The Trend of the Technicity Index of Hysterectomy in a Tertiary Hospital in sub – Sahara Africa

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ABSTRACT

Introduction: Therefore the technicity index (TI), an indicator of performance is the percentage of the number of vaginal and laparoscopic hysterectomies, over the number of hysterectomies performed during a year in a service. Objective: To evaluate the trend of the technicity index of hysterectomies at Douala General Hospital. Materials and Methods: From January 2010 to December 2015, we selected on a retrospective study only patients who could benefit from the 03 surgical route performed in the obstetrics and gynecology department at the Douala General Hospital, Cameroon. The cumulative frequencies for all types of hysterectomies were tallied and the year- specific technicity index was calculated. Results: One hundred and sixteen cases were selected. The mean age was 49 ± 9.0 years. Symptomatic fibroids (75.0 %, 87 cases) and atypical hyperplasia of the endometrium (22.4% (26 cases) were the main indications of hysterectomy. Laparotomy was the main route, 87.1%, 101 cases) followed by vaginal hysterectomy, (9.5%, 11 cases) and laparoscopic hysterectomy (3.0%, 4 cases); we observed a fluctuating but decreasing TI from 25% to 8.3% with a mean TI evaluated at 12.9%. Conclusion: The technicity index is low. It has been fluctuating but decreasing during the 06 previous years at the Douala General Hospital. This is explained by the few number of vaginal and laparoscopic hysterectomies performed. The reinforcement of capacity of the gynecologists in minimally invasive technique for hysterectomies could reverse the curve.

Keywords: Hysterectomy; technicity index; trend, Cameroon
1. INTRODUCTION

Hysterectomy is one of the most commonly practiced gynecological interventions in France, Canada, America and Africa\(^{1,2,3,4,5}\), and even in Cameroon\(^{6,7,8}\). In the obstetrics and gynecological unit of Douala General Hospital (DGH), Hysterectomies represent 13.2% of all the gynecological interventions\(^{9}\). Up to date, three main routes are used in the practice of hysterectomy: hysterectomy by the abdominal route, hysterectomy by the vaginal route which can be laparoscopically-assisted and hysterectomy by laparoscopic route. Several studies show strong evidence of morbidity linked to hysterectomy by abdominal route, which is not the case with the other mini-invasive technics which are: the vaginal and laparoscopic route\(^{9,10,11}\). The current trend is to favor the mini-invasive technics for hysterectomies, to the detriment of abdominal hysterectomies\(^{9}\); hence the concept of the technicity index (TI) introduced for the first time in France to appreciate the performance of gynecological units in the practice of hysterectomies\(^{1}\).

TI represents the percentage of hysterectomies carried out by the vaginal route and laparoscopic route over the total number of hysterectomies performed annually in the unit. TI is calculated using the formula\(^{2}\):

\[
TI = \frac{VH + LH}{VH + LH + AH} \times 100\%
\]

where VH: vaginal hysterectomies, LH: laparoscopic hysterectomies, AH: abdominal hysterectomies, and TI: technicity index in percentage.

Because of the associated reduction in morbidity when an abdominal laparotomy is avoided, an elevated TI leads to associated benefits\(^{9,10,11}\). In our context, a mastery of hysterectomy by the abdominal route is indispensable, because of polymyomatous uterus associated with late consultations and factors favoring adhesions such as sequelae of pelvic inflammatory diseases, endometriosis, past history of multiple laparotomies, and cases of gynecological cancers\(^{12}\). We are still in the phase of the vulgarization of classical laparoscopic surgery and the early phase of advanced minimally invasive surgery. Our objective was to evaluate the technicity index of hysterectomies at DGH and describe the trend of TI over the years.

2. METHODS

Study design & Setting: We carried out a retrospective descriptive study over a period of five years from January 2010 to December 2015. The study was carried out in the obstetrics and gynecological unit of DGH. We included all patients that could benefit from hysterectomy by any of the three routes. We included all patients suffering from benign pathologies with a uterine volume less 12 weeks gestation. Data were analyzed using SPSS version 20.0 and presented in the form of charts and tables. We set the level of significance set at 0.05.

