eventually the

uterus may protrude outside the body. This is called a procidentia or third-degree prolapse[4-6]. The last one is Vault prolapse – after a hysterectomy, the top (or vault) of the vagina may bulge down, this happens to one in ten women who have had a hysterectomy to treat their original prolapse. Uterine prolapse occurs when pelvic floor muscles and ligaments stretch and weaken, providing inadequate support for the uterus[7]. The uterus then slips down into or protrudes out of the vagina. It can happen to women of any age, but it often affects postmenopausal women who've had one or more vaginal deliveries. Uterus (or womb) is normally held in place inside pelvis with various muscles, tissues, and ligaments. Because of childbirth or difficult labour deliveries in some women these muscles weaken. When a women ages with the natural loss of the hormone estrogen, uterus can drop into the vaginal canal, causing the condition known as a prolapsed uterus. There are four degrees in which uterus sags and completely protrudes out of the body. First degree in which the cervix droops into the vagina. Second degree in which the cervix drops to the level just inside the opening of the vagina[8-11]. In third degree, the cervix is outside the vagina and the fourth degree in which the entire uterus is outside the vagina. Other conditions are also usually associated with prolapsed uterus. They weaken the muscles that hold the uterus in place[12].

Prevelance

The exact prevalence of Pelvic organ prolapse (POP) is difficult to determine. Uterine prolapse was found in 14% of the 27342 women in the United States[2]. Uterine prolapse was first recorded on the Kahun papyri in about 2000 BCE. Hippocrates described numerous nonsurgical treatments for this condition. In 98 CE, Soranus of Rome first described the removal of the prolapsed uterus when it became black. The first successful vaginal hysterectomy for the cure of uterine prolapse was self-performed by a peasant woman named Faith Raworth, as described by Willouby in 1670[13]. From the early 1800s through the turn of the century, other successful surgical approaches were used to treat this condition. Prolapses are classified according to their location and the organs contained within them. Pelvic organ prolapse is a very common problem with a prevalence of 41–50 per cent of women over the age of 40 years. It is difficult to know exactly how many women are affected by prolapse since many do not go to their doctor about it[14]. The annual incidence of surgery for Pelvic organ prolapse is in the range of 15–49 cases per 10,000 women years, and it is likely to double in the next 30 years worldwide[15]. Forty per cent of participants in the WHI (Women's Health Initiative) in the United States had some degree of prolapse. Uterine prolapse was found in 14% of the 27 342 women enrolled in the study. The Oxford Family Planning Association in the UK reported prolapse in 17000 women of 25-39 age[16]. In United Kingdom, the annual incidence of hospital admission with prolapse is 20.4/10 000 and the annual incidence of

surgery for prolapsed is 16.2/10 000. Spontaneous regression was also common, the regression rate was 48/100 women per years. Thus, prolapse is not always progressive. Two per cent of symptomatic prolapse occurs in nulliparous women, implying that there may be a congenital weakness of connective tissue. Genital prolapse is rare in Afro-Caribbean women, suggesting that genetic differences may exist. It does appear to be very common, especially in older women. Half of women over 50 have some symptoms of pelvic organ prolapse and by the age of 80 more than one in ten have had surgery for prolapse[17].

Causes

The pelvic organs are held inside the pelvis by strong healthy fascia. If the support tissues (fascia and ligaments) that keep the bladder, uterus and bowel in place inside the pelvis are weak or damaged, or if the pelvic floor muscles are weak and saggy, then prolapse can happen. Childbirth is the main cause of prolapse. The more vaginal births, the more likely prolapse occurs. Being pregnant is the most common causes of weakening of the pelvic floor, particularly if baby is large. Performing pelvic floor exercises is very important after childbirth but may not prevent prolapse from occurring[18]. It is more common at an older stage, particularly after the menopause. Being overweight can also weaken the pelvic floor. Uterine prolapse can be caused by damage to supportive tissues during pregnancy and childbirth, loss of estrogen**,** repeated straining over the years**,** trauma during childbirth**,** delivery of a large baby**,** difficult labor and delivery**,** loss of muscle tone**,** less circulating estrogen after menopause, weakness in the pelvic muscles with advancing age**,** conditions leading to increased pressure in the abdomen such as chronic cough (with bronchitis and asthma), straining (with constipation), pelvic tumors or an accumulation of fluid in the abdomen, major surgery in the pelvic area leading to loss of external support[19]. However, it is important to emphasize that only 1 out of 9 women (11%) will ever need surgery for prolapse. Some women may have an inherited risk for prolapse, while some diseases affect the strength of connective tissue e.g. Marfan syndrome and Ehlers-Danlos syndrome[20].

