INTRODUCTION

Genital prolapse is a common gynaecological condition occurring with advancing age and high parity. Risk factors for development of genital prolapse include menopause, child birth, collagen deficiency, race (whites more than blacks), pelvic surgery (hysterectomy) and co-morbid medical conditions which increase intra-abdominal pressure. It affects a women’s quality of life as it interferes with her urinary, gastrointestinal and sexual functions. Symptoms include vaginal mass, low backache, constipation, dysuria, urinary incontinence and dyspareunia.

It is estimated that 50 percent of women who are parous will develop genital prolapse by the age of 50 years and only 20 percent of them will seek medical advice. Life time risk for surgery due to prolapse is estimated at 11% by the age of 80 years.

Management of genital prolapse includes conservative management (lifestyle modifications, pelvic exercises, vaginal pessaries) and surgical management. Common surgical procedures include anterior repair, vaginal hysterectomy with or without anterior repair, posterior repair, sacrocolpopexy and colposuspension.

Failure rate, risk for recurrence of prolapse and re-operation is estimated at 29-30% within a period of 2 years.
OBJECTIVES

The objectives of the study were to determine the prevalence of genital prolapse at Dr George Mukhari Hospital, which is a tertiary hospital in Pretoria, in Gauteng province, and to determine the outcome of different treatment options.

MATERIALS AND METHODS

Files of patients treated for genital prolapse at Dr George Mukhari Hospital from 01 July 2006 to 30 June 2011 were identified and data was extracted and entered into data collection sheets and analysed.

Parameters assessed were patients’ ages, parity, mode of delivery, menopausal status, types of genital prolapses, treatment modalities, types of operations and their outcomes.

RESULTS

For the 5-year period from 01 July 2006 to 30 June 2011, a total of 84,974 patients were seen at Gynaecology clinics of Dr George Mukhari Hospital out of which 74 patients were diagnosed and managed for all types of prolapse. This gives prevalence of 87 cases of genital prolapse for 100,000 women or 0.09% seen at our institution.

The ages of women ranged from 20 to 90 years, with 1 who was 20 years of age. Majority of women were para 3 and above, 73 of them had vaginal deliveries (98.6%) with 65 of them (87.8%) being menopausal but 48 (64.9%) could not recall duration of menopause, for those who could recall, menopausal period ranged from 1 to 40 years with mean (± SD) of 15.4 years (± 9.6).
Chronic obstructive airway diseases (Asthma and Bronchitis) represented majority of co-morbid conditions; total of 13 (5 and 8 respectively).

Majority of patients 69 (93.2%) presented with uterine prolapse, with 33 (44.6%) presenting with cystocele.

Majority of the patients presented with vaginal mass (72) which represents 97.3%. 33 patients (44.6%) presented with urinary symptoms. The presentations of these complaints were not mutually exclusive as many of the patients had more than one complaint.

Majority of patients (83.8%) had pap smear taken for screening for cervical cancer. One patient’s smear had a cytological report showing (H-SIL/CIN II) and was referred to gynae-oncology unit for further investigations and management. 3 patients had ultrasound done and 9 (12.2%) had urine-analysis done.

6 patients were lost to follow up and of the 68 patients, 44 (64.7%) were treated surgically and 24 (35.3%) conservatively. 22 patients (91.7%) were treated with ring pessaries, with 19 (86.4%) being successful and 3 (13.6%) failing.

Majority of patients 44 (64.7%) were treated surgically with 22 (50.0%) having vaginal hysterectomy with anterior repair, with 9 (20.5%) having vaginal hysterectomy alone. 1 (2.3%) patient had abdominal sacro-colpopexy.

Of the remainder of patients 6 (13.6%) had vaginal hysterectomy with anterior and posterior repair. 4 (9.1%) had vaginal hysterectomy with anterior repair and
colposuspension. 2 patients (4.6%) had abdominal hysterectomy. Their hospital stay ranged from 2-5 days (±SD 3, 1 day)

Of all patients (44) who had surgical management and reviewed at 2 weeks, 39 (88.6%) of their operations were successful and 5 (11.4%) had failed. For those whose procedures had failed 2 (40.0%) presented with vault prolapse and 2 (40.0%) had cystocele and urinary incontinence and 1 (20.0%) had bladder injury.

**CONCLUSION:**

In this study over a 5-year period from 01 July – 30 June 2011 it is shown that the prevalence of genital prolapse is low in our unit with a prevalence of 0.09%. High parity (>3 vaginal deliveries) seems to be the identifiable risk factor for development of genital prolapse which is in agreement with the information available in the literature. Uterine prolapse and vaginal mass is the common clinical presentation in our patients, vaginal hysterectomy with anterior repair was the commonest surgical operation performed in these patients with a good success rate through the follow-up period of 2 weeks was too short.
INTRODUCTION

Genital prolapse also referred to as pelvic organ prolapse (POP) or pelvic floor dysfunction is defined as descent of one or more of the anterior vaginal wall, posterior vaginal wall, the uterus or apex of the vagina \(^{(1)}\)

Genital prolapse was first described in Ebers Papyrus dated 1500 B.C. in which the causes were not discussed but the suggested treatment was to “smear the fallen womb with a mixture containing honey and to press it back into place”. Haby Abbas (A.D. 932) was the first to acknowledge trauma, particularly birth trauma with difficult and prolonged labour with the appearance of prolapse. \(^{(2)}\)

The prevalence of genital prolapse is unknown as most of the prolapse is asymptomatic and women do not seek medical help for the condition and only 10-20% seek medical care \(^{(3, 4)}\)

The age-specific incidence increases with advancing age, with the lifetime risk of underlying single operation for genital prolapse and urinary incontinence by the age of 80 years being 11.1% with a reoperation of 29.2% and time intervals between repeat procedures decreasing with each successive repair in the USA \(^{(5)}\)
In the United Kingdom the incidence of hospital admission with genital prolapse is 2.04 per 1000 person years of risk \(^{(6)}\)

It is estimated that 50% of parous women lose pelvic floor support and develop prolapse. \(^{(4)}\)

Mawajdeh Sal M. et al. in a multicenter study on the prevalence and risk factors of genital prolapse found the prevalence of genital prolapse to be as high as 56% in the Giza Study, Egypt and 34% in the Ein El-Basha, Jordan. \(^{(7)}\)

In rural Gambia, West Africa, prevalence of genital prolapse was found to be 46% with 14% enough to warrant surgical intervention, \(^{(8)}\) whereas in the rural Ghana prevalence of genital prolapse was found to be 12.07%. \(^{(9)}\)

In South Africa it has long been recognised that genital prolapse is “an affliction that occurs in White patients of the community and not in the Black patients”. Genital prolapse does occur in Black women, but it is so rare that it is usually commented upon when such a case is found. In the Coloured and Indian sections of the community, it appears to be almost as high as the White section. \(^{(2)}\) In a descriptive study at Universitas Hospital, Free State Province, of the 140 patients managed surgically for genital prolapse, 90.7% were White and 5% were Black and 4.3% from other racial groups. \(^{(10)}\)
Genital prolapse was an indication for hysterectomy in 2.9% of 2901 hysterectomies in a series published in South Africa.\(^{(11)}\)

