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Retrospective review of determinants of complication of abdominal myomectomy at 03 Hospitals in Addis Ababa Ethiopia

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Addis Ababa, Ethiopia



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Summary

Back ground: myoma is a benign smooth muscle cell neoplasia of myometrium and its prevalence ranges from 4.5 to 68.6%. Abdominal myomectomy is a common management option for symptomatic myoma in women who wants future fertility. The pattern clinical characteristics and complications during abdominal myomectomy are not clearly known at SPHMMC, RDDMH and DMRH.

Objective: The objective of this study is to determine the proportion ,complication and associated factors of abdominal myomectomy at SPHMMC, RDDMH and DMRH.

Methods: Hospital based retrospective cross sectional study was conducted from May 2021 to April 2023 at SPHMMC, RDDMH and DMRH. The study included all patients who had abdominal myomectomy during the study period at SPHMMC, RDDMH and DMRH. Data was collected using structured questioner through chart and record review and finally entered and analyzed using SPSS version23. Descriptive summary of the data and logistic regression was used to identify possible predictors using odds ratio with 95%confidence interval and p value of 0.05.

Result: Total sampling yielded 234 cases, of which 203 records (86.7%) were adequate for analysis. Rate of abdominal myomectomy is 8.08% of which majority was from age of 31-35 and most of them were from urban area. 24.6% of cases developed complication. Location of myoma, size of uterus, number of myoma, post-operative hct and duration of operation were significantly associated with complication.

Conclusion: Outcome of abdominal myomectomy is generally favorable and it is preferred method for those who did not finish family size. Nevertheless, patients should be counseled preoperatively on the risk of blood loss and the possibility of blood transfusion. . Location of myoma, size of uterus, number of myoma ,EBL, post-operative hct and prolonged surgery time are significant determinants of complications.

-Keywords: Abdominal myomectomy, indication, complication, SPHMMC

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List of abbreviations

AUB=Abnormal Uterine Bleeding

CI =Confidence Interval

DMRH=Dagmawi Menelik Referral Hospital

DVT =Deep Venous Thrombosis

EBL=Estimated Blood Loss

ETB=Ethiopian Birr

EC=Ethiopian Calendar

FIGO =International Federation of Gynecology and Obstetrics

GC=Gregorian Calendar

IRB Institutional Review Board

WHO =World Health Organization

OR= Odds Ratio

PCV=Packed Cell Volume

RDDMH =Ras Desta Damtew Memorial Hospital

RR =Relative Risk

SPHMMC=Saint Paul's Hospital Millennium Medical College,RDDMH, DMRH

1 Introduction

1.1 Background

Myoma is benign smooth muscle cell neoplasia arising from myometrium. 80% of African and 70% of white ancestry affected during their life time .70% of patients with leiomyoma are asymptomatic but those with symptom presented with vaginal bleeding, pelvic pressure, pain bladder or bowel symptoms and infertility. (1,2)

Treatment of myoma should not only directed towards improving symptom but also achieving overall health status. Treatment options for uterine fibroid are expectant management, medical therapies, interventional radiology and surgical procedures. Step up approach is recommended by FIGO which begins with pharmacology and minimally invasive procedure before surgical once. The gold standard for treatment of leiomyoma is surgical intervention. (1,3,4)

Various surgical procedures are available for the treatment of leiomyoma these includes myomectomy, hysterectomies, volumetric thermal ablation, laparoscopic radiofrequency and endometrial ablation. These are options for those patients having persistent symptom despite conservative management. (1,5)

Myomectomy is a common gynecological procedure that can be approached, depending on fibroid location, hysteroscopically or abdominally either laparoscopically or through laparotomy(3,6). Abdominal myomectomy is surgical removal of fibroid tissue through abdomen and done for women who need to preserve future fertility or who desire to retain their uterus .The major disadvantage of myomectomy is recurrence, about 50% - 60% of patient will develop another leiomyoma within period of 5years.(3)

According to retrospective study done in Nigeria, complications associated with abdominal myomectomy are intraoperative bleeding requiring blood transfusion, fever, vaginal discharge, bilateral tubal blockage and distorted uterine cavity(7,8) .Significant determinants of intraoperative bleeding with or without blood transfusion were uterine size equivalent to 16 weeks' gestation or more, menstrual flow of 6 days or more, preoperative anemia, previous surgery, posterior incision, and surgery duration longer than 4 hours.

Whereas use of tourniquet, preoperative misoprostol and uterine artery ligation associated with reduced intraoperative blood loss(6,9)

1.2 Statement of Problem

Uterine leiomyoma is not only common, it also impose a tremendous burden on women who experience the symptoms related to it. Heavy bleeding, pain and fatigue are common symptoms and affect multiple domains of personal well-being and work productivity. The frequency of uterine fibroid is likely to be underestimated because in many women it is asymptomatic, or symptoms develop insidiously, and therefore it remains undiagnosed. The unknown extent and impact of undetected uterine fibroid bias the epidemiological data and evidence on associated factors to reflect severe disease. The true incidence and prevalence of myoma, and their global impact on women's health, and the role of presumptive risk factors, are currently unknown (11).

Incidence of myoma is a 3-4-fold likelihood of dominance among African women as opposed to what is seen in other races (1,2,12). Leiomyoma occurs mostly in women of reproductive age and have been observed by some workers in 80% of women in Nigeria within the age range of 25 years and above.(2)

A systematic review over 30 broad categories of risk factor for myoma were examined across the studies and black race was the only factor that was shown to be consistently associated with an increased risk of myoma in prospective cohort registry studies (13) .The multivariate-adjusted relative risk or odds ratio of uterine fibroid associated with black race compared with white race was reported in four registry studies. In all four studies, black women were found to have a 2–3-fold greater risk of developing myoma than white women .Other risk factor for development of myoma is age, which was found to increase the risk of myoma by up to approximately tenfold. In a retrospective, single-center study of the ultrasound records of women in Israel experiencing uterine fibroid symptoms, those aged 41–50 or 51–60 years were 10 times more likely to have myoma than those aged 21–30 years but the risk decline after the age of sixty(11).

