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MAJOR GYNAECOLOGICAL SURGERY IN THE GHANAIAN ADOLESCENT
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ABSTRACT

Objective: **To determine the indications for, findings, procedures performed and outcomes in major gynaecological operations performed on patients nineteen years old or younger.**

Design: **Retrospective observational study.**

Setting: **Korle Bu Teaching Hospital, Accra, Ghana.**

Subjects: **Cases of major gynaecological surgery in patients aged 19 years or younger in a six-year period.**

Results: **There were 245 patients, whose mean age was 17.3(SD 1.7) years. Sixty eight (27.8%) were less than seventeen years old and 177(72.2%) were 17-19 years old. Ruptured ectopic pregnancy, ovarian tumour, pelvic abscess and perforated uterus constituted 91% of indications. Ruptured ectopic pregnancy was confirmed in 106(43.3%), most of whom had salpingectomy performed. Five (13.9%) of 36 ovarian tumours were malignant, all in advanced stages of disease. Thirty six had pelvic abscesses; another 29 had uterine perforations, twelve of whom had hysterectomy performed. Five patients had congenital developmental anomalies of the genital or urinary tract. Non concordance between pre- and post-operative diagnoses occurred in 29(11.8%). Mean duration of post-operative hospital stay was 13.0(SD 8.9) days and the mortality rate was 3.8%. One hundred and eighty four (75.1%) of post-operative diagnoses were related to sexual activity or pregnancy.**

Conclusion: **Most of the gynaecological problems requiring major surgery in the Ghanaian adolescent may be prevented by adequately addressing issues regarding adolescent sexuality. Sex education, as part of family life education, should be incorporated into the school curriculum. This should aim at providing appropriate level of knowledge and promoting the development of attitudes and skills that will lead to the adoption of desired behaviours.**

INTRODUCTION

Gynaecological problems in the adolescent have received considerable attention for several years. These problems have included congenital developmental anomalies of the genital tract, ovarian and other genital tract neoplasms, and menstrual abnormalities. The greatest problems, however, have been those associated with sexual activity. The prevalence of adolescent sexual activity has been reported to be between 29%-80.1% from various parts of Africa(1,2). Sexually transmitted infections, and of particular concern HIV infection, may be acquired. In one African country 92% of sexually active adolescents were found to be seropositive for one or more sexually transmitted infections(3). Some of the infections could give rise to pelvic inflammatory disease (PID). Indeed 15-19 year olds are reported to have the highest incidence of PID compared to all other age groups(4). The potential complications of PID include pelvic abscess, generalised peritonitis, chronic pelvic pain, impaired fertility and a predisposition to developing ectopic pregnancy. In developing countries unwanted pregnancies may result in recourse to unsafe abortion procedures, which may give rise to serious complications or even result in death (5,6). Some of the aforementioned problems may be dealt with medically while others require surgical intervention.

This retrospective study, conducted at the Korle Bu Teaching Hospital, Ghana was an exploratory one aimed at determining the indications for, findings, procedures performed and the outcome in major gynaecological operations performed on young females nineteen years and below, in the obstetrics and gynecology department of the hospital. It was expected that the study would describe the nature and extent of the problem and identify some of the issues that needed to be addressed in adolescent reproductive health in Ghana. No such study had been previously reported from Ghana. Major gynecological operation was defined as one that involved laparotomy or reparative lower genital tract procedure. The study covered the period January 1991 to December 1996.

Korle Bu Teaching Hospital is the largest referral center in Ghana and is situated in Accra, the national capital. It serves as the site for clinical training of students of the Ghana Medical School.

MATERIALS AND METHODS

The sources of data were the operating theatre major operations record books, ward admission and discharge books and ward daily report books. The operating theatre record books were first examined and all patients nineteen years old and below were identified. The specific age, parity and gravidity for each patient were noted. The indication for each operation, the operative findings and the operative procedure performed were extracted. The ward admission and discharge books and the daily report books were then examined to determine the outcome to each patient.

The data were fed into and analysis performed by personal computer using Epi-Info 6.04. Continuous variables were compared using student t-test and differences were considered significant if $p<0.05$.