Though genital prolapse is a common gynaecological condition worldwide it is rarely associated with mortality (except in rare cases of ureteric obstruction) but it affects the woman’s quality of life by limiting physical, social, psychological and sexual functions.\(^{(4)}\)

With better access to health care, women will live longer and healthier lives. It is projected that by 2030, 6300 million women worldwide will be of 45 years of age and older, and by 2050, 33% of the population will be menopausal and genital prolapse (pelvic floor dysfunction) will even be more prevalent and this will have economic implications as it will be a burden to the health care services.\(^{(12)}\) In the United States of America alone, the 1997 National Hospital Discharge Survey Database was used and estimated that the annual direct cost to society of pelvic organ prolapse operations amounted to 1012 million dollars.\(^{(13)}\)

Despite the worldwide studies and publications on genital prolapse, no documentation exists on the prevalence of genital prolapse at our gynaecological unit at Dr George Mukhari Hospital and hence this study was conducted.
LITERATURE REVIEW

Pelvic organs (bladder, uterus, urethra and rectum) are contained within the pelvic cavity. Support for pelvic organs includes the bony pelvis, pelvic floor muscles and fascial support. This also depends on intact nerve supply from the pudendal nerve and sacral plexus of nerves. This integrated system when intact prevents the downward displacement of the pelvic organs. Because these displacements are associated with defects in the connective structures, they may each be considered a pelvic hernia.

The pelvis is divided into three compartments:

- Anterior compartment contains urethra and bladder,
- Middle compartment comprises uterus and vault of the vagina and
- Posterior compartment contains the rectum.

Bony Pelvis:

Bony pelvis is composed of pelvic inlet and pelvic outlet and has a central opening necessary for the reproductive function. The posterior aspect of the pelvic outlet is approximately 60 degrees above the anterior aspect due to the lordosis of the lumbo-sacral portion of the spine placing the pelvic outlet on an oblique orientation in females.
This partially vertical orientation of the pelvic inlet deflects force on to the superior symphysis pubis rather than directly on the pelvic outlet and urogenital hiatus, as a result the pelvic outlet is partially shielded from downward stresses in the anatomically normal woman. (16)

Muscular Support:

The pelvic floor muscles form a diaphragm that spans the pelvic cavity and is an integral part of the pelvic floor, together with the connective tissue provides the integral support for the pelvic organs. Levator ani muscles play an important role in supporting the pelvic organs. Levator ani muscle is composed of three basic regions and five parts. The opening within the levator ani muscle is called the urogenital hiatus of the levator ani and the urethra and vagina pass through the urogenital hiatus. The rectum also passes through the urogenital hiatus, but because the levator ani muscles attach directly to the anus, it is not included in the name of the hiatus. The hiatus is supported ventrally (anteriorly) by the pubic bones and levator ani muscles, and dorsally by the perineal body and external anal sphincter.

The five parts of the levator muscles are pubovaginal, puboperineal, puboanal portions, which forms the pubovisceral complex and puborectalis and iliococcygeus muscles.
Region 1 is the iliococcygeal portion which forms a horizontal shelf spanning the potential gap from one pelvic sidewall to the other near the sacrum.

Region 2 includes the pubovisceral muscle, with muscle fibres arising from pubic bone on either side of the symphysis and attach to the walls of the pelvic organs and perineal body, these help close the urogenital hiatus.

Region 3, puborectalis muscles form a sling around and behind the rectum.

The nerve supply is from the perineal branch of the pudendal nerve (S₂ and S₄) and the anterior primary rami (S₃ and S₄).

The normal baseline activity of the levator ani muscle keeps the urogenital hiatus closed by compressing the vagina, urethra and rectum against the pubic bone, the pelvic floor and organs in a cephalic direction. (17, 18)

Puborectalis and iliococcygeus muscles also cover the posterior and lateral portion of the pelvic outlet. Superior insertions of the iliococcygeus muscles are thickenings of the pelvic sidewall parietal fascia that extend from ischial spines posteriorly to the pubic tubercles. These lines of insertion are called arcus tendineus, levator ani or muscular arches. Inferior to the muscular arches are the white lines which are lateral attachment points for pubo-cervical fascia and proximal recto-vaginal septum and serves the function of mid-vaginal lateral support. The most posterior portion of the pelvis is covered by piriformis muscle. Midline confluence of the levator muscles forms the levator plate, which is a connective tissue between coccyx and anus. The vagina and
the rectum are suspended by the endopelvic fascia directly over the levator plate. Neuropathies cause weakness of the pubo-coccygeus and iliococcygeus muscles and may allow the levator plate to sag and descent permanently. (16)

**Connective Tissues:**

Connective tissues of the pelvis are called endopelvic fascia. Connective tissues contain extracellular matrix, the matrix is made up of water, collagen, elastin and ground substance. Collagen fibres form a structural framework and are responsible for resisting tensile force applied to tendons. Main constituents of interstitial connective tissue are collagen types 1, 2 and 3. Types 1 and 3 collagens are responsible for resistance to offering of resistance to tension (14). It supports and inverts all the midline organs and structures of the pelvis. Part of the fascia that attaches to the uterus is called parametrium and that which is attached to the vagina is called paracolpium (19)

Endopelvic fascia is specialised and divided into:

1. Pubocervical fascia (pubocervical ligaments) extending from anterior aspect of the cervix to the back of the body of pubis.
2. The lateral cervical ligament (Transverse cervical/Mackenrod/C Cardinal ligament) which extends from lateral aspect of the cervix and upper vagina to the pelvic side walls.
3. Uterosacral ligaments extending from the back of the uterus to the front of the sacrum

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iv. The posterior pubourethral ligaments extending from the posterior inferior aspect of the symphysis pubis to the anterior aspect of the middle third of the urethra and on to the bladder, thus elevating bladder neck. (15)

DeLancey divided the vaginal support into three levels in the biochemical analysis of the normal utero-vaginal support. (19)

i. Proximal vaginal level I support is attributed to suspension by the ligaments of the paracolpium. Damage to level I support results in utero-vaginal prolapse, post-hysterectomy vaginal prolapse and enterocoele. Primary load bearing elements are the utero-sacral ligaments and cardinal ligaments (parametrium)

ii. Midvaginal level II support is due to the lateral attachment of the fascia septa to the pelvic sidewalls. Septa attach to the arcus tendineus, fascia pelvis and arcus tendineus fasciae rectovaginalis. Damage at this level results in paravaginal and pararectal defects.

iii. Level III support is attributed to fusion to the urogenital diaphragm anteriorly and to the proximal perineum posteriorly. Damage at these sites results in urinary incontinence anteriorly and in perineal body deficits posteriorly.

