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Minimizing Blood Loss in Laparotomic Myomectomy through the Tourniquet Use: Insights from Our Clinical Experience and Literature Review

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Abstract: The uterine tourniquet is often not used to reduce intraoperative blood loss due to controversial opinions in the literature. The objective was to evaluate the effectiveness of this procedure in laparotomic myomectomy. This is a retrospective, monocentric case-control study, including patients who underwent laparotomic myomectomy and were categorized into the Tourniquet Group (A) and No Tourniquet Group (B). The blood loss outcomes were compared. Intra-operative blood loss in Group A was 275 ± 200 mL, while in Group B was 410 ± 390 mL (p = 0.11). Notably, five patients in the No Tourniquet Group lost more than 1000 mL of blood and required blood transfusion, while no such cases were reported in the Tourniquet Group. Furthermore, the decrease in hemoglobin post-procedure was statistically significant, favoring Group A with a decrease of 1.9 ± 0.7 g/dL compared to Group B's 2.8 ± 2.2 g/dL (p = 0.04). The use of the Foley catheter as a tourniquet during laparotomic myomectomy may represent a remarkable tool that profoundly impacts the surgical process by substantially reducing blood loss. Its use may play a role in significantly diminishing the likelihood of requiring blood transfusions, enhancing patient safety and outcomes, and should be systematically adopted.

Keywords: uterine myomectomy; laparotomy; surgical blood loss; tourniquets

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1. Introduction

Myomectomy is a fertility-sparing surgical procedure performed to excise uterine fibroids while preserving the uterus [1]. This approach aims to mitigate the symptoms associated with leiomyomas, including but not limited to, persistent abnormal uterine bleeding unresponsive to conventional medical therapies, pelvic discomfort, pressure symptoms, and issues related to infertility [2]. Significantly, this procedure is predominantly favored by individuals who, for psychological, reproductive, and cultural reasons, aspire to maintain their uterus beyond the completion of their family planning objectives. The surgical methods for myomectomy are diverse, encompassing a variety of approaches such as hysteroscopic, laparoscopic (inclusive of robot-assisted techniques), and traditional laparotomy to ensure the effective removal of fibroids. The surgical plane is carefully made based on the distinctive features of the leiomyomas, such as size, quantity, and anatomical site [3,4]. The laparoscopic modality, whenever feasible, is considered the gold standard, heralded for its association with reduced blood loss, diminished morbidity rates,

expedited hospital discharge times, and alleviated postoperative discomfort in comparison to conventional open myomectomies [5]. Nonetheless, the laparoscopic approach encounters its own set of challenges, including but not limited to, constraints related to the dimensions, number, and location of the myomas, alongside the requisite laparoscopic surgical proficiency, particularly the intricate multilayer suturing of the leiomyoma beds post-enucleation [6]. Consequently, despite the advances and preferences for minimally invasive techniques, myomectomy via laparotomy continues to be a prevalent choice across numerous healthcare facilities worldwide [7].

Myomectomy is associated with a relatively low complication rate, yet significant intraoperative blood loss remains a notable concern. Such bleeding can lead to various complications, including postoperative anemia, intra-operative hypovolemic shock, and infections [8]. Efforts to mitigate anemia and potential bleeding include oral iron therapy, gonadotropin-releasing hormone (GnRH) agonists [9], and progesterone antagonists [10]. Furthermore, a variety of techniques are employed to reduce blood loss, such as Bonney's clamp usage [11], intramyometrial infiltration with vasopressin and its analogs [12,13], intravenous oxytocin, preoperative administration of GnRH analogues [10], intravaginal misoprostol [13,14], intramyometrial bupivacaine with epinephrine [15], the application of profibrin agents/thrombin [16,17], and employing a tourniquet around the cervix or infundibulopelvic ligaments have been explored. These measures not only aim at reducing the immediate surgical risks but also at ensuring a smoother recovery process by addressing and preempting potential complications arising from significant blood loss. However, no single method has achieved consensus as the definitive standard [18]. The tourniquet technique is notable yet not universally adopted due to controversial opinions and the literature is lacking on this topic. For instance, it has been argued that ligating the infundibulopelvic arteries might obstruct ovarian circulation, inflict ischemic damage to the ovaries, reduce ovarian reserve, and affect fertility [19].

Thus, this study aimed to evaluate the effectiveness of tourniquet use in laparotomic myomectomy procedures to minimize intraoperative blood loss, comparing outcomes between patients with and without its application.

