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Original Research Article

Different methods of termination of second trimester pregnancy at Women's Health Hospital, Assiut University: efficacy and complications

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ABSTRACT

Background: Termination of pregnancy in second trimester is one of the greatest challenges in modern obstetrics practice and is more risky than during first trimester. Now the main concern of the obstetrician is to provide the most effective, safest, and cost-effective regimen with least or no complications. Describe the different indications, technique and complications of different methods of TOP used at Women's Health Hospital, Assiut University. Identify gap between current practice and guidelines and setting recommendations for filling gap to improve outcome

Methods: Studying the different methods used for all cases with gestational age 13-24 weeks attending at Women's Health Hospital, Assiut University from the 1st July 2015 to the 1st June 2016, for second trimester termination of pregnancy who are eligible for termination of pregnancy, with exclusion criteria including any case with scared uterus, multiple pregnancy and rupture of membranes.

Results: Of the 146 patients, 55 patients received misoprostol alone, 13 cases used foley's catheter alone, 67 cases received misoprostol in combination with foley's catheter and hysterotomy done in 9 patients (4 after failed induction and the rest as primary procedure). In present work the most common complication recorded was retained placental parts, 39 patients (26.5%) followed by surgical evacuation. Uterine perforation occurred accidentally in 3 cases during evacuation followed by laparotomy and repair of perforation without hysterectomy. Infection recorded in 3 cases (1.7%). Severe haemorrhage occurred in 4 cases where they needed hysterotomy.

Conclusions: All methods used in the department showed efficacy. Misoprostol induction was associated with a shorter induction-abortion interval but was associated with higher risk of retained placenta. Foley's catheter induction was more prolonged but it was associated with almost no complication. The most common complication was retained placenta except those who used Foley's catheter as they had no retained placental parts.

Keywords: Misoprostol, Miscarriage, Termination of pregnancy

INTRODUCTION

Termination of pregnancy is defined as Termination of pregnancy is defined as elective expulsion or extraction of products of conception from uterus instead of spontaneous onset of process in patients with gestational age 13-24 weeks. The commonest indications for a second trimester abortion termination are missed abortion and congenitally malformed fetus.¹ For some women,

second trimester TOP is unavoidable.² While second trimester TOP accounts for 10-15% of termination worldwide, it accounts for two-thirds of all major termination related complications.^{3,4}

Second trimester termination of pregnancy represents about 3.5% of labor and admission in Women's Health Hospital, Assiut University. Existing guidelines for different methods of termination exists (ACOG, RCOG,

SOGC, FIGO), but many of the details do not apply to our setting because of non-availability e.g dilatation and evacuation and mifepristone.⁵⁻⁸ Since there is no available data on the efficacy and safety of current modes of termination of second trimester pregnancy, this study aims to describe the methods used in pregnancy termination in the second trimester and analyze the efficacy and safety profile of these methods.

METHODS

It was a descriptive cross-sectional study.

All cases of eligible for TOP between the gestations of 13 and 24 weeks from 1st July 2015 to 1st June 2016, among women attending the department of obstetrics and Gynecology, Women's health hospitals

Exclusion criteria

- Age of gestation below 13 weeks.
- Age of gestation above 24 weeks.
- Multiple pregnancies.
- Rupture of membrane.
- Scarred uterus.

Methods of retrieving data:

- Record audit of demographic and baseline characteristics:
The following information were extracted from medical records: age, parity, history of previous TOP, previous surgeries indication for TOP, contraception when pregnancy resulted from contraceptive failure, gestational age at TOP.
- Identify the methods of termination of second trimester on which the audit will be on its use as misoprostol, foley catheter, their combination or hysterotomy.
- Record audit and direct observation

Data about the mode of termination and procedure were collected following a standard checklist. Different data were collected according to the method used. For patients who underwent medical TOP, the misoprostol dose, frequency, whether oxytocin was used, its timing, dose and rate, 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 nights spent in hospital. Additional information for patients who underwent surgical TOP included blood loss, anesthetic method and length of procedure.

The following complications of all methods were recorded. They were obtained by either record audit or direct observation when feasible:

- Hemorrhage requiring transfusion.
- Infection requiring intravenous antibiotics.
- Retained placenta requiring dilatation and curettage.

- Laparotomy (any indication including rupture uterus).
- Hysterectomy Uterine perforation and cervical laceration; and
- Unscheduled re-admission. Unscheduled re-admission was defined as hospital stay of more than three hours

Statistical analysis

Continuous data were presented as Mean+SD. Nominal and ordinal data were presented as ratios and percent.