A family history of fibroids was also shown to increase myoma risk in a multicenter case–control study of hospitalized women in Thailand. Women with a positive family history of uterine fibroid were over three times more likely to have uterine fibroid than those without such a history. Parity was associated with a reduced risk of developing myoma In a single-center study in Japan, the risk of myoma in women who had given birth three or more times was less than

one-fifth that of nulliparous women (11). 5-10% of cases of myoma may have infertility, but it is the sole cause in only 2-3% of all infertility cases.(11)As retrospective study done Ethiopia as well as Tunisia Myomectomy is found to significantly increase conception rate in women with myomas as a sole factor of infertility(13,14).

Eight studies were included in this systematic review ,Preoperative misoprostol was significantly associated with lower blood loss by 170.32 ml, lower drop in hemoglobin by 0.48 g/dl , reduced need for blood transfusion, and a reduction in operative time by 11.64 minutes(6). Comparative study done in Iran, 2016 conclude Administration of a single preoperative dose of misoprostol could be a simple and reliable method for reducing intraoperative blood loss and need for postoperative blood transfusion in abdominal myomectomies than intraoperative oxytocin infusion(16)

Prevalence and complication of abdominal myomectomy are not clearly studied in sub Saharan countries including Ethiopia. In addition, we will assess the importance of the numerous risk factors that have been associated with the outcome of abdominal myomectomy.

1.3 Significance of study

Myoma is a global problem with multi facet out comes affecting both developed and developing countries. It results in increased illness, and health-care costs. Due to these reasons this study is important to assess the prevalence, complication and associated factors of abdominal myomectomy. There is a limited study on prevalence and complication of abdominal myomectomy in sub-Saharan country especially Ethiopia. . So I am proposing this study to address the gaps.

The results of this study will inform the Ministry of Health in Ethiopia and the authorities of SPHMMC about the picture of determinant and outcome of perioperative complication of abdominal myomectomy in the hospital.

2. Literature Review

Uterine fibroid is one of the most common and yet understudied disease commonly affecting women in the reproductive age group(1) .A systematic review done on 60 publication shows that wide range of uterine myoma incidence and prevalence were reported ,217-3745 case per 100000 and 4.5%-6.6% respectively based on methods of diagnosis , types of investigation and ethnic demography of population studied (13).80% of African and 70% of white ancestry affected during their life time . 70% of patients with leiomyoma are asymptomatic but those with symptom presented with vaginal bleeding, pelvic pressure, pain bladder or bowel symptoms and infertility(1)

Pilot study done in London shows that the use of a delayed absorbable vascular tourniquet around the cervix to occlude the uterine vessels at open myomectomy appears to be safe. Theoretically, such a tourniquet may reduce not only intraoperative bleeding but also postoperative oozing from the uterine incision (9,20).

The meta-analysis conducted by Wang et al including 20 studies (2852 patients), a retrospective study by Raney et al a metaanalysis by Iavazzo et al. compared robotic, laparoscopic, and open myomectomy. The results show that robotic myomectomy is associated with fewer complications and lower blood loss than the other modalities. It also showed lower conversion rate and less bleeding than laparoscopic myomectomy and lower postoperative pain score than open surgery. In, longer operation time is stated as the biggest drawback in comparison with open surgery, which could outweigh shorter hospital stay. A mean operative time difference of 84 min in favor of open myomectomy against robotic assisted was observed(6).

9 year retrospective study conducted in China, main drawbacks of laparoscopic myomectomy are high chance of uterine rupture, high risk of recurrence and technically demanding procedure which require a high degree of training and skill. Moreover, laparoscopy minimizes the risk of adhesion formation. Comparative study on laparoscopic and minilaparotomic myomectomy and also systematic review and meta-analysis showed that operation time was significantly lower in the minilaparotomy group. When compared with minilaparotomy, laparoscopy was associated

with a lower decline of hemoglobin concentration, a reduced length of postoperative ileus, and a shorter time to discharge. Therefore laparoscopy should be standard approach for myomectomy. Lastly, further prospective studies have to be conducted to compare long-term outcome. Laparoscopic myomectomy including skill evaluation (17,18,22)

Systematic review done in Turkey showed a statistically significant difference between the groups with a uterine tourniquet applied and not applied in terms of hemoglobin drop, transfusion amounts, operation times and lengths of hospitalization in favor of the uterine tourniquet use group. Bilateral uterine arterial occlusion using a temporary uterine tourniquet had no negative effects on pregnancy outcomes (12,21).

6 years retrospective study in Pakistan showed that complications like intra operative blood loss, injury to adjacent viscera, trauma to the tubes, febrile morbidity, wound hematoma, , fertility, infection recurrence of myoma, adhesion formation were noted. A total of 50 abdominal myomectomies were performed during the study period. Mean age of the patients was 36 years with parity of 0 -2. Duration of operation ranged between 60 – 90 minutes, Blood loss varied between 1800ml – 2500ml and hospital stay was between 5–7 days. Fibroid size ranged 5-7cm, uterine cavity got opened in 10% of cases. In 20% of patients myomas had distorted the tubes bilaterally and 14% of cases had reduced uterine size. Febrile morbidity was noted in 14% of cases, vaginal discharge in 4% and lower abdominal pain in 10%. At follow up two patients conceived at 12 months and one patient at 24 months (8,16).

A systematic review and meta-analysis done in Studies were conducted in Egypt, Turkey, Thailand, Uganda and Iran. Eight studies were included with a total of 385 patients, of which 192 received misoprostol. Preoperative misoprostol was significantly associated with lower blood loss by 170.32 ml, lower drop in hemoglobin by 0.48 g/ dl, reduced need for blood - transfusion and a reduction in operative time by 11.64 minutes at open myomectomy. This low-cost and readily available drug should be routinely administered prior to open myomectomy to improve clinical outcomes (6).