Any disruption to the support structures of the pelvic organs contributes to the development of the genital prolapse. This disruption may be due to injuries, denervation or degeneration and consequently:
• Cystocele occurs because the bladder descends either centrally through pubo-cervical fascia or laterally where a break occurs between the attachments of pubo-cervical fascia from the white line of the pelvic side wall. A large cystocele will carry both utero-visceral junctions and lower end of the urethra with it and this can result in ureteric obstruction.

• Urethrocele occurs because of loss of support by the pubocervical fascia and posterior pubourethral ligaments.

• Descent of the uterus and cervix occurs when lateral cervical ligaments are weakened. This sometimes occurs in nulliparity and cervix elongates and uterus descends without cystocele but with enterocoele where condensations of the pelvic fascia are inadequately developed and lack their normal resilience.

• Vault prolapse occurs following abdominal or vaginal hysterectomy due to failure to support the vault adequately using lateral cervical ligaments, inadequate strength of the ligaments on failure to correct an enterocoele at time of hysterectomy.

• A rectocele represents increased hiatus between the left and right portions of the levator ani muscle and may be accompanied by tears on the recto-vaginal septum. *(15)*

Pathophysiology of genital prolapse is poorly understood and appears to be multifactorial. *(20)* Any pathological condition or physiological process that interferes with normal pelvic support leads to development of prolapse. This occurs due to pelvic floor
denervation, direct trauma to pelvic floor musculature, abnormal synthesis and degradation of collagen and defects in endopelvic fascia. \(^{(21)}\)

Several aetiological factors have been identified and are classified into:

(i) **Predisposing factors:** (growth and development, genetic factors, connective tissue weakness and joint mobility)

(ii) **Inciting factors:** (childbirth, pelvic surgery)

(iii) **Intervening factors:** (age-related changes, obesity, constipation, comorbidities, heavy occupational work and vigorous physical activity.) \(^{(20, 21)}\)

Of the above mentioned risk factors, labour and vaginal birth, advanced age and menopause (estrogen deficiency), race (white), genetic factors and collagen abnormalities have been strongly associated with development of genital prolapse.

Pelvic bone orientation has also been associated with development of genital prolapse. \(^{(2, 23)}\) These risk factors vary from patient to patient and often a combination of these aetiological factors result in development of genital prolapse (pelvic organ prolapse) \(^{(24)}\). Most of these risk factors are related to obstetric events \(^{(25)}\)
Pregnancy, Labor and Vaginal Delivery:

Pregnancy:

During pregnancy, the hormones affect the biomechanical composition of the solid matrix and hydration phases constituting each pelvic tissue. Remodelling mechanisms lead to changes in the organisation, orientation and diameter of the collagen fibres as well as the crimp structure of the collagen fibrils reinforcing each tissue. Such effects can significantly affect short and long-term viscoelastic properties of the vaginal wall, pubo-visceral muscles and perineal body. These will determine the extent and rate at which these structures can be stretched by expulsive forces acting cyclically on the fetal head and resistance to stretch provided by those structures. These changes to the pelvic tissues can occur in the anterpartum period before the onset of labour.

Labour and Vaginal Delivery:

Labor and vaginal deliveries are recognised as the main contributing aetiological factors for development of genital prolapse due to stretching and injury to the pelvic floor muscles and pudendal nerve damage and denervation. This damage occurs from the onset of the second stage of labor till delivery. It is even made worse if the second stage of labor is prolonged and with the use of instrumental vaginal delivery (particularly forceps delivery) and performance of episiotomy during delivery.

During the second stage of labor, the fetal head places the pelvic floor muscles under considerable stretch. As the head is engaging, it stretches the iliococcygeus, pubococcygeus and puborectalis muscles. These muscles are components of the levator ani.
muscle. The pubo-coccygeus, which is the shortest and most medial levator ani muscle, undergoes the largest strain. This ultimately leads to avulsion of the puborectalis from its insertion on the pelvic sidewall and occurs during crowning of the fetal head and as a result the levator hiatus is enlarged on its anterior part and is associated with development of genital prolapse. The injury is even more pronounced if forceps are applied for assisted delivery as this leads to injury of pubovisceral muscle.

Furthermore, during the second stage of labor, as the levator ani stretches, it leads to changes in motor unit duration after vaginal birth as well as changes in pudendal nerve terminal motor latency (PNTML). This leads to increased pelvic floor denervation and poor pelvic floor functioning. Prolonged pudendal nerve terminal motor latency is more pronounced in prolonged labor, delivery of large babies (>4kg) and use of forceps associated delivery.

Development of genital prolapse increases with higher parity. Women with 3 or more vaginal deliveries are at a higher risk from development of prolapse and for surgery for stress urinary incontinence and genital prolapse.

Elective caesarean section may lower the incidence of genital prolapse but development of prolapse is multifactorial. The protective effect of caesarean section against development of genital prolapse is lessened if done after the onset of labor.
**Age and Menopause:**

Prolapse becomes more common with advancing age. The risk of pelvic organ prolapse doubles with each decade of life \(^{(35)}\) and incidence of surgery for prolapse increasing from 0.1% at age 20 to 11.1% by age 80. \(^{(5)}\) An associated issue is the role of estrogen hormones. Estrogen activity is dependent not only on serum estrogen levels, but also on estrogen receptors: Estrogen receptors have been identified throughout the nuclei of connective tissue and smooth muscle cells of bladder trigone, urethra, vaginal mucosa, levator ani muscle stroma and arcus tendineus and uterosacral ligaments. The collagen content of the pelvic floor is also estrogen dependent \(^{(20)}\), estrogen also decreases tissue-degrading matrix metallo-proteinases in fibroblasts derived from pelvic connective tissue. During menopause there is a decrease in estrogen concentration and hence reduction in collagen content in the genito-urinary tissue of women and this predisposes women to development of prolapse \(^{(20, 35, 36)}\).

Also with prolonged hypoestrogenic state there is a risk of development of osteoporosis, leading to kyphotic changes in the spine. The pelvic inlet is displaced into a more horizontal plane and thus weight of the abdominal contents act directly on the pelvic floor and on the urogenital hiatus, further increasing the risk of prolapse development. \(^{(16)}\)
**Race:**

Genital prolapse is more common in white women than black women.\(^{37,39}\) The attributing factors to this difference between white and black women are the differences in the structure of connective tissue and a greater tendency to form a keloid.\(^{15}\) Black women have increased levator ani bulk and decreased pelvic floor cross-sectional area. Other proposed factors making black women less susceptible to development of prolapse as cited by Van Donger in South Africa are: \(^2\)

i. The smaller circumference of the pelvic floor in blacks requires shorter suspensory ligaments from the pelvic sidewalls to the cervix and vagina, and shorter ligaments are less likely to stretch than longer ligaments.

ii. The deeper pelvis in blacks allows thicker cardinal and uterosacral ligaments which, because of greater bulk, are less likely to stretch or tear,

iii. The longer supravaginal cervix in blacks allows larger and stronger attachments for the cardinal and uterosacral ligaments

iv. Blacks have inherent connective tissue of better quality than whites based on preliminary histologic studies showing a greater collagen content in the ligament.\(^2\)

v. The greater lumbar lordosis of blacks results in the diversion of abdominal forces towards the pubic bone and abdominal wall rather than towards the pelvic diaphragm.
All the above histological and anatomical differences make black women less susceptible to development of prolapse than white women.