2. Materials and Methods

This is a retrospective, descriptive, monocentric case-control study, including patients who underwent laparotomic myomectomy between January 2022 and December 2023.

The participants were consecutively enrolled, with the surgical approach being determined by the surgeon's preference, and were categorized into two groups: those who underwent surgery with a tourniquet (Group A) and those without a tourniquet (Group B). The same surgeon performed all of the myomectomies. In all cases, the histological diagnosis was a leiomyoma.

The indications for surgery were the presence of related symptoms, such as abdominal pain, abnormal uterine bleeding, symptomatic anemia, and feelings of pressure in the bladder or bowel. Patients who underwent a laparoscopic myomectomy, those younger than 18 years, pregnant women, and those with a histological diagnosis of a malignant myoma or an adenomyoma were not included in the study.

In Group A, a Foley catheter was employed as a tourniquet at the base of the uterus near the insertion of the uterosacral ligaments, just below the site of fibroid removal. The tourniquet was kept in place throughout the procedure to reduce blood supply from the uterine and infundibulopelvic vessels temporarily, released intermittently (for intervals of 10 min after every 20 min of application) during the operation to mitigate potential risks associated with prolonged ischemia, and removed after the uterus was repaired.

In Group B, myomectomies were conducted without employing a tourniquet, with operative site visibility being enhanced solely through the use of suction to remove blood from the field.

Pre-operative variables such as age, body mass index (BMI), parity, symptoms, uterine size, and hemoglobin (Hb) levels were detected, along with surgical specifics such as the

type of laparotomic incision, number and size of fibroids removed, blood loss, the necessity for blood transfusions, and the length of the procedure. Blood loss was estimated by measuring the volume of blood collected by the suction and visual estimation of swabs. Transfusion decisions were guided by anesthesiologists based on blood loss exceeding 1000 mL or the presence of unstable vital signs according to hypovolemia. Post-operative assessments included a comprehensive blood count after 6 h and confirmation of the size and number of fibroids, correlating with histopathological findings. The occurrence of fever and paralytic ileus was also taken into account.

Myomectomy was performed through a transversal laparotomic incision under general anesthesia. After general anesthesia induction, the patients were arranged in a supine position, the bladder was emptied, and a careful pelvic examination was performed. Body hair in the planned incision was clipped, cervical dilatation was performed to facilitate postoperative drainage from the endometrial cavity, a Foley urethral catheter was inserted in group A women, and abdominal preparation was completed. The choice of Pfannenstiel incision was considered appropriate. Following abdominal entry, the serosal surface was identified. Palpation of the myometrium was carried out and, during the surgery, further assessment of buried intramural or submucous leiomyomas was performed, carefully. The size, location, and number of myomas were evaluated. Bilateral windows were created in the leaves of the broad ligament at the level of the internal cervical when necessary. When everything was in readiness and the plan of operation had been selected by the surgical team, the Foley's was tightened progressively to reduce the blood supply in group A patients. Further uterine artery ligation was not necessary. Large, isthmic, or broad ligament leiomyomas, however, never limited the use of tourniquets. Thus, myomectomy was performed in a bloodless field, facilitating the complete removal of all tumors and the accurate reconstruction of the uterus. Once the tourniquets were tightened in place, myomectomy was carried out as quickly as possible to prevent ischemic damage to the uterus, tubes, and ovaries. However, the tourniquet was released intermittently (for 10 min at 20-min intervals) during the surgery to reduce the potential risks linked to prolonged ischemia. Removal of all leiomyomas was carried out through single or multiple incisions in the anterior or posterior body of the uterus. The vertical midline uterine incision allowed the removal of the largest number of myomas, through the fewest number of incisions. Myomas were grasped with tooth clumps. Applying traction on the leiomyoma outward and away from the myometrial incision created the development of a tissue plane between the myometrium and leiomyoma. Dissection of the pseudocapsule, which surrounded the leiomyoma, freed the tumor from the adjacent myometrium. In all cases, electrocoagulation was used. While removing myomas, the redundant serosa was taken away. In the reconstruction of the uterus, fixed points such as the attachments of the round ligaments and fallopian tubes on each side of the body were taken as a reference. Myoma beds were closed with interrupted or non-interrupted 2-0 delayed absorbable sutures. The myometrium was closed in one or two layers, depending on the thickness, to improve hemostasis and prevent hematoma formation. The serosal incision was closed using a continuous 5-0 or 4-0 delayed absorbable "baseball" stitch to limit adhesion formation. Tourniquets around the ovarian vessels were released while the uterine serosa was closed to restore circulation to the fallopian tubes and ovaries and to restore collateral flow to the uterus. The uterus was carefully inspected for any signs of bleeding. Before closing the abdomen, the small holes in the broad ligament were fixed with eight-shaped sutures.