RESULTS

A total of 245 adolescents had major surgery for presumed gynaecological indications during the six-year period, giving a rate of about 3 to 4 cases per month. The operations were performed as emergency procedures in 207 (84.5%) patients and as elective in 38(15.5%). The youngest was ten years old and the oldest nineteen. The mean age was 17.3(SD1.7) years. Sixty eight (27.8%) were less than seventeen years old and 177 (72.2%) were seventeen years or older. Two hundred and four (83.7%) were nulliparous; 37(15.1%) and three (1.2%) were of parity one and two respectively. The mean age of the parous, 18.2(SD 0.7) years, was significantly higher than that of the nulliparous, 17.1 (SD1.8) years ($p=0.0003$). Prior to the condition necessitating the surgical proceure and any pregnancy that may have been associated with it, 213(86.9%) had had no previous abortions. Twenty-five (10.2%) had had one and seven (2.9%) had had two previous abortions.

Indications for operation:. Table 1 shows the pre-operative diagnoses and therefore the indications for surgery. The most common indications were ruptured ectopic pregnancies, ovarian tumours, pelvic abscesses and perforated uterus; these together constituted 91% of the cases. The general peritonitis cases were thought to have arisen from gynaecological causes. The five cases of obstetric fistulae were made up of four of vesico-vaginal fistulae and one of left ureterovaginal fistula. There was one case of agenesis of the lower third of the vagina and another of Mullerian agenesis with absent vagina (Mayer-Rokitanski-Kuster-Hauser syndrome). The cases of uterine prolapse were of second and third degrees respectively.

Operative findings and procedures performed: Table 2 lists the post-operative diagnoses shown in two age groups. Overall, the most common diagnosis was ruptured ectopic pregnancy (43.3%). However, in patients under 17 years the most commonest diagnosis was ovarian tumour, which formed 32.4% (22 out of 68) in that group.

Of the thirty six ovarian tumours, five (13.9%) were malignant, all in advanced stages of disease (stage 4). Thirty-one were benign, eighteen on the right and thirteen on the left; seven (22.6%) of the benign tumours were dermoid cysts, six (19.4%) were solid tumours and one a chocolate cyst. Six benign tumours (19.4%) had undergone torsion. The mean diameter of the benign tumours was 16.7(SD 5.7) cm, with a range of 6-25cm. One ovarian cyst had ruptured with blood stained serous fluid in the peritoneal cavity. One patient with a dermoid cyst also had uterus didelphys.

Four of the cases of ovarian cancer were considered inoperable and therefore only had biopsies taken and the abdomen closed. In the fifth patient total abdominal hysterectomy, bilateral salpingo-oophorectomy and omentectomy were performed.

Concerning the benign ovarian tumours, cystectomy was performed in fifteen patients, including the ruptured cyst, the chocolate cyst, two dermoid cysts and two twisted cysts that were still viable. The rest, including all with solid tumours, had salpingo-oophorectomy performed.

There were 106 ectopic pregnancies. One hundred were ruptured tubal pregnancies, one chronic leaking tubal pregnancy with pelvic haematocoele, two tubal abortions, two abdominal pregnancies and one ruptured right ovarian pregnancy. The mean volume of haemoperitoneum was 1.54(SD 0.69) liters. Thirty eight (36.9%) of the tubal pregnancies were on the left and fifty six (54.5%) on the right; in nine (8.6%) cases the side was not indicated. The site of tubal pregnancy was the ampulla in sixty (58.3%), cornu in 12 (11.6%), isthmus in 12 (11.6%) and fimbria in eight (7.8%) patients; in eleven (10.7%) the site was not indicated. The contralateral tube was normal in 81 patients, was involved in adhesions, showed hydrosalpinx and/or was thickened in 13, and was absent in one (she had had previous salpingectomy for ectopic pregnancy); in nine the condition of the contralateral tube was not stated.

The abdominal pregnancies were both situated in the pouch of Douglas; in each case the tubes were involved in adhesions.

Eighty eight patients had salpingectomy and twelve had cornual wedge resection. In the patient with chronic leaking tubal pregnancy salpingo-oophorectomy was performed because of extensive involvement of the ipsilateral ovary. Partial oophorectomy was performed in the case of ruptured ovarian pregnancy. Haemostasis was successfully achieved in one of the patients with tubal abortion without having to remove the tube. With regards to the cases of abdominal pregnancies one had the conceptus evacuated and a salpingectomy performed. In the other case haemostasis was very difficult to achieve after evacuating the pregnancy and therefore the pelvic cavity was packed with abdominal packs which were removed after 48 hours, with satisfactory outcome.