10 year retrospective study done in Nigeria at teaching hospital showed that abdominal mass(63.7%) ,menorrhagia(57.7%)and subfertility(55.2%)were the most common indication for abdominal myomectomy.(2,3) 10.9 % of women who underwent abdominal myomectomy

developed complication, of the cases, 55.5 % of which were wound infections. Clinical and intra operative factors associated with complications included menorrhagia, estimated blood loss ≥ 500 mls and postoperative PCV of $<30\%$. They conclude that Complication rate after myomectomy was low with menorrhagia and $EBL \geq 500$ ml being significantly associated with development of complication AUB(8)

3, Objectives

3.1 General objectives

To assess the proportion, complication and associated factors of abdominal myoma at selected hospitals in Addis Ababa Ethiopia, 2021-2023

3.2. Specific objectives

To determine the proportion of abdominal myomectomy at selected hospitals in Addis Ababa from May2021-April 2023

To determine the complications of abdominal myomectomy

To identify associated factors of complication of abdominal myomectomy

4. Methods

4.1. Study settings

4.1.1. Study design and period

Retrospective cross sectional study was conducted among patients for whom abdominal myomectomy was done at SPHMMC, RDDMH, and DMRH in the last two years from May 01, 2021 to April 31, 2023

4.1.2. Study area

The study was undertaken at Saint Paul's Hospital Millennium Medical College, Ras Desta Damtew Memorial Hospital and Dagmawi Menelik Referral Hospital in Addis Ababa, capital city of Ethiopia. Saint Paul's hospital is one of the teaching and tertiary referral hospitals directly under the federal, ministry of health. The hospital gives service to 200,000 people annually, who are referred from all corners of the country. It has a total bed of 360, and on average 650 patients visit the hospital as outpatient and emergency daily. It gives service under different clinical disciplines which include obstetrics and gynecology. Ras Desta Dantew Memorial Hospital was established in 1924 E.C. currently the hospital has a medical facility that provides medical health care service to both in patient and out patients including gynecology and obstetrics cases. Dagmawi Menelik referral Hospital is the oldest and the first hospital in Ethiopia which was established in 1909. The hospital is the only specialized eye care service provider in Ethiopia but also give service in other departments like gynecology and obstetrics.

4.2. Population

4.2.1. Source population

All patients who were admitted to Gynecology ward of SPHMMC, RDDMH, DMRH for major gynecologic surgery during the study period

4.2.2. Study population

All patients who undergone abdominal myomectomy at SPHMMC, RDDMH, DMRH during 2021-2023 period.

4.3. Inclusion and exclusion criteria

4.3.1. Inclusion criteria

Patient with symptomatic myoma and those who need future fertility and managed with laparotomy abdominal myomectomy

4.3.2. Exclusion criteria

Patients who had laparoscopic myomectomy, vaginal myomectomy, myomectomy during cesarean section recurrent myoma endometriosis, adenomyosis, bleeding disorder, patient not desirous for further pregnancies, malignancies and pregnant women were excluded

4.4. Sample size determination and Sampling procedures

Take all method sampling was used and all women who had abdominal myomectomy and recorded in the log book of the major operation theater with in the study period who are eligible according to the inclusion criteria's was reviewed .

4.5. Variables of the study

4.5.1 Dependent variable

Perioperative complication

4.5.2. Independent variables

- Socio Demographic Characteristics

Age, marital status, educational status, place of residency, monthly income and religion

- Reproductive Characteristics

Gravidity, Parity, Abortion history, menstruation

- Characteristics of myoma

- Location of the myoma
- Location of uterine incision
- Size of myoma
- Number of myoma

- Preoperative preparation and clinical condition
 - Preoperative iron utilization
 - Tourniquet
 - Preoperative hematocrit
 - Duration of operation
 - Adhesion
 - Post-operative hematocrit
- Underlying chronic medical disorder
 - Bleeding disorder
 - history of Pelvic infections
 - Chronic bowel disease
 - History of previous abdominal surgery
 - Hypertension
 - Diabetes mellitus

4.6. Operational definitions

Duration of operation was defined as the time between the skin incision and skin closure as indicated on the anesthetist operation charts.(8)

Hemorrhage was defined as bleeding that affect the hemodynamic status of the patient that occurs within 24 hours to 7 days after surgery. (8)

Perioperative complication is a major and minor complication which occur during or after operation using Garry's criteria (8)

Major complications include

Major intraoperative bleeding requiring blood transfusion

Postoperative bleeding requiring blood transfusion

Pelvic or wound hematoma requiring drainage or blood transfusion

Injury to bladder, bowel ureter, adnexa

Conversion to hysterectomy

Wound dehiscence

Minor complication

Hemorrhage <500 ml

Hematoma not requiring blood transfusion

DVT

Wound infection

Fever $\geq 38^{\circ}\text{C}$

EBL is the approximate amount of blood that the patient lost during surgery and recorded from the operation notes as reported by the anesthetic team.(8)

Inflammatory bowel disease is a condition characterized by chronic inflammation of gastrointestinal tract(23)

Wound infection is the discharge of pus from incision occurring 5–7 days after Surgery.(8)

Sub serosal myoma leiomyomas originate from myocytes adjacent to the uterine serosa(10)

Intramural myoma is leiomyoma with growth centered within the uterine walls.(10)

Submucosal myomas is uterine fibroid proximate to the endometrium and grows toward and bulge into the endometrial cavity.(10)

4.7. Data collection procedures (instrument, personnel)

Data was collected using a pretested structured checklist/data extraction formats. The checklist/data extraction formats was prepared in English which is adapted from different literatures. Data was collected by principal investigator and interns in the gynecology ward.

A data collection checklist was used to extract routinely recorded data from patients for whom abdominal myomectomy was done. All charts containing detailed data like socio-demographic data health related variables, was reviewed collected from the registration book.

4.8. Data quality control

Pretest was conducted using structured checklist/data extraction formats on 5% of the sample at Black lion referral hospitals. Necessary correction on checklist/data was made according to the feedback obtained from the pre-test. All filled check lists was checked on daily basis for completeness, accuracy, and consistency by the principal investigator. Supervision was carried out by the principal investigator throughout the data collection.

To assure data quality, a data extraction checklist was adapted from different literatures carefully, interns currently work in the gynecologic ward was recruited as data collectors, a one-day training was given for data collectors and, completeness of the recorded variables was checked by taking some randomly selected cards, and principal investigator was monitoring carefully the entire data collection process.

4.9. Data processing and analysis

Descriptive statistics was summarized as percentage, mean, and median, and visualized using tables and charts. Texts, tables, and graphs was used to show frequencies of socio-demographic, clinical, and other variables. As the study is based on secondary data, all relevant independent variables that could affect the survival time was not available. After data collection, each check list was checked for completeness before entering to software. Data was entered in to SPSS version 23 statistical package. Coding of individual check list was checked before data entry in to the software. Further, data cleaning was performed to check for outliers, missed values and any inconsistencies before the data analysis. Data was analyzed using SPSS 23 version. Bivariate and Multivariate logistic regression was used.

