

Original Article

An Audit of Gynaecological Procedures Performed at Aminu Kano Teaching Hospital, Kano

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ABSTRACT

Background: Audit of all gynecological procedures as one of the commonest operations performed in medical practice is not routinely done in developing countries, including Nigeria. **Aim:** The study was aimed at determining the rate of all gynecological procedures performed; the common gynecological procedures and their indications, and the cadre of surgeons that performed different gynecological procedures within the period under review. **Materials and Methods:** A 1-year retrospective chart analysis of all gynecological procedures performed at Aminu Kano Teaching Hospital (AKTH) between 01/10/2012 and 30/09/2013 was conducted. Patients with complete relevant information in the registers were included in the audit and those with incomplete data were excluded. Data was further cleaned and analyzed using Microsoft Excel for Mac 2011, for frequencies and percentages. Results were presented by simple statistical tables. **Results:** A total of 6,604 patients were gynecological attendees, out of which 646 patients had gynecological procedures performed, giving an institutional gynecological procedure rate of 9.8% (646/6,604), within the period under review. Emergency gynecological procedures accounted for 5.9% (38/646), while the elective cases accounted 4.0% (26/646). Majority of the gynecological procedures was among the 20–40 years age group. About 20 different types of gynecological procedures were done and manual vacuum aspiration (MVA), for incomplete miscarriage accounted for 58.8% (380/646), while excision of transverse vaginal septum was the least at 0.3% (2/646) of all the gynecological procedures. Interns, registrars, senior registrars, and consultants were involved in performing the different gynecological procedures. Between 69 and 100% (446/646-646/646) of some of the major gynecological procedures were carried out by consultants, 14–27% (90/646-174/646) by senior residents (SRs), while the junior residents and interns performed only MVAs among the gynecological procedures at 53.1% (343/646) and 7.3% (47/646), respectively. **Conclusion:** The common gynecological procedure performed in AKTH is MVA by all cadres of surgeons, and consultants performed the highest number of all the gynecological procedures except MVA. A more regular audit of services rendered by the department is advocated. This may help to identify the gaps in training and services.

KEY WORDS: Aminu Kano teaching hospital, audit, gynecological procedures, Kano

INTRODUCTION

Females make up over 55% of the world population,^[1] and are estimated to constitute over 60% of the population of Kano State.^[2] A large percentage of hospital attendees all over the world would thus, undoubtedly be females. Gynecological operations including hysterectomy, laparoscopies, and manual vacuum aspiration (MVA), are thus the commonest procedures in medical practice.^[3-5] Gynecological procedures are performed on the female

reproductive system in nongravid women, whereas in gravid women it is performed during periods of pregnancy before viability of the fetus, and it is demonstrated to be at 28 weeks in Nigeria.^[6] They are performed for emergency or elective purposes.^[6] Emergency procedures are indicated for ruptured ectopic pregnancy and Bartholin's abscesses amongst others, while elective ones can be performed for genital prolapse, obstetric fistulae, or even cancerous conditions.^[6]

The common gynecological procedures reported in Nigerian literatures include myomectomy (41.9%), salpingectomy (26.0%), MVA (21.5%), hysterectomy (10.6%), and laparoscopy (2.8%).^[7-11] They are performed for various

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indications, as reported from various studies. In Abuja^[12] and Kano,^[5] Nigeria, the major indication for laparoscopy was infertility in 88.9 and 90.5% of patients who underwent the procedure, respectively.

The commonest indication for hysterectomy was uterine fibroid with completion of family size in 53.94% in Sokoto, Nigeria^[7] and 90.37% in Jos study.^[11] It was 73.7% in Hong Kong;^[3] however, in Peshawar, Pakistan,^[3] dysfunctional uterine bleeding was noted to be the commonest indication.

Incomplete abortion was the commonest indication for MVA, as reported in Jos (85.3%)^[4] and Maiduguri (88.1%).^[13] For salpingectomy, the commonest indication was ruptured ectopic (80.3%) in Benin.^[9] For obstetric fistula, studies from northern^[14] and eastern^[15] parts of Nigeria showed that the commonest indication was vesicovaginal fistula (VVF) in over 90% of cases. Menorrhagia was the most common indication for myomectomies done at Kano (86.7%).^[8]

The outcome of gynecological procedures is usually good and the prognosis is fair. Sometimes, however, the outcome may be related to the proficiency of the surgeon carrying out the procedure. Certain levels of competence are often attributed to the various cadres of surgeons and this has been reported to have direct relationship with the types of gynecological procedures they perform. However, this varies from center-to-center. For example, salpingectomy was reported from Kano,^[5] to have been performed mostly by senior (67.3%) and junior residents (29.7%), while consultants performed only 3.0%. Efetie *et al*^[12] reported that 98% of laparoscopies were performed almost entirely by consultants.

