

The Interest of Endoscopy in the Diagnosis of Fallopian Tubes Diseases at the Yaoundé Gyneco-Obstetric and Pediatric Hospital (Ygoph)

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Abstract

Introduction: Fallopian diseases are often implicated in female infertility. Several radiological and surgical explorations have been proposed in order to evaluate the severity of lesions found in utero-adnexal pathology. Among tools that are used to investigate such pathologies, we have ultrasound, hysterosalpingography and endoscopy. But, in many developing countries like Cameroon, the usage of endoscopy in gynecology is not yet known by many practitioners. The objective of our study was to show the interest of endoscopy in the diagnosis of fallopian tube pathologies. **Methodology:** We conducted a cross-sectional and descriptive study from March 1st, 2017 to May 31st, 2017 at the Gyneco-Obstetrics and Pediatric department of our Hospital. We included all women who presented infertility and underwent ultrasound, hysterosalpingography (HSG) and endoscopy at the Yaoundé Gyneco-obstetrics Hospital. We analyzed epidemiological parameters, clinics, ultrasound, hysterosalpingography and endoscopic finding. We used Cohen's Kappa test to determine the correlation between HSG/endoscopy and ultrasound/endoscopy in the diagnosis of fallopian tube pathologies. The threshold was significant for a K-value > 0.20. **Results:** We got a sample of 156 women; the mean age was 32.6 ± 4.5 years. The Secondary infertility dominated in 66.7% of cases; 31.1% of women presented a past medical history of sexually transmitted infections and 41.7% did abortions before. Endoscopic lesions were dominated by a fallopian obstruc-

tion in 54.5% of cases, 8.3% of adhesions, 33.9% of women presented uterine myomas, 37.8% of ovarian cysts and 1.3% of pelvic endometriosis. The K-values between HSG and endoscopy for distal and proximal tube obstructions were significant with respective thresholds of 0.25 and 0.30. The K-value between ultrasound and endoscopy was not significant with a threshold of 0.015 for the tubal hydrosalpinx. **Conclusion:** Endoscopy assessment appears as the most efficient tool to investigate fallopian tube diseases.

Keywords

Fallopian Tube, Endoscopy, Hysterosalpingography, Ultrasound

1. Introduction

Fallopian tube diseases have a great responsibility in the development of female infertility. Many tools are used to investigate these pathologies such as ultrasound, hysterosalpingography and endoscopy. Out of interventional proposes in surgery, endoscopy is a new technology that is also used for diagnostic investigations. It allows direct visualization of tissues and appears less invasive than other radiologic assessments. Current authors are considering endoscopy as the “gold standard” to explore gynecologic roots [1]. Since the 20th century, endoscopy has been used in Europe and US for explorations and interventions in urology, gynecology gastroenterology and ENT. This new technology is gradually imported towards developing countries. In Sub-Saharan Africa, the implementation of endoscopy in the practice is in process. Some countries like Cameroon introduced endoscopy in 1992, Senegal in 1995 and Côte d'Ivoire in 1999 [2]. But, many gynecologists have not yet added endoscopic explorations to their practice. This may be due to their ignorance or the lack of equipment. We have been motivated to conduct this study that aimed to demonstrate the interest of endoscopy in the diagnosis of fallopian tube diseases at the Yaoundé Gyneco-Obstetrics and Pediatrics Hospital (YGOPH) compared to HSG and ultrasound.

2. Patients and Method

This study has been approved by the Ethical Committee of the Yaoundé Gyneco-Obstetric and Pediatrics Hospital where the research has been conducted. The method was carried out in accordance with relevant guidelines and regulations. An informed consent was obtained from each patient that we followed prospectively for participation in the study. We conducted consecutive and exhaustive sampling. Thus, any patient followed at YGOPH during the study period and meeting our inclusion criteria was recruited. We conducted a 3 month cross-sectional and descriptive study from March 1st, 2017 to May 31st, 2017 at the Yaoundé Gyneco-Obstetrics and Pediatric Department of the YGOPH. We studied the period of January 1st, 2004 to December 31st, 2016 and we included all women who presented infertility and underwent ultrasound, HSG and en-

doscopy at the YGOPH. Gynecologic ultrasound was performed by abdominal or vaginal route. We used ultrasound from 3.5 to 9 MHz, and a classic HSG was realized. We used a 4F or 5F catheter to flow the contrast agent inside fallopian tubes and an X-ray film was realized to appreciate the vacuity of fallopian tubes. Laparoscopy was performed with a rigid endoscope for a trans-uterine visualization of fallopian tubes and other adnexia of the uterus. Data were collected from patient files where we retrieved US, HSG and post operative reports. The information collected were the age of patients, gynecologic and surgical past medical history, US, HSG and endoscopic findings with a type of surgery realized. The Cohen's Kappa test was used to determine the correlation between HSG/endoscopy and ultrasound/endoscopy in the diagnosis of fallopian tube pathologies. The threshold was significant for a K-value > 0.20. Data were analyzed with SPSS version 21.0, Epi info version 5.1, and Microsoft Excel 2010.