4.10. Result dissemination plan

The final result of this paper will be submitted to SPHMMC department of obstetrics and gynecology, public health department and Addis Ababa Public Health and Emergency Management Directorate. There will be presentation of the research outputs to the college community and other concerned stakeholders. Manuscript will also be prepared and sent for publication to reliable journals.

5. Ethical considerations

Ethical clearance was obtained from Institutional Review Board (IBR) of the SPHMMC and Addis Ababa Public Health and Emergency Management Directorate. On behalf the ethical review committee of department of Epidemiology and biostatistics. Wavering consent was taken from the IBR after detailed information was provided by the investigator about the objective of the study. The purpose of the study was explained to respective authorities and a letter of permission was obtained before the data collection starts and study was started after complete consent is obtained.

All the data obtained from the study was kept confidential by using codes instead of any personal identifiers the completed data extraction forms was locked in a cabinet and remain with the investigator.

6. Conceptual frame work

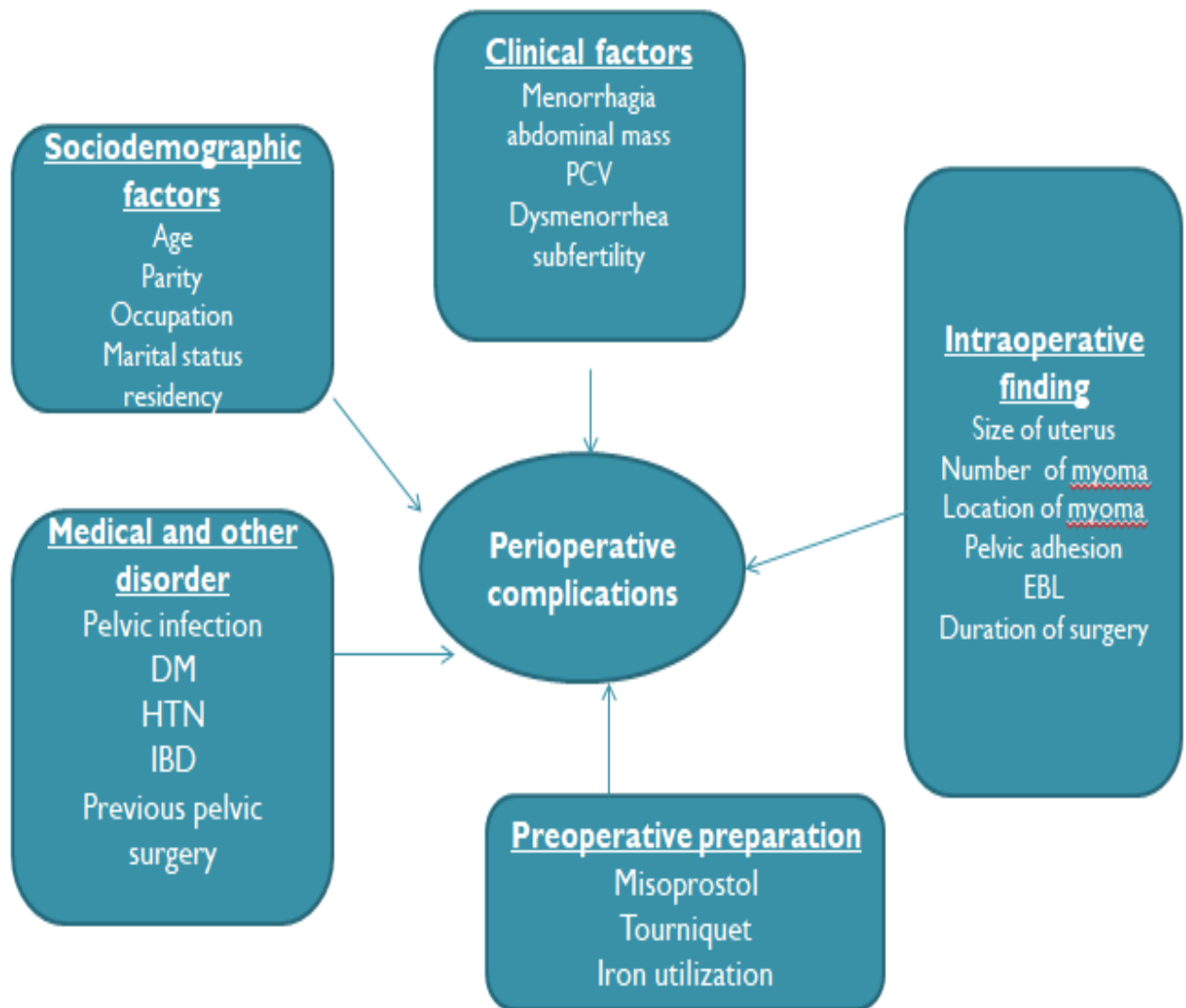


Figure 1 Conceptual framework of variables related to perioperative complication of abdominal myomectomy

7. Result

During the study period there were a total of 2893 patients admitted into the gynecology ward for major operation and a total of 234 women had abdominal myomectomy on account of uterine fibroid giving a proportion of 8.08%. The case files of 203 women with complete data set were included in the analysis, a retrieval rate of 86.7%.

7.1.1. Sociodemographic characteristics of the respondents

Age of respondent ranges from 20 to 46 with mean ranges from 26 to 35 and majorities of the women 69(34%) were from 31 to 35 .one hundred forty nine (73.4%) respondent were from urban area .Sixty (29.6%) of the respondent were private employee and ninety nine (48.8) were orthodox Christian followers regarding marital status majority (85.2%were married) as shown in table 1.

