

## OUTCOMES OF SECOND TRIMESTER SURGICAL ABORTION: THE EXPERIENCE OF A TERTIARY HEALTH FACILITY IN ETHIOPIA

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### ABSTRACT

**BACKGROUND:** Abortion is defined as expulsion or extraction of a fetus before fetal viability. It is a very common occurrence globally (40-50 million per annum). There is increasing evidence to suggest that dilation and evacuation (D&E) leads to fewer complications than medical abortion for second trimester termination of pregnancy. However, there is no recent documentation of the outcome of such a method in Ethiopia. Hence the aim of this study is to document the outcome of second trimester D&E performed at St Paul Hospital and Millennium Medical College (SPHMMC).

**OBJECTIVE:** To describe clinical characteristics and short-term outcomes of second trimester surgical abortion at SPHMMC.

**METHODS AND SUBJECTS:** A retrospective cross-sectional study design was employed to review all cases of dilation and evacuation performed in the six months period from January 1, 2018- July 30, 2018. A structured questionnaire was used to collect selected socio-demographic data, clinical characteristics and acute complications. Data was entered and analyzed using IBM SPSS Statistics, version 20.0 (IBM Corp, Released 2011).

**RESULT:** A total of 43 client records were reviewed and used for this analysis. The median (IQR) age of the study participants was 24 (20,26), with age range of 16 to 34 years old. The average gestational age is 16 weeks + 2 days (ranging from 13 weeks + 1 day to 20 weeks + 6 days). All women received doxycycline prior to performing D&E. No ultrasound was used during all the procedures. Over all complication rate is 2.3%, with 1 case of uterine perforation. The contraceptive uptake rate was 88.4% (38/43). The most common post abortion family planning method was long acting reversible contraceptives (LARC).

**CONCLUSION:** Our review demonstrated that D&E is safe after applying recommended procedures in a tertiary health facility in Ethiopia. Further analysis using a larger sample should be undertaken and comparison should be made with medical induction in order to establish the safety and effectiveness of second trimester surgical abortion.

**KEY WORDS:** second trimester safe abortion, Dilation & Evacuation

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## INTRODUCTION

Surgical methods of second trimester termination have evolved over the past 30 years starting in the early 1970s and is currently found to be the predominant method of second trimester termination of pregnancy in many parts of the world<sup>18</sup>. Dilation and Evacuation (D&E) has become the preferred surgical technique over dilation and curettage, hysterotomy and hysterectomy due to its relative safety<sup>2</sup>. Virtually all first trimester (less than 13 weeks' gestation) abortions in the United States (US) have been performed by curettage procedures (sharp or suction), predominantly suction curettage (vacuum aspiration)<sup>19</sup>. The relative frequency of D&E compared to medical abortion varies at different centers. Dilation and Evacuation accounts for 96%, 75% and 100% of abortions performed at  $\geq 13$  weeks' gestation in the United States, England and Wales respectively<sup>22</sup>. However, there is a limited evidence regarding D&E's in developing countries.

Globally, 10-15% of abortions are performed during the second trimester<sup>10,12</sup>, but accounts for two-thirds of major abortion-related complications<sup>13</sup>. Later abortions are restricted by laws in many countries, however, saving a women's life, health reasons, pregnancy related to rape or incest, fetal anomalies and socioeconomic constraints are given as reasons for performing the procedure<sup>4,14,18</sup>. Although previously the optimal method of second trimester termination was debated, recent evidence suggests that D&E is associated with less side effects and lower complication rates than medical induction abortion<sup>15</sup>.

A D&E procedure can usually be performed on an outpatient basis, with typical procedures taking less than 30 minutes to perform. Anesthesia is recommended by the WHO for every D&E and involves a paracervical block and non-steroidal anti-inflammatory analgesics or conscious sedation<sup>11,23</sup>. It requires preparation of the cervix using osmotic dilators or pharmacological agents and evacuation of the uterus using manual vacuum aspiration (MVA) with a 12-16 mm diameter cannula and long forceps. Depending on the duration

of pregnancy, preparation to achieve adequate cervical dilation can require from 2 hours to 2 days<sup>18</sup>. Various methods of preparing the cervix have been proposed in an attempt to reduce the risk of uterine and cervical damage. Specialized training and the maintenance of an adequate case load are required to perform D&E safely<sup>5</sup>. Staff should also be trained to provide counseling and information specific to second-trimester abortions<sup>18</sup>.

Antibiotic use is recommended prior to performing D&Es, although there is lack of studies addressing the proper antibiotic regimen. In the United States, 80% of D&E providers report using perioperative antibiotics, with the most common regimen being doxycycline. Currently, the American College of Obstetrics and Gynecology (ACOG) recommends administration of 200mg of doxycycline orally prior to the procedure<sup>19</sup>.

