



## Efficacy and safety of mifepristone in mid-trimester termination of post cesarean pregnancy

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### ABSTRACT-

There is an increase in incidence of fetal anomalies, detected in mid-trimester through TIFFA scan. Inparallel, there is steep rise in cesarean deliveries due to various reasons. Any scarred uterus may rupture due to prolonged use of uterotonics for termination of pregnancy.

The objective of the present study was to evaluate the efficacy and safety of the drug Mifipristone prior to uterotonics in mid-trimester termination of post cesarean pregnancy.

Methods – Type of study design – prospective observational study

Sample size – 24 antenatal women with severe fetal anomalies indicating for mid trimester MTP

Study period – 4 years

Setting – Department of Obstetrics and Gynecology, MallareddyMedical College for Women, Hyderabad, India.

All antenatal mothers who were detected to have severe congenital anomalies were recruited in the present study. All had presented with 14-22 weeks gestation with prior history of cesareandelivery.

They were given 400 mg of mifepristone after taking written consent.After 24 hours, an intracervical bougie was introduced. Augmentation of uterine contractions was done with minimal dose of oxytocin as it was a scarred uterus. Induction-abortion interval was noted.Any complications like rupture of the uterus, bleeding, retained productsand sepsis were noted.

Results – Total of 24 cases of post cesarean pregnant women in 4 years of study period came for mid trimester MTP due to fetal anomalies.Mean age was 24.2+3.3 years.Mean weeks of gestation found to be 16.4 + 2.4 weeks.Among 24 cases, 19 cases (79%) were with history of prior one cesarean section. More than 50% anomalies were neural tube defects (NTD). Mean induction-abortion interval was 16.5+4.1 hours. There was no serious complications like bleeding,sepsis and need for laparotomy found in the study.

Conclusion – Prior induction with mifepristone yielded a higher abortion rate of 100% in our study

witha mean time interval of 16.5 +4.1 hours. It required minimal dose of oxytocin in a few cases. There was no need for emergency laparotomy or hysterotomy in any of these cases. There were no fatal complications following this protocol.

**Keywords:** Mifepristone, mid-trimester termination, post cesarean pregnancy

### I. INTRODUCTION-

The incidence of fetal anomalies is increasing because of better methods of prenatal fetal surveillance like mid-trimester targetted imaging for fetal anomalies(TIFFA) and serum markers testing<sup>1</sup>.At the same timethe incidence of cesarean section for various reasons is also increasing in present days<sup>2</sup>.

Mid-trimester termination of pregnancy in post cesarean uterus is a challenge to the obstetrician because of scarred uterus.The scar rupture, intra peritoneal bleedingand need for hysterotomy and/or hysterectomy are not uncommon complications associated with mid trimester termination of post-cesarean pregnancies<sup>3</sup>

There are many MTP protocols evaluated allover the world. In the present study, we followed the protocolof prior administration of Mifipristone followed by intracervical Foley's catheter along with low physiological dose of oxytocin achieved a high success rate of complete abortion with lower induction-abortion interval <sup>4</sup>.The method is most economical with minimal days of hospital stay and least complications.

### II. METHODS-

The present study was carried out in the Department of Obstetrics and Gynecology for a period of 4 years from September 2019 to September 2023.The study involved 24 cases of mid-trimester abortions with prior cesarean section.

The inclusion criteria were women with severe fetal anomalies, severe uncontrolled hypertension and intra uterine fetal demise and preterm rupture of membranes. The exclusion criteria consisted of antenatal women with severe



bleeding, sepsis and placental morbid adherence. All cases recruited in the present study were counselled regarding the protocol, hospital stay and the probable complications and surgical interventions if needed and a detailed informed written consent was taken regarding MTP.

A thorough clinical history especially related to anomalies like consanguineous marriage, antenatal medications, diabetes, hypertension, and family history of child with anomalies.