3. Results

156 women met inclusion criteria in our study. The mean age was 32.6 ± 4.9 years with extremities between 21 and 46 years. The modal group was represented by women aged between 30 and 35 years (**Table 1**). The past medical history of voluntary interruption of pregnancy was found in 41.7% of cases. 32.1% of patients suffered from sexually transmitted infections and were recognized to have unprotected sexual intercourses. In addition, 7.1% of women presented myomas and 1.3% ovarian cysts. 7.1% of women underwent myomectomy before; 3.8% underwent salpingectomy and 3.2% tubal plastic surgery indicated for ectopic pregnancy (**Table 2**). HSG assessment revealed 29.8% of bilateral distal tubal obstructions, 16% of bilateral proximal tubal obstructions, 10.9% of unilateral distal tubal obstructions, and 20.5% of unilateral proximal tubal obstructions (**Table 3**).

Table 1. Distribution of women according to socio-demographic characteristics N = 156.

Variables	Effective	Percentage (%)
Age groups (years)	<25	5.1
	[25 - 30[20.5
	[30 - 35[38.5
	[35 - 40[29.5
	[40 and +[6.4
Marital status	Bride	57.7
	Bachelor	42.3
Occupation	Private sector	10.3
	Public sector	23.7
	Small trades	59.0
	Student	6.4
	Household	0.6

Table 2. Distribution of women according to the results of the anamnesis N = 156.

Variables		Effective	Percentage (%)
Gynecological history	Abortion	65	41.7
	sexually transmitted infection	50	32.1
	Past history of dysmenorrhea	37	23.7
	Dyspareunia	36	23.1
	Tubo ovarian abscess	2	1.3
Gynecological pathologies	Myomas	11	7.1
Surgical history	Ovarian cysts	2	1.3
	Myomectomy	11	7.1
	Salpingectomy	6	3.8
	tubal plastic surgery	5	3.2
	caesarean section	3	1.9
	Cystectomy	1	0.6
	Appendectomy	6	3.8

Table 3. Distribution of women according to the level of tubal obstruction (TO) N = 156.

Observed lesions	Effective	Percentage(%)
Bilateral Distal TO	47	29.8
Unilateral Proximal TO	32	20.5
Bilateral Proximal TO	25	16.0
Unilateral Distal TO	22	10.9
Isthmic TO	3	1.9

Table 4. Distribution of women according to lesions found on ultrasound N = 62.

Variables	Effective	Percentage (%)
Uterine myomas	27	17.3
Ovarian cysts	19	12.2
Ovarian dystrophy	9	5.8
Chronic adnexitis	3	1.9
Hydrosalpinx	4	2.5

Uterine myomas were found in 17.3% cases with ultrasound examination (**Table 4**). Endoscopic explorations found myomas in 33.9% cases, 37.8% of corpus luteum cysts and Hydrosalpinx associated to tubal adhesions were diagnosed in 58.3% of patients (**Table 5**). The Cohen's Kappa test for the correlation between HSG and laparoscopy was significant with a value of 0.36 for tubal obstructions (**Table 6**) and the correlation between ultrasound and endoscopy was no significant with a value of 0.015 for hydrosalpinx (**Table 7**) [3] [4] [5].

Table 5. Distribution of women according to the different lesions observed on endoscopy N = 156.

Variables		Effective	Percentage (%)
Uterine lesions	Myomas	53	33.9
Ovarian lesions	Ovarian cysts	59	37.8
	Adhesions	28	17.9
	Ovarian dystrophy	11	7.1
	Unvisualized ovaries	2	1.3
	Pyo ovary	1	0.6
Tubal lesions	Distal tubal obstructions	32	20.5
	Tubal adhesions	91	58.3
	Proximal tubal obstructions	53	34.0
	ampullary mass	3	1.9
Endometrial lesions	Endometriosis	2	1.3

Table 6. Correlation between hysterosalpingography and endoscopy in tubal obstructions (OT) in general.

