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Original Research Article

Intrauterine Ectopic Pregnancy and Implications for Future Fertility and Pregnancy Outcome: A Descriptive Study in Yaounde

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Abstract: ***Background*:** Intrauterine ectopic pregnancies (IUEP) are uncommon. However, invasive management technics are usually required and this could compromise fertility, or obstetric and life prognosis in subsequent pregnancies. ***Objective*:** we aimed to assess the occurrence of pregnancy after an IUEP and the outcome of these pregnancies in 2 hospitals in Yaoundé, Cameroon. ***Methods*:** this was a descriptive cross-sectional study carried out on a 5-years period (2018-2022) with an exhaustive sampling. The study was done at two reference hospitals in Yaoundé and lasted 09 months (December 2023 to August 2024). We reviewed theatre registers for cases and searched for their files from which case details were extracted. We completed data through phone calls and used descriptive statistics as appropriate. ***Results:*** we found a total of 78 intrauterine (cornual or interstitial), excluded 37 cases and 41 cases were considered. Out of the 41 patients considered in the study, 17 conceived, 10 had reached at least 30 weeks of gestation with 3 still pregnant and 7 had a term delivery; of which 3 were vaginal and 4 by caesarean section. We recorded no uterine rupture. ***Conclusion*:** The fertility after IUEP was good and the outcome of subsequent pregnancies was favourable, with a slight preference for caesarean section as route of delivery.

Keywords: Pregnancy Outcome, Intrauterine Ectopic Pregnancy, Fertility Post-Surgery, Delivery Route, Yaoundé.

1. INTRODUCTION

About 5% of all ectopic pregnancies have a non-tubal localization[1]. Intrauterine ectopic pregnancies (IUEPs) are uncommon, with interstitial and cornual ectopic pregnancies accounting for 2 to 5% of all ectopic pregnancies [2] and cervical ectopic pregnancies (CEP) accounting for less than 1% of all ectopic pregnancies [1].

Even though IUEPs are less common, they constitute an important entity because the morbidity and mortality associated with them is reportedly high. Uterine rupture may occur in up to 20% of the cases of cornual pregnancies that progress beyond 12 weeks, usually causing massive haemorrhage due to the high vascularity in this region where the branches of the uterine and ovarian arteries meet. Consequently, prompt cornual resection is usually required [3]. In a similar manner, CEP may present with life-threatening unexpected bleeding due to erosion of the cervical blood vessels and may require a hysterectomy [4]. However, due to improvements in outcome with current practice, conservative medical and surgical methods of management are preferred, even though these methods do not protect against recurrence [5]. Unfortunately, in African developing countries, most women tend to present at the rupture stage (with hemodynamic instability), such that invasive management is most often required.

Literature is not unanimous on fertility and obstetrical outcomes following cornual pregnancy. In some they are not affected whatever the initial treatment [6, 7]. In others, after medical treatment for an interstitial pregnancy, the risk of uterine rupture remains unknown for a future pregnancy, even though this concern exists for interstitial pregnancies that are treated surgically, warranting close monitoring of these women during pregnancy and elective caesarean section for delivery [8, 9]. Some articles have reported cases of spontaneous

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uterine rupture during subsequent pregnancies[8-10], while others described safe delivery (both vaginal and caesarean section) without any complication in pregnancy [11–13]. Recurrence of cornual pregnancy has also been reported [5-12].

In our setting, most IUEPs are managed surgically. But reports evaluating the outcome of pregnancies occurring after these rare forms of ectopic pregnancy are hard to find in the literature. However, an in-depth knowledge of the impact of these IUEPs on the life, fertility and obstetric prognosis of affected women is vital to guide management recommendations and further research. We therefore sought to evaluate the outcome of subsequent pregnancies in women managed for IUEP in our reference hospitals. This information is vital for adequate counselling and management of affected women.

2. METHODS

2.1 Study Design and Setting

This was a hospital-based descriptive cross-sectional study with retrospective and prospective data collection carried out from December 2023 to August 2024 at the Obstetrics & Gynaecology departments of the Gynaeco-Obstetric and Paediatric Hospital of Yaounde (GOPHY) and the Central Hospital of Yaounde (CHY). This simple cost-effective method was adopted because it was adequate to meet the study objectives. The study period was five years, from January 2018 to December 2022. These two hospitals are among the highest reference hospitals in the city with well-developed maternal health services and high patient flow.