RESULTS

This work involved 146 patients attended to Women's Health Hospital, Assiut University, 90% of them are uneducated and only 10% are educated, about 65% are from rural areas while the rest are from urban areas, the age among 180 patients ranges between 18 to 41 years with a mean 25.92+5.67 years. The parity of patients in that work ranges between primigravida to para 9. With a mean 2.51+1.94. There are 73 patients with history of previous abortion where 40 patients aborted one time before while 33 patients aborted 2 times or more. Only 2 patients gave history of previous ectopic pregnancy, no patients had history of molar pregnancy. According to gestational age; It ranges between 13 to 24 weeks with a mean 19.44+4.49 weeks.

Table 1: The clinical data of group I (Misoprostol group).

| Item | No. (n= 55) | % |
|----------------------------------|-------------|------|
| Dose of misoprostol (mcg) | | |
| 100 | 20 | 36.4 |
| 200 | 29 | 52.7 |
| >200 | 6 | 10.9 |
| Number of doses | | |
| One | 12 | 21.8 |
| Two | 22 | 40.0 |
| Three | 11 | 20.0 |
| More than three | 10 | 18.2 |
| Frequency | | |
| Once | 12 | 21.8 |
| Every 6 hours | 43 | 78.2 |
| Oxytocin given | | |
| Yes | 8 | 14.5 |
| No | 47 | 85.5 |
| Dose of oxytocin: (IU) | | |
| 5 | 2 | 25.0 |
| 10 | 5 | 62.5 |
| 20 | 1 | 12.5 |

The indication of termination varied among cases where 102 cases had termination of pregnancy for missed abortion, while 26 cases had fetal congenital anomalies and 18 cases had to terminate their pregnancy for maternal indications as RHD, sever hemorrhage,

eclampsia. Among 146 patients, termination of pregnancy occurred by misoprostol in 55 of them, in 13 patients termination was by intracervical Foley's catheter while both methods used by 67 patients. Only 9 patients had hysterotomy where 5 of these cases had failure of induction of abortion while 4 had sever hemorrhage.

Table 1 shows 55 patients who started their termination by Misoprostol, 29 patients (52.7%) received 200 mcg, while 20 of them (36.4%) received 100 mcg, and 6 patients (10.9%) received >200 mcg of misoprostol. The number of doses varies from one dose among 12 patients (21.8%), two doses were needed by 22 patients (40%), three doses for 11 patients (20%), and >3 doses in 10 patients (18.2%), with a frequency of 6 hours between each dose. Only 8 patients (14.5%) needed oxytocin after misoprostol where 5 patients received 10 units of oxytocin, 2 patients received 5 units and only one received 20 units. Among 30 patients (54.5%) the placenta expelled within 30 minutes and in 4 patients (7.3%) the placenta expelled within 30-60 minutes, and 16 patients needed surgical evacuation for retained placental parts. The start of uterine activity ranges from 1 to 7 hours from the start of induction with mean 2.73 ± 1.16 hours. The interval time needed for those patients to complete termination ranges between 2 to 33 hours with mean 12.45 ± 7.12 hours.

Table 2: The clinical data of group II (Foley's catheter group).

| Item | No. (n= 13) | % |
|------------------------------------|-------------|------|
| Oxytocin given | | |
| Yes | 8 | 61.5 |
| No | 5 | 38.5 |
| Dose of oxytocin (drop/min) | | |
| 5 | 7 | 87.5 |
| 10 | 1 | 12.5 |

Table 2 shows the use of intracervical Foley's catheter in 13 patients. In all cases, the Foley's catheters were inflated by 40 ml of saline and traction was done. Among the following group, the interval time for the fall of Foley's catheter ranged from 5 to 28 hours with mean 12.77 ± 6.99 hours. Of 13 patients, 8 (61.5%) needed oxytocin with dose 5 units of oxytocin, except one patient who received 10 units. The start of uterine activity ranged from 2 to 11 hours with mean 5 ± 2.65 hours. Among all patients in that group, the placenta was expelled within 30 minutes. The placenta was expelled within 30-60 minutes in only one case. The duration of termination in that group of patients ranged between 7-41 hours with mean 17.77 ± 9.58 hours.

Table 3 shows 67 patients who started induction of abortion by misoprostol in combination with intracevical Foley's catheter in which all catheters were inflated with 40 ml saline and traction was done. The dose or misoprostol varies among patients, where 40 patients

(59.7%) received 100 mcg, and 23 patients (34.3%) received 200mcg.