The study was conducted in the gynecology unit of Douala general hospital (DGH). DGH is the fastest growing hospital in the Central African sub-region. It has a capacity of 320beds distributed amongst the different services and units of the hospital. The gynecology unit has an operating theater and a hospitalization ward attached to it. Both laparoscopic and open surgeries are performed in the theater of DGH.

Ethical consideration: Ethical clearance was obtained from the institutional review board of the Faculty of Medicine and Biomedical Sciences and administrative approval from the administration of Douala general hospital. The principles of ethics involving human participants were respected throughout the study.

3. RESULTS

A total of 349 hysterectomies were conducted in the unit during the five years period, out of which 116 cases were treated for benigne pathologies with uterine size less than or equal to 12 weeks gestation. The mean age of our population was 49.1 ± 9.0 years (range 27 - 80) with the bulk of our patients greater than 40 years (104 cases, 89.6%). The main indications of hysterectomies were metrorrhagia in uterine fibroids (87 cases, 75.0%) and atypical hyperplasia of the endometrium (26 cases, 22.4%); followed by uterine prolapse (2 cases, 1.7%) and endometriosis (1 case, 0.9%). Laparotomy was the main route in 101 cases, (87.1%), followed by the vaginal route 11 cases (9.5%) and the laparoscopic route 4 cases (3.4%). The mean duration of hospitalization was: 6 days for laparotomy, three days for the vaginal route and 3.6 days for the laparoscopic route. We observed 13 cases (11.2%) of peri-operative complications as thus: 11 cases (9.4%) of hemorrhage from laparotomy, 1 case (0.8%) of bladder injury from laparotomy and 1 case (0.8%) of hemorrhage from the...
vaginal route. There was no statistically significant difference between these complications. Post-operatively we also observed 13 cases (11.2%) of complications: 11 cases (9.4%) of fever in laparotomy, 1 case of anemia in laparotomy and 1 case of fever in the vaginal route.

The mean technicity index was 12.9% with a range of 8.3% to 25% (Table 1). We observed a decreasing trend of the global technicity index over the years 25% in 2010 to 11.5% in 2015 (Figure 1).

**Table 1: Technicity index per year for the hysterectomies at Douala General Hospital from 2010 to 2015**

<table>
<thead>
<tr>
<th>Years</th>
<th>Laparotomy</th>
<th>Vaginal route</th>
<th>Laparoscopy</th>
<th>Total</th>
<th>Technicity Index (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>2011</td>
<td>19</td>
<td>2</td>
<td>0</td>
<td>21</td>
<td>9.5</td>
</tr>
<tr>
<td>2012</td>
<td>13</td>
<td>3</td>
<td>0</td>
<td>16</td>
<td>18.7</td>
</tr>
<tr>
<td>2013</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>17</td>
<td>11.7</td>
</tr>
<tr>
<td>2014</td>
<td>22</td>
<td>2</td>
<td>0</td>
<td>24</td>
<td>8.3</td>
</tr>
<tr>
<td>2015</td>
<td>23</td>
<td>2</td>
<td>1</td>
<td>26</td>
<td>11.5</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>11</td>
<td>4</td>
<td>116</td>
<td>12.9</td>
</tr>
</tbody>
</table>

**Fig.1: The trend of Technicity Index of hysterectomy at Douala General Hospital from 2010 to 2015**

4. **DISCUSSION**

The main indication of hysterectomy was symptomatic fibroids in 75% of cases. This is more than the 64.86% found by Kouam and coll and the 54.4% of Matanga and coll (6,7). This is in line with literature that classifies symptomatic uterine fibroids as the main indication for hysterectomies (4,5,13,14). We observed a common practice of the abdominal route (87.1%). This was similar to studies earlier done by Kouam and coll (7), and Buambo and coll (4), where abdominal hysterectomies were performed respectively in 75% and 82.5%.