General examination was done to rule out anemia, hypertension and systemic diseases. Antenatal examination was performed for estimation of gestational age and to rule out sepsis.

Laboratory investigations including complete blood picture, coagulation profile, blood group and Rh typing, serum thyroid profile, serum creatinine, fasting and postprandial blood sugars were done to assess the fitness for termination.

All women in the study group were given 400 mg of mifepristone. After 24 hours Foley's catheter was introduced into cervix with the bulb inflated with 30 ml of water. The catheter was left in situ for 12 hours. In some cases it got expelled spontaneously within 10 hours. In some cases, 5 units of oxytocin in 500 ml of Ringer lactate was administered in physiological dose to augment the uterine contractions. Prophylactic antibiotic like Ceftriaxone or Cefotaxime was given in a single intravenous dose. When the products were expelled, the time of induction, induction-abortion interval, completeness of abortion process and the type of congenital abnormality of the expelled fetus were noted.

The socio demographic data like age, gravida, number of previous caesarean sections, present gestational age, and indication for MTP and induction-abortion interval were noted. The complications of mid-trimester MTP like bleeding, need for curettage, and hysterotomy, pyrexia, nausea, vomiting, and diarrhea were also observed. All the data was analysed statistically using SPSS software system 2018.

### III. RESULTS-

In the present study 24 antenatal women with previous caesarean section who came for mid-trimester MTP were included. Majority were aged between 21-25 years. Only two were above 30 years of age. The mean age was 24.2 ± 3.3 years (Table 1). More than half of the study group was of 13-16 weeks of gestation. Mean weeks of gestation in present study was 16.4 ± 2.4 weeks (Table 2)

Most of them were second gravida (Table 3) with one prior caesarean section (Table 4). Four women had two previous caesarean sections (Table 4).

Regarding fetal indications for mid-trimester MTP, neural tube defects (NTD) constituted nearly 50% of the main causes. And among NTD, anencephaly and meningocele were noted (Table 5). Mifepristone and intracervical Foley's catheterization led to successful termination. Mean induction-abortion interval was 16.5 ± 4.1 hours. In three cases only it was more than 20 hours (Table 6). Cases with less than 16 weeks had shorter induction-abortion interval (Table 7). There was not a single case of uterine scar rupture or incomplete abortion, sepsis and bleeding. No single case was operated for uterine rupture or hysterectomy or hysterotomy.

### IV. DISCUSSION –

The present study was aimed at finding a safe protocol for mid-trimester MTP in a scarred uterus that can prevent prolonged abortion process and uterine rupture. Since with advent of TIFFA scan at 18-22 weeks, the accurate detection of anomalies of the fetus is done in present day obstetrics. Thus, there is increased incidence of severe fetal anomalies requiring mid-trimester MTP<sup>5</sup>. Since there is increased incidence of caesarean section in modern era due to various reasons, the termination of mid trimester pregnancy is challenging to obstetricians as there is increased risk of scar rupture or increased incidence of surgical interventions like hysterotomy for MTP and hysterectomy for scar rupture<sup>6,7</sup>

In previous days, Ethacridine lactate or intra amniotic hypertonic saline were used to procure mid trimester MTP with intra cervical placement of bulb of Foley's catheter. Whenever induction-abortion interval was prolonged and there was an increased risk of scar rupture<sup>8</sup>.

Medical abortion with prior treatment with Mifepristone followed by misoprostol is a widely used protocol in termination of first and mid trimester pregnancies<sup>9</sup>. But misoprostol has an inherent risk of hyperstimulation which leads to uterine rupture<sup>10</sup>. The risk is much more in pregnancy with history of previous caesarean section<sup>11</sup>. Even oxytocin in higher doses leads to rupture of uterus in midterm and term pregnancies with previous history of caesarean deliveries.<sup>12</sup>

To find out a safer medical method, we administered Mifepristone 400 mg and after 24 hours, intra cervical Foley's catheter was introduced and physiological dose of oxytocin was given in the form of intravenous drip for augmentation of pains. Prior treatment of 400 mg