Table 3: The clinical data of group III (Misoprostol with Foley's catheter).

| Item | No. (n= 67) | % |
|----------------------------------|-------------|------|
| Dose of misoprostol (mcg) | | |
| 50 | 2 | 3.0 |
| 100 | 40 | 59.7 |
| 200 | 23 | 34.3 |
| > 200 | 2 | 3.0 |
| Number of doses | | |
| One | 9 | 13.4 |
| Two | 24 | 35.8 |
| Three | 13 | 19.4 |
| More than three | 19 | 28.4 |
| Frequency | | |
| Once | 14 | 20.9 |
| Every 6 hours | 53 | 79.1 |
| Oxytocin given | | |
| Yes | 9 | 13.4 |
| No | 58 | 86.6 |
| Dose of oxytocin (IU) | | |
| 5 | 7 | 77.8 |
| 10 | 2 | 22.2 |

The number of doses varied among patients; 35.8% received 2 doses, 13.4% received one dose, 19.4% received 3 doses, and 28.4% received more than 3 doses, with a frequency of 6 hours between each dose. Only 9 patients needed oxytocin after the last dose of misoprostol. The duration of insertion of foley's catheter ranged from 2 to 50 hours with mean 13.8 ± 10.59 hours. The start of the uterine activity ranged between 2-10 hours with mean 4.74 ± 2.48 hours. The placenta in 49 patients (75.4%) was expelled within 30 minutes, but 16 patients (24.6%) needed surgical evacuation for retained placental parts. The interval time needed to complete termination in those patients ranged from 5 to 65 hours with mean 20.35 ± 13.53 hours.

Table 4: Duration (Induction to abortion interval) in all groups.

| Duration | Group I Misoprostol (n= 55) | Group II Foley's catheter (n= 13) | Group III Combined (n= 67) |
|----------------------|-----------------------------------|--|----------------------------------|
| Mean±SD | 12.45±7.12 | 17.77±9.58 | 20.35±13.53 |
| Median | 12 | 15 | 16 |
| Range | 2 – 33 | 7 - 41 | 5 - 65 |
| P-value ¹ | | 0.050* | 0.000* |
| P-value ² | | | 0.697 |
| P-value ³ | | | |

Table 4 shows that there is a clear difference between the time interval taken by each group to complete termination. The time interval in the group which used

misoprostol (12.45 ± 7.12) is shorter than that in the other groups, and the difference is significant. But there is no significant difference between the group which used Foley's catheter alone, and the combined group. The group of patients who received misoprostol after Foley's catheter expelled have the longest time interval (31.53 ± 13.46) with a significant difference between it and other groups.

Table 5: Time Foley's catheter expelled in group II and group III.

| Time expelled | Group II Foley catheter (n= 13) | Group III combined (n= 67) |
|---------------|---------------------------------|----------------------------|
| Mean \pm SD | 12.77 \pm 6.99 | 13.80 \pm 10.59 |
| Median | 12 | 10 |
| Range | 5-28 | 2-50 |
| P-value1 | | 0.757 |
| P-value2 | | |

The start in uterine activity varies among different groups shown in Table in which the earliest start of activity was in group of misoprostol with a mean of 2.73 ± 1.16 hours, with a significant difference between it and the other groups. This difference is not significant between the group of Foley's catheter (5 ± 2.65) and that of the combined group (4.74 ± 2.48).

Table 6 shows a comparison between complications in different groups. The most common complication that was recorded was retained placental parts, which needed surgical evacuation, that occurred in 39 patients (26.9%) of all cases. 21 of those patients were among the group of misoprostol only, 18 in the combined group, and no cases in the group in which Foley's catheter only was used. Infection was noticed only in 3 patients (2%), where 2 patients were in the group which used misoprostol in combination with Foley's catheter. Two cases had accidental uterine perforation during surgical ring evacuation of retained placenta that belonged to the group of misoprostol only.

Table 6. Complications in the studied groups.

| | Group I Misoprostol (n= 55) | | Group II Floey catheter (n= 13) | | Group III Combined (n= 67) | | Group IV Hysterotomy (n= 9) | |
|--|-----------------------------|------|---------------------------------|-----|----------------------------|------|-----------------------------|------|
| | No. | % | No. | % | No. | % | No. | % |
| Hemorrhage requiring transfusion | 0 | 0.0 | 1 | 7.7 | 0 | 0.0 | 3 | 33.3 |
| Infection requiring intravenous antibiotics | 0 | 0.0 | 0 | 0.0 | 2 | 3.0 | 0 | 0.0 |
| Retained placenta requiring dilatation and curettage | 21 | 38.2 | 0 | 0.0 | 18 | 26.9 | 0 | 0.0 |
| Laparotomy | 2 | 3.6 | 0 | 0.0 | 1 | 1.5 | 0 | 0.0 |
| Hysterectomy | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Uterine perforation | 2 | 3.6 | 0 | 0.0 | 1 | 1.5 | 0 | 0.0 |

DISCUSSION

The study revealed that different methods exist for termination of second trimester miscarriage. These methods are misoprostol, insertion of intracervical Foley's catheter, misoprostol combined with Foley's catheter and hysterotomy. The method choice depends upon personal preference. Overall, all the methods proved efficacious. The longest induction to abortion interval was found in the Foley's catheter group but this group had the lowest complication rate. There is a high rate of retained placenta specially in misoprostol group.

