

Female infertility and laparoscopic surgery: A series of 415 operations at the Yaounde Gyneco-Obstetric and Pediatric Hospital, Cameroon

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ABSTRACT

Objective: To describe the practice of laparoscopic surgery in the treatment of infertility at the Yaoundé Gyneco-Obstetrics and Pediatric Hospital. **Materials and Methods:** This was an observational study with retrospective data collection. All patients who underwent laparoscopy for infertility with a complete file were recruited. Data were collected on a pre-established form and analyzed with Microsoft Excel 2007 software. **Results:** Six hundred and thirty-three women, representing 6.9% of gynecologic operations, underwent laparoscopic surgery during the study period. Infertility accounted for 69.8% (442 cases) of the indications. Four hundred and fifteen files were analyzed. The commonest intraoperative findings were: tubo-peritoneal adhesions (71.6%), hydrosalpinx with distal tubal occlusion (41.5%), peri-hepatic adhesions (22.4%), uterine fibroids (20.2%) and tubal phimosis (14.0%). Adhesiolysis, neosalpingostomy and fimbrioplasty were the commonest surgical gestures. At the end of the procedure, the best tube was staged as favorable in 57.6% of our patients. A complication rate of 4.3% was observed. **Conclusion:** Infertility is the main indication for laparoscopic surgery in our setting. The main operative findings are tubo-peritoneal adhesions and hydrosalpinx. The most practiced tubal surgical gesture is neosalpingostomy. Half of the recruited women have a favorable stage for the best tube. The complication rate is low.

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Keywords: Infertility; Laparoscopic Surgery; Tubal Surgery; Yaoundé; Cameroon

1. INTRODUCTION

Since gynecological laparoscopic surgery was introduced in Cameroon [1], several studies have been dedicated to this new surgical approach in our setting [1-7]. Even though laparoscopic operations in gynecology now include a variety of surgeries previously done only by laparotomy such as the cure of uterine prolapse, simple or radical hysterectomy and pelvic or para-aortic lymphadenectomy [8], it remains mainly limited to tubo-adnexal surgery in Cameroon. Raiga *et al.* have reported a series of 735 gynecological laparoscopic surgeries after five years of practice in Cameroon, most of which were indicted for tubal infertility [2]. In the same hospital, Kasia *et al.* have documented 194 tubal surgeries by laparoscopy with a pregnancy rate of 27.3% [3]. Afterwards, the laparoscopic surgical rate of tubal surgery of 91.3% has been reported in the same setting [4]. At the same time, advanced laparoscopic surgeries have only been documented by Belley Priso *et al.* in Douala and Kasia *et al.* in Yaoundé [5-6].

The Yaoundé Gyneco-Obstetric and Pediatric Hospital was created in 2002 and a study by Foumane *et al.* has stated a laparoscopic rate of 6.7% for the management of ectopic pregnancy [7]. Thus, little is known concerning the practice of laparoscopic surgery for tubal surgery in this hospital, especially when female infertility is suspected.

The objective of this study was to describe the practice

of laparoscopic surgery in the management of female infertility at the Yaoundé Gyneco-Obstetric and Pediatric Hospital, Cameroon. This study would determine the role of tubal surgery for infertility in our surgical activity and provide data on surgical findings as well as complications observed.

2. METHODOLOGY

It was an observational study with a retrolective data collection, carried out at the Yaoundé Gyneco-Obstetric and Pediatric Hospital, Cameroon. After the authorization of the hospital authorities was obtained, all the female patients laparoscopically operated for infertility from January 1st 2004 to November 30th 2011 were included. Patients with incomplete files were excluded. The studied variables were: age, parity, type of infertility, hysterosalpingography results, operatory findings, operatory gestures, quality of the best tube accordingly to Mage's tubal score [9], complications observed. Data were analyzed using Microsoft Excel 2007.

3. RESULTS

During the study period, 9194 gynecological surgeries were carried out at the Yaoundé Gyneco-Obstetric and Pediatric Hospital. Among these, 633 were done by laparoscopy, giving an endoscopic surgery rate of 6.9%. At the same time, 69.8% (442/633) of the laparoscopic operations performed were indicated for infertility. Twenty-seven files were incomplete (27/442; 6.1%) and our analysis was done on the remaining 415 files (93.9%).

The mean age of our patients was 31.8 ± 4.9 years with a range from 17 to 47 years. Most of the women (349/415; 84.1%) were aged between 25 and 39 years. Nearly three quarters of the included patients were married (301/415; 72.5%), while 85.3% of them (354/415) had at least a secondary education level. Half of the operated women (209/415; 50.4%) had an income and 94.0% of them were living in an urban area (**Table 1**).