Table 1: Socio demographic characteristics of the study group (n=203)

Variable	category	Frequency	Percent
Age	below 26	16	7.9
	26-30	62	30.5
	31-35	69	34.0
	36-40	46	22.7
	41-45	10	4.9
	Total	203	100.0
Place	Urban	149	73.4
	Rural	54	26.6
	Total	203	100.0
Occupation	House wife	28	13.8
	private employee	60	29.6
	Farmer	54	26.6
	government employee	36	17.7
	Merchant	20	9.9
	Student	5	2.5
	Total	203	100.0
Religion	Orthodox	99	48.8
	Muslim	54	26.6
	Catholic	4	2.0
	Protestant	46	22.7
	Total	203	100.0
Marital. Status	Married	173	85.2
	Unmarried	23	11.3
	Divorced	7	3.4
	Total	203	100.0

7.1.2. Reproductive characteristics of respondents

One hundred ten (54.2%) women were multigravida and one hundred twenty one (59.6%) of respondent were nulliparous whereas forty one (20.2%) of the study group had one or more times abortion. Ninety four (46.3%) of the women had heavy menses.(Table 2)

Table 2: reproductive characteristics of respondents (n=203)

Variable	Category	Frequency	Percent
Gravidity	Nulligravida	93	45.8
	Multigravida	110	54.2
	Total	203	100.0
Parity	nulli parous	121	59.6
	Primiparous	61	30.0
	Multiparous	21	10.3
	Total	203	100.0
Abortion	Yes	41	20.2
	No	162	79.8
	Total	203	100.0
Menses	Regular	77	37.9
	Irregular	32	15.8
	heavy bleeding	94	46.3
	Total	203	100.0

7.1.3 Characteristics of myoma

Most of location of myoma in study group were combined (intramural sub mucosal and sub serosal)102(50.2%) followed by intramural myoma 76(37.4%). One hundred three (50.7%) of uterine incision was anteroposterior and one hundred five (51.7%) had uterine size of greater than sixteen week. Regarding number of myoma, one hundred forty four (70.9%) had between two and ten. (Table 3)

Table 3 characteristics of myoma (n=203)

Variable	Category	Frequency	Percent
Location of myoma	Intramural	76	37.4
	Sub serosal	18	8.9
	Sub mucosal	7	3.4
	Combined	102	50.2
	Total	203	100.0
Location of uterine incision	Anterior	59	29.1
	Posterior	41	20.2
	Anteroposterior	103	50.7
	Total	203	100.0
Size of uterus	<12 week	11	5.4
	12- 14 week	37	18.2
	15- 16 week	50	24.6
	>16week	105	51.7
	Total	203	100.0
Number of myoma	1	37	18.2
	2-10	144	70.9
	> 10	22	10.8
	Total	203	100.0

7.1.4 Indication of myomectomy in the study group

Most patients had more than one complaint. Abdominal swelling was the leading indication of abdominal myomectomy in the study group (68.5%) followed by menorrhagia (57.6%) and pelvic pressure or pain (35%) as shown in table 4.

Table 4: Indication of myomectomy (n=203)

Variable	Category	Frequency	Percent
Abdominal swelling	Yes	139	68.5
	No	64	31.5
	Total	203	100.0
Menorrhagia	Yes	117	57.6
	No	86	42.4
	Total	203	100.0
Infertility	Yes	30	14.8
	No	173	85.2
	Total	203	100.0
Pelvic pressure or pain	Yes	71	35.0
	No	132	65.0
	Total	203	100.0
Pregnancy loss	Yes	14	6.9
	No	189	93.1
	Total	203	100.0

7.1.5 Clinical condition and perioperative preparation of the study group

In the majority of the cases, 93(45.8%) ,preoperative hematocrit was greater than 35%.In 138 (68%)of the cases EBL was less than 500 ml and there was adhesion in 26(12.8%) of cases during operation. In most of the cases ,87(42.9%) , post-operative hematocrit ranges between 30 and 35% .operation stayed between 60 and 120 minute in 127(62.6%) of cases .hemostatic technique used were tourniquet at uterine isthmus (88.2%)and misoprostol (2%) .29(14.3%) of cases were provided with iron before operation and postoperatively. (Table 5)

Table 5: Clinical condition and perioperative preparation of the study group (n=203)

Variables	Category	Frequency	Percent
Preop HCT	<30%	28	13.8
	30-35%	82	40.4

	>35%	93	45.8
	Total	203	100.0
EBL	<500 ml	138	68.0
	500-1000ml	50	24.6
	>1000 ml	15	7.4
	Total	203	100.0
Adhesion	Yes	26	12.8
	No	177	87.2
	Total	203	100
Post op HCT	<30%	44	21.7
	30-35%	87	42.9
	>35%	72	35.5
	Total	203	100.0
Duration of operation	<60 minute	6	3.0
	60-120 minute	127	62.6
	>120 minute	70	34.5
	Total	203	100.0
misoprostol	Yes	4	2.0
	No	199	98.0
	Total	203	100.0
Tourniquet	Yes	179	88.2
	No	24	11.8
	Total	203	100.0
Iron utilization	Yes	29	14.3
	No	174	85.7
	Total	203	100.0

7.1.6 Underlying medical illness of the respondents (n=203)

Majority of had no underlying medical or surgical illness .18(8.9%) of the cases have history of pelvic surgery, 10(4.9%) had hypertension and 6(3%) of cases had DM. (table 6)

Table 6: Underlying medical illness of the respondents (n=203)

Characteristics	Category	Frequency	Percent
Bleeding disorder	No	203	100.0
Pelvic infection	Yes	1	.5
	No	202	99.5
	Total	203	100.0
Chronic bowel disease	No	203	100.0
History of pelvic surgery	Yes	18	8.9
	No	185	91.1
	Total	203	100.0
Hypertension	Yes	10	4.9
	No	193	95.1
	Total	203	100.0
DM	Yes	6	3.0
	No	197	97.0
	Total	203	100.0

7.2 Perioperative complication of respondent (n=203)

There were complications in 50 (24.6%) of all patients who underwent abdominal myomectomy; 22.4% brought major complication whereas 5.9% produced minor complication. Among this the commonest complication were intraoperative bleeding 27(13.3%) followed by post-operative anemia requiring transfusion 11(5.4%) and fever 9(4.4%) (Table 7)

Table 7: Perioperative complication of respondent (n=203)

Variables	Category	Frequency	Percent
Intraoperative bleeding requiring	Yes	27	13.3
	No	176	86.7

transfusion	Total	203	100.0
Post-operative anemia requiring transfusion	Yes	11	5.4
	No	192	94.6
	Total	203	100.0
Pelvic or wound hematoma	Yes	1	.5
	No	202	99.5
	Total	203	100.0
Injury to bowel, bladder ,ureter or adnexa	Yes	3	1.5
	No	200	98.5
	Total	203	100.0
Conversion to hysterectomy	No	203	100.0
DVT	Yes	1	.5
	No	202	99.5
	Total	203	100.0
Wound infection	Yes	2	1.0
	No	201	99.0
	Total	203	100.0
Fever	Yes	9	4.4
	No	194	95.6
	Total	203	100.0
Relaparotomy	Yes	3	1.5
	No	200	98.5
	Total	203	100.0