Even if D&E is known to be safe and effective for second semester termination, there are some potential complications. Acute complications include retained products of conception, cervical laceration, uterine perforation, hemorrhage, and infection, the most common of which are cervical laceration and uterine perforation. Uterine perforation, one of the serious complications, is reported to occur in less than 1% of D&Es. However, dilation and evacuations performed by inexperienced providers have higher risks of complications, mainly, uterine perforation<sup>16</sup>. Consequently, inexperienced providers are advised to use medical methods<sup>6</sup>.

Recent review of the safe abortion services in Ethiopia concluded that inclusion of second semester medical or surgical (D&E) termination of pregnancy should be provided to those who need it<sup>8</sup>. In Ethiopia only 8% of all abortions are performed during the second trimester of pregnancy<sup>12</sup>. Dilatation and evacuation have only been performed in instances of failed medical abortion or if a woman has contraindications to medical abortion, but there is no study done to review cases of D & E before. Furthermore, a recent study reported that the majority of obstetrician-gynecologists in Ethiopia (72.1%) held favorable opinions toward D&E for second semester pregnancy termination<sup>2</sup>.

In October 2017, St Paul's Hospital and Millennium Medical College (SPHMMC, one of the teaching tertiary health facilities in Ethiopia) began a fellowship program in Family Planning, in which comprehensive training in performing D&E has been provided. Therefore, the aim of this study is to analyze and document the outcomes and acute complications of D&E procedures performed at this institution for the period from January 1, 2018 to Jun 30, 2018.

## METHODS AND MATERIALS

### Study area and period

The study was conducted at SPHMMC, which is the second largest hospital in Ethiopia, located in Addis Ababa, Gullele Sub City. The medical school was opened in 2007 G.C. to commemorate the Ethiopian Millennium. The department of obstetrics and gynecology is one of the departments in the hospital offering services on various areas. The service delivery sites are outpatient department, gynecology ward, maternity ward, labor ward, operation rooms and MICHU clinic. MICHU clinic provides services in the area of reproductive health including comprehensive abortion care and family planning. The analysis was performed on cases of D & E procedures carried out for termination of pregnancy in the six-month period from January 1, 2018- June 30, 2018.

**Study design and sample:** Retrospective cross-sectional study design was used to evaluate the outcomes and acute complications of D&E among clients who were admitted to procedure room for D&E procedure. All women who were managed with D&E during the study period were included in the study while excluding those with lost records.

### Variables and measurement

Structured questionnaire prepared in English was used to collect data. Selected socio-demographic, reproductive and medical history related variables were extracted from the medical records of clients for whom D&E was performed between January 1, 2018 and June 30, 2018.

The variables include various socio-demographic characteristics, obstetric profile (parity, gestational age), reasons for second trimester D&E, type of abortion care (safe abortion, post abortion care), type of cervical preparation for the procedure, and procedure complications (hemorrhage, uterine perforation, failed D&E).

## DEFINITION OF TERMS

**Comprehensive abortion care** -includes all of the elements of post abortion care as well as safe induced abortion for all legal indications (i.e. as allowed by national law), while **safe abortion**-refers to a comprehensive termination of pregnancy that is offered to clients as permitted by the law.

**Post abortion care** -is a comprehensive service to treat women that present to a health care facility after abortion has occurred spontaneously or after attempted termination outside the hospital.

**Second trimester surgical abortion**- a method of abortion using medical or mechanical method for cervical preparation followed by evacuation of uterine contents using different types of forceps

**Cervical preparation**- Using medical or mechanical techniques to make the cervix soft and favorable for doing an intrauterine procedure.

### Data processing and analysis:

The collected data was checked for completeness and consistency and coded. The data was then analyzed using IBM SPSS Statistics for Windows, Version 22.0 ((IBM Corp, Released 2011). Descriptive statistics were performed to generate the mean ( $\pm$ SD), median (IQR), and frequency tables.

## ETHICAL CONSIDERATIONS

The purpose of the study and the starting time was communicated, and permission received from head of the department and the academic vice provost of the SPHMMC. The study is conducted after getting clearance from SPHMMC IRB. An official letter is also obtained from IRB before starting the data collection.

## RESULTS

### Basic characteristics of patients:

There were 46 cases of D&E done in the six-month period and we were able to collect 43 (93.5%) records with only three missing records. There were missing values for some of the variables, but all records were included in the analysis as they contain the outcome of interest. The median (IQR) age of the study participants was 24 (20,26), with age range of 16 to 34 years old. Patients had an average gestational age of 16 weeks + 2 days (ranging from 13 weeks + 1 day to 20 weeks + 6 days). Dilation and evacuations performed as post abortion care (PAC) made up 16.2% (7/43) of patients in the study.