**Congenital Abnormalities/Collagen Deficiencies:**

Connective tissue is composed of collagen as one of its components. The dominant molecular types are Collagen Type I and Collagen Type III which are responsible for tissue tensile strength and thus preventing prolapse and joint hypermobility. Abnormalities of collagen metabolism such as increased activity of matrix metalloproteinase-I, collagen type 3 alpha I polymorphism and Type I collagen polymorphism and abnormal gene coding leads to abnormal collagen production and laxity of the pelvic floor and joint hypermobility as demonstrated in Ehlers-Danlos Syndrome type IV. These abnormalities are responsible for development of prolapse in young, nulliparous and premenopausal women. \(^{(40, 41, 42, 43)}\)

**Lifestyle / Occupational / Co-Morbid Conditions**

Lifestyle or occupational activities contribute to the development of prolapse. Lifting objects heavy enough to require Valsalva manoeuvre or fixation of the respiratory diaphragm displaces stress directly on the pelvic floor. This is observed in athletes undergoing high-impact frequent intense training and this leads to alterations in pelvic floor morphology and function. \(^{(44)}\) Women in Western Nepal do a lot of agricultural and manual work without post-partum rest and were found to have some type of genital prolapse at about 25.1% prevalence. \(^{(45)}\)
Obesity increases the load on the pelvic floor and decreases its mobility, as well as the ability to do muscle strengthening exercises. (46)

Chronic obstructive airway diseases and chronic constipation places repeated stress on the pelvic floor. Medical conditions such as diabetes mellitus contribute to neuropathy and this contributes to prolapse. Smoking has antiestrogenic properties, contributes to vascular diseases and creates a chronic hypoxic state of the nuclei and tendons and thus weakens them and contributes to the development of genital prolapse.

**Previous Urogynaecological and Gynaecological Surgeries**

Risk of recurrence for the development of genital prolapse and of reoperation is established at 29 – 30% within a period of 2 years. (5)

Patients who had hysterectomies with poor or inadequate vault suspension are at a risk of development of vault prolapse due to structural damage to the pelvic floor support during surgery and due to the use of absorbable suture materials. Patients undergoing Burch Colposuspension for surgical treatment of female stress urinary incontinence had post-operative genital prolapse as a significant complication. (47) Vault prolapse follows 11.6% of hysterectomies performed for prolapsed and 1.8% for other benign diseases and its incidence increases with time since hysterectomy.
Symptoms of genital prolapse

It is estimated that 50% of parous women lose pelvic floor support and 10-20% of these women seek medical care. \(^{(3, 4)}\)

Symptoms of genital prolapse depend on the site and not on the size of the prolapse\(^{(15)}\).

Symptoms of genital prolapse are classified as urinary, bowel, sexual symptoms and other local symptoms and clinical examinations may not necessarily correlate with the symptoms:

Cystocele and cystourethrocele: Prolapse of the bladder and urethra may lead to dragging discomfort, sensation of a lump in the vagina, urinary symptoms such as stress incontinence, frequency, urgency and urge incontinence.

Uterine descent: patients present with low backache, protrusion of the cervix and blood stained or purulent vaginal discharge, dyspareunia, incontinence during sexual activity.

Enterocoele, vault prolapse / rectocoele. These may give vague symptoms of vaginal discomfort, constipation or incomplete bowel emptying or non-specific symptoms.

Common to all types of prolapse are lumps or dragging in the vagina, urinary symptoms voiding difficulties and defecatory dysfunction and these symptoms do not necessarily correlate with the compartment-specific defects and may overlap from one compartment to another. \(^{(21)}\)
Classification and Grading

Genital prolapse can be broadly categorized according to the compartment where it occurs:

Anterior compartment – prolapse of the urethra (urethrocoele) or bladder (cystocoele) or both into the vagina (cystourethrocoele)

Middle compartment - uterine or vault descent and enterocoele (herniation of the Pouch of Douglas)

Posterior compartment – prolapse of the rectum into the vagina (rectocoele)

Several staging and grading systems exist: Traditionally uterine descend is graded as first degree (within vagina), second degree (descend to the introitus) and third degree (descend outside the introitus), or as being mild, moderate and severe. (3)

For standardization, 2 grading and staging systems for genital prolapse are currently in use. These are:

- Baden – Walker Halfway System
- Pelvic Organ Prolapse – Quantification System (POP-Q System)
**Baden – Walker Halfway System**

This system records the extent of the prolapse from 0 – 4 at each of six defined sites in the vagina in relation to the hymen.

Grade 0: Normal position for each site  
Grade 1: Descend halfway to the hymen  
Grade 2: Descend to the hymen  
Grade 3: Descend halfway past the hymen  
Grade 4: Maximum possible descend for each site

**Pelvic Organ Prolapse – Quantification System (POP – Q System)**

This system was adapted from several classifications for staging and grading of genital prolapse and adopted by the International Continence Society (ICS). It is a site specific system and includes six points (two on the anterior vaginal wall, two in the superior vagina and two on the posterior vaginal wall) that are located with reference to the plane of the hymen.  

This system records measurements on a tic-tac-toe style grid based on the sites in the vaginal wall and stage prolapse from stage 0 (no prolapse) to stage IV (complete prolapse).

Stage 0: No prolapse demonstrated  
Stage I: Most distal portion of the prolapse 1 cm above the level of the hymen  
Stage II: The most distal portion of the prolapse less or equal to 1 cm proximal to or distal to the plane of the hymen.  
Stage III: The most distal portion of the prolapse more than 1 cm below the plane of the hymen.
hymen but protrudes no further than 2 cm less than the total vaginal length in centimeters.

Stage IV: Complete eversion of the total length of the lower genital tract.

**Clinical examination and evaluation**

Patient’s assessment is based on the initial history and patient is examined in the left lateral position or standing position with Sims speculum inserted along the vaginal wall to assess the anterior wall and vault and vice versa. Descent of the uterus can be assessed by traction with a single toothed vulsellum. Valsalva manoeuvre is performed to appreciate extent of the prolapse.

After the patient is assessed, the prolapse is graded or staged according to either Baden-Walker Halfway system or Pelvic Organ Prolapse Quantification system (POP – Q system). The International Continence Society recommends the use of POP – Q system for staging of genital prolapse.

**Investigations**

Genital prolapse is diagnosed clinically but the following investigations are recommended as adjunct to clinical evaluation.
1. Urinalysis and urine microscopy and sensitivity. These are recommended for patients with urinary symptoms and patients with pelvic organ prolapse stage II and above.

2. Urodynamic studies - Cystometry and uroflorometry are done to evaluate potential stress incontinence, other overt urinary incontinence and potential emptying phase dysfunction, which may be masked by the prolapse and these should be performed prior to surgery.