Even though 72.7% (202/415) of the infertile women have previously been pregnant in their life, only 37.6% (156/415) have experienced a delivery and 25.5% (106/415) have delivered once. Most of them (365/415; 87.9%) were pauciparous (**Table 2**). On the 415 recruited patients, 40 (9.6%) had a pelvic surgical history, ectopic pregnancy being encountered in 72.5% (29/40) of the cases (**Figure 1**).

Tubo-peritoneal adhesions were present in 71.6% (297/415) of the operated patients. Hydrosalpinx with distal tubal occlusion was encountered in 41.5% (172/415) of our patients while proximal tubal occlusion concerned 2.4% (10/415) of the cases. Tubal phimosis was described in 14.0% (58/415) cases. Peri-hepatic adhesions and fibroid were respectively discovered during

Table 1. Socio-demographic variables of women operated for infertility ($n = 415$).

Variables	Frequency	%
Age (years)		
15 - 20	1	0.2
20 - 25	30	7.2
25 - 30	81	19.5
30 - 35	176	42.4
35 - 40	92	22.2
40 - 45	33	8.0
>45	2	0.5
Marital status		
Single	101	24.3
Married	301	72.5
Cohabitation	13	3.1
Education		
None	2	0.5
Primary	59	14.2
Secondary	164	39.5
University	190	45.8
Profession		
Housewife	178	42.9
Student	28	6.7
Self employment	78	18.8
Civil servant	68	16.4
Private sector worker	63	15.2
Residency area		
Rural	24	5.8
Urban	390	94.0
Abroad	1	0.2

Table 2. Gravidity and parity of operated patients ($n=415$)

Variable	Frequency	%
Gravidity		
0	113	27.3
1	130	31.3
2 and more	172	41.4
Parity		
0	259	62.4
1	106	25.5
2 and more	50	12.1

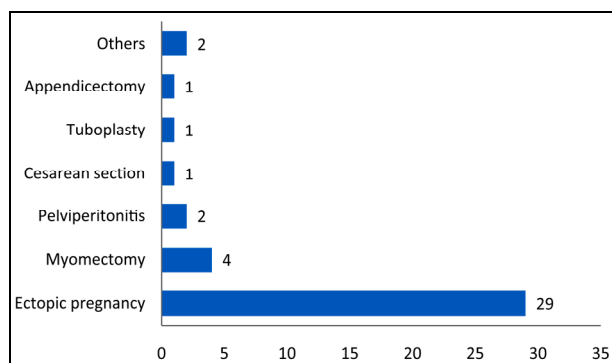


Figure 1. Past pelvic surgical events reported ($n = 40$).

laparoscopy in 22.4% (93/415) and 20.2% (84/415) of the patients (**Table 3**).

The commonest operatory gestures during laparoscopic surgery included adhesiolysis (297/415; 71.6%), neosalpingostomy with fimbriae eversion (172/415; 41.5%) and fimbrioplasty (58/415; 14.0%). Tubal scores 1 and 2 were reported in 57.6% (239/415) patients, while 42.4% (176/415) of them had a tubal score 3 or 4 for the best tube at the end of surgery (**Table 4**).

According to the analyzed files, 18 patients (4.3%) presented operatory complications, the commonest described being uterine perforation (**Table 5**).

4. DISCUSSION

The 6.9% rate of endoscopic surgery in gynecology found in this setting remains below the figures published by well trained and equipped teams like that of Takacs *et al.* who reported a laparoscopically treatment rate of 86.3% for ectopic pregnancy since 2004 in Miami, USA [10]. This rate usually depends on socio-cultural, economic and structural conditions, explaining similar figures in similar settings. In the same department, a 6.7% rate of ectopic pregnancy management by laparoscopy has been reported [7]. Though a closer figure of 10% has been documented in the neighboring Gabon by Pither *et al.* [11], Sanogo *et al.* have published a surprising 19% rate of endoscopic surgery in Bamako [12], suggesting that the figures could be improved, even in a Sub-Saharan Africa setting.

Most of our laparoscopic surgeries are indicated for infertility (69.8%). This figure is similar to the 76.3% of laparoscopic operations for infertility reported in 2007 by Mboudou *et al.* at the Yaoundé General Hospital [13], and remains beyond the rates observed in western countries where the prevalence of pelvic infections is low and access to assisted reproduction therapy easier [14].

The sociodemographic characteristics of our patients are similar to those of infertile women reported in the same setting. We found a mean age of 31.8 years in our patients while Belley Priso *et al.* in the Douala General

Table 3. Laparoscopic findings in operated patients ($n = 415$).