An audit is important for planning purposes, to direct resource allocation, and can serve to improve clinical response and outcomes. It will serve to improve the quality of services delivered by all theater users. The quality of life of those undergoing such procedures is also improved in the long run. Such an audit of all the gynecological procedures performed in AKTH is lacking in its 20 years of existence. This audit is therefore necessary to review the services delivered at this center in the time period specified as baseline, to enhance the training received in this institution. It will also add to the literature on the subject, as well as achieve the purposes outlined above. The study was aimed at determining the rate of all gynecological procedures performed, the common gynecological procedures and their indications, and the cadre of surgeons that performed different gynecological procedures within the period under review.

MATERIALS AND METHODS

A retrospective chart analysis of all gynecological procedures performed at AKTH over a 12-month period between

October 1, 2012 and September 30, 2013 was carried out. Approval was obtained from research and ethics committee of the hospital. Kano State is situated in the northwestern zone of Nigeria, one of six geopolitical zones of the country. The state which was created in 1967 comprises an area of 20,760 km² and currently has 44 local government areas. The state is one of Nigeria's most dynamic states with its rich historical past and a glorious culture. Kano State is one of the most densely populated states in Nigeria with a total population of 9,383,682 million. Women constitute 4,539,554 of the population.^[16] The state shares borders with Jigawa State to the east, Katsina State to the north and west, and Kaduna and Bauchi States to the south. Kano is a cosmopolitan city with Hausa/Fulani, Igbo, and Yoruba as the major residents. There are also settlers from neighboring francophone countries of Chad, Cameroon, and Niger Republics. The people are highly endowed with skills in the field of agriculture, craftsmanship, nomadism, industry, administration, etc. As a commercial center, Kano has always been receiving immigrants from different parts of Nigeria and overseas. Immigration of traders, merchants, nomads, and clerics of diverse background has today made Kano a melting pot of various cultures. Like other cities in Nigeria, Kano has all the facilities like hospitals, colleges, university, airport, etc. The main food consumed by the people includes cereals, tubers, vegetables, fruits, fish, meat, and meat products among others. The sociocultural background of the people is similar, with Islam and Christianity as the major religions. English is the official language, while Hausa is the lingua franca in the State. Majority of the population (61%) are from low socioeconomic class.^[17] More than 60% of the population is in the rural areas of the state with little or no formal education.

Aminu Kano Teaching Hospital (AKTH) is a 500-bed modern federal health institution established in 1988. Located in Kano, the largest commercial center of northern Nigeria, this hospital serves both, as a tertiary and referral health center for Kano and its environs and even the neighboring sub-Saharan African countries. The Department of Obstetrics and Gynecology has 17 consultants and 35 residents. The department runs its clinical services in four teams (A, B, C, and D). Booking and antenatal clinics are carried out on daily basis between Mondays and Thursdays 8.00 am–2.00 pm. Gynecology clinics also operate on the same days 2.00pm–6.00pm. Postnatal clinic runs along with booking and antenatal clinics. Family planning clinics are run every working day 8.00 am–5.00 pm. Patronage of the hospital is very high because of affordability and availability of all medical subspecialties with personnel who are well vast in their various field of specialization. The hospital attended to about 20,000 patients,^[18] in the year under review. All available records in the Obstetrics and Gynecology (O and G) operation theater register and

gynecological ward records were retrieved and reviewed for age, indications for the procedure, type of procedure done, and the cadre of attending surgeon as at when the procedure was done and such information was recorded on a proforma. Case notes of the patients were however, not retrieved to check and analyze for the outcome of such procedures. Patients with complete relevant information in the registers were included in the audit and those with incomplete data were excluded. The total number of all gynecological attendees during the study period was also obtained from the central statistics unit. Data was further cleaned and analyzed using Microsoft Excel for Mac 2011 (USA) for frequencies and percentages. Results were presented by simple statistical tables.

RESULTS

A total of 6,604 patients were gynecological attendees, out of which 646 patients had gynecological procedures performed, giving an institutional gynecological procedure rate of 9.8% (646/6,604), within the period under review. Emergency gynecological procedures accounted for 5.9% (38/646), while the elective cases accounted 4.0% (26/646). About 20 different types of gynecological procedures were done, as presented in Table 1. MVA accounted for 58.8% (380/646), laparoscopy 7.4% (48/646), salpingectomy 6.0% (39/646), hysterectomy 5.3% (34/646), myomectomy 5.1% (33/646), obstetrics fistula 4.0% (26/646), and cervical cerclage insertion 3.6% (23/646); while excision of transverse vaginal septum was the least (0.3%, 2/646) of all the gynecological procedures.

