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Myomectomy under Cervico-Isthmic Tourniquet: Experience of the Gynecologic-Obstetric Department at the University Teaching Hospital of Cocody (Abidjan)

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ABSTRACT

Objective: To report the experience of Cocody's University Teaching Hospital in the practice of myomectomies under cervico-isthmic tourniquet and to assess its impact on per and post-operative blood loss.

Methodology: It was a case control study covering a 10-year period (that is from January 2009 to December 2018), and a population of 600 patients divided into two groups (A and B). The first (A) includes all patients admitted and operated on uterine myomas after the introduction of a cervico-isthmic tourniquet (CIT) by Foley catheter (case) and the second all patients admitted and operated on without CIT(Control).

Results: The average age of patients was 37 years with extremes of 24 and 50 years They were nulligestous in 38.3% of cases and nulliparous in 61.7% of cases. Hemorrhagic complications made up 65% of the surgical indications. The practice of myomectomy under cervico-isthmic tourniquet was associated with a relatively significant reduction in the duration of intervention including 20 minutes of time saved and a considerable reduction in blood loss($p<0,001$). Blood loss was estimated at 438.8 ml (+/- 127) in the CIT group, compared to 685.4 ml (+/- 182) in the control group($p<0,001$).

The postoperative hemoglobin rate in the cervico-isthmic tourniquet patients was 10.1 g/dl compared to 8.7 g/dl in the non-distort patients($p<0,0012$). No complications related to the presence of CIT were observed after sufficient follow-up. The length of stay in the hospital was estimated to be 2.8 days compared to 4.4 days in patients who did not use a tourniquet ($p=0,15$).

Conclusion: The use of the cervico-isthmic tourniquet in myomectomy, considerably limiting blood loss and reducing postoperative morbidity, appears to be an alternative to blood transfusion in countries of sub-Saharan Africa, where the dispensing of blood products remains a problem.

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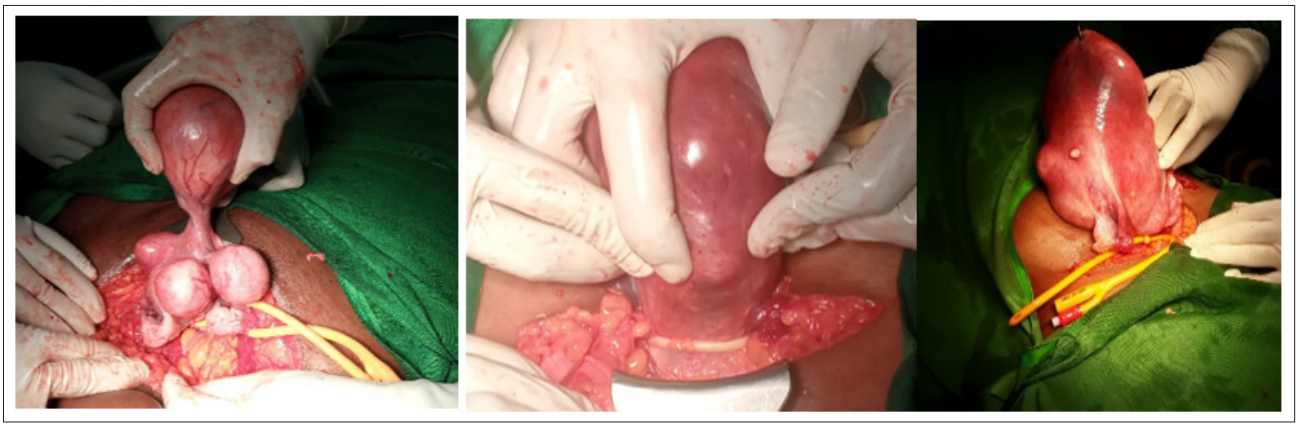
Introduction

Uterine fibroids are benign tumors whose pathogenesis is poorly known and do not allow the implementation of etiological treatments [1]. They are observed in 80-100% of black women over the age of 35. Their often asymptomatic presence can be the cause of several complications whose main are hemorrhagic, mechanical and infertility. Due to pronatalist culture in sub-Saharan Africa, conservative treatment remains the reference treatment, which is dominated by abdominal myomectomy, which carries a hemorrhagic risk in per and post-operative [2-4]. Several techniques have been recommended, including the introduction of the cervico-isthmic tourniquet or tourniquet technique to reduce blood loss. Through this study, it is a question of showing the impact of this technique through the experience of the Teaching Hospital of Cocody in Abidjan.

Methodology

It was a case control study. The study covered a period of 10 years, that is from January 2009 to December 2018 in the gynaecology and obstetrics department of the Cocody's University Teaching Hospital. The study population consisted of 600 myomectomized patients in two groups. Cases defined as all patients admitted and operated on at the gynaecological-obstetric department of the Cocody's University Teaching Hospital for uterine myomas after the establishment of a cervico-isthmic tourniquet by Foley catheter

(See figures 1, 2 and 3). The second group defined as controls: Patients admitted and operated without a cervico-isthmic tourniquet at Cocody's University Teaching Hospital and randomly selected after recruitment of a myomectomy under a cervico-isthmic tourniquet. The duration of the tourniquet was 90 minutes to maximum. These patients received an oxytocin infusion (30 IU of syntocinon®) and an intramuscular injection of methyl ergometrin (Methergin®). Not included in our study: Patients with indicated myomectomy converted to hysterectomy, incomplete records, patients who received myomectomy in another procedure (C-section, kystectomy, salpingectomy) and patients with coagulopathy or anticoagulant. The main criteria for comparison were per-operative blood loss and pre- and post-operative hemoglobin levels. We compared the proportions of the variables of interest in the two groups using the Chi-square test. The odds ratio with a 95% confidence interval was used to assess the relationship of each variable with the use of the CIT. The significance level was set at 0.05.