Statistical analysis was performed using the t-student test to examine group differences in age, BMI, uterine size, and changes in Hb level. Chi-square and Fisher exact tests were used to test group differences in parity, number of patients losing more than 1000 mL, and need for transfusion. The threshold for statistical significance was $p < 0.05$.

3. Results

In total, 180 women who underwent laparotomic myomectomy were consecutively included: 90 patients received the procedure with a tourniquet (Group A) and the other 90 without (Group B).

The predominant pre-operative clinical symptoms observed included low abdominal mass (71.1%), menorrhagia (43.3%), infertility (38.3%), abdominal pain (22.2%), and dysmenorrhea (16.7%) (Table 1).

Table 1. Symptoms reported by the included patients.

Symptoms	Tourniquet (Group A) (*n* = 90)	No Tourniquet (Group B) (*n* = 90)	Total (*n* = 180)
Abdominal mass (*n*, %)	69 (76.7%)	59 (65.6%)	128 (71.1%)
Menorrhagia (*n*, %)	34 (37.8%)	44 (48.9%)	78 (43.3%)
Infertility (*n*, %)	26 (28.9%)	43 (47.8%)	69 (38.3%)
Abdominal pain (*n*, %)	17 (18.8%)	23 (25.6%)	40 (22.2%)
Dysmenorrhea (*n*, %)	7 (7.8%)	23 (25.6%)	30 (16.7%)
Irregular vaginal bleeding (*n*, %)	4 (4.4%)	13 (14.4%)	17 (9.4%)
Urinary symptoms (*n*, %)	6 (6.7%)	10 (11.1%)	16 (8.9%)
Recurrent abortion (*n*, %)	4 (4.4%)	0 (0%)	4 (2.2%)

Abbreviations: *n*, number.

No significant differences were observed in baseline characteristics between the two groups. The group with the tourniquet, had a mean age of 35 ± 4.3 years, while the Group without the tourniquet had a mean age of 36 ± 3.2 years (p = 0.33). The mean BMI was 23.2 ± 8.9 Kg/m^2 in A patients and 22.7 ± 8.6 Kg/m^2 in B patients (p = 0.92). Nulliparity was reported in 65.5% of women in Group A and 67.7% in Group B. The uterus size averaged 15.5 ± 4.0 weeks of gestation in Group A and 16.5 ± 3.8 weeks in Group B (p = 0.34). The largest leiomyoma measured 17 ± 4.4 cm in Group A and 15 ± 6.1 cm in Group B (p = 0.17). The number of myomas was 3 ± 3 in Group A and 3 ± 2 in Group B (p = 0.84). Preoperative Hb levels were 12.1 ± 1.5 g/dL in Group A and 12.0 ± 1.3 g/dL in Group B (p = 0.79). Adhesions were found in 61.7% of cases of Group A and 55.5% of Group B (Table 2).

Table 2. Patients' baseline characteristics.

Variables	Tourniquet (Group A) (*n* = 90)	No Tourniquet (Group B) (*n* = 90)	t-Student	*p*-Value
Age (mean ± SD) (years)	35 ± 4.3	36 ± 3.2	0.98	0.33
BMI (mean ± SD) (Kg/m^2)	23.2 ± 8.9	22.7 ± 8.6	0.11	0.92
Nulliparity (*n*,%)	59 (65.5%)	61 (67.7%)		
Size of the uterus (mean ± SD) (weeks of gestation)	15.5 ± 4.0	16.5 ± 3.8	0.95	0.34
Size of largest leiomyoma (mean ± SD) (cm)	17 ± 4.4	15 ± 6.1	1.39	0.17
Number of leiomyomas (mean ± SD)	3 ± 3	3 ± 2	0.23	0.84
Preoperative Hb (mean ± SD) (g/dL)	12.1 ± 1.5	12.0 ± 1.3	0.26	0.79
Pfannenstiel incision (*n*,%)	90 (100%)	90 (100%)		
Adhesions (*n*,%)	55 (61.7%)	50 (55.5%)		

Abbreviations: Hb, hemoglobin; *n*, number; SD, standard deviation.

