Original Article

Determinants and Management Outcomes of Pelvic Organ Prolapse in a Low Resource Setting

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Abstract

Background: The last decade has seen significant progress in understanding of the pathophysiology, anatomy and management modalities of pelvic organ prolapse. A review of the way we manage this entity in a low resource setting has become necessary. **Aim:** The aim of the study is to determine the incidence, risk factors and management modalities of pelvic organ prolapse. **Subjects and Methods:** A 5-year cross-sectional study with retrospective data collection of women who attended the gynecologic clinic in Nnamdi Azikiwe University Teaching Hospital, Nnewi, south-east Nigeria and were diagnosed of pelvic organ prolapse was made. Proforma was initially used for data collection before transfer to Epi-info 2008 (v 3.5.1; Epi Info, Centers for Disease Control and Prevention, Atlanta, GA) software. **Results:** There were 199 cases of pelvic organ prolapse, out of a total gynecologic clinic attendance of 3082, thus giving an incidence of 6.5%. The mean age was 55.5 (15.9) years with a significant association between prolapse and advanced age ($P < 0.001$). The age range was 22-80 years. The leading determinants were menopause, advanced age, multiparity, chronic increase in intra-abdominal pressure (IAP) and prolonged labor. Out of the 147 patients with uterine prolapse, majority, 60.5% (89/147) had third degree prolapse. Vaginal hysterectomy with pelvic floor repair was the most common surgery performed. The average duration of hospital stay following surgery was 6.8 (2.9) days and the most common complication was urinary tract infection, 13.5% (27/199). The recurrence rate was 13.5% (27/199). Most of the patients who presented initially with pelvic organ prolapse were lost to follow-up. **Conclusion:** The incidence of pelvic organ prolapse in this study was 6.5% and the leading determinants of pelvic organ prolapse were – multiparity, menopause, chronic increase in IAP and advanced age. Most were lost to follow-up and a lesser proportion was offered conservative management. Early presentation of women is necessary so that conservative management could be offered if feasible.

Keywords: Determinants, Management outcome, Pelvic organ prolapse

Introduction

Pelvic organ prolapse occurs when abnormal descent or herniation of the pelvic organs occurs from their normal anatomic positions or their normal position in the pelvis.[1] Pelvic prolapse occurs, in part, due to site-specific fascial defects that result in vaginal segment weakness.[1,2] Understanding this process has led to changes in the surgical approach to this challenging clinical problem.

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It is a common observation that women generally want to maintain their physique and capacity for sexual function well beyond menopause. Few maladies are more disruptive to these goals than pelvic organ prolapse which accounts for 32.3% of pelvic reconstructive surgery.[1]

The exact prevalence of pelvic organ prolapse is difficult to determine, however, the life time risk of requiring at least one operation to correct incontinence or prolapse has been estimated at approximately 11%.[2] In a women's health initiative report, 34% of women had anterior vaginal wall prolapse, 19% had posterior vaginal wall prolapse and 14% had uterine prolapse on physical examination.[2]

However, in a population-based survey, it was found that 4-10% of women report symptoms of pelvic organ prolapse.[3-5] Although not well-studied, African-American women report

symptoms of pelvic organ prolapse less often than their white counterparts.[3,5]

Pelvic floor defects may be as a result of childbirth due to the stretching and tearing of the endopelvic fascia, the levator muscles and the perineal body. Pregnancy by itself, with or without vaginal birth has been cited as a risk factor as well.[6,7] However, vaginal birth and operative vaginal deliveries increase the individual's risk for urinary incontinence and pelvic organ prolapse 5-10 years after the delivery when compared with elective cesarean delivery.[6] With increasing age, fascial tissues become more liable to rupture.[7] The majority of patients with clinically significant prolapse will have at least two or more risk factors for the disorder.[7] In general, the presence and severity of symptoms are not strongly correlated with the stage and site of prolapse and more than one site may be affected.[8]

The diagnosis of pelvic organ prolapse is based upon the characteristic findings on physical examination. The clinician should consider assessing the patient's needs before and after initial consultation, as these may shift the focus from symptomatic relief and obtaining information to treatment.[9]

Management is guided by the severity of symptoms and the degree of prolapse. Women with mild degree of organ prolapse are appropriately treated with pelvic floor exercises and/or physical therapy with behavioral modification.[10] Women with moderate prolapse and those who are not ideal surgical candidates may benefit from the use of pessaries. Surgery is the preferred treatment of choice for severe prolapse, although, it has traditionally been associated with a recurrence or re-operation rate of up to 30%.[11] Some centers have even reported reoperation rates of over 50%.[12,13] Adequate counseling prior to surgical treatment usually helps the patients to make informed decision.[14] This measure enable them have rest of mind on the outcome of the surgery and ultimately improve their quality of life.