The source population comprised of women who had been managed surgically for IUEP at the aforementioned hospitals during the study period. Our sampling was exhaustive but we excluded cases with missing or incomplete files or unclear location of ectopic pregnancy.

2.2 Study Procedure

First, we obtained ethical clearance from the ethics committee of the Faculty of Medicine and Biomedical Sciences (FMBS) of the University of Yaounde 1, and administrative clearances from both hospital authorities. To identify cases in the hospitals, we explored theatre registers for cases of ectopic pregnancy managed surgically, and noted the date of surgery and the location of the pregnancy. We then proceeded to search the archives for the files of the patients with IUEP. Eligible records for the study were then recruited. This procedure was done by the principal investigator with the assistance of the service personnel. We used an interviewer-administered questionnaire designed for the study to collect data. The questionnaire included socio-demographic data (age, sex, ethnicity, marital status, level of education, occupation) and clinical data collected from patients' medical records (period, diagnosis, per-operative findings, subsequent pregnancy if any and its outcome). Patients were contacted by phone for further information, after confirming their identification and consent. The questionnaire data were checked and validated followed by immediate entry into a data software.

2.3 Data Management and Analysis

Data collected were cleaned and entered into CSPro version 7.7software. The database was then exported for analysis into SPSS version 25 software. Categorical variables were reported as frequencies and percentages, while numerical variables were summarized as means with their corresponding standard deviations (SD) and ranges. Tables and figures were used to present the findings of the study.

3. RESULTS

We identified 100 non-tubal out of a total of 1,014 EPs managed surgically at the study sites during the study period. Of these 100 (9.9%) non-tubal ectopic pregnancies, 78 (7.7%) were IUEPs, 13 (1.3%) ovarian and 9 (0.9%) abdominal.

All 78 IUEPs were described as cornual (5.2%) or interstitial (2.5%). There was no cervical or caesarean scar EP. We excluded 37 cases (34 for missing and 03 for incomplete files), and studied 41.

Sociodemographic Characteristics of the Study Population

The mean age of participants was 28.9 (+6.1) years. The most represented age bracket was 21-30 years and the majority had a secondary level of education (60%) and single marital status (53.7%). The predominant religion was Christianity (table 1).

Table 1: Distribution by socio-demographic characteristics of women with IUEP at the two hospitals of study in Yaounde (N=41)

Variable	Cases of IUEP (n)	Proportion (%)
Age group		
[15 – 20]	1	2.4
[21 – 30]	22	53.7
[31 – 40]	17	41.5
[41 – 50]	1	2.4
Level of education		
Primary	1	3.3

Variable	Cases of IUEP (n)	Proportion (%)
Secondary	18	60.0
Higher	11	36.7
Occupation		
Civil servant	1	2.5
Private sector	17	42.5
Housewife	10	25.0
Unemployed	4	10.0
Student	8	20.0
Marital status		
Single	22	53.7
Married	13	31.7
Cohabiting	6	14.6
Religion		
Christian	34	82.9
Muslim	6	14.7
Others	1	2.4

IUEP=intrauterine ectopic pregnancy

Conception Following Surgery for IUEP

Out of 41 cases of IUEP studied, we could only reach 32 (78.0%). Out of 20 participants that had a desire to conceive 17 (85%) did within 6 to 36 months following surgery, with a mean duration of 13.35 (±8.98) months. Conception occurred within 18 months from surgery in 75% of cases (table II).

Table II: Distribution of cases of IUEP according to fertility after surgery

Variable	Frequency (n)	Percentage (%)
Desire for conception (N=32)		
Yes	20	63
No	12	37
Conception following IUEP (N=20)		
Yes	17	85
No	3	15
Number of months following management (N=17)		
≤ 18 months	15	75
> 18 months	2	10
Location of pregnancy (N=17)		
Normal	17	100
Ectopic	0	0

Outcome of Pregnancy Post-IUEP Surgery

Ten (58.8%) pregnancies reached the 3rd trimester, and 7 (41.1%) ended in term deliveries; 03 vaginal (42.9%) and 04 caesarean sections (57.1%), No uterine rupture occurred (Table III).

