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# Correlates of abnormal hysteroscopy findings among infertile women in Nigeria

**Joseph Odirichukwu Ugboaja[1*], Charlotte Oguejiofor Blanche[1], Emmanuel Okwudili Oranu[2], Emmanuel Ndudi Monago[3], Onyecherelam Monday Ogelle[4] and Anthony Osita Igwegbe[1]**

[1]Department of Obstetrics and Gynaecology, Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, Nigeria.
[2]Department of Obstetrics and Gynaecology, University of Port-Harcourt Teaching Hospital, Port-Harcourt, Nigeria.
[3]Kandudi Specialist Hospital, Achina, Anambra State, Nigeria.
[4]Blessed Specialist Hospital Onitsha, Anambra State, Nigeria.

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**This study aimed to evaluate the correlates of abnormal hysteroscopy among infertile women seen in 2 new Fertility/Gynaecological Endoscopy units in Nigeria. Data was collected on biosocial and clinical characteristics of the patients as well as the findings at hysteroscopy and was analyzed with STATA software, version 12.0 SE (Stata Corporation, TX, USA) for the correlates of abnormal hysteroscopy using the Pearson's chi square test. P- value of less than 0.05 at a confidence interval of 95% was taken as significant. One hundred and twelve (70.4%) out of 159 women had abnormal findings at hysteroscopy. The mean age of the women was 36.6 ± 6.2 years. The uterine lesions found on hysteroscopy were mainly intrauterine adhesions (47.8%), endometrial polyps (17.6%), submucous fibroids (11.9%) and mullerian duct abnormalities (10.7%). Abnormal hysteroscopy was significantly associated with secondary infertility ($X^2$=5.4; p=0.02), duration of infertility more than 2 years ($X^2$=16.5; p<0.001), menstrual abnormalities ($X^2$=4.6; p=0.03), secondary dysmenorrhea ($X^2$=4.9; p=0.03) and abnormal hysterosalpingogram findings ($X^2$=5.0; p=0.03). There was no significant relationship of abnormal hysteroscopy with pelvic ultrasound findings ($X^2$=1.82; p=0.18). Abnormal hysteroscopy was significantly associated with secondary infertility, menstrual abnormalities, secondary dysmenorrhea and abnormal HSG findings. Therefore, diagnostic hysteroscopy is strongly recommended in these classes of women.**

**Key words:** Clinical, correlates, abnormal hysteroscopy, infertile women, Nigeria, Nnewi.

## INTRODUCTION

Infertility remains the commonest indication for gynaecological outpatient consultation in Nigeria (Adeyemi et al., 2009; Obuna et al., 2012; Orhue and Aziken, 2008; Ikechebelu, 2005; Karshima et al., 2014). This is on the basis of the high premium placed on childbirth in the country.

*Corresponding author. E-mail: ugbajaj@yahoo.com. Tel: +2348036757293.

In the Southeast Nigeria, the prevalence rates of infertility among new gynaecological patients ranges from 15.4% reported in Abakiliki (Obuna et al., 2012) to 41.6% reported in Nnamdi Azikiwe University Teaching Hospital Nnewi Nigeria (Ikechebelu, 2005). The aetiological factors in infertility in Nigeria include tubal diseases, anovulation, uterine lesions and semen fluid abnormalities. (Adeyemi et al., 2009; Obuna et al., 2012; Orhue and Aziken, 2008; Ikechebelu, 2005; Karshima et al., 2014).

Hysteroscopy is considered the gold standard for investigating intrauterine lesions in infertility (Snowden et al., 1984; Hourvitz et al., 2002; Roma Dalfó et al., 2004). It is the visualization of the uterine cavity under magnification by the use of small metal sheaths known as hysteroscopes. This is facilitated with the assistance of a distension media to open up the uterine cavity which is a potential space to aid visualization of the entire cavity. The procedure is done in the immediate post menstrual phase for a better vision of the cavity. If this is not feasible, then endometrial thinning becomes necessary. During diagnostic hysteroscopy, there is systematic evaluation of the cervical canal, the internal cervical os of the uterine walls including the fundus and the tubal ostia and abnormal hysteroscopies refer to abnormalities in these areas. These abnormalities also include cervical lesions such as cervical polyps, internal os stenosis or occlusion and foreign bodies within the canal. Endometrial lesions include endometrial polyps, intrauterine adhesions, submucous fibroids, foreign bodies and mullerian duct anomalies such as uterine septum. Tubal ostia abnormalities include occlusion, fibrosis, adhesions or absence.