3. Imaging – Pelvic fluoroscopy with barium contrast on the vagina, bladder small bowel and rectum may be helpful if the symptoms and signs of the prolapse do not correlate.

   MRI scan of the levator ani muscle can be used to assess defects on the pelvic floor.

4. Preoperative pessary test – The rationale behind pessary test is to simulate the position that the bladder or bladder neck will occupy after prolapse surgery.

**Management options**

Management of genital prolapse can either be conservative or surgical. Both options involve counselling of the patient about expected outcomes of treatment modalities.
Conservative management

Conservative management of genital prolapse includes – treatment of co-morbid conditions (lifestyle modifications) pelvic floor muscle rehabilitation and use of pessaries.

Co-morbid conditions; chronic obstructive airway diseases, obesity and chronic constipation increase intra-abdominal pressure and can worsen the symptoms of genital prolapse and should be managed prior to surgical intervention.

Pelvic floor muscle rehabilitation

Pelvic floor muscle exercises, (Kegel exercises) is a simple non-invasive intervention that may improve pelvic function. The pelvic floor exercises do not resolve the prolapse but may limit the progression of mild prolapse and alleviate mild prolapse symptoms.\(^{(3)}\) It is recommended as an adjunct therapy for women with genital prolapse and associated symptoms.

Pessaries:

The use of pessaries for treatment of genital prolapse dates back to the ancient times and has been documented in early Egyptian papyruses on ISSO BG. It evolved from its use as a succession therapy, pomegranate soaked in wine into the vagina, brass and waxed cork in the 16\(^{th}\) and 17\(^{th}\) century to the modern pessaries made from silicone, which is inert, does not absorb secretions odours, flexible and can be autoclaved for sterilization.\(^{(49)}\)
Use of pessaries in genital prolapse are indicated in:

(i) As a non-surgical relief of symptoms associated with genital prolapse

(ii) Patients who are unfit or decline surgery

(iii) Pregnant patients

(iv) Patients who wish to retain their fertility

(v) Rarely in neonates with prolapse occurring in conjunction with neural tube defects

They are used by about 77% members of American Urogynaecologic Society as a first line therapy for genital prolapse and are used by 87% - 98% of gynaecologists and urogynaecologists\(^{(50)}\)

Pessaries are classified into two main groups; viz support pessaries and space occupying pessaries. Support pessaries are those that were defined by spring mechanisms, of which the ring pessary is the commonly used.

Space filling pessaries are defined as supported by the creation of suction between the pessary and the vaginal wall (e.g. – donut pessary, Gellhour pessary and cube pessary.

Several risk factors are associated with an unsuccessful pessary fitting, namely: in patients with short vagina (≤6cm) and wide introitus, younger patients and patients with prior pelvic surgery.\(^{(51)}\)

Complications associated with pessaries commonly are vaginal discharge, odour developing with continued wearing of vaginal pessary and mucosal erosion and abrasions of the vagina and/or cervix and occurs commonly with cube and Gellhorn pessaries.
Surgical Management

The aims of surgical correction of prolapse are relief of symptoms of genital prolapse, restoration of normal vaginal anatomy, and preservation of coitus and urinary and anal continence.

Surgery is indicated when pessary fails, when patient wants definitive treatment or when prolapse combines with the urethral sphincter incompetence or faecal incontinence.

The routes for surgical management of genital prolapse can be abdominal, vaginal or laparoscopic.

Surgical procedures can be broadly categorised into three (3) groups:

(i) Restorative - which use the patient’s endogenous support structure
(ii) Compensatory, which attempt to replace deficient support with some type of graft
(iii) Obliterative, which close the vagina.

Operations can be classified according to the compartment at which they are done and thus for anterior compartment, middle compartment and posterior compartment defects.

Some operations can include both anterior and middle compartment and/or posterior compartments with or without the insertion of a mesh. Risk of recurrence or re-operation after prolapse surgery range from 10 – 30% over a period of 2 years.

Anterior compartment surgery

Anterior colporrhaphy (Anterior Vaginal Repair): This entails placation of the vesicopelvic fascia and bladder neck, thus correcting the distension defect of the cystocoele and stabilises the periurethral fascia. Interposing mesh can be placed on the anterior vagina for additional support and reduce recurrence. When stress
incontinence coexist with anterior prolapse tension – free vaginal tape under the mid-urethra may be used.

**Colposuspension** can also be used in cases where the paravaginal fascia on either side of the bladder neck and base of the bladder are approximated to the pelvic side wall by sutures places through the ipsilateral ileopectineal ligaments.

**Middle compartment surgery**

Objective of middle compartment surgery is to replace the damaged or absent upper support while fixing the upper third vagina over the levator plate. This can be done by abdominal, laparascopic or vaginal routes. This includes vaginal hysterectomy, vault repair, sacrospinous fixation, bilateral iliococcygeal hitch or sacrohysteropexy and sacrocolpopexy.

Sacrohysteropexy can be performed on women who wish to retain their uterus after failure of conservative treatment and in young nulliparous women.

**Posterior compartment surgery;** (Posterior colporrhaphy) Three different surgical approaches have been used for repair of posterior compartment proplapse. Gynaecologists use transvaginal repair involving levator plication whereas colorectal surgeons use the transanal route for treatment of rectocele. This repair can be done with or without mesh insertion. Suprapubic sacrocolpopexy is done with mesh interposition. Posterior colporrhaphy is associated with constipation, incomplete bowel emptying and sexual dysfunction. Levator plication is associated with dyspareunia secondary to atrophy and scarring of muscle fibres. (3, 21, 52)
AIM OF THE STUDY

To evaluate the files of patients admitted at DGMH with genital prolapse and assess their outcomes.

OBJECTIVES

1. Determine the prevalence of genital prolapse at DGMH.
2. Compare the outcome of different treatment options for genital prolapse.
3. Determine the outcomes for those who were treated for genital prolapse at DGMH

STUDY SETTING:

This review was conducted at the department of Gynaecology of DGMH, using records of women who had presented with genital prolapse and managed at DGMH

METHODOLOGY

Study Design

This was a retrospective, descriptive study of cases of genital prolapse in patients who were admitted and managed at DGMH over a period of 5 years (1st July 2006 to 30th June 2011). Parameters assessed were age, parity, menopausal status, mode of delivery, type of prolapse, where available BMI and type of management, the patient had.
Sample population
Patient who had presented and managed for genital prolapse from 1\textsuperscript{st} July 2001 to 30\textsuperscript{th} June 2011 were included in the review. Files of patients with incomplete information were excluded.

Sample Size
Over the 5 year period (1\textsuperscript{st} July 2006 30\textsuperscript{th} June 2011) 81 files of patients managed for genital prolapse were identified and 74 files were retrieved. (Retrieval rate 91%).

Examination and investigation
The diagnostic procedures consisted of relevant history (age, menopausal status, parity, mode of delivery), physical examinations (BMI; identification of type of prolapse on examination and grading)

Investigations performed in these patients in our gynaecological unit were urinalysis, ultrasound and pap smear. Pap smear was routinely performed in these patients as an opportunistic test to screen for cervical neoplasia.