		Laparoscopy		Total	Kappa	P-value
		Yes	No			
HSG*	Yes	46 (29.5%)	61 (39.1%)	107 (68.6%)	0.360	0.000
	No	7 (4.5%)	42 (26.9%)	49 (31.4%)		
Total		53 (34.0%)	103 (66.0%)	156 (100.0%)		

HSG*: hysterosalpingography.

Table 7. Correlation between ultrasound and laparoscopy in hydrosalpinx.

		endoscopy		Total	Kappa	P-value
		Yes	No			
Ultrasound	Yes	3 (1.9%)	3 (1.9%)	6 (3.9%)	0.015	0.554
	No	93 (59.6%)	57 (36.5%)	150 (96.1%)		
Total		96(61.5%)	60 (38.4%)	156 (100.0%)		

4. Discussion

The mean age of our sample was 32.63 ± 4.92 years with a modal group ranged between 30 and 35 years. Mboudou *et al.* found a similar result in a study conducted at the YGOPH that presented a mean age of 31.8 ± 4.9 years [6]. Mehdi Kehila *et al.* conducted another study in Tunis and presented a mean age of 35.3 years [7]. This can be explained by the delay engagement in a couple's life due to socio-economic conditions where women are interested by long studies first before marriage. Many studies reported sexually transmitted infections and volun-

tary interruption of pregnancy as major risk factors of infertility [8] [9]. Belley Priso *et al.* showed that 65% of women who consult for infertility have a past medical history of chlamydia trachomatis infection [10]. In a study conducted by Tshabu agumon *et al.* in Benin in 2014, he reported that many patients presenting infertility underwent pelvic surgery for myomectomy [11]. A similar result has been found in our study. In 2013, Mboudou *et al.* found ectopic pregnancy as a major risk factor of infertility in a cohort of patients where the majority underwent surgery for abnormal location of the fetus [6]. So myomectomy, voluntary interruption of pregnancy and sexually transmitted diseases lead to adherence which will cause fallopian tube obstruction and results to infertility [11]. Fallopian obstructions appear as the main lesion observed in our patients. It has been diagnosed in 79.3% with HSG and 54.50% with Endoscopy. Ultrasound was less sensitive for tubal obstruction detection in our sample. But with endoscopy we diagnosed 1.3% of endometriosis and 1.9% of ampullary masses. Endoscopy appears more specific than HSG. In a series of 120 patients Medhi Kehila *et al.* found endometriosis in 7% of cases and fallopian tube obstructions in 20% of women with endoscopy [8]. This difference can be explained by the size of his series which was less than ours. Out of diagnostic proposes, endoscopy has been used for adhesiolysis in 85.3% of cases. We also performed tubal fimbrioplasty and neosalpingostomy respectively in 15.4% and 63.5% of cases using endoscopy. A few years before in the same town, current authors used endoscopy for intervention proposes in gynecology. In a series presented by Mboudou *et al.* in 2013, he performed tubal adhesiolysis in 71.6% of cases [6]. Kasia *et al.* performed tubal adhesiolysis in 73.9% of women who consult for infertility. He realized fimbrioplasty and neosalpingostomy respectively in 46% and 56% of cases. This difference can be explained by the big size in their series respectively 415 and 402. We did the Cohen's kappa test and the correlation between HSG and endoscopy for tubal obstruction in general was 0.36. This result is sensitive and similar to what Mehdi *et al.* reported in his series that was 0.42 [8]. Our study presented a good correlation between HSG and endoscopy in the detection of proximal tubal obstructions with a Cohen's Kappa sensitivity of 0.30. Mehdi Kehila *et al.* reported also a significant K-value of 0.48 [8]. The treatment of tubal obstructions is well managed with endoscopy and several techniques have been presented by many authors in the previous literature in order to limit sollicitation of IVF for patients who consult for infertility [12] [13] [14]. Furthermore, no correlation was found between ultrasound and endoscopy for hydrosalpinx in our study. The relationship between hydrosalpinx and female infertility is well accepted with a fairly high prevalence in our study. Although ultrasound is mainly used to diagnose adnexial masses such as ovarian cysts, we have been using also for tubal permeability nevertheless it is not specific [15]. In total, we diagnosed (2.5%) of lesions. For hydrosalpinx, a non-significant correlation between ultrasound and endoscopy has been found in our study and the K-value was 0.015. This study was limited by the sample size that was short compared to other studies. The studied period was also short and we did not do a post operative fol-

low-up of patients to present a short term results of endoscopy usage.

5. Conclusion

Endoscopy appears as the most efficient tool to diagnose and treat fallopian tube diseases. Although many gynecologists still lack experience in endoscopy usage in our country, they may either refer patients who consult for infertility to a reference hospital for better management or look for training to improve their skills in endoscopy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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