Table 2 details the age-specific distribution of number of gynecological procedures performed. Majority of the gynecological procedures (520) was among the 21–40 year age group (80.5%, 520/646), whilst the least (three) was among the 61–70 year age group (0.5%, 3/646). The peak age-specific distribution of number of gynecological procedures of 52.6% (340/646) was among the 21–30 year age group, while the age groups 1–10 had no any gynecological procedure performed on them during the year under review.

Table 3 summarizes the distribution of commonest gynecological procedures by age group. Laparoscopy and dye test, MVA, and salpingectomy were the commonest gynecological procedures performed in the 21–30 year age group accounting for 64.6% (31/48), 59.7% (227/380), and 59.0% (23/39), respectively. Among those patients that had hysterectomy during the study period, up to 67.6% (23/34) had abdominal hysterectomy with 82.6% (19/23) occurring in the 31–50 year age group. While vaginal hysterectomy was done in 32.4% (11/34) with 81.8% (9/11) occurring in the 51–70 year age group. All the patients (5/11) in the

Table 1: Frequency distributions of all gynecological procedures at AKTH, Kano

Procedures surgery	Frequencies	Percentages
Laparoscopy with dye test	48	7.4
Myomectomy	33	5.1
Salpingectomy	39	6.0
Hysterectomy	34	5.3
Manual vacuum aspiration	380	58.8
Obstetric fistula	26	4.0
Suction evacuation in theatre	10	1.5
Marsupialization	3	0.5
Cystectomy	7	1.1
Colpoperineorrhaphy	8	1.2
Staging laparotomy and biopsy	5	0.8
EUA and biopsy	4	0.6
Polypectomy	4	0.6
Laparotomy for pelvic abscess	4	0.6
Minilaparotomy	4	0.6
Debulking surgery	3	0.5
Hysteroscopy	6	0.9
Vulvovaginoplasty	3	0.5
Excision of transverse vaginal septum	2	0.3
Cervical cerclage insertion	23	3.6

AKTH=Aminu Kano Teaching Hospital, EUA=Examination under anesthetic

Table 2: Age-specific distribution of number of gynecological procedures

Age group	Frequency (n=646)	Percentage
1-10	0	0
11-20	74	11.5
21-30	340	52.6
31-40	180	27.9
41-50	41	6.3
51-60	8	1.2
61-70	3	0.5

Table 3: Distributions of commonest gynecological procedures by age group

Age groups (years)	Procedures				
	Lap and dye	Myomectomy	Salpingectomy	Hysterectomy	MVAs
			Abdominal	Vaginal	
1-10	0	0	0	0	0
11-20	2	0	3	1	0
21-30	31	11	23	1	0
31-40	14	21	13	7	0
41-50	1	1	0	12	2
51-60	0	0	0	2	4
61-70	0	0	0	0	5

61–70 year age group had vaginal hysterectomy done. Myomectomy was the commonest procedure accounting for 97% (32/33) in 21–40 year age group with a peak age-specific occurrence of 63.6% (21/33) in 31–40 year age group.

The most common and least common indications of the commonest gynecological procedures are depicted in Table 4. VVF was the commonest indication for obstetric fistula repair accounting for 88.5% (572/646). The commonest indication for hysterectomy was recurrent uterine fibroid with completion of family size (44.1%, 285/646). Myomectomy was indicated for menorrhagia in 75.8% (490/646) of the patient, 79.5% (514/646) had salpingectomy for ruptured ectopic gestation, while 85.4% (552/646) had MVA for

Table 4: Most common and least common indications of the commonest gynecological procedures

Type of procedure	Commonest indication	Percentage	Least common indication	Percentage
Lap and dye	Secondary infertility	45.8	Missing IUCD	2.0
Myomectomy	Menorrhagia	75.8	Primary andsecondary infertility with fibroids	3.0
Salpingectomy	Ruptured ectopic pregnancy	79.5	Unrupturedectopic pregnancy	7.7
Hysterectomy	Recurrent uterine fibroid with completion of family size	44.1	Genital prolapse	3.0
MVAs	Incomplete abortion	85.5	Blighted ovum	0.5
Obstetrics fistula repair	VVF	88.5	Vesicouterine fistula repair	3.8

MVA=Manual vacuum aspiration, VVF=vesicovaginal fistula, IUCD=intrauterine contraceptive device

incomplete abortion. Up to 45.8% (296/646) of the study population had lap and dye for secondary infertility.