Table III: Outcome of pregnancy in women previously operated for IUEP

Variable	Frequency (n), N=17	Percentage (%)
Outcome of pregnancy [N=17]		
Term delivery	7	41.2
Preterm delivery	0	0.0
Spontaneous abortion	7	41.2
Pregnancy ongoing (T3)	3	17.6
Route of delivery [N=7]		
Vaginal delivery	3	42.9
Caesarean section	4	57.1
Foetal outcome (n=7)		
Livebirth	7	100
Stillbirths	0	0

4. DISCUSSION

Sociodemographic Characteristics

The characteristics of the study population of this study are a reflection of reproductive age women in Yaoundé, from the dominance of the 21-30 years age bracket, to the predominance of women of secondary level of education, single marital status and Christian faith.

Conception after Surgery for IUEP

Out of the 41 cases, 17 conceived (all normally implanted) at the close of the study period, while 3 had a desire but had not conceived yet. The remaining 12 had no desire for conception and had adopted contraception or abstinence. Nine of them could not be contacted. The 85% fertility we report in those who had a desire to conceive is better than the 60% infertility post-salpingectomy reported in Ukraine and the 53.6% pregnancy occurrence post salpingostomy reported in Iran [14, 15], and similar to the 71.4% Reported in Taiwan [16]. More contextually, a study in Oslo found no difference in fertility rate between tubal and interstitial pregnancy post-cornual resection [17]. The higher outcome in our result could be linked to the small sample we had and also the fact that we couldn't contact some (selection bias). Furthermore, considering the definition of infertility (12 months of adequate exposure to but no pregnancy) and time for uterine scarring after surgery (estimated at about 6 months), conception after 18 months post-surgery occurred in 75% of cases in our study. This is just slightly lower than the 85% chance of conception after 12 months of conception as described by Taylor [18]. This is an expected result given that the patients now present fertility lowering factors. In a randomised controlled trial conducted in France 64% of patients conceived up to 2 years after radical surgery for tubal EP [19]. This figure is close to the 75% we observed in our study 18 months after surgery.

The time between surgery and conception was 6-36 months in our study. A similar study reported a 2–53 months interval in Singapore [13]. In spite of this early occurrence of pregnancy in the latter study, no case of uterine rupture was recorded.

Outcome of Pregnancy Post-Surgery for IUEP

Seven cases had a spontaneous abortion, while 10 pregnancies progressed beyond 30 weeks. Three were still pregnant at the moment data collection ended while the other 7 had given birth at term. This is consistent with reports in the literature that although there are fears of spontaneous uterine rupture, these pregnancies can reach term [13]. The routes of delivery were vaginal (42.9%) and by caesarean section (57.1%), similar to the 60% caesarean delivery reported by the study in Oslo [17]. Another study reported 50% vaginal deliveries, 30% caesarean sections and 20% loss to follow-up [13]. A case of heterotopic (cornual + intrauterine) pregnancy reported from Seoul had laparoscopic cornual resection, and was delivered by emergency caesarean section for failure of labour to progress [11]. A case of IUEP in Cameroon had a twin pregnancy 7 months post-laparoscopic cornual resection and was delivered by caesarean section at 37 weeks [20]. These reports indicate that these pregnancies can reach term, and vaginal delivery is possible, even though caesarean section is still considered to be the safer route due to the fear of uterine rupture during labour.

We recorded no case of uterine rupture in our study, just like two other studies [6-13]. However, a study reported 2 cases out of 33 pregnancies, and another a 30% prevalence [17, 16]. The difference in our results could be due to the small number of term pregnancies in our study and information not gotten from all patients. Other reasons could be related to surgical technique, proper counselling post-surgery, time from surgery to pregnancy, and differences in assessment for indication of route of delivery.

5. LIMITATIONS

This study had the following limitations, in relation to its sample size. Firstly, only files of patients managed surgically were involved hence missing other cases. However, only these cases could have definitive diagnosis of location. Secondly, many cases were lost because their files were not found or critical information could not be gotten. Furthermore, some information could have been inaccurate due to recall bias.

6. CONCLUSION

From our results we can conclude that fertility after IUEP is good and that subsequent pregnancies can reach term. Vaginal delivery is possible with a favourable outcome after a thorough case assessment, but caesarean section should be considered safer.

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