The prevalence of these abnormalities among infertile women varies from place to place in Nigeria. Available literature has shown prevalent rate of 61.1% in Lagos (Ajayi et al., 2015) and 77.0% in Port-Harcourt (Okohue et al., 2009) among women with IVF. However, intrauterine adhesions are reported as the commonest intrauterine lesion seen among infertile women followed by endometrial polyps.

The use of hysteroscopy is very limited in Nigeria while the prevalence of intrauterine adhesions among Nigerian women is high (Ajayi et al., 2015a,b; Okohue et al., 2009). There is therefore need to incorporate hysteroscopy into the routine evaluation of female infertility in the country but this will require personnel training and provision of facilities which may be a big financial burden for a developing country like Nigeria. Therefore, there is need for clinical evaluation to identify women who are at risk of intrauterine pathologies and by extension infertility in other to avoid wastage of the limited resources. This study therefore, is essential to identify those clinical features in infertile women that correlate significantly with the presence of intrauterine lesions so as to recommend such women for hysteroscopy. This study was aimed at evaluating the clinical correlates of abnormal hysteroscopy with a view to identifying those infertile women that will most likely benefit from diagnostic hysteroscopy. The aim of the study was to evaluate the correlates of abnormal hysteroscopy among infertile women seen in two new Fertility/ Gynaecological Endoscopy units in Nigeria over a period of 18 months. The objectives were: 1) to study the clinical characteristics of the women; 2) to study the prevalence and pattern of abnormal hysteroscopy findings among the women; 3) to investigate the clinical correlates of abnormal hysteroscopy among the women and 4) to make recommendations on the use of hysteroscopy in the evaluation of female infertility in Nigeria.

## Outcome measures

Primary outcome measures clinical correlates of abnormal hysteroscopy among the women while the secondary outcome measures the prevalence and pattern of abnormal hysteroscopy among the women.

## Study setting

Study setting includes the fertility and Gynaecological endoscopy units of Nnamdi Azikiwe University Teaching Hospital Nnewi Anambra State, Nigeria and Holy Rosary Specialist Hospital, Onitsha Anambra State, Nigeria.

## Study design

This is a prospective study of 159 infertile women who were presented to the Fertility and Gynaecological endoscopy units of Nnamdi Azikiwe University Teaching Hospital Nnewi Anambra State, Nigeria and Holy Rosary Specialist Hospital, Onitsha Anambra State, Nigeria for management between 1$^{st}$ November 2015 to April 30$^{th}$ 2017.

## Study population

Consecutive infertile women who presented at the Fertility and gynaecology endoscopy unit of Nnamdi Azikiwe University Teaching Hospital and Holy Rosary Specialist Hospital, Onitsha Anambra State, Nigeria for management within the study period who gave consent for the study were recruited. Those who withheld consent were excluded from the study.

### Methods

A proforma was developed and used to collect data on all the infertile women who were presented for management. The

**Table 1.** Distribution by Sociodemographic characteristics of the women.

| Sociodemographic profile | Frequency | Percentage |
|---|---|---|
| **Education** | | |
| Secondary | 37 | 23. 2 |
| Tertiary | 122 | 76.8 |
| **Age** | | |
| 20-29 | 34 | 21.5 |
| 30-39 | 75 | 47.4 |
| 40 and above | 49 | 31.0 |
| **Parity** | | |
| 0-1 | 140 | 88.1 |
| 2-4 | 18 | 11.3 |
| 5 and above | 1 | 0.6 |
| **Occupation** | | |
| Public servant | 68 | 42.8 |
| housewife | 27 | 17.0 |
| Trader | 24 | 15.1 |
| Healthcare worker | 23 | 14.5 |
| Student | 13 | 8.18 |
| Artisan | 4 | 2.5 |
| **Religion** | | |
| Catholic | 87 | 34.7 |
| Anglican | 42 | 26.4 |
| Pentecostal | 30 | 18.9 |

information obtained included the biosocial data, the presenting complaint, menstrual pattern and reproductive performance.

