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# Prevalence and Outcome of Total Abdominal Hysterectomy Performed for Cervical Intraepithelial Neoplasia in Benin City

**Kehinde Osazee [a], Emmanuel Chukwunyere Anyanwu [a] and Peter Waibode Alabrah [b*]**

*[a] Department of Obstetrics and Gynaecology, School of Medicine, College of Medical Sciences University of Benin, Benin City, Nigeria.*
*[b] Department of Obstetrics and Gynaecology, Federal Medical Centre, Yenagoa, Nigeria.*

***Authors' contributions***

*This work was carried out in collaboration among all authors. Author KO designed the study, wrote the first draft, managed literature searches, participated in data collection and supervised the research. Author ECA participated in data collection, managed the analyses of the study and wrote the results Author PWA managed the literature searches and wrote the discussion. All authors read and approved the final manuscript.*

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## ABSTRACT

**Background:** Cervical cancer is the commonest malignancy of the female genital tract in developing countries. A preventable disease with a precursor; cervical intraepithelial neoplasia (CIN), is detected by screening methods and it is treated by the use of ablative or excisional methods. Nonetheless, the incidence and death from cervical cancer have continued to rise in developing countries due to a lack of screening programs/follow up.
**Aims:** The study looked at the recourse to total abdominal hysterectomy (TAH) with CIN as the primary indication at the University of Benin Teaching Hospital as well as the outcome of surgery and observed complications.
**Methodology:** This was a 4-year retrospective cross-sectional, analytical study that was conducted on 145 women who underwent TAH for benign gynaecological conditions. Relevant data were extracted from case notes and hospital records. Analysis was performed using SPSS version 22.
**Results:** A total of 145 cases were analysed and the prevalence of TAH for CIN (n = 25) was

**Corresponding author: E-mail: sirde7@yahoo.com, alabrahpee@gmail.com;*

17.2%. Uterine fibroids contributed the highest prevalence for TAH at 51% followed by endometrial hyperplasia at 22.8%. The mean age distribution was 47.2 years and 96.6% were parous. The commonest adverse surgical outcome was haemorrhage, followed by a prolonged hospital stay.
**Conclusion:** Hysterectomy remains the most effective treatment for CIN. With the advent of effective ablative and excision procedures, it is considered overkill in developed countries. However, the lack of skills and equipment for these procedures and loss of follow-up in developing countries make hysterectomy a viable treatment modality for CIN.

*Keywords: CIN; TAH; benign gynaecological conditions; ablative and excision procedures.*

## 1. INTRODUCTION

Cancer of the cervix is the second most common cause of cancer-related death in women worldwide [1] and the principal cause of cancer death in sub-Saharan Africa [2] where it places a significant social and economic burden on the health facilities [3]. An estimated 85% of global death from cervical cervix occurs in low- to middle-income countries compared to developed countries [2].

The reasons ascribed for this disparity are the virtual absence of effective preventive measures through early detection and prompt treatment programmes, and the lack of equal access to such programmes [2]. Without these interventions, patients with cervical cancer usually present at an advanced stage when it is too late for effective treatment, resulting in high mortality [2,4]. Even the few that may present in the premalignant stage, are often lost to follow-up [3,4]. Other reasons that have been adduced include the ageing and growth of the population, inadequate health facilities and access to them, poor nutrition, late presentation, and insufficient facilities for treatment [2-5].

The incidence and deaths from this malignancy in developing countries are constantly increasing [2]. An estimated 604,127 new cases were diagnosed worldwide in 2020 with associated 341,831 related deaths in the same year [6]. Although, this is a preventable and curable disease if detected early [3]. The malignant phase often evolves from a long precancerous state that can be detected by screening and treated appropriately [3,4]. Follow up assessment is easy because the cervix is easily accessible [7].

Evidence has shown that HPV infection and health-related lifestyles influence the progression of CIN [8,9]. Analyses of cervical neoplasia lesions showed the presence of HPV in more than 80% of all CIN lesions and 99.7% of all invasive cervical cancers [10].

Risk factors for CIN include early coitarche, multiple sexual partners, history of sexually transmitted infections, cigarette smoking, immunosuppressive conditions, multiparity and long-term use of oral contraceptive pills [10-13]. Bacterial vaginosis and trichomonas vaginalis infections are significantly associated with persistent HPV infection and the development of CIN [14].