Junior residents performed 53.1% (343/646) of all gynecological procedures; consultants performed 25.7% (166/646), senior residents (SRs) 13.9% (90/646), while the interns were involved in 7.3% (47/646) of all the gynecological procedures carried out. This is shown in Table 5.

Table 6 shows distribution of most common gynecological procedures by cadre of surgeons.

Between 69 and 100% (446/646-646/646) of some of the major gynecological procedures were carried out by consultants, 14–27% (90/646-174/646) by SRs, while the junior residents and interns performed only MVAs among the gynecological procedures (53.1% (343/646) and 7.3% (47/646), respectively). Similarly, laparoscopy and dye tests were performed in 77.1% (37/48) and 22.9% (11/37) of the patients by consultants and SRs respectively. Up to 69.7% (23/33) and 27.3% (9/33) of the patients, as well as 85.3% (29/34) and 14.7% (5/34) of them had myomectomy and hysterectomy done by consultants and SRs respectively. Consultants performed 100% of the repairs of obstetric fistulae, cystectomy, laparotomy for pelvic abscess, mini-laparotomy, hysteroscopy, and vulvovaginoplasty. Residents also performed major percentages of some procedures, for example, salpingectomies (SRs = 61.5% (24/39)) and suction evacuation (junior residents = 85.3% (324/380)).

DISCUSSION

The present study reports a gynecological procedure rate of 9.8% within the period under review. Emergency gynecological procedures accounted for 5.8%, while the elective cases accounted 4.0%. This was; however, lower than a rate of 28.5% reported in a previous study^[19] in northern Nigeria. This difference may be accounted for by the difference in number of years in the audit.

Our audit indicated that MVAs were by far the commonest gynecological operations done at our center, accounting for 58.8%. This is similar to anecdotal information on the

Table 5: Distribution of number of gynecological procedures by cadre of surgeon

Cadre of surgeon	Frequency (n=646)	Percentage
Consultants	166	25.7
Senior residents	90	13.9
Junior residents	343	53.1
Interns	47	7.3

Table 6: Distribution of most common gynecological procedures by cadre of surgeon

Type of procedure	Cadre of surgeon			
	Consultants	Senior residents	Junior residents	Interns
Lap and dye	37	11	0	0
Myomectomy	23	9	1	0
Salpingectomy	1	24	14	0
Hysterectomy	29	5	0	0
Abdominal	19	4	0	0
Vaginal	10	1	0	0
MVAs	1	8	324	47
Obstetrics fistula repair	26	0	0	0

MVA=Manual vacuum aspiration

subject all over the country. However, Mutahir and Ujah reported a lower rate of 21.5% in Jos and mainly due to incomplete miscarriage.^[4] The higher value reported in our audit may be related to the high fecundity anecdotally observed in the core northern part of Nigeria, where women are known to aspire for as many children as they can accommodate, the practice of polygamy, and increased rate of divorce/remarriages among others. The procedure of MVA has been shown to be safe and effective in first trimester abortion.^[4,7] The other relatively common surgeries in our series included laparoscopy (7.4%), salpingectomy (6.0%), hysterectomy (5.3%), myomectomy (5.1%), obstetric fistula repair (4.0%), and cervical cerclage insertion (3.6%). Least common surgeries performed in our audit include excision of transverse vaginal septae (0.3%), vulvovaginoplasty (0.5%), debulking surgery for cancerous conditions (0.5%), and marsupialization (0.5%); all of which are done for very rare conditions. Most common indications for surgeries in our study were similar to that reported in literature.^[4,7,9,11,13,14] Laparoscopy rate of 7.4% was higher than 28.7 per 1,000 gynecological operations reported from Abuja,^[4] probably due to higher Kano population and importance attached to family size in Kano. They also reported logistic problems with equipment and strike actions during the study period. Most of the laparoscopies were diagnostic. Open salpingectomy

accounts for 6.0% of gynecological surgeries in our series, especially following ruptured tubal ectopic pregnancy. Although salpingectomy is the main stay of management because majority of the women are hemodynamically unstable at presentation, operative laparoscopy could have been a viable alternative.^[5] Hysterectomy in this audit accounted for 5.3%. This is lower when compared with hysterectomy for benign gynecological conditions accounting for 10.7% of all major gynecological operations in Gombe, northeastern part of Nigeria^[20] and other previous reports.^[7,8,11] Obstetrics fistula, cervical cerclage insertion, and excision of transverse vaginal septum were not very common procedures.