Management options:
Conservative management: Pessaries were used for treating the symptoms of genital prolapse in those patients who were unsuitable or declined surgical treatment.
**Surgical Management:** Different surgical interventions were performed in these patients depending on the type of prolapse. These were either transvaginal or transabdominal. Operations performed were vaginal hysterectomy with or without anterior repair or vaginal hysterectomy with both anterior and posterior repair, abdominal hysterectomy and abdominal sacrocolpopexy.

**DATA COLLECTION TOOL**

All the information from the files of patients managed for genital prolapse was entered and captured into a data collection form. The form was designed to include relevant information on each patient and each patient had a separate data collection form.

**DATA ANALYSIS**

This was a descriptive analysis and data was entered into an excel spread sheet and imported into SPSS statistical programme for analysis. Demographics and characteristics of patients were expressed as range, mean +/- standard deviation (SD). Outcome measures were calculated as percentages to reflect success or failure of treatment options.
ETHICAL ISSUES

No patient consent was required for this study as it was done retrospectively. However, the protocol was submitted and approved by institutional review committee of the University of Limpopo (Medunsa Campus) and the superintendent of the hospital (DGMH) for the use of patients’ case files. The information retrieved from files of patients was treated with the strict confidentiality.

RESULTS

During the review period, stretching from July 2006 to June 2011, a total of 84,974 patients were seen at the gynaecological clinic of DGMH, out of which 74 patients were diagnosed and managed for all types of genital prolapse. This gives a prevalence of occurrence as 87 cases of genital prolapse per 100,000 women (i.e. 0.09%) seen at DGMH.

Table 1 shows the characteristic features of the patients. The women were aged between 20 and 90 years with a mean of 63.2 years.
### TABLE 1: CHARACTERISTIC FEATURES OF THE PATIENTS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of cases [N = 74]</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AGE (yrs.):</strong> Range</td>
<td>20 – 90</td>
<td>-</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>63.2 ± 12.5</td>
<td>-</td>
</tr>
<tr>
<td><strong>PARITY:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>1 – 2</td>
<td>11</td>
<td>14.9</td>
</tr>
<tr>
<td>3 – 4</td>
<td>28</td>
<td>37.8</td>
</tr>
<tr>
<td>5 - 6</td>
<td>16</td>
<td>21.6</td>
</tr>
<tr>
<td>≥ 7</td>
<td>16</td>
<td>21.6</td>
</tr>
<tr>
<td>• Two women were of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity 3+2 &amp; 3+6 (i.e. with 2 and 6 previous abortions respectively).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MODE OF DELIVERY:</strong> NVD</td>
<td>73</td>
<td>98.6</td>
</tr>
<tr>
<td>C/S</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>MENOPAUSAL:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>65</td>
<td>87.8</td>
</tr>
<tr>
<td>NO</td>
<td>9</td>
<td>12.2</td>
</tr>
<tr>
<td><strong>YEARS SINCE MENOPAUSE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1 – 40 years</td>
<td>-</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>15.4 ± 9.6 years</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>48</td>
<td>64.9</td>
</tr>
</tbody>
</table>
Parity ranged from 0 to ≥ 7. Women with parity 3 – 4 (28; 37.8%) constituted the majority. One patient was para = 0 (1.4%). Grand multiparity of 5 – 6 was recorded =16 (21.6%). Patients with great grand multiparity (≥ 7) were 16 (21.6). 73 women (98.6%) had delivered vaginally in the previous 1 – 4 pregnancies except for a 48-year old patient, non-menopausal, who had delivered the last three pregnancies by repeat C/S.

Sixty five patients (87.8%) were post-menopausal at the time of the occurrence of genital prolapse compared to 9 (12.2%) who were pre-menopausal at the occurrence of the genital prolapse. Forty eight (73.8%) of the postmenopausal women were unable to recall the interval between onset of menopause and the occurrence of genital prolapse. In seventeen women (26.2%), the interval between menopause and occurrence of genital prolapse was 1 – 40 years with a mean of 15.4 years.

Table 2 illustrates the co-morbidity, types of prolapse and the complaints by the women at the time of presentation in hospital. Asthma occurred in 5 patients (6.8%); bronchitis was reported in 8 patients (10.8%) and constipation was reported for 12 patients (16.2%). 10 BMI’s were available for the review and the BMI ranged from 20.3 – 60.1 with mean (± SD) of 35.9. There were four types of genital prolapse recorded for this series: i.e. uterine prolapse (69; 93.2 %), cystocele (33; 44.6%), rectocele (7; 9.5%), vault prolapse (2;2.7%)
TABLE 2: CO-MORBIDITY, TYPES OF GENITAL PROLAPSE AND PATIENTS’ COMPLAINTS AT PRESENTATION IN DGMH

<table>
<thead>
<tr>
<th>CO-MORBIDITY:</th>
<th>Number of Cases [N = 74]</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>5</td>
<td>6.8</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>8</td>
<td>10.8</td>
</tr>
<tr>
<td>Constipation</td>
<td>12</td>
<td>16.2</td>
</tr>
<tr>
<td>BMI</td>
<td>10 Records</td>
<td>Range: 20.3 – 60.1</td>
</tr>
<tr>
<td>Mean (± SD)</td>
<td>35.9 (± 14.3)</td>
<td>52.7</td>
</tr>
<tr>
<td>No co- morbidity</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPES OF PROLAPSE:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine prolapse</td>
<td>69</td>
<td>93.2</td>
</tr>
<tr>
<td>Cystocele</td>
<td>33</td>
<td>44.6</td>
</tr>
<tr>
<td>Rectocele</td>
<td>7</td>
<td>9.5</td>
</tr>
</tbody>
</table>
COMPLAINTS AT PRESENTATION:

- Vaginal Mass 72 97.3
- Urinary Problem 33 44.6
  - Retention 3
  - Dysuria 2
  - Incontinence 3
  - Non-specific 25
- Bowel problem 4 5.4
- Sexual: 2 2.7

These sub-types of genital prolapse are not mutually exclusive and majority of the patients presented with more than one type of prolapse. However, the majority of the patients (approximately 93.2%) had uterine prolapse.

At first presentation in hospital 72 patients (97.3%) complained of vaginal mass. Thirty three patients (44.6%) had urinary problems (retention dysuria and incontinence), Higher percentage of patients (25) had non-specific urinary problems. Bowel complaints among the patients accounted for only 5.4% and two patients had dyspareunia.
Only three patients (4.1%) were investigated by ultrasonography (U/S), nine (12.2%) had urinalysis performed but for the majority of the patients (83.8%) pap-smear samples were taken for cytological screening for cervical dysplasia. Cytological report for one of the patients revealed High Grade Squamous Intraepithelial Lesion (HSIL) and she was referred to the oncology unit for further investigations and management.