The diligent implementation of wide-scale secondary prevention interventions, which comprises effective screening, timely diagnosis and prompt treatment for pre-cancer and early cancer, has engendered a reduction in the incidence of cervical cancer and its associated mortality in developed countries of the world [2,12]. The reverse is the case in developing countries and this is due to financial constraints, lack of political will and an unwillingness to surmount barriers in the implementation of policies aimed at cervical cancer reduction [7,15]. Thus, cervical intraepithelial neoplasia progressing to cervical cancer has continued to rise in these sub-regions [15].

Other factors responsible for the high cervical cancer burden include lack of awareness, low socioeconomic status, poor health-seeking behaviour, inadequate and overburdened health facilities, insufficient supplies, cultural and religious beliefs and most importantly, loss to follow up in patients with premalignant lesions [7,16]. A major factor in the loss to follow-up of patients is that as reported by Nketim [17] who reported that more than half of the women who develop cervical cancer in Sub-Saharan Africa are rural dwellers. Due to financial constraints, dearth of and lack of access to a health facility, these women sadly, remain untreated [17].

The employment of Colposcopy in the 1970s revolutionized the management of cervical

intraepithelial neoplasia (CIN), with the introduction of conservative treatment modalities [7,15]. These include cryotherapy, electro-diathermy, carbon dioxide laser and cold coagulation. Excisional methods include cone biopsies (knife, loop and laser), large loop excision of the transformation zone (LLETZ), and needle/straight-wire excision of the transformation zone [8,18,19]. However, these treatment options are associated with the risk of recurrence of the disease [8,18,19]. Consequently, a robust and diligent follow-up strategy must be in place.

While much can be achieved in the developed countries, Hysterectomy has remained the mainstay treatment modality for CIN in developing countries due to inadequate screening programs as well as fear of loss of the patient to follow-up for the reasons stated above [17,20].

Organized population-based cervical cancer screening linked to prompt treatment of abnormal results has reduced morbidity and mortality from the disease in developed countries [16,17]. The ability to reliably follow up with patients after treatment has allowed less invasive treatment approaches such as ablative and excisional techniques on the cervix and thus avoiding TAH [17].

In developing countries like Nigeria, factors militating against organized screening programs and challenges with patient follow up have led to the use of TAH in the management of cervical intraepithelial neoplasia (CIN) [20,21].

The study aimed to evaluate the prevalence and other related factors of CIN as a primary indication for TAH performed at the University of Benin Teaching Hospital and compare it with TAH done for benign gynaecological conditions.

## 2. MATERIALS AND METHODS

A retrospective, case-controlled analytical study was carried out at the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria. Information was retrieved from case records of patients who had TAH for benign gynaecological conditions including CIN from January 2015 to December 2019.

### 2.1 Data Management

A database was generated containing information on socio-demographic characteristics and relevant clinical information of the study population. Subgroup analysis was performed comparing patients who had Hysterectomy for CIN and those who had Hysterectomy for other benign conditions. The outcomes of interest include the sociodemographic profile of the patients and the outcome of surgery. The social classification was done as outlined by Oyedeji [22].

The statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 22 and results were presented as whole numbers and percentages for categorical variables. While continuous variables are expressed as mean values with standard deviations. Categorical variables were compared using Chi-square or Fisher's exact test and continuous variables were compared with the t-test. Statistical significance p-value less than 0.05.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

A total of 145 patients underwent total abdominal hysterectomy for benign gynaecological conditions from January 2015 to December 2019. The majority of the patients (54.5%) were above 40 years with a mean age of 47.2±5.2 years. 96.6% of the women were parous and a total of 5 (3.4%) women were nulliparous comprising 4 celibates and 1 married woman. 37.9% of the women were in social class 2 while 7.6% were in social class 5. (Table 1).

The commonest indications for TAH were uterine fibroids (51%), endometrial hyperplasia (22.8%) and cervical intraepithelial lesion contributed 17.2%. Of the 25 women that had a total abdominal hysterectomy for cervical intraepithelial neoplasia, all were parous (100%) and 60% were above 50 years. (Table 2). 83.4% of all the women who had TAH reside in the urban area. (Table 3) and 52% of the patients that had TAH for CIN had blood loss of half a litre and more (Table 4).