Gynecological surgeries are usually carried out on women of childbearing age as this is related to most of its indications. Majority of the gynecological procedures was among the 21–40 year age group (80.5%). This may be related to the increased frequency of miscarriages resulting in MVA (324); whilst the least was among the 61–70 year age group (0.5%). The peak age-specific distribution of number of gynecological procedures of 52.6% was among the 21–30 year age group, while the age groups 1–10 had no any gynecological procedure performed on them during the year under review. This is probably because surgeries at this age group usually take place in the clinic for example in the separation of labial agglutination. Previous study reported that about 43% of adolescents had surgery for ruptured ectopic pregnancy.^[21] The age of 35.8 ± 7 and 45.7 ± 11.1 years was reported among those undergoing myomectomy^[8] and hysterectomy, respectively.^[20] Unsafe abortion requiring MVA was said to be commoner in 15–19 years group in Africa and among older adults in developed nations,^[22,23] as similarly observed in our audit. Obstetric fistula mostly occurred in the 11–30 year age group (69.2%). A report from the southern part of the country reported the age for obstetrics fistula repair as 29.3 ± 5.2 years.^[15] This is comparable to the report of our study.

A teaching hospital combines undergraduate academic training with clinical postgraduate training, and different cadres of clinical staff including interns, registrars, senior registrars, and consultants exist in the system. It is expected that as one proceeds through the ranks; clinical skill, experience, and judgment increases. However, the basis of clinical training is a combination of observation during the performance of a procedure, assisting severally during the performance of that same procedure, and finally carrying out the said procedure under supervision and without. The number of surgeries performed by cadres in training could thus, be an indication of the effectiveness of training, and determine if training itself is being received. Our results were similar to that reported in literature,^[3,5,7,8,11,12]

where consultants seem to perform more of the common surgeries. In our series, it was found that consultants did 69.7% myomectomies, while the SRs did only 27.3%. It was a similar finding in abdominal hysterectomy where consultants did 82.6% and SRs had 17.4%; and in vaginal hysterectomy consultant did 90.9%, while the SRs performed only 9.1%. Consultants performed 100% of the repairs of obstetric fistulae, cystectomy, laparotomy for pelvic abscess, minilaparotomy, hysteroscopy, and vulvovaginoplasty. SRs also performed major percentages of some procedures, for example, salpingectomies (61.5%); and the junior residents suction evacuation (85.3%), similar to Yakasai's study in the same center 2 years ago,^[10] where 67.3% of salpingectomies were done by SRs. Junior residents performed 53.1% of all gynecological operations, although this is misleading as most of these surgeries by this cadre of surgeons were MVAs. Junior residents did 324 MVAs out of 343 surgeries overall (94.5%). This could be related to the perceived ease of these operations as compared to laparoscopies and myomectomies or hysterectomies. It could also be related to the preponderance of these MVAs during night call periods when interns and registrars may be the most available cadre of surgeons.

Interns were involved in 47 of all the gynecological surgeries carried out (7.3%), surprisingly, all of these were MVAs, and this could be related to the interest in this procedure, as this cadre of doctors are more likely to perform this particular operation in regions they would be expected to cover during the service period after internship.

Our audit noted a skew towards general anesthesia (GA) surgeries in cadres that are higher than registrars. Both consultants and SRs performed similar percentages of surgeries under other forms of anesthesia apart from GA. This reflects the poor representation of the registrar cadre in surgeries done under GA. This could ultimately affect their skill set, as proficiency would be expected from this same category of doctors when promoted to higher cadres.

Common indications for gynecological procedures identified in this audit were incomplete abortion for MVA, menorrhagia for myomectomy, and infertility for lap and dye. Others were ruptured ectopic pregnancy for salpingectomy, VVF for obstetric fistulae repair and uterine fibroid, and completion of family size for hysterectomy. Consultants performed the highest number of all the gynecological procedures except MVA and salpingectomy which were mostly performed by lower cadres of surgeons. The audit is retrospective and may have been limited with problems of data storage and retrieval. It is also limited by the fact that the outcomes of these gynecological procedures were not audited. An audit of all gynecological surgeries in unison may hinder appropriate extrapolations and deductions to

be made from data on individual surgeries and indications. Improvement in data storage method is advocated. This can be done by using computer-assisted record system. A more regular audit of services rendered by the department is also advocated. This may help to identify the gaps in training and services. It may also be advantageous for the department to develop a protocol that audits surgeries performed by varying cadres of surgeons in training to enhance versatility and competence. An individual audit may thus also be more advantageous to the department.

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