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Original Research Article

## A retrospective study on various methods used in second trimester MTP at KIMS hospital and research centre, Bangalore

Sankalpa A. J.\*, Jayanthi T., Sanvithi A.

Department of OBG, KIMS, Bangalore, Karnataka, India

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**\*Correspondence:**

Dr. Sankalpa A. J.,

E-mail: [sankalpa.addamane@gmail.com](mailto:sankalpa.addamane@gmail.com)

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### ABSTRACT

**Background:** Despite the fact that majority of abortions are performed in the first trimester, 10-15% of abortions have taken place in the second trimester period globally because of delayed diagnosis of fetal anomalies and failure to recognize an undesired pregnancy in the first trimester. This study aims to describe the various methods used in inducing second trimester abortions and to analyse the efficacy and safety profile of these methods.

**Methods:** Retrospective observational study. This study analysed case records of 30 patients who underwent second trimester abortion between the gestations of 12 and 28 weeks. All case records of patients who underwent second trimester abortion between the gestation 12 and 28 weeks from 1st January 2021 to 1st August 2021 at the department of obstetrics and Gynaecology, KIMS hospital and Research Centre, Bangalore was analysed. Dilapan-s (hygroscopic mechanical dilator), Foley's and mifepristone for cervical ripening followed by varying doses of misoprostol are the different methods studied in this study population.

**Results:** Most of the patients in study population belonged to the age group of 28-32 years. 60% patients underwent MTP between the gestational ages of 16-20 weeks. The commonest indication for MTP was fetal anomaly.

**Conclusions:** Mifepristone group had short induction to abortion interval but was associated with higher rates of retained placenta bits. Foleys group had the longest induction to abortion interval but reported no complications.

**Keywords:** Cervical ripening, MTP, Dilapan-S

### INTRODUCTION

Around 210 million pregnancies occur each year throughout the world. An average of 46 million of these pregnancies end in abortion: 36 million in developing countries and 10 million in developed countries.<sup>1</sup> Termination of pregnancy between 12-28 weeks is considered as second trimester abortion. Despite the fact that majority of abortions are performed in the first trimester, 10-15% of abortions have taken place in the second trimester period globally because of delayed diagnosis of fetal anomalies and failure to recognize an undesired pregnancy in the first trimester, which all contribute to the continuing need for late abortions.<sup>2-4</sup> When compared to first trimester, second trimester

abortions disproportionately contribute for maternal morbidity and mortality especially in low-resource countries where access to safe second trimester abortion is limited.<sup>5</sup> Globally, abortion-related maternal deaths account for 13%, of which majority are caused by unsafe abortions, and significant number of them occurring in the second trimester.<sup>5</sup> It is also a cause of maternal death that can be easily reduced with the right interventions. Evidence showed that the prevalence of induced second trimester abortion was 30% in India, 25% in South Africa, 8.6% in England and Wales, 34% in Kenya, 10% in Nigeria, and 11% in Ethiopia.<sup>6-8</sup>

Modern medical methods include induction with mifepristone and misoprostol, or with misoprostol alone.

A regimen of oral mifepristone 200 mg followed 24-36 hours later by intravaginal prostaglandins (800 mcg intravaginally followed by 400 mcg orally or intravaginally at 3-hourly intervals up to a maximum of 4 doses) has been shown to have a 97% successful abortion rate.<sup>9</sup> Misoprostol, a prostaglandin E1 analogue, is also commonly used as a single agent for inducing second trimester medical abortion and in this regimen the dosage is 400mcg of misoprostol vaginally every 3 to 4 hours with a maximum of 5 doses.<sup>10</sup> The vaginal route has been shown to be more effective than the oral route with a shorter induction-to-delivery interval.<sup>11</sup>

Amongst the mechanical methods, Foleys induction and hygroscopic dilators (Dilapan-S) are more the most commonly used methods. All these medical and mechanical methods were analyzed for their efficacy in terms of the number of cases that required surgical intervention such as evacuation or hysterotomy due to failed medical/failed mechanical and medical methods.

### ***Aims and objectives***

This study aims to describe the various methods used in inducing second trimester abortions and to analyze the efficacy and safety profile of these methods.

## **METHODS**

### ***Sample size and sampling technique***

A total 30 case records of patient's who underwent second trimester abortion at KIMS hospital and research centre was analyzed. Consecutive sampling technique was employed to include all eligible subjects.