### Procedure preparation:

Regarding antibiotic use, all women in the study received Doxycycline prior to the procedure (Table 1). Nearly 98% (42/43) of women were provided with analgesia and there is no documentation for the remaining one patient. Ninety-five percent (41/43) of women received a para cervical block using lidocaine 1%. The most common combination of analgesia used was diclofenac with para cervical block (79.1%).

All women received mifepristone the day prior to the procedure and all but 1 woman received an additional method of cervical preparation prior to the D&E (Table 1). Sixty-five percent of patients (26/43) received misoprostol alone, while 37.2% of patients (16/43) received both misoprostol and laminaria. The most common route of misoprostol administration was sublingual (41.9%, 18/43). Misoprostol was administered on average 2 hours ( $\pm 0.78$ ) prior to the procedure, with a range of 1-4 hours. Laminaria was placed an average of 22.4 hours prior to the procedure (range of 12 to 48 hours). For patients  $\leq 16$  weeks + 6 days, misoprostol alone 1-3 hours prior to the procedure was the preferred method (85.2%), whereas for patients  $\geq 17$  weeks, misoprostol in combination with laminaria was the most common method of cervical priming (81.3%). The only woman who did not receive cervical preparation was receiving D&E as post abortive care for inevitable abortion and already had a cervical dilation of 3cm prior to the procedure. (81.3%). The only woman who did not receive cervical preparation was receiving D&E as post abortive care for inevitable abortion and already had a cervical dilation of 3cm prior to the procedure.

Table 1-Perioperative care for clients who had undergone D & E at SPHMMC, January-June 2018.

Care provided	Number of patients	Percentage
Mifepristone	43	100%
Cervical preparation done	42	97.7%
Misoprostol alone	26	60.5%
Misoprostol + Laminaria	16	37.2%
Administered essential antibiotics	43	100.0%
Received systemic analgesia	42	97.7%
Received paracervical block	41	95%
Counseled on contraception	43	100.0%
Provided contraception	38	88.3%

**The procedure characteristics and complications:**

The procedures lasted for an average duration of 22.78 minutes and ranged from a minimum of 10 minutes to a maximum of 40 minutes (Table 2). All patients have pre-procedure hematocrit and no patient had bleeding requiring observation or transfusion. The median (IQR)

time of total patient hospital stay for their procedure was 3 (2.8,4) hours. The mean duration from initial consultation for safe abortion services to procedure was 31.9 hours (SD ±19.8 hours).

Out of the 43 D&E's performed at SPHMMC during

**Table 2- procedure characteristics for clients who had undergone D & E at SPHMMC January-June 2018.**

Procedure characteristics	Mean	Std deviation	Minimum	Maximum
Duration of procedure (minutes)	22.78	7.69	10	40
Length of hospital stay (hours)	6.9	12.32	2	72
Time from initial visit to discharge (hours)	31.9	19.82	4	96

this 6-month period, only 1 acute complication occurred, with an overall complication rate of 2.3%. This complication was a case of uterine perforation following D&E done for a case of septic inevitable abortion. This patient was on triple antibiotic for sepsis and has feature of chorioamnionitis at the time of the procedure. 24 hours has lapsed after initiation of misoprostol. The cervix was open to 3 cm at the time of the procedure. Due to the low incidence of complications, we were not able to make correlation of complication rates with patient clinical factors.

Post procedure contraception:

All women who received D&Es at SPHMMC were counseled on family planning. Of those women, 88.3% (38/43) received contraception after the procedure. The majority (73.7%) opted for Long Acting Reversible Contraceptives (LARC), including 36.8% (14/38) chose Implanon, 5.3% (2/38) chose Jadelle and 31.6% (12/38) chose an intrauterine contraceptive device (IUCD). The remainder of patients choose oral contraceptive pills (OCPs; 13.2%, 5/38), and the contraceptive injection (Depo-provera; 13.2%, 5/38) (Figure.1). About 11% (5/43) of the patients did not receive any form of contraceptive