**Table 1. Socio-demographic distribution**

| Variable | Frequency (145) | Percent (%) |
|---|---|---|
| **Age group** | | |
| 30-49 | 79 | 54.5 |
| 50-69 | 64 | 44.1 |
| >70 | 2 | 1.4 |
| Mean age (S.D) = 47.2±5.2 | | |
| **Parity** | | |
| 0 | 5 | 3.4 |
| 1-4 | 93 | 64.2 |
| >4 | 47 | 32.4 |
| **Marital Status** | | |
| Single | 4 | 2.8 |
| Married | 136 | 93.8 |
| Divorced | 5 | 3.4 |
| **Level of education** | | |
| No formal education | 2 | 1.4 |
| Primary | 18 | 12.4 |
| Secondary | 46 | 31.7 |
| Tertiary | 79 | 54.5 |
| **Occupation** | | |
| Skilled | 35 | 24.1 |
| Semi-skilled | 49 | 33.8 |
| Unskilled | 61 | 42.1 |
| **Social class** | | |
| 1 | 30 | 20.7 |
| 2 | 55 | 37.9 |
| 3 | 34 | 23.5 |
| 4 | 15 | 10.3 |
| 5 | 11 | 7.6 |
| **Residence** | | |
| Urban | 121 | 83.4 |
| Rural | 24 | 16.6 |

*Social class by Oyedeji** [22]

**Table 2. Indications for TAH**

| Variable | Frequency (145) | Per cent (%) |
|---|---|---|
| Uterine fibroid | 74 | 51.0 |
| Endometrial hyperplasia | 33 | 22.8 |
| CIN | 25 | 17.2 |
| Endometrial polyp | 6 | 4.1 |
| Adenomyosis | 3 | 2.1 |
| Cervical polyp | 2 | 1.4 |
| Molar gestation | 2 | 1.4 |

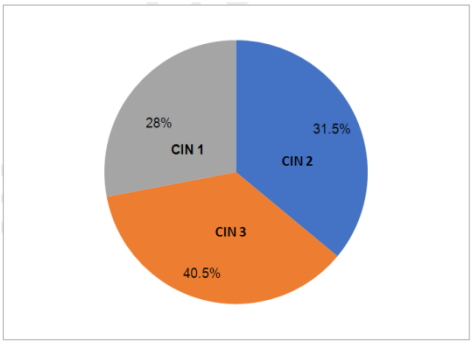


**Fig. 1. Pie chart showing the type of CIN among the study population**
*The majority of the patient (40.5%) had CIN 3*

**Table 3. Comparing socio-demographic characteristics**

| Variable | TAH for CIN 25 (%) | TAH for Benign lesions 120 (%) | Test of Statistics |
|---|---|---|---|
| **Age Group** | | | |
| 30-49 | 10 (40.0) | 69 (57.5) | F.E = 0.188 |
| 50-69 | 15 (60.0) | 49 (40.8) | |
| >70 | 0 (0.0) | 2 (1.7) | |
| **Parity** | | | |
| 0 | 0 (0.0) | 5 (4.1) | F.E = 0.172 |
| 1-4 | 13 (52.0) | 80 (66.7) | |
| >4 | 12 (48.0) | 35 (29.2) | |
| **Marital status** | | | |
| Single | 0 (0.0) | 4 (3.3) | F.E = 0.317 |
| Married | 23 (92.0) | 113 (94.2) | |
| Divorced | 2 (8.0) | 3 (2.5) | |
| **Level of education** | | | |
| No formal education | 0 (0.0) | 2 (1.7) | F.E = 0.173 |
| Primary | 5 (20.0) | 13 (10.8) | |
| Secondary | 4 (16.0) | 42 (35.0) | |
| Tertiary | 16 (64.0) | 63 (52.5) | |
| **Occupation** | | | |
| Skilled | 3 (12.0) | 58 (48.3) | *P* = .001 |
| Semi-skilled | 10 (40.0) | 39 (32.5) | |
| Unskilled | 12 (48.0) | 23 (19.2) | |
| **Residence** | | | |
| Urban | 20 (80.0) | 101 (84.2) | *P* = .610 |
| Rural | 5 (20.0) | 19 (15.8) | |

*F. E= fisher's exact, P = P-value*

**Table 4. Comparison of the complications associated with both study group**

| Complications | TAH | | Test of statistics |
|---|---|---|---|
| | CIN 25 (%) | Other benign lesions120 (%) | |
| Blood loss | | | |
| <500ml | 12 (48.0) | 64 (53.3) | *P* = .471 |
| 500 –1000ml | 11 (44.0) | 39 (32.5) | |
| >1000ml | 2 (8.0) | 17 (14.2) | |
| Injury to GUT/GIT | | | |
| Yes | 0 (0.0) | 3 (2.5) | F.E = 1.000 |
| No | 25 (100.0) | 117 (97.5) | |
| Wound breakdown/sepsis | | | |
| Yes | 1(4.0) | 3 (2.5) | F.E = 0.535 |
| No | 24 (96.0) | 117 (97.5) | |
| Anaesthetic complications | | | |
| Yes | 1 (4.0) | 0 (0.0) | F.E = 0.172 |
| No | 24 (100.0) | 120 (99.2) | |
| Hospital stay >7days | | | |
| Yes | 1 (4.0) | 12 (10.0) | p = .339 |
| No | 24 (96.0) | 108 (90.0) | |