All case records of patients who underwent second trimester abortion between the gestation 12 and 28 weeks from 1<sup>st</sup> January 2021 to 1<sup>st</sup> August 2021 at the department of obstetrics and Gynecology, KIMS hospital and Research Centre, Bangalore was analysed.

### ***Exclusion criteria***

Multiple pregnancies and inevitable abortion.

### ***Methods of retrieving data***

The following information were extracted from medical records: age, parity, history of previous termination of pregnancy, previous surgeries, indication for Termination of pregnancy, history of use of contraception, gestational age at termination of pregnancy, any co morbidities.

Data about the mode of termination and procedure were collected following a standard checklist. The various methods of inducing second trimester abortion such as mifepristone and misoprostol combination, misoprostol alone, foley catheter or hygroscopic mechanical dilators used in combination with misoprostol were noted. The

misoprostol dose, frequency, time from induction to delivery, time from delivery of the fetus to delivery of the placenta, whether manual removal of the placenta was required and the number of cases that required surgical interventions such as dilatation and evacuation and hysterotomy in view of failed medical/mechanical methods were also noted.

The following complications of all methods were recorded: hemorrhage requiring transfusion, infection requiring intravenous antibiotics, retained placenta requiring manual removal, laparotomy (any indication including rupture uterus). Hysterectomy, uterine perforation and cervical laceration, unscheduled re-admission and failed medical methods requiring surgical intervention.

### ***Statistical analysis***

Data were checked for completeness, consistency and entered into EpData version 3.1. SPSS version 21.0 was used for statistical analysis.

## **RESULTS**

This study analyzed case records of 30 patients who underwent second trimester abortion between the gestations of 12 and 28 weeks during the study period of six months at KIMS Hospital and Research. It was found that most of the patients belonged to the age group of 28-32 years. It was noted that most of the patients belonged to the age group of 28-32 years and most of them were multiparous (53.4%). 12(40%) patients underwent MTP between 12-15weeks+6days gestational age and 18 patients between 16-20weeks of gestation. The most common indication was fetal anomalies, followed by social reason and intrauterine death or missed abortion.

Two methods were used for second trimester MTP at our hospital. Cervical ripening with mifepristone followed by misoprostol. Cervical ripening with mechanical methods such as dilapan-s (Hygroscopic dilators) or Foley's catheter followed by misoprostol. 23 patients were given mifepristone for cervical ripening and mechanical methods such as dilapan-s/Foleys were used for cervical ripening in 7 patients. Out of the 7 patients dilapan-s (hygroscopic mechanical dilator) was used in 3 patients and foleys was used in 4 patients. Following cervical ripening with medical or mechanical methods, misoprostol 400 mcg was repeated every fourth hourly and it was noticed that the number of doses varied from one dose in 3 patients (10%), two doses in 18 patients (60%), three doses in 6 patients (20%), and >3 doses in 3 patients (4 doses in two patients and in one patient 5 doses) (10%). The study population was categorized into three groups. Patients in whom mifepristone was used for cervical ripening were grouped as group 1, group 2 consisted of patients in whom dilapan-s was used and group 3 included patients in whom Foleys was used for cervical ripening.

The duration of induction to abortion interval was noted in all the three groups. Among the three patients in whom dilapan-S was used for cervical ripening, all patients underwent abortion within 12-24 hours. In patients who received mifepristone, 18 patients aborted within 12-24 hours, 5 patients between 24-48 hours. In Foley's group, 2 patients required >48 hours (50 and 52 hours) and 2 patients aborted between 24- 48 hours. Table 6 shows a comparison between complications in different groups.

**Table 1: Sociodemographic characteristics.**

Variable	No. of patients	(%)
<b>Age (in years)</b>		
18-22	07	23.4
23-27	08	26.6
28-32	12	40
>32	03	10
<b>Parity</b>		
Primiparous	14	46.6
Multiparous	16	53.4
<b>Gestational age</b>		
12-15weeks + 6 days	12	40
16-20 weeks	18	60

**Table 2: Indication for MTP.**

Indication for MTP	Number	(%)
Fetal anomaly	10	33.3
Social reason	8	26.6
Severe oligohydraminos	3	10
Medical disorders	4	13.3
IUD/missed abortion	5	16.6

**Table 6: Complications in the studied groups.**

Complications	Group 1 (mifepristone)	Group 2 (dilapan-S)	Group 3 (foley'S)
Retained placental bits requiring surgical evacuation	4 (17.39%)	1 (33.33%)	0
Laparotomy	0	0	0
Hysterectomy	0	0	0
Uterine perforation	0	0	0

The most common complication that was recorded was retained placental bits, which needed surgical evacuation that occurred in 5 Patients of all cases. 4 of those patients were among the group of mifepristone and no cases in the group in which Foley's catheter and dilapan-S was used. None of the cases had uterine perforation, needed laparotomy or hysterectomy.