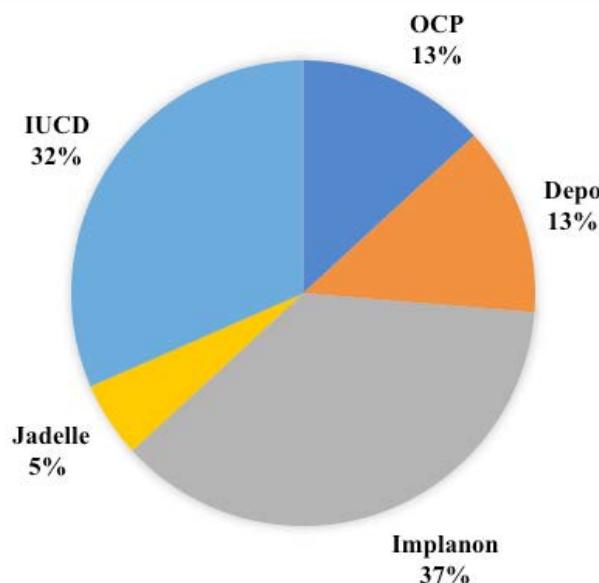


Figure 1: Percentage of post abortion family planning provided to D&E clients, SPHMMC

## DISCUSSION:

Dilation and Evacuations have historically been a relatively uncommon procedure in Ethiopia. Since 2005, the country has been making strides to improve the provision of abortion services. For example, in 2014, abortion only accounted for 6-9% of maternal mortality, a decrease of 75% since 2005<sup>7,11</sup>. As a result of the initiation of the Family Planning Fellowship Program and the beginning of the regular of D&E service in SPHMMC, D&E has become the routine treatment for a woman electing surgical abortion in the second trimester. The current analysis demonstrated the institutional capacity to perform it and safety and effectiveness of the second trimester D&E for candidate patients.

The pre-operative and peri-operative care provided for patients undergoing dilation and evacuation at our institution met international standards for all patients. All patients in our study received a pre-operative antibiotic. Regarding peri-operative pain control, the WHO recommends an analgesia regimen of a paracervical block plus non-steroidal drugs or conscious sedation, which was provided for 97.7% of our patients<sup>23</sup>. General anesthesia was not used on any patients in this study, as the WHO reports that this can increase rates of complications<sup>23</sup>. Mifepristone is used in all patients 24 hours prior to the D&E at all gestational ages. Furthermore, cervical preparation, which is known to reduce complication rates of D&E, was performed for all women undergoing safe termination and all but one woman who underwent post-abortion care. Multiple studies indicate that laminaria or a combination of laminaria with misoprostol is recommended for patients at higher gestational ages, as this can improve cervical dilation and lower complication rates<sup>9</sup>. Similarly, misoprostol alone is acceptable for patients at gestational ages <16-17 weeks. Our data reflected these recommendations, with the majority (81.3%) of patients at gestational age  $\geq 17$  weeks receiving a combination of laminaria and misoprostol, whereas the majority of patients below 16.6 weeks of gestation received

misoprostol alone. Our methods of cervical preparation proved to be effective, as only 1 patient in the study was noted to have inadequate cervical dilation, which led to an extra 10 minutes of procedure time.

Our overall complication rate was very low (2.3%), which is consistent with recent studies demonstrating complication rates of D&E ranging from 1.5 to 7% across different international institutions that have been providing the procedure as regular practice for many years<sup>17,1</sup>. The only patient who had a complication was admitted for post abortion care for inevitable septic abortion. The finding underscores the safety and effectiveness of D&E as there was no complication documented for the elective induced procedures.

Provision of post abortion contraception is an important part of comprehensive abortion care and helps to reduce unintended pregnancy and subsequent abortions. In our study, 100% of women who underwent D&E were counseled on family planning, with 88% women provided with various options of contraception post-procedure. This rate is higher than previous studies demonstrating that 77-86% of women in Ethiopia received contraception following abortion services<sup>3,12,20</sup>.

This analysis is the first attempt to document the clinical characteristics of patients, procedure, outcomes and complications of D&E in Ethiopia which largely has not been offered to Ethiopian women. A 2014 study concluded that safe abortion care interventions in Ethiopia should prioritize training of providers in D&E, in order to improve women's access to second trimester abortion services<sup>8</sup>. Despite the fewer number of second trimester D&E used for this analysis, we were able to document all aspects of the procedure and outcomes. More accurate rates of complications and procedure characteristics could be obtained by having a higher sample size.



## CONCLUSION:

In conclusion, there were a total of 46 D&E procedures performed in the study period from which we analyzed 43 of them. The cervical preparation method employed was found to be effective. The study also demonstrated the clinical safety and effectiveness of D&E for second trimester surgical induction when performed by trained providers. Only one complication was documented, and it was on a patient who underwent post abortion care for a septic abortion. Our model for second trimester D&E can be used to inform other local institutions on the benefit and safety of offering the procedure to women seeking second trimester termination.

Future studies should analyze larger sample as more D&Es continue to be performed at

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