Regarding the use of misoprostol alone, FIGO has recommended the regimen protocol for second trimester pregnancy termination with 100-200 mcg intravaginal misoprostol, repeated 6 hourly till maximum of 4 doses/24 hours.⁸ The induction to delivery interval of misoprostol alone in this study was 12 ± 7 hours. Other

studies showed marked variation from 9-33 hours. The induction-abortion interval was shorter in Ranjan et al and Imran F et al.^{9,10} Other studies showed longer interval time as in a study by Namrata T et al, Koury et al.^{11,12} It is noteworthy that FIGO dosage schedule was not followed in 21% of women in our series who used it only once, also six women used >200 micrograms. This latter dose may result in uterine hyperstimulation where cases of uterine rupture was reported during second trimester termination using misoprostol (Ashok et al), hence this should be avoided.³ These results indicate that misoprostol induction was comparable to efficacy in other studies but it did not consistently follow the recommended dosage of FIGO for misoprostol 2012.⁸ Regarding complications reported in the misoprostol group, a high rate of retained placenta was found. As regard similar studies, retained placental remnants reported in 10-12 % of cases as in studies by Tripti Namrata, Nebend et al, Karsidag et al.^{11,13,14}

In the Foley's catheter group done through 16 french Foley's catheter with its balloon inflated with 40 ml saline, and traction was applied, which had been done among all patients that used Foley's catheter. Reported in the literature similar protocols was used by Nasreen et al, Amjad and Akhter, Shabana et al.¹⁵⁻¹⁷ In the studies where foley's catheter was used alone, a long time (ranging between 19 up to 31 hrs) was needed for the process of abortion to be completed when it compared to other methods regarding the time interval taken by the Foley's catheter to be expelled and the product expulsion interval. No major complications were reported in our series or similar studies. These results indicate that Foley catheter termination of second trimester miscarriage is efficacious and safe but longer induction to expulsion interval should be expected. A local protocol for the use of intrauterine Foley's catheter regarding the size inflation of its balloon and traction is necessary. Further research may be needed to determine which is the best size of catheter, volume of inflation and method of traction.

For the group of patients who used Foley's catheter in combination with misoprostol, the induction-abortion interval was longer than misoprostol alone. This is in contrast to studies using similar combination (Ranjan et al, Shabana et al and Rezk et al where the induction to abortion interval ranges between 7.5-18 hours in these studies.^{9,17,18} This may be because these studies used the same dose of misoprostol that was used in misoprostol termination alone and supplemented this with Foley's catheter insertion. In our study, it was found that a lower dose of misoprostol and a lower frequency of misoprostol were used. Therefore, there is also a need to standardize the protocol of combined misoprostol and Foley's catheter use. A protocol for misoprostol regarding the dose, its frequency, and gestational age should be designed.

The complications among the combined group in the study revealed that 18% of cases needed surgical evacuation for retained placenta, infection occurred in 3% of cases and uterine perforation during D and E occurred in one case followed by laparotomy and repair. In a study by (Rezk et al), among 100 patients, 4% had retained placenta, 13% had fever, 8 % had nausea and vomiting, and 8% developed haemorrhage.¹⁸ Other study on 50 patients (Ranjan et al), retained placenta in 10% occurred, fever in 8%, nausea and vomiting in 18%, and 8% had haemorrhage.⁹ These results indicate that The patients should start fasting after the start of uterine contractions as they may need general anaesthesia for retained placenta, also the process of surgical evacuation should be done with care and under ultrasonographic guidance to avoid uterine perforation and strict aseptic conditions should be emphasized when insertion of Foley's catheter done.

CONCLUSION

All methods used in the department showed efficacy. Misoprostol induction was associated with a shorter

induction-abortion interval but was associated with higher risk of retained placenta. Foley's catheter induction was more prolonged but it was associated with almost no complication. The most common complication was retained placenta except those who used Foley's catheter as they had no retained placental parts.

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