In Nnewi, Nigeria, pelvic organ prolapse has remained largely uninvestigated. This study, therefore aims to determine the incidence, risk factors and management modalities of pelvic organ prolapse at the Nnamdi Azikiwe University Teaching Hospital, Nnewi, South-east Nigeria**.**

Subjects and Methods

The study was carried out in Nnamdi Azikiwe University Teaching Hospital, Nnewi which is located in South-East Nigeria which serves as a referral center for many gynecological cases. Majority of the cases of pelvic organ prolapse managed in the gynecological clinics were referred from the general out-patient department of the hospital and private hospitals in the environs. The teaching hospital also has various facilities for management of gynecological cases due to pelvic organ prolapse including a well-equipped gyne-endoscopic surgery unit.

A 5 year retrospective study of all patients who attended the gynecological clinic of the hospital and were diagnosed of pelvic organ prolapse between 1st January, 2006 and 31st December, 2010 was done. The case files of the women were retrieved from the medical records department of the hospital. Relevant information were carefully extracted from the case files, which included socio-demographic status, risk factors for pelvic organ prolapse, clinical and various treatment modalities offered, intra-operative findings and their respective outcomes including follow-up patterns.

Baden-Walker system and its modifications for grading of pelvic organ prolapse was not used,[7] however, the traditional method was used in the grading system.[7,15] In the traditional method, uterine prolapse/descent was graded on a scale of 0-3, the grade increasing with increasing severity of the prolapse as follows: 0 (no prolapse), 1 (cervix is below ischial spines), 2 (cervix is up to the introitus), 3/procidentia (cervix is outside the introitus).[15]

We included all women diagnosed of cystocoele, cystourethrocoele, uterine prolapse, vault prolapse, rectocoele and enterocoele. However, patients who had other symptoms other than those of utero-vaginal prolapse such as those with nerve injury or disease, connective tissue disorders, neuromuscular diseases and genital tract malignancy were excluded. The study received the hospital's ethical committee approval. Data analysis was performed using Epi info 2008 (v 3.5.1; Epi Info, Centers for Disease Control and Prevention, Atlanta, GA). The results were expressed as frequency, means and standard deviation where necessary.

Results

Within the study period, 3082 patients were seen at the gynecological clinic. Out of these, 199 cases of pelvic organ prolapse fulfilled the inclusion criteria and were identified from the 208 case files retrieved, thus giving an incidence of 6.5% (199/3082).

The socio-demographic status of the patients is shown in Table 1. The mean age of the patients in this series was 55.5 (15.9) years and median age was 55 years. Majority, 39.4% (79/199) of the patients were within the age brackets of 65-74 years. The age range was 22-80 years as shown in Table 1.

Majority, 52.8% (105/199) of the patients were grandmultiparous women. Nulliparous women accounted for 3.0% (6/199) of the total. Most of the patients were married 60.3% (120/199) while 23.6% (47/199) of the women were widows. There was no formal education in 29.2% (58/199) of patients, while 44.7% (89/199) women had primary education as seen in Table 1. The analysis of the risk factors for pelvic organ prolapse present in the patients is shown in Table 2. Most patients were post-menopausal women, 74.3% (148/199).