Prevention

It is much better to prevent prolapse than try to fix it. As prolapse is due to weak pelvic tissues and pelvic floor muscles, it is essential to keep pelvic floor muscles strong. It should be checked by an expert such as a pelvic floor physiotherapist or a continence nurse advisor[21-23].

Symptoms

There are a few signs of prolapse such as heavy feeling or dragging in the vagina, something ‘coming down’ or a lump in the vagina, a lump bulging out of your vagina, sexual problems of pain or less feeling, bladder might not empty as it should, or urine stream might be weak, urinary

tract infections might keep coming back (i.e. relapsed UTI). A small amount of prolapse can often be normal[24]. The most common symptom is the sensation of a lump 'coming down', backache, heaviness or a dragging discomfort inside the vagina. These symptoms are often worse if you have been standing (or sitting) for a long time and improve on lying down. If bladder has prolapsed into the vagina, then the symptoms are: difficulty in passing urine or a sensation that bladder is not emptying properly, leak urine when coughing, laughing or lifting heavy objects, have frequent urinary tract infections (cystitis). If bowel is affected, there will be an experience of low back pain, constipation or incomplete bowel emptying, sex may be uncomfortable[25-27]. In moderate to severe uterine prolapse, symptoms are: Sensation of heaviness or pulling in pelvis, tissue protruding from vagina, urinary problems, such as urine leakage or urine retention, feeling as if sitting on a small ball or as if something is falling out of vagina**,** difficulty in walking**,** Incontinence of flatus, or liquid or solid stool**,** feeling of incomplete emptying, dyspareunia (painful or difficult intercourse) [28].

Risk Factors

Confirmed risk factors are older age, race, family history, increased body mass index, higher parity, vaginal delivery, constipation, menopause. Possible complications of uterine prolapse include: 1. Ulcers (In severe cases of uterine prolapse, part of the vaginal lining is displaced by the fallen uterus and protrude outside your body. The friction may lead to vaginal sores (ulcers). In rare cases, the sores could become infected. 2. Prolapse of other pelvic organs, it includes bladder and rectum[29-30].

Diagnosis

A prolapse is diagnosed by performing a vaginal examination. Doctor usually insert (a plastic or metal instrument) or speculum which is used to separate the walls of the vagina to show or reach the cervix to see exactly which organ are prolapsing[31-34]. A pelvic examination is done using a Sim's single bladed speculum to define the extent of the prolapse and establish the compartments of the vagina affected (anterior, posterior, or apical). Pelvic organ prolapse quantification system defines the extent of prolapse by measuring the descent of anterior, posterior, and apical segments of the vaginal wall relative to the vaginal hymen. Other test that may be needed include urinalysis, urodynamics, imaging tests such as an ultrasound or magnetic resonance imaging (MRI).

The five stages of prolapse are:

Stage 0: No prolapse

Stage 1: The most distal portion of the prolapse is >1 cm above the level of the hymen

Stage 2: The most distal portion of the prolapse is ≤1 cm proximal or distal to the hymen

Stage 3: The most distal portion of the prolapse is > 1 cm below the hymen but protrudes no further than 2 cm less than the total length of vagina.

Stage 4: Complete eversion of the vagina[35-39].

Management

Treatment option for uterine prolapse are:

1) Vaginal pessary device: The pessary is a plastic or silicone device that fits into the vagina to support the pelvic organs and hold up the uterus. There are various types and sizes of pessaries, the most commonly used type is a ring pessary. This device fits inside vagina and holds uterus in place. It is used as temporary or permanent treatment. Vaginal pessaries may be of little use if severe uterine prolapse occurs[40-45]. A pessaries can also irritate vaginal tissues and can causes ulcers. It may also interfere with sexual intercourse. Fitting the correct size of pessary is important, it may take more than one attempt. Pessaries should be changed or removed, cleaned and reinserted regularly[46-48].

2) Surgery: Surgery depends on age and whether the women wish to become pregnant. In England (2005-2006), 22, 274 operations were performed for "vaginal prolapse. Surgery can repair damaged or weakened pelvic floor tissues. Surgical correction of POP can be divided in to main categories as follows: Reconstructive procedures to correct the anterior and posterior wall defects and resuspend the vaginal apex or obliterative procedures to close off the vagina[49-51].