Six patients (8.1%) were lost to follow-up. For the remaining 68 patients (91.9%), 24 of them (35.3%) were treated conservatively (using ring pessary or oestrogen cream) while the remaining 44 (64.7%) were treated by surgical procedures.
Among the 24 patients who were treated conservatively, 2 (8.3%) received only oestrogen-cream treatment and the remaining 22 patients (91.7%) were treated with ring pessary (please see Figure 2 below). There were five in this group for whom surgical management became necessary after failure of conservative management. (See table 3)

Figure 2: Conservative management of genital prolapse at DGMH
### TABLE 3: OUTCOME OF GENITAL PROLAPSE MANAGED CONSERVATIVELY

<table>
<thead>
<tr>
<th>Method used</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring-pessary</td>
<td>22</td>
<td>91.7%</td>
</tr>
<tr>
<td>Oestrogen-cream</td>
<td>2</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome of management</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful</td>
<td>19</td>
<td>79.9%</td>
</tr>
<tr>
<td>Failed</td>
<td>5</td>
<td>20.1%</td>
</tr>
</tbody>
</table>

Table 4 shows the type of procedures which were carried out in treating the genital prolapse. Majority of the patients (22; 50%) were managed by vaginal hysterectomy and anterior repair, vaginal hysterectomy alone was done for nine patients (20.5%) and a further 6 patients (13.6%) were managed by vaginal hysterectomy with anterior and posterior repair. Four patients (9.1%) out of 44 who had surgical management underwent vaginal hysterectomy together with anterior repair and colposuspension. Two other patients (4.6%) underwent total abdominal hysterectomy and one patient (2.3%) had abdominal sacro-colpopexy.
TABLE 4: SURGICAL PROCEDURES PERFORMED FOR MANAGEMENT OF GENITAL PROLAPSE AT DGMH [N = 44]

<table>
<thead>
<tr>
<th>SURGICAL PROCEDURES</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N24</td>
<td></td>
</tr>
<tr>
<td>• Vaginal Hysterectomy + Anterior repair</td>
<td>22</td>
<td>50.0</td>
</tr>
<tr>
<td>• Vaginal Hysterectomy alone</td>
<td>9</td>
<td>20.5</td>
</tr>
<tr>
<td>• Vaginal Hysterectomy + Anterior and Posterior repair</td>
<td>6</td>
<td>13.6</td>
</tr>
<tr>
<td>• Vaginal Hysterectomy + Anterior repair and Colposuspension</td>
<td>4</td>
<td>9.1</td>
</tr>
<tr>
<td>• Abdominal Hysterectomy</td>
<td>2</td>
<td>4.6</td>
</tr>
<tr>
<td>• Abdominal sacro-colpopexy</td>
<td>1</td>
<td>2.3</td>
</tr>
</tbody>
</table>
Table 5 shows the outcome of the management of patients with genital prolapse. Thirty-nine (88.6%) of the 44 cases of genital prolapse which were managed surgically were successful in the short-term (2 weeks post-surgery) and five (11.4%) were reported as having failed. The reasons for failure of surgical management were: recurrence of vault prolapse (2 patients), cases of cystocele and incontinence (2) and one case of bladder injury. Hospital stay for those who underwent surgical management ranged from 2 – 5 days with a mean (± SD) of 3.1 days (± 0.8).
Table 5: OUTCOME OF MANAGEMENT OF GENITAL PROLAPSE AT DGMH

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=44</td>
<td></td>
</tr>
<tr>
<td>SURGICAL MANAGEMENT:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successful</td>
<td>39</td>
<td>88.6</td>
</tr>
<tr>
<td>Failed</td>
<td>5</td>
<td>11.4</td>
</tr>
<tr>
<td>REASONS FOR FAILED CASES [N = 5]:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vault prolapse</td>
<td>2</td>
<td>40.0</td>
</tr>
<tr>
<td>Cystocele + Incontinence</td>
<td>2</td>
<td>40.0</td>
</tr>
<tr>
<td>Bladder Injury</td>
<td>1</td>
<td>20.0</td>
</tr>
<tr>
<td>LENGTH OF HOSPITAL STAY IN DAYS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range (Days)</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Mean (± SD)</td>
<td>2 – 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.1 days (± 0.8)</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

During the period of five years from the 1st of July 2006 to the 30th of June 2011, a total of 84,974 patients were seen at the gynaecological unit of Dr. George Mukhari Hospital, which is a tertiary referral centre attached to the University of Limpopo (MEDUNSA Campus), out of which 74 patients (72 Blacks and 2 Coloureds) were diagnosed and managed for all types of genital prolapse. This gives a prevalence of occurrence as 87 cases of genital prolapse per 100,000 women (i.e. 0.09%) in our unit.

The women in this review were aged between 20 years and 90 years, with a mean age of 63.2 years. This is similar to most studies that advanced age is an established risk factor for the development of genital prolapse. One patient in our review was a 20 year old and nulliparous. In her file, there was no documentation on the possible risk factors or if she was investigated for collagen disease or not. Ingrid Nygaard et al. reporting for Women’s Health Initiative study (WHI) reported a mean age of 68.3 years and a prevalence of 65.5% for genital prolapse. Other studies found mean ages of 61.5 years and 63.25 years in patients with genital prolapse. \(20, 24, 53\)

In this review of the 74 patients, 72 (97.3%) were black. In most of the studies, the patients were elderly white women. In a previously cited South African study, it was found that genital prolapse occurs in 1 out of 80 women, but in other African studies; Ghana (12%)\(^9\), Rural Gambia (46%)\(^8\) and a multicentre study in Egypt and Jordan, found the prevalence rate to be 56.3% and 34.1% respectively\(^7\). This discrepancy
might be due to other risk factors for the development of prolapse even within the same race group.\textsuperscript{(2, 7, 8, 9)}

Women with parity 3 – 4 (28; 37.8\%) constituted the majority in our review. In most of the studies, a higher parity of 3 and above was found to be a significant risk factor in patients with genital prolapse.\textsuperscript{(6, 39)} Our finding was similar to those studies. What was found to be also significant in our review, was that grand multiparity (16; 21.6\%) and great grand multiparity (16; 21.6\%) combined was found to be in majority: This compares with the multicentre study in Egypt and Jordan where it was found that the majority of patients with genital prolapse were para 5 and above.\textsuperscript{(17)}

Two patients in this review who were both para 3 had 2 abortions and 6 abortions respectively. No identifiable risk factor apart from parity could be found in their files linking their prolapse and abortions.