Thirty six patients had pelvic abscesses: eight were unilateral tubo-ovarian abscesses (one of which was ruptured), three were tubo-ovarian abscesses with contralateral pyosalpinx or ovarian abscess, and four were pyosalpinges (two bilateral, one ruptured). Twenty

one were mainly cul-de-sac collections, and in these patients both tubes were either inflamed or involved in adhesions. In all cases of unilateral tubo-ovarian abscesses salpingo-oophorectomy was performed; in those with concurrent contralateral collections these were drained without excising the adnexa. Salpingectomy was performed in three of the patients who had pyosalpinges, including bilateral salpingectomy for one of those who had bilateral pyosalpinges; the other patient with bilateral pyosalpinges just had the abscesses drained. Patients with cul-de-sac abscesses had the collections drained through laparotomy; the volume of pus drained ranged from 200ml to 1500ml. All patients with pelvic abscesses had warm normal saline lavage to the pelvis and abdomen, and drainage using corrugated rubber drains.

Perforated uterus resulting from unsafe abortion procedures was found in twenty one patients. The perforations were fundal in twelve, in the posterior wall in six, right cornu in two and right lateral into the broad ligament in one. There was, in addition, pus in the peritoneal cavity in thirteen patients; the volume of pus ranged from 150ml to 1500ml. In nine patients the uterus was gangrenous or necrotic. Hysterectomy was performed in twelve patients, including the nine with gangrenous or necrotic uterus. Nine had the perforations repaired.

In twelve patients the main problems found were gastrointestinal tract pathologies. There were three cases of appendicitis (two with adhesions involving adjacent bowel), one of appendix mass and one of ruptured appendix abscess. There was one case each of the following: typhoid perforation (in the terminal ileum), small bowel obstruction (from adhesions) with gangrene, inflamed ileo-caecal region, loops of bowel matted together, megacolon with impacted faeces, gangrene of a segment of ascending colon 5cm from the ileo-caecal junction, and cocoon of the small bowel. Appendectomy was performed in the three patients with appendicitis; the one with ruptured appendix abscess had appendectomy with drainage. The typhoid perforation was sutured over, and the gangrenous large and small bowels resected and anastomosed. The loops of bowel matted together were easily separated; the cocoon of small bowel was excised. In the cases of the appendix mass, megacolon with impacted faeces and inflamed ileo-caecal region the abdomen was closed and the cases managed conservatively.

The ten cases of generalised peritonitis all showed evidence of pelvic inflammatory disease; in one case peritonitis had followed septic abortion resulting from an unsafe abortion procedure. In each case the pus was drained, abdominal and pelvic lavage was performed with warm normal saline and corrugated rubber drains placed in the pelvis before abdominal closure. The volume of pus drained ranged between 200ml and 4000ml.

With regards to obstetric fistulae, the one with left uretero-vaginal fistula had left ureteric reimplantation performed. One patient had a vesico-vaginal fistula about 2.5cm in diameter, with the urethra completely destroyed, she had repair of the fistula and urethral reconstruction. Another patient had a large vesico-vaginal fistula of about 4cm in diameter; there was no anterior bladder wall and the urethra was absent. She had ureterosigmoidostomy performed. The other two patients had relatively smaller vesico-vaginal fistulae that were repaired.

Table 1

Indications for operations

Indication	No. of patients (%)
Ruptured ectopic pregnancies	110 (44.9)
Ovarian tumours	43 (17.6)
Pelvic abscess	40 (16.3)
Perforated uterus	30 (12.2)
Generalised peritonitis	11 (4.5)
Obstetric fistulae	5 (2.0)
Congenital developmental genital tract anomalies	2 (0.8)
Uterine prolapse	2 (0.8)
Uterine fibroids	1 (0.4)
Stress incontinence	1 (0.4)
Total	245 (100)

Table 2

Post operative diagnoses

Diagnosis	No. in age group <17 years	17-19	Total (% of whole group
Ruptured ectopic Pregnancy	11	95	106 (43.3)
Ovarian tumour	22	14	36 (14.7)
Pelvic abscess	12	24	36 (14.7)
Perforated uterus	8	13	21 (8.6)
Gastrointestinal tract pathology	7	5	12 (4.9)
Generalised peritonitis	5	5	10 (4.1)
Obstetric fistulae	0	5	5 (2.0)
Congenital anomalies	1	3	4 (1.6)
Others	2	13	15 (6.1)
Total	68	177	245 (100)