Following clinical evaluation including transvaginal scan and in some cases, hysterosalpingogram, the patients are scheduled for diagnostic hysteroscopy. This was done in the immediate post menstrual phase.

Misoprostol (50 µg) is normally inserted into the posterior fornix a night before the procedure in the nulliparous women to aid cervical os dilatation. The procedure is done with the Stryker (USA) Camera, Monitor and Light Source while the Hysteroscopes used were techno (Germany). We usually start with administration of anaesthesia, patient positioning in lithotomy position, bladder drainage, and pelvic examination. This is followed by exposition of the cervix with Sims speculum, grasping the anterior lip with volsellum, estimation of the uterine depth and cervical os dilatation. Dilatation is usually up to 5.5 mm for the diagnostic procedure and may increase in cases where operative procedures are done. Our choice of distension media was normal saline delivered via a manual pressure bag pump with a gauge suspended on a drip stand. Distension pressure was maintained at 80 to 120 mmhg. Following the introduction of the diagnostic hysteroscope under fluid distension, a systematic survey of the cervical canal, cervical os and the uterine cavity including the fundus, the anterior and posterior walls and the lateral walls were done. The tubal ostia were then examined for normalcy, fibrosis or occlusion. The designed proforma was then completed with the findings from hysteroscopy and laparoscopy and dye test. If an operative procedure was carried out, the operative details including the duration of the procedure, the nature and volume of distension media and the challenges and complications encountered were also documented. Postoperatively, the patients were given antibiotics and discharged home the same day and followed up at the clinic in a week's time.

#### Data analysis

Data was analyzed with STATA software, version 12.0 SE (Stata Corporation, TX, USA). The mean, median and modes were calculated for the continuous variables while percentages were calculated for the composite variables. Two levels of analysis were conducted. The 1st analysis was done to explore the prevalence and pattern of the abnormal hysteroscopies among the women. In the second analysis, we utilized the Pearson's chi square test to explore the relationship between selected clinical features and presence of abnormal hysteroscopy. P- value of less than 0.05 as at a confidence interval of 95% was taken as significant.

#### Ethical clearance

Ethical clearance was gotten from the Institutions ethical board and the ethical principles of non-maleficence, beneficence, confidentiality and respect of persons were applied throughout the duration of the study. The patients were well counseled on the purpose of the study and they all gave consent. Those who withheld consent were excluded from the study.

## RESULTS

### Biosocial characteristics of the women

As shown in Table 1, most of the women were public servants (42.8%; n=68) and had acquired tertiary education (76.8%; n=122). The age range of the women was 21-46 years with a mean 36.6 ± 6.2 years and the modal parity group was 0-1(88.1%; n=.140). The mean parity was 0.5± 1.1. All the women were Christians and majority of them belong to the Catholic denomination (34.7%; n=87)

### Clinical characteristics of the women

The mean age of menarche was 13.9± 1.8 years and 49.1% of the women had normal menstrual pattern with a mean cycle length of 27.7 ±2.0 days. Secondary infertility constitute 56.6% of all cases. The mean duration of infertility was 4.3 ± 2.8 years. Seventy eight (49.1%) of the women had menstrual abnormalities while 39 (24.5%) had a history of secondary dysmenorrhea. Seventy eight (49.1%) of the women had done a pelvic surgery in the past (Table 2).