Among all women, the distribution of fibroid locations was predominantly intramural (92.7%), followed by subserosal (57.2%), and submucosal (38.9%), indicating that many patients had fibroids in more than one anatomical location. There was no statistical difference between the two groups with regard to the sites of the fibroids ($p > 0.05$) (Table 3).

Table 3. Location of the fibroids.

Location	Tourniquet (Group A) (n = 90)	No Tourniquet (Group B) (n = 90)	Total (n = 180)
Intramural myomas (n,%)	83 (92.2%)	84 (93.3%)	167 (92.7%)
Subserosal myomas (n,%)	60 (66.7%)	43 (47.8%)	103 (57.2%)
Submucosal myomas (n,%)	33 (36.7%)	37 (41.1%)	70 (38.9%)

Abbreviations: n, number.

Intra-operative blood loss in Group A was 275 ± 200 mL, while in Group B was 410 ± 390 mL ($p = 0.11$). Notably, 5 patients in the No Tourniquet Group lost more than 1000 mL of blood and required blood transfusion, while no such cases were reported in the Tourniquet Group. Furthermore, the decrease in Hb post-procedure was statistically significant, favoring Group A with a decrease of 1.9 ± 0.7 g/dL compared to Group B's 2.8 ± 2.2 g/dL ($p = 0.04$). The duration of the operation was significantly shorter in the tourniquet group (55.5 ± 29.3 min versus 79.3 ± 38.5; $p = 0.02$). Postoperative fever and paralytic ileus did not differ significantly between the two groups (2 cases in both groups for postoperative fever and no cases for paralytic ileus) (Table 4).

Table 4. Postoperative outcomes.

	Tourniquet (Group A) (n = 90)	No Tourniquet (Group B) (n = 90)	t-Student	p-Value
Blood loss (mean ± DS) (mL)	275 ± 200	410 ± 390	1.61	0.11
Blood loss > 1000 mL (n)	0 (0%)	5 (5.6%)		
Blood transfusion (n)	0 (0%)	5 (5.6%)		
Postoperative Hb (mean ± DS) (g/dL)	10.2 ± 2.1	9.2 ± 1.9	1.67	0.10
Hb fall (mean ± DS) (g/dL)	1.9 ± 0.7	2.8 ± 2.2	2.03	0.04
Surgery duration (mean ± DS) (min)	55.5 ± 29.3	79.3 ± 38.5	2.48	0.02
Postoperative fever (n)	2	2		
Paralytic ileus (n)	0	0		

Abbreviations: Hb, hemoglobin; n, number; SD, standard deviation.

4. Discussion

Laparotomic myomectomy remains a cornerstone in the treatment of uterine myomas across numerous healthcare facilities, primarily due to its cost-effectiveness and procedural simplicity compared to the minimally invasive surgical alternatives [7]. Nowadays, with the availability of safe and efficient blood transfusion services and advancements in surgical practices, morbidity and mortality have been reduced.

Despite these improvements, the threat of hemorrhage due to the uterus's enhanced vascularity continues to be a critical concern [8]. Maximizing the patient's Hb level before surgery is paramount in minimizing the need for transfusion. Given that abnormal uterine bleeding—a prevalent reason for myomectomy—often leads to secondary anemia, a thorough pre-surgical hematological evaluation is essential.

The use of the conventional Foley's urethral catheter as a tourniquet is highlighted for its cost-effectiveness and accessibility, making it a potentially effective strategy to reduce blood loss during laparotomic myomectomy. Historically, the United States has seen the rubber tourniquet employed through the broad ligament to encircle the cervix and occlude uterine vessels, with techniques varying in tourniquet release times as detailed by Rubin [20] (in which it was released every 10 min) and Monaghan [21] (every 20 min). Some authors recommend the placement of the tourniquet around the uterine vessels only, while others use it around both the cervix and infundibulopelvic vessels. In the present study, the tourniquet was placed at the base of the uterus near the insertion of the uterosacral ligaments. The observed differences in blood loss and Hb decrease between the groups underscore the clinical significance of tourniquet use in myomectomy. This strategy not only enhances surgical safety by reducing the need for transfusions—a critical consideration in patient management—but also implies a potential for faster patient recovery. Lower blood loss is associated with fewer complications, such as infections and anemia, leading to a smoother postoperative course. The substantial reduction in Hb drop within the tourniquet group suggests that patients may potentially experience less postoperative fatigue and a quicker return to daily activities. In clinical practice, these findings support a paradigm shift towards integrating tourniquet use more systematically, particularly in surgeries with high bleeding risk. This approach could redefine patient care standards, emphasizing not just the surgical outcome but the overall recovery trajectory, including reduced hospital stay and lower healthcare costs.