Findings	Frequency	%
Tubal		
Tubo-peritoneal adhesions	297	71.6
Unilateral hydrosalpinx	77	18.6
Bilateral hydrosalpinx	95	22.9
Unilateral pyosalpinx	8	1.9
Bilateral pyosalpinx	1	0.2
Unilateral proximal occlusion	6	1.4
Bilateral proximal occlusion	4	1.0
Tubal phimosis	58	13.7
Erected tube	7	1.7
Paratubal cyst	31	7.5
Ovarian		
Ovarian cyst	40	9.6
Polycystic ovaries	38	9.2
Uterine		
Uterine fibroids	84	20.2
Malformations	3	0.7
Pelvic		
Endometriosis	21	5.0
Normal pelvis	7	1.7
Liver		
Peri-hepatic adhesions	93	22.4
Others	18	4.3

Table 4. Mage's score of the best tube following surgery ($n = 415$).

Score	Frequency	%
1	60	14.5
2	179	43.1
3	123	29.6
4	53	12.8
Total	415	100.0

Hospital [15] and Nana *et al.* in the Yaoundé Central Hospital [16] respectively published a mean age of 32 and 32.7 years. At the same time, 87.9% of the operated women in our series were pauciparous. This figure is similar to the 93.5% pauciparous women found by Mboudou *et al.* at the Yaoundé General Hospital [13].

Nearly three quarters of women with a pelvic surgical history had been operated for ectopic pregnancy. This is different from the findings of Nzintcheu *et al.* [17] who

Table 5. Complications observed following surgery ($n = 415$).

Complications	Frequency	%
Per-operative		
None	405	97.6
Serious complications		
Intestine perforation	3	0.7
Vascular lesion with massive hemorrhage	3	0.7
Uterine perforation	4	1.0
Minor complications	/	/
Post-operative		
None	407	98.2
Serious complications		
Pelvipерitonitis	1	0.2
Eventration at incision site	1	0.2
Minor complications		
Parietal bleeding	1	0.2
Pelvic pain	3	0.7
Epigastralgia	2	0.5

reported myomectomy as the commonest pelvic surgical past event encountered in infertile women undergoing laparoscopy. This difference can find an explanation in the fact that Nzintcheu *et al.* did a prolective data collection, while we collected our data retrolectively. A past history of myomectomy could be under-reported in the patients files. On the other hand, ectopic pregnancy and infertility share several risk factors and are commonly associated.

Tubo-peritoneal adhesions, hydrosalpinx, fibroids and peri-hepatic adhesions are the commonest laparoscopic findings in our series. The role of tubo-peritoneal adhesions and hydrosalpinx in female infertility is well documented [18,19]. Apart from pelvic infections due to *Chlamydiae trachomatis* and others pathogens [19], adhesions may arise following pelvic surgery or unsafe abortion which are common in our setting [15]. As well as pelvic adhesions, peri-hepatic adhesions result from pelvic inflammatory diseases. They have been found in 40% of infertile women in the same setting and their findings were correlated to the presence of severe tubal lesions [17].

According to the Mage's classification, the tubal score was favorable in 57.6% of our patients. This figure is not far from the 46.1% reported by Nzintcheu *et al.* in the same hospital in 2009 following a prolective data collection on 130 infertile women [17]. The scoring of the best tube at the end of laparoscopic surgery for infertility remains an important step in low-resource settings with low access to assisted reproductive therapy [3].

Our complications rate of 4.3% is beyond the rate found by Mboudou *et al.* at the Yaoundé General Hospital in a group of 609 patients operated by laparoscopy [13]. However, they faced a set of diversified indications, including two cases of laparoscopic hysterectomies.

Our results should be considered with some limitations inherent to a study with rétrolective data collection. Twenty-seven patients with incomplete files were excluded. At the same time, the collection of data such as complications could have been non exhaustive, serious complications tending to be more reported than minor. All these might have given some bias to our results.

5. CONCLUSIONS

Infertility is the main indication for laparoscopic surgery in our setting. The main operative findings are tubo-peritoneal adhesions and hydrosalpinx. Ectopic pregnancy is the most common past pelvic surgical event reported. The most practiced surgical gestures are adhesiolysis, neosalpingostomy and fimbrioplasty. Half of the recruited women have a favorable stage for the best tube. The complication rate is low.

We recommend a strengthening of endoscopic surgical skills of the gynecologists engaged in the practice of laparoscopic surgery in advanced techniques, as well as the update of the available equipments at the Yaoundé Gyneco-Obstetric and Pediatric Hospital.

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