The reconstructive procedures are as follows:

Vaginal approach: This involves making an incision in the vagina, separating the prolapsed organ from the vaginal wall and using stitches to strengthen and repair the vagina. Permanent stitches may also be placed into the top of the vagina or into the cervix and attached to strong ligaments in the pelvis to provide support to the uterus. In a study of all hysterectomies performed in the UK during 1993 and 1994, 95% of these were for prolapse. Abdominal approach: This involves making an incision in the abdomen. Sutures or graft materials are used to support the vagina and uterus. Laparoscopic approaches: It often repairs in the similar way by open abdominal approach but with quicker recovery time and smaller scars. At present, robotic surgery is also available in a few centers[52-57]. Uterine preserving surgery: Uterine preserving surgery is used largely when a woman still wants to have further children and therefore the uterus has to be preserved. A woman wishes to preserve her uterus and then may choose this option occasionally[60]. The Manchester repair: This involves accessing the uterus vaginally, amputating the cervix and using the uterosacral cardinal ligament complex to support the uterus. The operation is rarely used now because of problems and complications to the cervix resulting in either cervical stenosis or cervical

incompetence. Le Fort colpocleisis: This operation is used in very frail patients who are unfit for major surgery and are not sexually active. It involves partial closure of the vagina while preserving the uterus[61]. Surgeons recommend hysterectomy, which removes uterus. During the surgery, the surgeon can also correct the sagging of the vaginal walls, urethra, bladder, or rectum. After surgery, the patient should not plan for future pregnancy, otherwise it will undo the surgical repair[62-65]. Approximately 75% of women having vaginal surgery and 90 to 95% having an abdominal approach, have a long term cure of their prolapse symptoms. In a sacrocolpopexy, a prolapsed vaginal vault is supported using mesh attached to the sacrum. A variety of procedures are available to support the vaginal vault at the time of hysterectomy. These include McCall culdoplasty, sacrospinous or prespinous fixation for vaginal vault prolapse; and sacrocolpopexy. A retrospective case control study compared 62 women having sacrospinous fixation with 62 women having McCall culdoplasty at the time of vaginal hysterectomy. It has been found that women who had McCall culdoplasty had fewer recurrences. Closing off vagina (colpocleisis) may be considered in post-menopausal women but only if the patient is in a very poor medical health or if she have had several operations previously that have been unsuccessful. Vaginal intercourse is no longer possible after this operation[66-72].

3) Life style changes: Lifestyle changes such as losing weight, managing a chronic cough, stopping smoking, avoiding constipation, avoiding heavy lifting, vaginal hormone treatment (estrogen). Estrogen cream or suppository ovules or rings inserted into the vagina help in restoring the strength and vitality of tissues in the vagina. But estrogen is only for the use in selected postmenopausal women[73-74].

4) Pelvic floor exercise or Kegel exercise: It strengthen pelvic floor muscles and support the uterus, bladder and bowel. A strong pelvic floor provides better support for pelvic organs and relief from symptoms associated with uterine prolapse. Kegel exercise is performed in the following way:

- Tighten (contract) pelvic floor muscles — the muscles which is use to stop urination
- Hold the contraction for five seconds, then relax for five seconds
- Three sets of 10 repetitions each day, just as any exercise program, pelvic floor exercises require time, motivation and proper technique[75-80].

In Specific conditions, such as ureteral obstruction due to complete prolapse, intravenous pyelogram (IVP) or renal sonography is needed. Dye is injected into vein, and a series of X-rays are taken to view its progress through bladder. About 25 out of 100 women having surgery for prolapse will develop another prolapse in the future. There is a higher chance of the prolapse

returning if the patient is overweighted, constipated, have a chronic cough or undertake heavy physical activities. Prolapse can often be treated without surgery, mainly in the early stages or when the prolapse is mild. To prevent the prolapse coming back again, expert training should be provided to make sure of pelvic floor muscles[81-86].

CONCLUSION

Pelvic organ prolapse, including anterior and posterior vaginal prolapse and uterine prolpase is a common group of clinical condition affecting millions of American women. This article is designed to highlights the clinical importance of uterine prolapse, its pathophysiology and approaches to diagnose and therapy. Uterine prolpase is a disorder, altering vaginal anatomy to complete vaginal eversion associated with severe urinary, defecatory and sexual dysfunction. The evaluation of women with uterine prolapse requires a comprehensive approach, with attention to function in all pelvic compartment based on a detailed patient history, physical examination and limited testing. Uterine prolpase is associated with many symptoms and the treatment is warranted based on the specific symptoms. No effective prevention strategy for prolapse has been identified, considerations include weight loss, reduction of heavy lifting, treatment of constipation, modification or reduction of obstetric risk factors and pelvic floor physical therapy. Prolapse management fall into two broad categories: Nonsurgical, which includes pelvic floor training and pessary ; and Surgical (eg. Sacral Colpopexy). Virtually all women with uterine prolapse can be treated and their symptoms improved, even if not completely resolved.

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