Mifepristone improves the Bishop score, it shortens the induction-abortion interval<sup>13</sup>. It reduces the amount of oxytocin required for the abortion process<sup>14</sup>. It aids in completeness of the process and thus, post abortal bleeding was minimal. In our study, among 24 cases, only three required surgical evacuation for minimal retained products of conception. As induction-abortion interval was short in our study, there was a need of lesser amount of oxytocin for augmentation of uterine contractions. In literature it was stated that the more of induction-abortion interval, the higher is the risk of uterine rupture and surgical intervention like laparotomy<sup>15</sup>.

Success rate in the present study was 100 %, as none of our cases needed laparotomy for rupture uterus or hysterotomy for failed MTP. No case had complaints of nausea, vomiting or diarrhoea or post abortal bleeding.

In literature, one study was found wherein they used exclusively Mifepristone alone as an inducing agent for mid trimester abortion in previous cesarean section cases. They used misoprostol apart from oxytocin. In their study, they found the effectiveness of Mifepristone as robust, in achieving the completeness of abortion process.

The induction-abortion interval was  $8.2 \pm 3.8$  hours and there were no major complications<sup>16</sup>.

In our study, we used single customised protocol of Mifepristone and Foley's bulb along with minimal dose of oxytocin for mid-trimester MTP in a scarred uterus and avoided misoprostol. It was observed that there was a shortened induction-abortion interval with completeness of the abortion process.

## V. CONCLUSION-

Prior induction with mifepristone leads to a safer method of mid-trimester MTP in post caesarean cases. It requires only minimal dose of oxytocin with shortened induction-abortion interval. The post MTP complications were very minimal. There is no risk of rupture of uterus in mid-trimester MTP in previous caesarean cases using mifepristone as a preinduction drug followed by intra cervical Foley's catheter and oxytocin intravenous drip in a physiological dose. There is a need for multi-centric study using a larger sample size so as to implement the protocol widely in modern obstetrics.

## VI. TABLES

Table 1. Age distribution of the study group

(n = 24; mean  $\pm$  SD = 24.25  $\pm$  3.31)

Age (in years)	No. of cases	Percentage
$\leq 20$	3	12.5
21-25	15	62.5
26-30	4	16.67
> 30	2	8.33

Table 2. Weeks of gestation among the study group

(n = 24; mean  $\pm$  SD = 16.42  $\pm$  2.1)

Gestation (in weeks)	No. of cases	Percentage
13-16	14	58.33
17-19	8	33.33
$\geq 20$	2	8.34



Table3. no of gravida among the study group

Gravida	No. of cases	Percent
2	19	79.1%
3	4	16.7%
>3	1	4.2%
Total cases	24	

Table 4 . No. of previous cesarean sections in the present study

No of previous c- sections	No of cases	percentage
One	19	79.2%
Two	5	20.8 %
Total	24	

Table 5. Indications of second trimester MTP in the present sample

Indication for MTP	No. of cases	Percentage
Anencephaly	9	37.5%
Meningomyelocele	4	16.6%
Osteodysplasia	1	4.2%
Massive hydrocephalus	3	12.5%
Multiple anomalies	3	12.5%
Limb bodywall complex	1	4.2%
Omphalocele	3	12.5%
Total cases	24	

Table 6. Time interval between induction and abortion among cases

(n = 24; mean  $\pm$  SD = 16.56  $\pm$  4.17)

Induction abortion interval (in hours)	No. of cases	Percentage
1-10	3	12.5
11-20	18	75
21-30	3	12.5

Table 7. Number of cases according to period of gestation versus induction-abortion interval

Induction-abortion interval	1-10 hours	11 - 20 hours	21-36 hours	Total cases
13-16 weeks	2	11	1	14
17-19 weeks	1	5	2	8
20weeks	0	1	1	2
Total cases	3	17	4	24

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