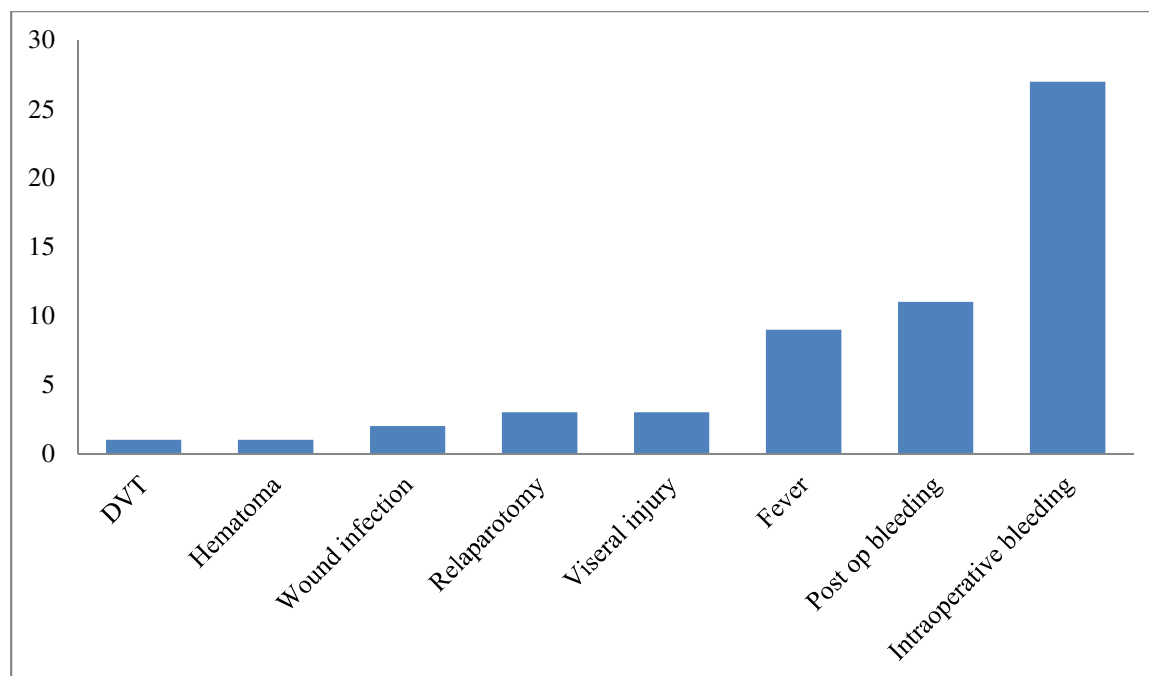


Figure 2 complication of myomectomy in study group

7.3. Factors associated with perioperative complication of abdominal myomectomy

7.3.1 Socio demographic factors determining complication of abdominal myomectomy

Binary logistic regression shows that there is no significant association between age, place of residency, occupation, religion and marital status with complication of abdominal myomectomy with confidence interval of 95% and p value ≤ 0.05 as shown in table 8

Table 8: Socio demographic factors determining complication of abdominal myomectomy (n=203)

Factors	Category	Complication		COR(95% of CI	P value
		Yes	No		
age of respondent				1.11(0.07-17)	
	< 26	3	13		
	26-30	15	46	0.44(0.049-3.99)	
	31-35	17	52	0.38(0.043-3.47)	
	36-40	14	32	0.25(0.02-2.31)	
	41-45	1	9		0.787
place of residency	urban	39	110		
	rural	11	42	1.354	0.433
Occupation	house wife	7	21	2.99(0.24-37)	
	private employee	14	46	3.24(0.31-33)	
	Farmer	11	42	2.12(0.04-112)	0.431
	government employee	10	26	3.04(0.23-39)	
	Merchant	6	14	2.24(0.17-28)	
	Student	2	3		

Religion	Orthodox	29	69	0.56(0.23-1.37)	
	Muslim	12	42	0.95(0.32-2.77)	
	Catholic	0	4		
	Protestant	9	37		
marital status	Married	42	130		
	Unmarried	8	15		
	Divorced	0	7	1.159	0.687

7.3.2 Reproductive factors (n=203)

Logistic regression was done for association between reproductive character and perioperative complication of abdominal myomectomy, there is no significant association with 95 % CI and p value ≤ 0.05 as shown in the table 9.

Table 9. Reproductive factors (n=203)

Factors		complication		COR(95% CI)	P value
		Yes	no		
graviity	Nulligravida	18	75	0.57(0.299-1.11)	0.10
	Multigravida	32	77		
parity	nulli parous	29	92	0.86(0.53-1.35)	0.58
	Primiparous	14	46		
	Multiparous	7	14		
abortion	Yes	9	32	0.82(0.36-1.86)	0.64
	No	41	120		
menstruation	Regular	18	57	1.11(0.58-2.28)	0.71
	Irregular	7	25	1.34(0.50-3.53)	
	heavvy	25	70		
	beeding				

7.3.3 Characteristics of myoma as determinant of complication of abdominal myomectomy

Binary logistic regression shows that location of myoma (COR 2.4,95%CI(1.2,5.1)),size of uterus(COR:3.2,95% CI(1.24,8.3))and number of myoma (COR 5,95%CI(2.08,12)) have significant association with development of complication during abdominal myomectomy but location of uterine incision has no significant association with complication with p value ≤ 0.05 and CI of 95% as shown in the table 10 .