In our unit, almost all the women (73; 98.6\%) had delivered vaginally in their previous pregnancies. It is well established in the literature about the effect of vaginal delivery on the pelvic floor as it leads to the stretching of the pelvic floor and partial denervation, thus predisposing the patient to the development of genital prolapse.\textsuperscript{(17, 33)} Dietz et al. found that vaginal delivery was associated with the injury of the levator muscle and leading to the development of genital prolapse, especially posterior compartment defects.\textsuperscript{(29, 30)}
One patient in the review was a 48 year old non-menopausal, para 3 who had 3 Caesarean Section deliveries. It was not documented whether the Caesarean Sections were done when she was in labour or not. It is hypothesised that an elective Caesarean Section may be protective against the development of genital prolapsed\(^\text{(26)}\). Sze et al. in their study comparing vaginal delivery and Caesarean Section delivery in the development of prolapse found that Caesarean Section deliveries were partially protective against prolapse development. \(^\text{(26)}\)

There is still no consensus regarding offering women elective Caesarean Sections for the prevention of genital prolapse. De Lancey et al. hypothesised that damage to the pelvic floor and its collagen contents occurs mostly earlier during pregnancy due to the hormonal effects on the solid matrix. \(^\text{(17)}\)

65 patients (87.8%) were post-menopausal compared to 9 (12.2%) who were pre-menopausal. Menopause is a “hypoestrogenic state”. Estrogen receptors have been demonstrated in the pelvic floor. It is hypothesised that estrogen deficiency is a risk factor for the development of urogenital prolapse and atrophy. Estrogen deficiency may lead to the weakening of the connective tissue surrounding the uterus and vagina, and an increased risk of prolapse. Our finding in this study is similar to other studies linking menopause to the development of prolapse. \(^\text{(54)}\)

Most of the patients (39; 52.7%) in our review had no co-morbid conditions for the development of genital prolapse. Chronic obstructive airway diseases such as asthma
(5; 6.8%) and bronchitis (8; 10.8%) were the commonest co-morbid conditions. Constipation accounted for 16.2% of the cases (12). The mean body mass index was 35.9 kg/m$^2$ but the information was available in only 10 records of the patients. In the WHI study, obesity was found to be a co-factor in patients with genital prolapse. (53)

COAD and obesity lead to increased intra-abdominal pressure and risks to the development of prolapse.

In our setting, most patients presented with more than one type of prolapse. Sixty nine patients (93.2%) had uterine prolapse, cystocoele (33; 44.6%); rectocoele (7; 9.5%) and vault prolapse (2; 2.7%). The staging and grading was different amongst patients as they were examined by different doctors with majority using the Baden Walker Halfway system as opposed to the Pelvic Organ Prolapse Quantification System (P-O-P-Q). One patient had a genital prolapse complicated by a cervical prolapse. This is a rare combination, but has been reported also in the literature where it is associated with other lesions of the cervix. (55)

Two patients had vault prolapse following hysterectomy. There is a risk of recurrence of genital prolapse following hysterectomy for prolapse repair. One patient was a 64 year old who had total abdominal hysterectomy and presented 24 years later with vault prolapse but was lost to follow up. The second patient was a 68 year old who developed vault prolapse following hysterectomy and operated for vault prolapse at another tertiary hospital. She had abdominal sacro-colpopexy in our unit. In the Swedish study, it was
found that there is an increased risk of recurrence of prolapse and re-operation in patients who had surgery for repair of genital prolapse over time \(^{(6)}\).

Commonest complaint at presentation in our patients was a vaginal mass (72; 97.3\%) followed by urinary complaints of the 33; 44.6\%. Twenty five patients had non-specific urinary complaints, 3 with urinary retention, 2 with dysuria and 3 with incontinence. This presentation might be due to the fact that history was not asked from patients as the primary complaint was vaginal mass. It was not specified which type of bowel complaints were in the 4 patients.

Investigations performed in our unit on these patients included Pap smear, ultrasound and urinalysis: The majority of the patients (83.8\%) had a pap smear done as an opportunistic test for screening of cervical dysplasia. In the remaining patients (6; 8.19\%), it was not done as they were lost to follow up. Genital prolapse is a clinical diagnosis but the International Continence Society recommends urodynamic studies in patients with urinary symptoms and P-O-P-Q II or above. These studies were not done in these reviews due to the unavailability of the service in our institutions.

One patient who had a pap smear revealed High Grade Squamous Intraepithelial Lesion (HSIL)/CIN II. She was a 68 year old who presented with uterine prolapse and postmenopausal bleeding. A biopsy of the lesion revealed a squamous cell carcinoma of the cervix and was later referred to the gynae-oncology unit for further management.
In the gynae-oncology unit, she was found to have endophytic cancer of the cervix II b and a vaginal hysterectomy was done and later underwent chemoradiation. This is quite a rare combination, but cases have been reported with a similar clinical presentation. \(^{(56)}\)

24 of the patients were managed conservatively with pessaries. 22 (91.7%) with ring pessaries and 2 (8.3%) with estrogen cream. 19 (86.4%) were successful; this is higher than the outcome of Clemons et al. where their success was 73%. \(^{(51)}\)

Patients where conservative management failed were all on estrogen creams. Clinical effectiveness of vaginal estrogen is unproven.

Forty four patients in this review had surgical management with 22 (50.0%) undergoing vaginal hysterectomy and anterior repair as most of the patients presented with uterine prolapse and cystocele. Other patients had vaginal hysterectomy, vaginal hysterectomy with anterior and posterior repair. 4 patients had vaginal hysterectomy, anterior repair and colposuspension. Two patients had abdominal hysterectomy. One patient had abdominal sacro-colpopexy for recurrent vault prolapse following the hysterectomy. Comparing the above operations done in our institution and the operations where mesh was inserted, there has been no difference in reducing the symptoms as reported in the literature \(^{(15)}\). On short term (2 weeks post-surgery) with 39 (88.6%) patients, their surgeries were successful, and 5 (11.4%) patients’ surgeries
were unsuccessful. In the literature recurrence rate and re-operation rate is reported to be about 30% in a 2 year follow up. The two week follow up period in this review is too short to conclude the success of surgical management on long term. A longer follow up period might have given a different outcome.

**CONCLUSION**

This review concurs with previous studies that the prevalence of genital prolapse amongst Black women is low, though menopause and advanced age, high parity are still the risk factors for development of genital prolapse. Grand multiparity and great grand multiparity are the other risk factors for the development of prolapse in the Black women in this review. In patients who were unsuitable or declined surgery, use of pessaries was successful in most of them, and estrogen cream use was unsuccessful in management of genital prolapse. Surgical treatment on short term was successful, but the two week review was too short to make a conclusion on success of surgical intervention.
LIMITATIONS OF THE STUDY

There were instances where the information was inadequate or absent which could have affected the overall conclusion of this review as it occurs in most retrospective studies:

- There was no information regarding the duration of labor, fetal weight, whether instrumental delivery occurred or not, and this could have identified other risk factors in these patients.

- For patients who had Caesarean section delivery there was no information on whether these were emergency Caesarean sections when patients were already in labor or elective Caesarean section deliveries.

- Patients who were referred or operated at other hospitals no documentation was available on type of surgery performed or whether surgery was performed for recurrence of the prolapse or not.

ACKNOWLEDGEMENTS

I am grateful to the invaluable assistance which I received from my Supervisors: Dr T.J. Mashamba and Professor O.A. Towobola and to Dr A.M.N. Muse, which enabled me to accomplish this review. I am also indebted to the consultants, colleagues and administrative staff of the Department of Obstetrics and Gynaecology, University of Limpopo (Medunsa Campus) who contributed immensely to the successful completion of my postgraduate training and studies.
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