## 3.2 Discussion

The prevalence of total abdominal hysterectomy for cervical intraepithelial neoplasia was 17.2%. This is comparable to the report by Oseki et al [23] but higher than that reported by other researchers [21,24,25]. Anzaku et al [20] reported a prevalence of 27%. The high prevalence in this study was due to a lack of equipment for conservative treatment methods for CIN. This is against the backdrop that the hospital is a major referral centre and a large proportion of the women are older and have completed their family size.

The majority of the patients were in their fifth decade of life with a mean age of 47.2 ± 5.2 years and 96.4% of the women were multiparous. These findings are corroborated by other similar studies [23,26,27]. Completed

family size is a key consideration during counselling. This is because in contemporary African society high premium is placed on childbearing [21,28]. Most of the women in this study were menopausal or perimenopausal, parous, and have completed their family size. Thus, counselling these patients for total abdominal hysterectomy for cervical premalignant lesions didn't pose many challenges for both the women and the gynaecologists. However, only 5 women (3.4%) were nulliparous. 4 were clergies and only one (1) was married.

When compared to other benign gynaecological conditions, hysterectomy for CIN ranked as the second most common indication after uterine fibroids. A similar find was reported by other studies [20, 21, 23, 28]. The option of hysterectomy in the treatment of CIN has been considered an overkill since the advent of ablative and local excision techniques [20,21,25]. Hence the adoption of the conservative approach in the developed countries such as ablative and excisional methods, especially for women of childbearing age who may desire pregnancy in the future [28,29]. In this case, a close follow-up plan is in place to prevent recurrence and the development of invasive cervical cancer. Such practice remains elusive in most parts of sub-Saharan Africa due to the scarcity of necessary skills and the absence of an organized screening programme [21,23,24]. In addition, the risk of losing patients on follow-up review/examination may increase morbidity and mortality associated with the malignancy form of the disease [20,28]. Therefore, the practice of total abdominal hysterectomy for cervical intraepithelial neoplasia remains the predominant treatment modality for consenting patients in low-resource settings [20,25].

The procedure is not completely innocuous as complications may arise from the procedure itself or the anaesthesia. Similar findings reported in to other studies [18,19,24], notable complications amongst women that had a hysterectomy for CIN were haemorrhage (8.0%) and sepsis/wound breakdown (4.0 %) leading to a prolonged hospital stay. While one patient (4.0 %) had prolonged recovery from anaesthetic complications.

In contrast, a higher number of women have complications related to hysterectomy for other benign gynecological conditions. In consonance with other studies [20,22,24,26], 17(14.2%) women suffered haemorrhages and 12(10.0%) had prolonged hospital stays. Wound breakdown was recorded in 3(2.5%) women and another 3(2.5%) women had injuries to the gut. These results tend to suggest that hysterectomy for CIN may not be associated with an increased risk of surgical complications. However, more than 50% of women who undergo TAH for CIN lose more than 500 ml of blood during surgery. This is contrary to the application of ablative and local excision methods which are associated with minimal blood loss, shorter operative time, and shorter hospital stay**.** [30].

## 4. CONCLUSION

Hysterectomy is the gold standard in the management of benign gynaecological conditions. Moreover, with the advent of effective and efficient ablative and local excisional procedures, it is now considered overkill for women with precancerous lesions of the cervix, especially in the developed countries of the world. However, in poor and/or low resource countries, with limited facilities and skills for local excision and ablative procedures, hysterectomy remains the primary treatment option for women with the disease, cervical intraepithelial neoplasia.

Therefore, given the risks and complications associated with TAH for cervical dysplasia, there is a need to provide the accessible infrastructure and skills required for minimally invasive procedures to treat Cervical dysplasia in developing countries.

## ETHICAL APPROVAL

The approval for the study was obtained from the Research and Ethics Committee of the University of Benin Teaching Hospital, Benin City.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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