Table 10. Characteristics of myoma as determinant of complication of abdominal myomectomy(n=203)

Factors		Complication		COR(95% CI)	P value
		Yes	No		
location of myoma	Intramural	13	62	2.4(1.2-5.1)	0.013
	Sub serosal	2	16	4.17(0.9-19.2)	
	Sub mucosal	0	7		
	Combined	35	67		
location of uterine incision	Anterior	10	47	2.08(0.93-4.6)	0.071
	Posterior	8	33	1.8(0.76-4.4)	
	Antero posterior	32	72		
size of uterus	<12 week	4	7	0.7(0.2-2.8)	0.016
	12- 14 week	8	28	1.5(0.6-3.7)	
	15- 16 week	6	44		
	>16week	32	73	3.2(1.24-8.3)	
number of myoma	1	5	31		0.000
	2-10	30	110	5(2.08-12)	
	> 10	15	11		

7.3.4 clinical and perioperative factors as determinant of complication of abdominal myomectomy

Binary logistic regression shows that EBL(COR:28),95% CI,(8,93),post op hematocrit (COR:1.68,95% CI(1.06,2.6)) and duration of operation (COR:3.1,95% CI,(1.6,6.2))has significant association with development of complication but preoperative hematocrit,pelvic adhesion,misoprostol, tourniquet application and iron provision has no significant association with perioperative complication of abdominal myomectomy with CI of 95% and p value ≤ 0.05 (table 11)

Table 11 clinical and perioperative factors as determinant of complication of abdominal myomectomy (n=203)

Factors		Complication		COR(95% CI)	P value
		Yes	No		
preoperative HCT	<30%	9	19	0.66(0.26-1.67)	0.51
	30-35%	19	63	1.04(0.51-2.10)	
	>35%	22	70		
EBL	<500 ml	17	112	28(8-93)	0.000
	500-1000ml	16	36	9.5(2.7-32)	
	>1000 ml	17	4	0.2(0.13-0.37)	
post-operative hct	<30%	20	27		0.02
	30-35%	16	73		
	>35%	14	52	1.68(1.08-2.61)	

duration of operation	<60 minute	1	5	3.1(0.3-28)	0.001
	60-120 minute	20	101	3.1(1.6-6.2)	
	>120 minute	29	46		
Misoprostol	Yes	2	2	3.1(0.42-22.7)	0.2
	No	48	150		
Tourniquet	Yes	45	133	1.2(0.45-3.64)	0.6
	No	5	19		
iron utilization	Yes	7	21	1.01(0.40-2.55)	0.9
	No	43	131		
Adhesion	Yes	9	17	1.74(0.72-4.20)	0.21
	No	41	135		

7.3.5 The relationship between major intraoperative bleeding and other factors

Logistic regression showed that the association between major intraoperative bleeding and location of myoma (COR:3.3,95% CI(1.2,7.6)),size of uterus (COR: 4.8, 95% CI (1.3, 16)), number of myoma (COR 5.4, 95% CI (2.1, 13)) EBL (COR:19.2,95%CI(6.4,57)), post-operative hematocrit (COR: 0.32, 95% CI (0.13, 0.7)) and duration of operation (COR: 4.3,95% CI(1.9, 9.5)) significant while others didn't have with p value ≤ 0.05 % and CI of 95%.(Table 12)

Table 12: The relationship between major intraoperative bleeding and other factors

Factors		Major intraoperative bleeding		COR(95%CI)	P value
		Yes	No		
Location Of myoma	Intramural	7	68	3.3(1.2-7.6)	0.013
	Subserosal	2	16	0.2(0.5-11)	
	Sub mucosal	0	7		
	Combined	25	78		
Location of uterine incision	Anterior	7	50	1.8(0.7-4.7)	0.25
	Posterior	5	36	1.9(0.6-5.4)	
	anteroposterior	22	83		
Size of uterus	<12 week	2	9	1.3(0.2-6.8)	0.013
	12-14 week	4	32	2.4(0.7-7.6)	
	15-16 week	3	47	4.8(1.3-16)	
	>16 week	25	81		
Number of myoma	1	4	32		0.000
	2-10	18	122	6.4(1.7-23)	
	>10	12	15	5.4(2.1-13)	
Preoperative hct	<30%	8	20	0.4(0.14-1.11)	0.199
	30-35%	13	69	0.8(0.3-1.9)	
	>35%	13	80		
EBL	<500 ml	9	120	19.2(6.4-57)	0.000
	500-1000ml	12	40	4.8(1.6-13)	
	>1000 ml	13	9		
Post-	<30%	17	31	0.32(0.13-0.7)	

operative hct	30-35%	7	82	2.0(0.7-5.8)	0.001
	>35%	10	56		
Duration of operation	<60 minute	0	6		0.00
	60- 120minute	11	110	4.3(1.9-9.5)	
	>120 minute	23	53		

7.3.6 Underlying medical illness and other factors as determinant (n=203)

Logistic regression showed that DM (COR6.52,95%CI(1.15,36)) has significant association with development of perioperative complication of abdominal myomectomy but other medical and other illness dose not show any significant association as mentioned in the table with 95% CI and p value ≤ 0.05 .(table 13)

Table 13 Underlying medical illness and other factors as determinant (n=203)

Factors		complication		COR(95% OF CI)	P VALUE
		Yes	no		
bleeding disorder	No	50	152		
pelvic infection	Yes	0	1	0.00	1
	No	50	151		
chronic bowel disease	No	50	152		
history of previous	Yes	7	11	2.08(0.76-5.7)	0.15
abdominal surgery	No	43	141		
Hypertention	Yes	2	8	0.72(0.15-3.65)	0.7
	No	48	144		
diabetes mellitus	Yes	4	2	6.52(1.15-36.75)	0.034
	No	46	150		

7.3.7 Location of myoma, number of myoma, size of uterus ,EBL, post operative hct, duration of surgery and DM :result of multivariable analysis using backward binary logistic regression model

Stepwise backward logistic regression analysis was carried out by taking conceptual frame work in to account to assess the relative effect of the explanatory variable the dependent variable. all variables which has association with binary logistic regression were entered in to the model . Multiple logistic regression analysis of the risk factor showed (number of myoma AOR 0.46, 95% CI,EBL AOR 0.28, 95% CI) have significant association with complication at p value ≤ 0.05 .(table14)

Tale 14 Factors of complication of abdominal myomectomy: results of backward stepwise multivariable analysis(n=203)

Variable	Category	Complication		AOR	P value
		yes	No		
Location of myoma	Intramural	13	62	0.83	0.25
	Subserosal	2	16		
	Submucosal	0	7		
	Combined	35	35		
Size of uterus	<12 week	4	7	1.1	0.46
	12-14 week	8	28		
	15-16week	6	44		
	>16 week	32	73		
Numner of myoma	1	5	31	0.46	0.03
	2-10	30	110		
	>10	15	11		
EBL	<500 ml	17	112	0.28	0.00
	500-1000ml	16	36		
	>1000ml	17	4		
Post operative hct	<30%	20	27	0.75	1.08
	30-35%	16	73		
	>35	14	52		
Durationof operation	<60minute	1	5	0.6	0.17
	60-120minute	20	101		
	>120 minute	29	46		
DM	Yes	4	2	2.9	0.29
	No	46	150		