Few other studies evaluated the use of the intra-operative uterine tourniquet during abdominal myomectomy to reduce blood loss. A case-control study Elliot et al. [22] showed that there was no significant difference in the estimated blood loss, fall in Hb, and the need for transfusion. Conversely, other papers have shown results consistent with those of the present study. Bahall et al. [23] and Alptekin at al. [24] obtained a mean intraoperative blood loss in the tourniquet group of 252.60 mL and 286.4 mL (similarly to this study), significantly lower compared to the controls. Other authors [25] found a mean intraoperative blood loss for the tourniquet group to be higher than those reported (515.7 $\pm$ 292.8 mL), but still statistically lower compared to the no-tourniquet group (756.4 $\pm$ 285.7 mL) ($p > 0.001$). Indeed, a randomized controlled trial by Taylor [26] found a difference between means of 1870 mL ($p < 0.0001$) and transfusion rates of 7% and 79% ($p = 0.0003$). Similarly, other studies [27–29] concluded that there was a statistically significant difference between the groups with a uterine tourniquet applied and not applied in terms of blood loss, reduction in Hb, and transfusion amounts, in favor of the uterine tourniquet use group in patients who underwent an abdominal myomectomy. Moreover, two studies [19,30] compared triple uterine tourniquet with single tourniquet in terms of blood loss during open myomectomy, showing no significant difference. In another retrospective study [31], where 138 out of 145 patients had tourniquets applied to the uterus to reduce bleeding during laparotomic myomectomy, 17.4% had a post-operative fever, a percentage higher than that of the present study. However, the different settings of the previous analysis, conducted in South Nigeria, might have influenced the results.

Although uterine tourniquet application would appear to prolong the duration of the operation, this study reported that its use shortens the time of the surgery. This aligns with a study by Mehdizadehkashi et al. [29] who used a Penrose drain to achieve uterine artery occlusion and concluded that the duration of surgery was shorter compared to controls, despite the time spent on fastening and opening the tourniquet. In another study [28], the operation times in patients with more than three myomas removed were shorter in the tourniquet group than in the non-tourniquet group. This indicates that myomectomy without a tourniquet is associated with complications, especially blood loss, according also to the results of the linear regression from the latest study [28]. Therefore, a clear operating field represents a significant advantage gained from the use of the tourniquet.

Moreover, previous studies have demonstrated the safety of the procedure. Firstly, it is important to consider that the tourniquet may be released intermittently to prevent

ischemic damage during myomectomy, as performed in the current study and reported by other authors. This also ensures that the risk of ischemic reperfusion injury following the device's removal need not be a concern [29]. Furthermore, no significant alterations were observed in the Doppler resistance indices of the uterine artery when compared to baseline values during follow-up after open myomectomy [26]. It is also believed that ligating the uterine artery may reduce blood flow to the ovarian artery and ultimately decrease ovarian reserve, as the ascending branch of the uterine artery forms an anastomosis with the ovarian artery. However, in the literature, the use of a uterine tourniquet did not appear to impact ovarian function. Taylor et al. [26] reported no change in ovarian function following the triple tourniquet technique as postoperative serum Follicular-Stimulating Hormone (FSH) levels did not significantly change compared with preoperative levels. Al et al. [19] who focused on the effects of triple and single uterine tourniquets during myomectomies also concluded that tourniquet use had no significant effect on ovarian reserve as determined by Anti-Müllerian Hormone (AMH) levels. In a retrospective review [23] all patients restarted menses within six weeks of myomectomy. Finally, another analysis [28] detected no difference between the pregnancy outcomes of the patients in the uterine tourniquet use and non-use groups.