Table 3

Non-concordance between pre-operative and post operative diagnosis

Pre-operative diagnosis	Post-operative diagnosis	No. of cases
Pelvic abscess	Appendix mass Appendicitis with adhesions Typhoid perforation Inflamed ileo-cecal region	2 5
Ovarian tumour	Huge retroperitoneal cyst Single pelvic kidney Cocoon of small bowel Megacolon with impacted faeces Loops of bowel matted together Bicornuate uterus, with one horn gravid Edematous twisted ovary Adhesions between right tube, ovary and adjacent bowel	8
Perforated uterus	Pelvic abscess Appendicitis Gangrene right tube and ovary Ruptured corpus luteum cyst Generalised peritonitis (2 cases) Acute PID (3 cases)	9
Ruptured ectopic pregnancy	Ruptured corpus luteum cyst Ruptured ovarian cyst Bleeding telangectasia on gravid uterus	2 4
Generalised peritonitis	Ruptured appendix abscess Large bowel gangrene Small bowel obstruction with gangrene	3

There were four cases of congenital anomalies made up of one each of the following: agenesis of the lower third of the vagina with haematocolpos and haematometra, Mullerian agenesis with absent vagina (Mayer-Rokitanski-Kuster-Hauser syndrome), bicornuate uterus with one gravid horn, and a single pelvic kidney with absent uterus but both tubes and ovaries present. In the case of the agenesis of the lower third of the vagina, canalisation followed by skin grafting was performed via a perineal approach. Construction of a vagina using a segment of rectosigmoid was performed in the patient with Mayer-Rokitanski-Kuster-Hauser syndrome.

The fifteen patients categorised as 'others' were made up of the following:

- Two cases of uterine prolapse - one had Manchester operation performed and the other a modified Gilliam's ventrosuspension.
- Uterine fibroids - the uterus was about 16 weeks size and myomectomy was performed.
- Three cases of ruptured corpus luteum cyst - in each case the corpus luteum was excised and the ovary repaired.
- Bleeding telangectasia - this was from the anterior surface of a fourteen-week gravid uterus near the insertion of the right round ligament. Haemostasis was successfully secured using diathermy cautiously.
- Huge retroperitoneal cyst about 30cm in diameter - this was completely excised.

  Genuine Stress incontinence - colposuspension was performed.
- One case of gangrene of the right tube and ovary and another of moderately enlarged, firm edematous ovary which had undergone torsion - salpingo-oophorectomy was performed in both cases
- Adhesions between the right tube and ovary and adjacent bowel - adhesiolysis was carried out.
- Three cases of acute PID - the abdomen was closed and treatment continued with antibiotics in each case.

Non-concordance between pre-operative and post-operative diagnosis: Table 3 shows the cases in which the post-operative diagnoses were different from the pre-operative ones. There were twenty nine of such situations, giving a misdiagnosis rate of 11.8%. The most common misdiagnosis, in both absolute and relative terms, was perforated uterus, nine; this formed 31.0% of the total numbers of misdiagnoses and 30% of the pre-operative diagnosis of perforated uterus. The diagnosis that was least likely to have been wrong was ruptured ectopic pregnancy (4 out of 110, 3.6%).

The most common problems misdiagnosed were gastrointestinal tract pathologies, which constituted twelve (41.4%) of the misdiagnosed cases.

Outcomes: Two hundred and five patients were discharged home and eight died; in thirty two patients. It was not possible to determine the outcome because the appropriate information could not be found. The mortality rate for those in whom the outcome could be determined was therefore 3.8%. Four of the patients who died had advanced ovarian carcinoma, three had gangrenous perforated uterus and one had generalised peritonitis following septic abortion.

For the patients who were discharged the overall mean duration of hospital stay postoperatively was 13.0(SD 8.9) days. Patients with ectopic pregnancy had the shortest mean duration of post-operative stay, 10.2(SD4.8) days; the longest was in those who had had obstetric fistula repair, 43.8(SD 23.9) days.

DISCUSSION

Ectopic pregnancies formed the most common indication for and findings in major gynaecological surgery in the Ghanaian adolescent. The hundred per cent incidence of rupture is not very different from the 98.1% reported in a previous study of ectopic pregnancies in all age groups presenting to the Korle Bu Teaching Hospital(7). The mean volume of haemoperitoneum in this study is a little higher than the 1.37 liters reported in the above-mentioned study. The rate of 97.2% of ectopic pregnancies being tubal, the slight preponderance of the right over the left and the most common site being ampullary are consistent with other reports on ectopic pregnancy(8). Although in most reports cornual implantation is the least common, with incidence of 1.9%-4.7%(9), the finding in this study of incidence of 11.6% is consistent with findings in other studies from developing countries(7,10). It is significant to note that in 76.4% (81 out of 106) of ectopic pregnancies the contralateral tube was normal on gross examination. This suggests a favourable prognosis for future fertility. Women who have ectopic pregnancies with normal contralateral tubes have significantly higher intrauterine pregnancy and full term birth rates and significantly lower repeat ectopic pregnancy rates than those with damaged contralateral tubes (11).