8. Discussion

Myoma is benign smooth muscle cell neoplasia arising from myometrium. 80% of African and 70% of white ancestry affected during their life time .70% of patients with leiomyoma are

asymptomatic but those with symptom presented with vaginal bleeding, pelvic pressure, pain bladder or bowel symptoms and infertility. (1,2)

In current study, the proportion of abdominal myomectomy among major gynecologic surgery which was done in one teaching and 2 Government Hospital of Addis Ababa Ethiopia (SPHMMC,RDDMH,DMRH) is 8.08%.The finding was higher than with research finding of Nigeria which was 3.4%. Majority of the patients were in the age group of 31 to 35.most patients had more than one compliant ,abdominal swelling is the leading indication of abdominal myomectomy(68.5%) followed by menorrhagia(57.6%) whereas menorrhagia was leading indication of myomectomy in Nigeria. Intraoperative findings shows that most of patients have combined: intramural,sub mucosal,sub serosal myoma(50.2%).In 50.7% of the cases uterine incision was anteroposterior and 51.7% had uterine size greater than 16 week. Location of myoma, size of uterus and number of myoma was significantly associated with perioperative complication of abdominal myomectomy

In 45.8% of cases preoperative hematocrit was greater than 35. This could be because of most patients are stabilized before operation. Majority of patients have EBL < 500 ml and duration of surgery was between 60 to 120 minute in 62.6% of cases. hemostatic technique used was tourniquet at uterine isthmus and misoprostol in 88.2% and 2% respectively indication that there is no significant association between hemostatic technique and perioperative complication since almost all patients use either of the techniques. Postoperative hematocrit ranges between 30-35% (42.9%).had significant association with development of complication. EBL and duration of operation were also significantly associated with development of complication Majority of the cases had no underlying medical and other illness, 3% has DM which is significantly associated with complication. The proportion of perioperative complication of abdominal myomectomy in our study is 24.6% .among this 22.4 % has major complication while 5.9% has minor complication whichwas comparable with Londons study (25%) but higher in Nigeria(76.5%),due to primary hemorrhage in 45.3% of case. The commonest complication was intraoperative bleeding requiring transfusion (13.3%), similar with Turkey finding but higher in Nigeria(45.3%) .This may be because of majority of cases have combined myoma,anteroposterior uterine incision and multiple myoma which was significantly associated .No case was conerted to hysterectomy no death in the study.

9. Conclusion

Abdominal myomectomy is a successful approach for large and multiple fibroids resulting in distortion of normal anatomy of uterus. It is preferred method in those patients who want to become pregnant. With correct approach it has few complications with potential of some patients conceiving while others becoming symptom free. Intraoperative haemorrhage necessitating blood transfusion is the most common and significant complication that can follow abdominal myomectomy. Location of myoma, size of uterus, number of myoma and prolonged surgery time are significant determinants of complications.

10. Limitation

The limitation of the study is data collection was from secondary source and information was not complete. Some Chart lost from chart room. Study design is cross sectional, difficult to establish causal relationship.

11. Recommendation

For hospitals and clinicians

Proper patient evaluation and measures to prevent perioperative complications should be considered

For researcher

Recommend to conduct further research using mixed and prospective study to conduct risk factors of complication of abdominal myomectomy.

Conduct research on preventive measures of perioperative complication of abdominal myomectomy

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Annexes

Anexe 1: Data collection tool (check list)

Code of the study unit.....

1. Socio demographic characteristics

101	Age (years)	1.≤25 2.26-30 3.31-35 4.36-40 5.41-45 6.≥46
102	Place of residency	1.Urban 2.Rural
103	Occupation	1. House wife 2. Private employee 3. Farmer 4. Government employee 5. Merchant 6. Student 7. If others specify.....
104	Marital status	1.Married 2.Unmarried 3.Divorced 4.Widowed

2. Reproductive Characteristics

201	Gravity	
202	Parity	Nulliparous primi parous Multiparous Grand multiparous
203	Abortion	
204	Menstruation	1.regular 2.Irregular 3.heavy bleeding... yes/no

3. Characteristics of the myoma

301	Location of myoma	1.Intramural 2.Subserous 3.Submucous 4.Combined 5.Others
302	Location of uterine incision	1.anterior 2.posterior 3.anteroposterior
302	Size of uterus (gestational week equivalent)	1.< 12week 2.12 to 14week 3.15 to 16week 3.> 16week
303	Number of myoma	1.1 2.2-10 3 .>10

4. Perioperative complications

401	Major intraoperative bleeding requiring blood transfusion	1.Yes 2.No
402	Post-operative anemia requiring blood transfusion	1.Yes 2.No
403	Pelvic or wound hematoma requiring drainage or blood	1.Yes 2.No

	transfusion	
404	Injury to bladder, bowel, ureter, adnexa	1.Yes 2. No
405	Conversion to hysterectomy	1.Yes 2.No
406	DVT	1.Yes 2. No
407	Wound infection	1.yes 2.No
408	Fever	1.Yes 2.No
409	Relaparotomy	1.Yes 2.No

5. Indication of myomectomy

501	Abdominal swelling	1.Yes 2.No
502	Menorrhagia	1.Yes 2. No
503	Infertility	1.Yes 2.No
504	Pelvic pressure or pain	1.Yes 2. No
505	Pregnancy Loss	1.Yes 2.No

6. Clinical condition and preoperative preparation

601	Preoperative hematocrit	1.<30% 2.30-35% 3.>35%
602	EBL	1.<500ml 2.500-1000ml 3.>1000ml
603	Postoperative hematocrit	1.<30% 2.30-35% 3.>35%
604	Duration of operation	1.<60 minutes 2.60–120 minutes 3.>120 minutes

605	Presence of adhesion	1 yes 2 no
606	Misoprostol	1.Yes 2.No
607	Tourniquet	1.Yes 2.No
608	Iron utilization	1.Yes 2.No

7. Underlying medical illness and others

701	Bleeding disorder	1.Yes 2.No
702	Pelvic infection	1.Yes 2.No
703	Chronic bowel disease	1.Yes 2.No
704	History of previous abdominal surgery	1.Yes 2.No
705	Hypertension	1.Yes 2.No
706	Diabetes mellitus	1.Yes 2.No

Annex: 2 Conceptual framework