Table 1: Socio-demographic profiles

Parameter	Frequency (*N*)	Percentage
Age (years)		
15-24	5	2.5
25-34	21	10.6
35-44	25	12.6
45-54	27	13.5
55-64	42	21.1
65-74	63	31.7
75-84	16	8.0
P<0.001*; significant		
Parity		
0	6	3.0
1	1	0.5
2	20	10.0
3	25	12.6
4	42	21.1
≥5	105	52.8
P<0.001* (significant)		
Educational level		
None	58	29.2
Primary	89	44.7
Secondary	36	18.1
Tertiary	16	8.0
P=0.31 (not significant)		
Marital status		
Married	120	60.3
Separated	32	16.1
Widowed	47	23.6
P=0.25 (not significant)		

**P* value of <0.05

Table 2: The risk factors seen in patients with pelvic organ prolase

Risk factors	Frequency (*N*)	Percentage
Overweight	63	31.7
Postmenopausal	148	74.3
Instrumental delivery	7	3.5
Prolonged labor	52	26.1
Chronic IAP	89	44.7
Family history	10	5.0
Previous hysterectomy	16	8.0
Pelvic surgery	8	4.0
Abdominal mass	21	10.6
Distribution of risk factors		
None	17	8.5
One	15	7.6
Two	44	22.1
>two	123	61.8

IAP: Intra-abdominal pressure

Chronic increase in intra-abdominal pressure (IAP) (from constipation, chronic cough and strenuous physical activities including farming) was present in 44.7% (89/199) of the patients in this series. Up to 26.2% (51/199) patients had a previous history of prolonged labor while 31.7% (63/199) were overweight. The occurrences of other risk factors are also presented in Table 2. Majority, 61.8% (123/199) of the patients had more than two risk factors.

Protrusion of mass and/or heaviness in the vagina was the predominant presenting symptom, 87.4% (174/199) and a greater number having urinary symptoms 44.7% (89/199). This is shown in Table 3. Patients' presenting to the clinic within 12 months of onset of symptoms was seen in 56.8% (113/199) of patients. The predominant type of prolapse was uterine prolapse, 73.9% (147/199) while cystocele was present in about one half of the patients [Table 3]. Of the 147 patients with uterine prolapse, majority, 60.5% (89/147) were third degree uterine prolapse, followed by second degree 34.7% (51/147) and first degree 4.8% (7/147).

As shown in Table 4, out of the 199 cases of pelvic organ prolapse seen in this review, 33.7% (67/199) received treatment while the remaining 66.3% (132/199) were lost to follow-up. Non-surgical treatment was the only treatment modality offered in 15.1% (30/199) of patients while surgery was performed in 13.6% (27/199) of the patients. Only 5.0% (10/199) of the women had combination of surgical and conservative treatments. Vaginal hysterectomy with pelvic floor repair was the predominant surgical treatment and was followed by anterior colporrhaphy. Notable was a case of laparoscopic assisted vaginal hysterectomy (LAVH) which occurred in a 60-year-old post-menopausal woman, para 6 (+2) with moderate cystocele, narrowed vagina but with no descent of the cervix.

The average duration of hospital stay following surgery was 6.8 (2.9) days and the most common complication was urinary tract infection, 13.6% (27/199). The recurrence rate was seen in 13.6% (27/199) of cases. An additional 29.9% (20/67) of treated patients were lost to follow-up, thus bringing the total number of patients lost to follow-up to be 76.4% (152/199).

Discussion

The incidence of pelvic organ prolapse of 6.5% from our study was different from those of other earlier reports from other parts of the country.[16,17] A previous study of pelvic organ prolapse in this institution by Okonkwo *et al*.[1] gave an incidence of 2.1%. In the United States of America for example, 24% of women have some type of pelvic floor disorder.[18] The probable explanations for the difference in our incidence and other earlier reports may be due to cultural differences and attitude of people toward illness that influence health seeking behavior in different regions, reduction in ignorance through increased level of education (though marginal) among cohorts and increased sample size. The emerging treatment modalities, increasing skills and availability of various diagnostic equipments such as ultrasound and laparoscopy may also be responsible for the rising trend. The difference in incidence may also be more related to the type of population studied. In both Okonkwo *et al*.[1] and Onowhakpor *et al*.[17] studies,

Table 3: Clinical presentation of patients

Parameter	Frequency (*N*)	Percentage
Symptom/sign		
Vaginal heaviness/ protrusion or vaginal mass	174	87.4
Urinary symptoms	89	44.7
Vaginal discharge	32	16.1
Vaginal itching	16	8.0
Ulceration	25	12.6
Impaired sexual function		
Duration of symptoms before presentation (months)		
0-1	24	12.1
>1-6	37	18.6
>6-12	52	26.1
>12	86	43.2
Types		
Cystocele	99	49.7
Cystourethrocoele	21	10.6
Uterine prolapse	147	73.9
Vault prolapse	11	5.5
Rectocoele	47	23.6
Enterocoele	15	7.5