Injecting dilute vasopressin solutions directly into myomas, raising a circumferential wheal, to induce vascular spasm and muscle contraction is an effective alternative to tourniquet techniques [12]. Saha et al. [32] concluded that the intramyometrial vasopressin injection during myomectomy operation more effectively decreased the blood loss, and need for blood transfusion, and it caused less reduction in Hb in the postoperative period ($p \leq 0.001$). These results were confirmed by a randomized comparison [33] in which vasopressin resulted in less blood loss (mean 287.3 $\pm$ 195 mL vs. 512.7 $\pm$ 400 mL for tourniquet; $p = 0.036$), and 6 of 26 patients in the tourniquet group lost more than 1000 mL of blood, whereas all of the vasopressin subjects lost less than this amount ($p = 0.023$); however, there were no significant differences between the two groups in the fall in the Hb level and the number of blood transfusions. However, another paper [34] found no statistically significant difference between no intervention, vasopressin, and combined vasopressin and tourniquet groups in blood loss, drop in Hb, and blood transfusions. Nonetheless, vasopressin use is compromised by risks associated with involuntary intravascular infiltration, such as transient severe hypertension, bradycardia, atrioventricular block, myocardial infarction, and pulmonary edema [35,36].

A prospective randomized controlled trial [37] showed that tourniquets were significantly more effective than preoperative treatment with GnRH analogues at reducing intra-operative blood loss during open myomectomy; intra-operative estimated blood loss was significantly higher with the use of GnRH analogue than tourniquets giving a difference between means of 1842 mL ($p < 0.001$); similarly, significantly more women required blood transfusion in the GnRH analogue group (70 vs. 30%, $p < 0.025$). In fact, GnRH analogues, while reducing fibroid size, seem to not significantly impact blood loss, are expensive, and have associated menopausal side effects. In addition, during the treatment, the smallest masses disappear and become visible again only after surgery [38]. Another advantage associated with the use of the tourniquet technique is that offers a clearer operating field, facilitating the complete removal of fibroids and possibly reducing operative time.

Finally, Afolabi et al. [39] conducted a randomized controlled trial involving women who underwent abdominal myomectomy in Nigeria, showing that the effectiveness of perioperative vaginal misoprostol (a single dose of 400 µg one hour before surgery) was comparable to intra-operative hemostatic paracervical tourniquet in terms of intraoperative blood loss (931.89 $\pm$ 602.13 mL vs. 848.40 $\pm$ 588.85 mL, $p = 0.532$), intra-operative blood transfusion rates (60 vs. 55%; $p = 0.651$), blood transfused (1.30 $\pm$ 1.20 units vs. 1.20 $\pm$ 1.30 units; $p = 0.722$), and post-operation blood transfusion rates were 2.5 vs. 5% ($p = 0.556$). However, adverse effects of misoprostol occurred in 5 (12.5%) participants.

A key strength of this research lies in its comprehensive methodological approach, which includes an in-depth analysis of both pre-operative and post-operative variables.

Furthermore, the adoption of a uniform surgical approach across all cases ensures consistency in the application of the tourniquet technique, thereby minimizing variability in outcomes attributable to surgical techniques. Another merit of the study is the large sample size, which enhances the reliability of the findings and supports the potential for generalization to a broader population undergoing laparotomic myomectomy. However, the retrospective design of the study, while providing valuable insights, inherently limits the ability to ascertain causality and might be subject to biases associated with retrospective data collection. Conducting the research in a single center also poses questions regarding the generalizability of the findings, suggesting that multicentric studies could offer broader validation. Additionally, the potential for selection bias due to the consecutive enrollment of participants and decisions based on surgeon preference might impact the comparability of the intervention and control groups, thereby influencing the study's outcomes. Further research, particularly prospective, multicentric studies, could help validate the technique's effectiveness and explore its applicability to a broader range of surgical scenarios. This future research could also address any long-term outcomes associated with the use of the Foley catheter as a tourniquet, including potential complications or impacts on healing processes, to provide a more comprehensive understanding of its benefits and limitations.

5. Conclusions

The use of the Foley catheter as a uterine tourniquet during laparotomic myomectomy may represent a remarkable tool that profoundly impacts the surgical process by substantially reducing blood loss. Its use may play a role in significantly diminishing the likelihood of requiring blood transfusions, enhancing patient safety and outcomes, and should be systematically adopted.

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Abbreviations

AMH, Anti-Müllerian Hormone; BMI, body mass index; FSH, Follicular-Stimulating Hormone; GnRH, gonadotropin-releasing hormone; Hb, hemoglobin; *n*, number; SD, standard deviation.

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