According to the Canadian Society of Obstetricians and Gynaecologists, the vaginal route is the first intention followed by laparoscopy (9). This recommendation comes as result of greater morbidity in abdominal hysterectomy reflected by longer hospital stay and longer recovery time, as well as an elevated incidence of ileus, pain, infections and post-operative fever and higher per operative blood loss (4,6,7,10,11). Besides the advantages to the patient, minimally invasive surgery is specifically advantageous in the social area. All these advantages were observed in our study: average duration of hospital stay was 6.07 ± 1.92 days for laparotomy, 3±
1.09 days for vaginal route and 3.6 ± 1.04 days for laparoscopy. For all the three routes, the length of hospital stay was higher for abdominal hysterectomies with a significant difference (p = 0.00023).

All patients for laparoscopic route could have been out by the 36th hour since they had no major symptom except moderate fatigue. For precaution, however, because of difficulties in communication and far distance from their households, hospital stays was prolonged by 24 hours. Our results were close to Chapron et al.(15) and Wattiez and coll.(16) who respectively observed a length of hospital stay of 3.9 days and 4.3 days. Recent studies have also shown that vaginal route and laparoscopy could reduce the length of hospital stay by at least 24 hours, especially as there is a better post-operative pain control(17,18).

Analysis of intraoperative and postoperative complications revealed a high morbidity for laparotomy largely due to hemorrhage (11 cases, 9.4%) and fever (11 cases, 9.4%); These complications were rare for mini-invasive routes: hemorrhage (1 case: 0.8%) and fever (1 case: 0.8%). In hysterectomy performed by mini-invasive routes inflammation is reduced, hemostasis is precise and particularly in laparoscopy due to amplification of pelvic structures, reducing by thus the inflammatory surface area and blood collections which breed pyrogenic substances.(19,20)

As a result, an increase in the technical index makes it possible to minimize not only the morbidity and stay in hospital but also the global cost of management. Global TI is weak at our institution because of the low number of hysterectomies carried out by the vaginal and laparoscopic routes. The low fluctuating and decreasing trend of TI was principally attributed to the low number of the practice of hysterectomy by the vaginal and laparoscopic route by the gynecologists in the unit. We were not able to compare our results to those studies carried out in African hospitals because to the best of our knowledge there were not published studies. To our knowledge, we are the first to publish on TI for hysterectomies in Africa. Notwithstanding, Laberge et Singh in Quebec found that the global TI was 30% with a maximum of 60% (21%); In France, TI was 90% in 2008, with only 10% of hysterectomies carried out by laparotomy(1). Our TI (12.9%) is close to what Maha AL Khadury and coll in Moyen-Orient had which was 19% in 2012(22).

5. CONCLUSION

Our study shows a low technicity index in the practice of hysterectomies in DGH. Reinforcement of the capacity of the gynecologists in the practice of hysterectomies by mini-invasive route, via internships with experienced hospitals, the organization of practical sessions supervised by experienced teams and the reinforcement of teamwork can contribute to its rise.

DECLARATIONS

Ethics approval and consent to participate: Ethical approval was obtained from the institutional review board of the Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1. A copy of is available for review upon request by the Editor-in-Chief of this journal

CONSENT FOR PUBLICATION

Being a retrospective study, consent for publication was obtained from the administration of Douala general hospital

AVAILABILITY OF DATA AND MATERIAL

The datasets (details of all results) are available from the corresponding author on reasonable request by the editor – in chief. The file of the patient is in Douala general hospital.

COMPETING INTERESTS

"The authors declare that they have no competing interests” in this section.

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None

AUTHOR’S CONTRIBUTIONS

KNL wrote the protocol and collected the data, NNT, PNT and KNK wrote the initial draft; TNC, KB, NNC, KS, ME, NNM and BPE read and corrected the initial manuscript, and all authors approved the final manuscript.

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