Table 4: The various treatment modalities seen in patients with pelvic organ prolapse

Parameter	Frequency (*N*)	Percentage
Non-surgical		
Weight reduction	5	2.5
Pessary	11	5.5
Physiotherapy (kegel's exercise)	26	13.0
Surgical		
Vaginal hysterectomy +		
Pelvic floor repair	26	13.0
Anterior colporrhaphy	16	8.0
Posterior colpoperineorrhaphy	12	6.0
Sacrocolpopexy	2	1.0
Sacrospinous colpopexy	1	0.5
LAVH	1	0.5
Summary		
No treatment	132	66.3
Treated	67	33.7
Non-surgical treatment only	30	15.1
Surgical treatment only	27	13.6
Combined	10	5.0
Treated patients lost to follow-up	20	10.1
Total patients lost to follow-up	152	76.4

LAVH: Laparoscopic assisted vaginal hysterectomy

the population studied were patients admitted for major gynecological surgeries whilst in the current study, patients seen in the gynecology clinics were also studied.

The mean age of our patients was 55.5 years which was 1 year above the mean age observed in a similar study.[1] Different studies in different parts of the country have different results.[16,17] The fascia of the pelvic floor has been shown to provide weaker support with advancing years.[7] Parity is a well-established risk factor and from the study, it can be seen that the incidence increases with parity and grand multiparous patients constituted more than 50% of the patients. This also compares favorably with studies in various parts of the country and beyond.[1,17,19-21] Pregnancy itself, without vaginal birth has been cited as a risk factor.[21] In addition, partial pudendal and perineal neuropathies are also associated with labor and can predispose to pelvic organ prolapse.[22] However, following childbirth some re-innervation will occur which will result in rehabilitation of the muscle at least to some degree.[7] Re-innervation results in more muscle fibers being innervated by each remaining nerve fiber. This results in the pelvic floor muscles being more vulnerable to age-related denervation since further nerve loss with age will result in a more marked loss of muscle fiber activity.[7] Thus, the damage to the pelvic floor muscle during childbirth often only becomes more evident when age-related changes are superimposed.[1,7] Indeed, most of the patients in this study were post-menopausal, further emphasizing the role of estrogen deficiency independent of parity and age as a risk factor, although there is no statistical analysis to back up this statement from this study.[7]

In this review, most of the patients had little or no form of formal education. Only about 26% of the patients attained up to secondary school education. Education seems to confer a protective effect on the development of pelvic organ prolapse. The most probable explanation for this relationship was that women that are educated are less likely to have large family size, as well as more likely to have antenatal care and supervised hospital delivery.[17] They are also better nourished and hence less likely to be subjected to physically exerting occupation.[16] Most of the patients had more than two risk factors which highlights the need for prediction and prevention of pelvic organ prolapse. Ultimately, this could also be related to the access to health care and the awareness of the problem in patients with higher educational level.

The most common symptom of prolapse in this review was a sensation of pelvic pressure/heaviness or protrusion of tissue from the vagina. Urinary tract symptoms (ranging from frequency, dysuria, urgency and incontinence) were also common. However, reports regarding correlation of prolapse severity with urinary symptoms are inconsistent.[23-25] A good number of patients in this study did not seek medical help until 12 months of onset of symptoms. This was understandable in Nigeria where a lot of people patronize herbal and unorthodox care and only seek medical help as a last resort. Since more than 20% of the women were widows with possible no current sexual activity, they may not have identified the problem of the prolapse.