### Abnormal findings at hysteroscopy among the women

As shown in Table 3, 112 (70.4%) of the women had abnormal findings at hysteroscopy. The lesions detected were intrauterine adhesions (47.8%), endometrial polyps

**Table 2.** Distribution by Clinical characteristics of the women.

| Characteristic | Frequency | Percentage |
|---|---|---|
| **Type of Infertility** | | |
| Primary | 69 | 43.4 |
| Secondary | 90 | 56.6 |
| **Duration of Infertility** | | |
| Less than 5 years | 94 | 59.1 |
| 5 years and above | 65 | 40.9 |
| **Menstrual abnormality** | | |
| Yes | 78 | 49.1 |
| No | 81 | 50.9 |
| **Secondary dysmenorrhea** | | |
| No | 120 | 75.4 |
| Yes | 39 | 24.5 |
| **Previous pelvic surgeries** | | |
| Yes | 78 | 49.1 |
| No | 81 | 50.9 |
| **Previous treatment** | | |
| Clomiphene citrate | 56 | 35.2 |
| Myomectomy | 12 | 7.5 |
| Herbal medicine | 18 | 11.3 |
| Combination | 36 | 22.6 |
| Artificial insemination | 4 | 2.5 |
| IVF and Embryo transfer | 3 | 1.9 |

(17.6%), submucous fibroids (11.9%) and mullerian duct abnormalities (10.7%). Lost IUCD and embedded fetal bone were found in 6.3 and 2.5% of cases respectively. Intrauterine adhesions were mainly moderate (40.8%) and mild (34.2%) in severity while the submucous fibroids were mostly of type 0 (63.2%). The commonest Mullerian abnormality seen was arcuate uterus (41.2%).

### Clinical correlates of abnormal hysteroscopy

Table 4 shows the clinical correlates of abnormal hysteroscopy among the women. Abnormal hysteroscopy was significantly associated with secondary infertility ($X^2$=5.4; p=0.02), duration of infertility more than 2 years ($X^2$=16.5; p<0.001), menstrual abnormalities ($X^2$=4.6; p=0.03), secondary dysmenorrhea ($X^2$=4.9; p=0.03) and abnormal HSG findings ($X^2$=5.0; p=0.03).

## DISCUSSION

Hysteroscopy is the gold standard in the evaluation of the endometrium in the management of female infertility (Ajayi et al., 2015a,b; Okohue et al., 2009). In addition to its diagnostic values, hysteroscopy enables the surgical management of identified intrauterine lesions either at the same setting or in subsequent arrangements. The prevalence of endometrial lesions seen at hysteroscopy among the women (Ajayi et al., 2015a,b; Okohue et al., 2009; Ajayi; Jain, 2014). Our study found a prevalence rate of 70.4% of intrauterine lesions among the studied women which is high but comparable to the earlier reports of Ajayi et al. (2015) who found a rate of 61.1% among women in Lagos, Okohue et al. (2009) in Port Harcout who reported a prevalence rate of 77.0% and Ajayi et al. (2015) who a found 76.0% among women in Asaba, Nigeria.

The commonest lesion found was intrauterine adhesions followed by endometrial polyps, uterine fibroids and mullerian abnormalities. This is similar to previous reports in Nigeria (Ajayi et al., 2015a,b; Okohue et al., 2009) and elsewhere (Jain, 2014).

This study shows a positive correlation between secondary infertility, long duration of infertility, abnormal menstruation, secondary dysmenorrhea and dyspareunia with abnormal hysteroscopy. These findings are not surprising as the major intrauterine lesions identified in this work are all related to abnormal uterine bleeding and dysmenorrhea.

The association of secondary infertility with abnormal hysteroscopy may relate to the fact that intrauterine adhesions were the commonest abnormality found. These IUAs often result from improper termination of previous pregnancies by dilatation and curettage and sometimes by infectious complications. Other pregnancy related risk factors for IUAs include complicated caesarean section, myomectomy and excessive curettage for the management of postpartum haemorrhage.

Association of long duration of infertility with abnormal hysteroscopy may be due to the fact that hysteroscopy is not done routinely for the evaluation of infertility in Africa. The basic investigations are semen analysis, test for ovulation and tubal patency testing with hysterosalpingogram. Therefore, endometrial lesions causing infertility are rarely discovered except the big lesions that are detected on hysterosalpingogrm. As a result, these women keep visiting several hospitals without relief prolonging the duration of infertility.

The significant association with abnormal menstruation and secondary dysmenorrhea may relate to the common pathologies found on hysteroscopy. These include intrauterine adhesions, endometrial polyps, uterine fibroids and mullerian duct anomalies. Endometrial polyps and uterine fibroids are present with menstrual abnormality and secondary dysmenorrhea especially when they are protruding through the os.