Figures 1, 2 and 3: Foley Catheter Surgical Views of the Cervical Isthmic Tourniquet (#16 or 18) Placed Before Myomectomy

Results

1. The average age of patients was 37 years with extremes of 24 and 53 years.
2. They were nulligestous in 38.3% of cases and nulliparous in 61.7% of cases. The desire for motherhood was estimated at 74%. They had already undergone myomectomy in 5% of cases.
3. Hemorrhages constituted 65% of the surgical indications
4. Post-myomectomic complications were present in 3.7% of cases, dominated by hemoperitoneum objectified to the control ultrasound and did not cause reintervention.
5. The average preoperative hemoglobin level was 11.1 g / l in the cases against 10.4 g / l in the controls.
6. The postoperative hemoglobin level of the patients who were subjected to the cervico-isthmic tourniquet was equal to 10.1 g / dl against a rate of 8.7 g / dl in the patients without tourniquet (Table 1).
7. Comparison of the 2 populations

Table 1: Comparison of the two groups

	Group A (case)	Group B (control)	p	Odds ratio (IC95%)
Average operating time	140 min	160 min	<0.001	3.89[2.07 – 7.49]
Average Blood Loss Estimated (ml)	438.8 (+/-127)	685.4 (+/-182)	<0.001	4.08[2.41 – 10.92]
Average Postoperative hemoglobin (g / l) rate	10.1g/dl	8.7g/dl	0.0012	2.67[1.10 – 6.52]
Average length of hospital stay (in days)	2.8	4.4	0.15	1,35[0.43 – 4.28]
Transfusion Practice	20.7%	38.3%	0.02	2.38[1.25 – 7.25]

X^2=51,04

Discussion

Uterine myomatosis is a pathology of women in full genital activity and myomectomy represents the first gynecological intervention in sub-Saharan Africa [1, 5, 6]. Thus, the average age of our patients was 37 years. Nulliparous accounted for 61.7%. Our patients were followed for infertility in 74% of cases. Parity was low, as some authors such as Ikechubulu found, whose patients had parity below 2[2,5]. The practice of myomectomy under cervico-isthmic tourniquet would increase the indications of myomectomy in sub-Saharan Africa where the desire for conception is constantly on the agenda. This technique allows multiple enucleations of myomas where a hysterectomy should traditionally be performed as a first line. This technique also allows the anesthesia team to be more serene and no longer perform a transfusion during surgery as in the past [7]. However, it is observed that when the tourniquets are too tight there could be a circulatory incidence and a risk of cataclysmic hemorrhages during the removal of the tourniquets which would cause the blood losses that we wanted to minimize. The advantages of this technique are numerous: possibility of anatomical reconstruction by progressive padding especially in a beginner or less fast surgeon; possibility to extract all myomas after a methodical exploration of the different layers of the uterus [3, 6, 7].

The duration of surgery was relatively longer in patients who received myomectomy without a cervical isthmic tourniquet. In other words, the installation of the cervico-isthmic tourniquet reduced the surgical time by 20 min. Indeed, the tourniquet in the cervico-isthmic position temporarily ligates the uterine arteries, which considerably decreases the blood flow to the uterus. Before this opportunity the surgeon is facilitated in all his gestures he realizes his stitches with more finesse and delicacy [8-11].

The blood loss in patients who benefited from the introduction of the tourniquet in the realization of their myomectomy was estimated on average of 438.8 ml against that obtained with the control group which was 685.4ml. This statistically significant difference indicates that this technique is actually effective in reducing intraoperative blood loss. This efficacy was already found in the Ikechebelu studies where blood loss was estimated at 515.7 ml (+/- 292.8) versus 756.4 ml (+/- 285.7) in the control group [2]. Blood losses in other studies, including Alptekin, were much lower, that is 286.4 ml (+/- 137.5) compared with 673.8 ml (+/- 172.3) for the control group and, double reinforce the idea of an alternative to blood transfusion embodied by the cervico-isthmic tourniquet [10].

The postoperative hemoglobin rate of our patients who were subjected to the cervico-isthmic tourniquet was equal to 10.1 g/dl against 8.7 g/dl and this difference is statistically significant. In our study, 20.7% of our patients who benefited from the use of a cervico-isthmic tourniquet during myomectomy used a blood transfusion in the postoperative unlike patients without tourniquet which is 38, 3% of cases. The practice of myomectomy under tourniquet has reduced blood transfusion demands by almost half. The same difference in transfusion need was demonstrated by the Alptekin study when there were 02 transfusion cases in 33 patients in the control group compared to 0 in 34 patients with tourniquet [10]. This surgical technique has a place in Sub-Saharan Africa to address the untimely shortages of blood products.

As for the duration of postoperative hospitalization, we found an average length of hospitalization of 4.4 days compared to 2.8 days in cases. The study by Fanny et al. agrees with our study when it estimated the average length of stay at 4 days in the groups of patients without tourniquet [3]. There is certainly limited evidence that misoprostol, vasopressin, bupivacaine plus epinephrine, tranexamic acid, gelatin-thrombin matrix, cervico isthmic tourniquet and mesna may reduce bleeding during myomectomy [4], we must recognize in our under-medicalized context the advantage of using the single CIT method, which is inexpensive and relatively effective [11-13].

Conclusion

The use of the cervico-isthmic tourniquet in myomectomy significantly limiting blood loss and reducing postoperative morbidity appears as an alternative to blood transfusion in sub-Saharan African countries where the dispensing of blood products remains a problem. Our study thus allowed us to show the effectiveness of myomectomy under cervico-isthmic tourniquet in the reduction of morbidity per and postoperative, and in the reduction of post-operative transfusion demands.

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