Moreover, it is notable that prolapse was graded using a variety of imprecise classification systems that were not easily reproduced or communicated in a standard way. However, the study showed that uterine prolapse was the most common

form of pelvic organ prolapse and more than 50% of them had associated anterior vaginal wall defect (cystocele, urethrocoele). The degrees/grades of prolapse were omitted from the results because of the above reasons. Since its introduction in 1996 and adoption by the Society of Gynecologic Surgeons, American Urogynecologic Society and International Continence Society, the pelvic organ prolapse quantification (POPQ) system has become the most common standardized prolapse grading system used in medical literature.[7] This study has underscored the need for the POPQ system to be used for uniformity in future studies. Interestingly, a simplified POPQ has been validated.[26,27] This simplified POPQ exam is based on the POPQ with similar ordinal staging but with only four points measured instead of nine[25] as published by Manonai *et al*. in 2011.[26] Even though, the simplified version of the POPQ is simpler, there is good inter-examiner agreement of a simplified POPQ classification system and it appears to have good inter-system association with the POPQ.[26] Although it is presently under investigation, simplified version of POPQ hopefully may be very useful in developing country settings.

Various treatment options are available for management of pelvic organ prolapse and both surgical and non-surgical options were offered. The amount of patients lost to follow-up without treatment was 76.4% (152/199). The reasons are not far-fetched considering the biosocial characteristics of majority of them (low socio-economic status, educational level) and culture which affect patient perception of the disease. Although, there is currently no known traditional treatment for pelvic organ prolapse, seeking alternative treatment may be an important reason for this ugly trend. In addition, nonsurgical treatment was less commonly done as compared to other parts of the world. Thus, this could be another reason for the high default rate. The severity of the prolapse could also be another factor related to the high default rate reported, although majority (95.2%) of patients with uterine prolapse in this study have high degree of descent of at least second degree. This finding is really intriguing.

Nevertheless, the most common surgery done in the facility was vaginal hysterectomy and pelvic floor repair as evidenced by the study. This was understandable and comparable with previous study in Nigeria[1,17] and Ethiopia.[19] Thus, the current conventional approach to uterine prolapse when a woman no longer wishes to have children is a vaginal hysterectomy with any additional repair to the vaginal walls as appropriate. The vaginal vault is then supported by re-attaching the uterosacral/cardinal ligaments to the vagina. These ligaments can also be plicated together in the midline to prevent the development of enterocoele.[7,9]

In this review, the proportion of those that were treated non-surgically was much less than that in the developed world where up to 75% of urogynecologists used pessaries as first-line therapy for prolapse.[28] Conservative management confers several advantages such as safety, low cost and less morbidity and mortality. Conservative management is also minimally invasive and can not only lead to a high patient satisfaction, but may be used for those awaiting surgery or patients who decline surgical management.[28] Another noteworthy aspect of this study is one case of LAVH observed in this study.[29] This case of LAVH is the first major gynecological laparoscopy surgery in our hospital and we consider it an important urogynecological breakthrough.

Interestingly, three patients presented with vaginal vault prolapse and were offered surgical treatment. Vaginal vault prolapse may be treated surgically by a vaginal sacrospinous colpopexy or an abdominal (or laparoscopic) sacrocolpopexy. The two procedures were offered to our patients. A Cochrane review has reported that the sacrocolpopexy has a higher cure rate and recurrence, when it occurs, is sooner with a sacrospinous colpopexy.[7] The two procedures do not appear to produce any difference in urinary and bowel symptoms post-operatively.[7] Sacrocolpopexy is associated with a longer post-operative recovery period (when performed as an open procedure) and is therefore more expensive. Adverse events appear to occur with similar frequency and patient satisfaction rates have been shown to be similar.[7]

Limitations of the present analysis also need to be addressed. The main weakness is that the study could not address the reasons why majority of the patients were lost to follow-up. The high default rate, however, is an issue that worth further exploration and would constitute an area for further research. Cultural and religious beliefs may appear to positively relate to higher parities seen in the patients studied although there is no statistical analysis to justify this extrapolation. Furthermore, psychosocial factors such as ignorance and socioeconomic factors such as income and social class could have explained more variance in the pelvic organ prolapse which we did not evaluate in the present study. Another limitation is the retrospective study design where some data could have been lost.

Conclusion

The incidence of pelvic organ prolapse in this study was 6.5%. The leading determinants of pelvic organ prolapse were multiparity, menopause, chronic increase in IAP and ageing. Most of the patients were lost to follow-up and the proportion of women offered conservative management was low. It is recommended that public health education on reduced family size and contraception and the need for hormone replacement therapy for post-menopausal women with high parity be encouraged. The POPQ system should be adopted and used for staging. Patients should be encouraged to present early so that conservative management could be offered whenever feasible.

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