The proportion of 13.9% of ovarian tumours being malignant is consistent with the 10%-33% reported in other series(12-14). It must be mentioned, however, that the 13.9% in this series may be an underestimate since the diagnosis was based on gross clinical findings rather than on histopathological examination. The rate of torsion of benign tumours of 19.4% is high compared to 10.1% reported from Finland(15) and 6.9% in girls aged 9-18 years reported from Philadelphia, United States of America(13). Most cases of ovarian malignancies presented with such late disease that very little could be done for them, and 51.4% of those with benign tumours had to have salpingo-oophorectomy either because of large tumour size or torsion. It is likely that there was delay in diagnosis after appearance of initial symptoms suggestive of the presence of ovarian tumour. The most common symptoms associated with ovarian tumours in this age group are abdominal/ pelvic pain and/or increasing abdominal girth(13-14). It is therefore important that in female children and adolescents presenting with such symptoms or any non-specific abdominal or pelvic symptoms, abdominal palpation and bimanual recto-abdominal examination are performed. Abdominal and pelvic ultrasound examinations should be more readily resorted to.

The two patients who had ruptured adnexal abscesses had only adnexectomy performed, rather than total abdominal hysterectomy with bilateral salpingo-oophorectomy. This is in line with current approach to surgical management of such conditions, which is largely conservative(16). Transvaginal ultrasonographically guided needle aspiration has been successfully used to drain tubo-ovarian abscesses, pyosalpinges and other pelvic abscesses with satisfactory outcome(17). Consideration should be given to the use of this procedure in order to enhance the possibility of conserving the ovaries and tubes in such young patients.

Even though liberal abortion laws were enacted in Ghana about fifteen years ago the public, perhaps out of ignorance of the law, still perceives abortion as illegal. Women therefore tend to procure abortions clandestinely, sometimes from unqualified practitioners. This explains the persistence of uterine perforations as an indication for major gynaecological surgery. The case mortality rate associated with perforated uterus in all age groups following unsafe abortion procedures presenting to the Korle Bu Teaching Hospital in the early 1990's was 227.8 per 1000 (18). In most cases the patients deny having had any abortion procedures performed. This has created a situation of mistrust on the part of doctors in the obstetrics and gynaecology department such that even when a patient genuinely denies having had an abortion procedure performed a diagnosis of perforated uterus may still be made on the basis of clinical findings. This may be the explanation for the most common misdiagnosis being perforated uterus.

It is not surprising that pathologies involving the gastrointestinal tract, with its close proximity to the pelvis, were the conditions most commonly misdiagnosed as gynaecological pathologies pre-operatively. Although it may not be possible to completely avoid such misdiagnoses it is important to emphasize the need for ultrasonography routinely and surgical consultation in ambiguous situations.

It is significant to note that 181 (73.9%) of the post-operative diagnoses were related to sexual activity or pregnancy (i.e. PID, pelvic abscess, perforated uterus, generalised peritonitis, ectopic pregnancy, obstetric fistula,). Even in those younger than seventeen years, in whom the single most common diagnosis was

ovarian tumour, conditions related to sexual activity or pregnancy formed the largest proportion, 52.9%(36 out of 68). These suggest that most of the gynaecological problems requiring major surgery in the Ghanaian adolescent may be prevented by appropriately and adequately addressing issues regarding adolescent sexual activity. Sex education, as part of family life education, should be incorporated into the school curriculum. This should start around 12 years of age; the mean age of debut of sexual activity in Ghanaian female adolescents is 16.2 years(19). This education should emphasize the health and social implications of adolescent sexual activity. The problems of sexually transmitted infections (including HIV), pelvic inflammatory disease and its complications of pelvic abscess, chronic pelvic pain, infertility, and predisposition to having ectopic pregnancy, and of unwanted pregnancy should be emphasised. The long term effect of an increased risk of developing cervical carcinoma, especially where there have been multiple sexual partners, should be explained. They should be made aware of the law on abortion in Ghana and of the dangers of unsafe abortion procedures. Although education on contraception should be offered, actual provision of contraception service to young unmarried adolescents will be difficult because this is something the society generally frowns upon. Postponement of initiation of sexual activity may be the option to strongly recommend to the adolescent. Essentially, the education should aim at providing appropriate level of knowledge and promoting the development of attitudes and skills that will lead to the adoption of desired behaviours.

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