The symptoms of IUA are dependent on the configuration and part of the cavity involved in adhesions. When the lesions are obliterative, they present hypomenorrhea which will progress to amenorrhea if not managed. There may be associated chronic pain. However, if the adhesions are obstructive, involving the

**Table 3.** Distribution by abnormal findings at hysteroscopy among the women.

| Abnormality | Frequency | | Percentage |
|---|---|---|---|
| Abnormal findings | 112 | | 70.4 |
| Intrauterine Adhesions | 76 | | 47.8 |
| | **Number** | **%** | |
| Mild | 26 | 34.2 | |
| Moderate | 31 | 40.8 | |
| Severe | 19 | 25.0 | |
| Endometrial polyps | 28 | | 17.6 |
| Solitary | 19 | 67.9 | |
| Multiple | 9 | 32.1 | |
| Submucous fibroids | 19 | | 11.9 |
| Type 0 | 12 | 63.2 | |
| Type 1 | 5 | 26.3 | |
| Type 2 | 2 | 10.5 | |
| Mullerian abnormalities | 17 | | 10.7 |
| Arcuate uterus | 9 | 52.9 | |
| Incomplete septum | 7 | 41.2 | |
| Uterus didelphys | 1 | 5.8 | |
| Lost IUCD | 10 | | 6.3 |
| Retained Fetal bone | 4 | | 2.5 |
| Uterine perforation with entrapment of omentum | 3 | | 1.9 |

**Table 4.** Distribution by clinical correlates of abnormal hysteroscopy among the women.

| Clinical characteristic | Abnormal hysteroscopy | | Total | $X^2$ | P- value |
|---|---|---|---|---|---|
| | No | Yes | | | |
| **Type of infertility** | | | | | |
| Primary | 27 | 42 | 69 | | |
| % | 39.1 | 60.9 | 100.0 | 5.4 | 0.02 |
| Secondary | 20 | 70 | 90 | | |
| % | 22.2 | 77.8 | 100.0 | | |
| **Duration of infertility** | | | | | |
| 2 years and below | 26 | 25 | 51 | | |
| | 51.0 | 49.0 | 100.0 | 16.5 | 0.00 |
| More than 2 years | 21 | 87 | 108 | | |
| % | 19.4 | 80.6 | 100.0 | | |
| **Menstrual abnormality** | No | Yes | Total | | |
| No | 31 | 53 | 84 | 4.6 | 0.03 |
| % | 36.9 | 63.1 | 100.0 | | |
| Yes | 16 | 59 | 75 | | |
| % | 21.3 | 78.7 | 100.00 | | |
| **Secondary dysmenorrhea** | | | | | |
| No | 41 | 79 | 120 | | |
| % | 34.2 | 65.8 | 100.0 | 4.9 | 0.03 |

**Table 4.** Contd.

| | | | | | |
|---|---|---|---|---|---|
| Yes | 6 | 33 | 39 | | |
| % | 15.4 | 84.6 | 100.0 | | |
| **HSG finding** | | | | | |
| Abnormal | 14 | 55 | 69 | 5.0 | 0.03 |
| % | 20.3 | 79.7 | 100.0 | | |
| Normal | 33 | 57 | 90 | | |
| % | 36.7 | 63.3 | 100.0 | | |
| **Pelvic scan** | | | | | |
| Abnormal | 18 | 56 | 74 | | |
| % | 24.3 | 75.7 | 100.0 | 1.82 | 0.18 |
| Normal | 29 | 56 | 85 | | |
| % | 34.1 | 65.9 | 100.0 | | |

lower uterine body and the cervix, the presentation is mainly hypomenorrhea or amenorrhea in association with secondary dysmenorrhea and cyclical abdominal pain. The mullerian duct anomalies may also be present with menstrual abnormalities and secondary dysmenorrhea if they are occlusive and involves the lower part of the uterus or the cervix.

## Conclusion

Secondary infertility, menstrual abnormality, secondary dysmenorrhea and abnormal HSG findings were significantly associated with abnormal hysteroscopy. Therefore, hysteroscopy is recommended in the initial evaluation of these classes of infertile women in the country.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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