## DISCUSSION

### Main finding

This study showed that various methods exist for second trimester MTP. These methods are mifepristone followed

**Table 3: Methods of MTP.**

Methods of MTP`	Number	(%)
Medical method (cervical ripening with mifepristone)	23	76.6
Medical method (Cervical ripening with mechanical methods like dilapan-s/foley's)	07	23.4
Dilapan-S	04	57.2
Foley's	03	42.8

**Table 4: Misoprostol dosage.**

No of doses of tab misoprotol 400 Mcg (4 <sup>th</sup> hourly)	Number (n=30)	(%)
1 dose	03	10
2 doses	18	60
3 doses	06	20
>3 doses	03	10

**Table 5: Duration (induction to abortion) in the studied groups.**

Duration (induction to abortion interval)	Group 1 (mifepristone)	Group 2 (dilapan-S)	Group 3 (foley'S)
12-24 hours	18	3	0
24-48 hours	5	0	2
>48 hours	0	0	2

by misoprostol, insertion of intracervical Foley's catheter followed by misoprostol, misoprostol alone, insertion of hygroscopic mechanical dilators such as Dilapan-S followed by misoprostol. The choice of the method used depends on personal choice. All the methods proved efficacious.

### Interpretation

There is a high rate of retained placental bits in the mifepristone group (17.39%). Similar to the studies conducted by Tripti Namrata, Nebend et al, Karsidag et al which reported 10-12% of cases with retained placental bits requiring surgical evacuation.<sup>12-14</sup> Patients in whom

foley's catheter was used for cervical ripening, 16 French Foley's was used and the bulb was inflated with 40ml normal saline and traction was applied. Similar protocols was used by studies conducted by Nasreen et al, Amjad and Akhter, Shabana et al.<sup>15-17</sup> The induction to abortion interval in the foley's catheter group was much higher in this study(>48 hours) and it was in contrast to the results noted in the studies conducted by Ranjan et al, Shabana et al and Rezk et al where the induction to abortion interval varied between 7.5-18 hours.<sup>17-19</sup> The induction to abortion interval was longest in the Foley's catheter group but this group had the lowest complication rate (0%). These findings suggest that Foley catheter when used for second trimester MTP is effective and safe, but anticipate a longer induction to abortion interval. The use of dilapan for cervical ripening showed a shorter induction to abortion interval and also had very minimal complications i.e., one patient (33.33%) had retained placental bits requiring evacuation but the efficacy cannot be commented as it was used in only three patients and bigger sample size would be required to draw conclusions.

The complications noted in this study in different groups was comparable with the Ranjan et al study on 50 patients in which, the following complications was noticed, that is, retained placenta (10%), fever (8%), nausea and vomiting (18%), and 8% had severe hemorrhage requiring transfusion.<sup>18</sup> Out of the 23 patients in the mifepristone group in our study, 4 (17.39%) patients had retained placenta bits similar to the study mentioned above.

#### **Strengths and limitations**

The strengths of this study include meticulous data collection with all records derived from a real-time updated database, thereby minimizing the possibility of bias. Nonetheless, the present study has several limitations: the retrospective design raises the possibility of biases inherent to such investigations. The most significant drawback is that the current study may have lacked sufficient statistical power due to the small sample size to detect small but clinically different outcomes and also the generalizability of our findings to other populations with different characteristics may be difficult.

#### **CONCLUSION**

The different medical methods used in second trimester MTP was noted. The use of dilapan-s (hygroscopic mechanical dilator), Foley's and mifepristone for cervical ripening followed by varying doses of misoprostol are the different methods studied in this study population. Mifepristone group had short induction to abortion interval but was associated with higher rates of retained placenta bits. Foleys group had the longest induction to abortion interval but reported no complications. The efficacy of dilapan-S could not be drawn due to small sample size.

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