MIDTRIMESTER PREGNANCY TERMINATION: COMPARISON OF PROSTAGLANDIN F2 ALPHA WITH MISOPROSTOL

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ABSTRACT

Objective: *To compare the efficacy and cost of misoprostol and prostaglandin F2 alpha (PGF2α) for mid-trimester pregnancy termination.*

Methodology: *This comparative quasi experimental study was conducted in Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar from September 2006 to August 2007. Total 100 pregnant women admitted for therapeutic termination pregnancy were included in the study that fulfilled the inclusion criteria. Patients were randomly allocated into 2 equal groups by lottery method. Patients in group- I were induced with tablet misoprostol while patients in group-II were induced with extra-amniotic prostaglandin F2 alpha injection. In both groups' variables like induction delivery interval, duration of hospital stay, cost of drugs and side effects were measured. Data was analyzed by SPSS version 16.*

Results: *Induction delivery interval and hospital stay were shorter in Misoprostol group (P < .000). Misoprostol was more economical compared with PGF2α (P < .000). Success rate was 100% with PGF2α and 96% with misoprostol. However, side effects were common with PGF2α (P < .001).*

Conclusion: *Misoprostol is a very effective and economical drug for mid-trimester pregnancy termination.*

Key Words: *Pregnancy termination, Induction delivery interval, Mid-trimester, PGF2α, Misoprostol.*

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INTRODUCTION

Globally approximately 26-31 million legal abortions (therapeutic termination of pregnancy) are performed every year and 10-20 million clandestine abortions are performed every year[1]. The option of surgical evacuation of uterine contents during the second trimester is not routinely possible by dilatation and curettage or vacuum extraction[2].

Various medical methods are being used for termination of pregnancy in second trimester. The most common approach has been the administration of oxytocin. These methods have been associated with high failure rates and medicines had to be repeated several times before complete expulsion of uterine contents[3].

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Prostaglandins opened a new horizon in the management of such cases. The use of PGF2α for second trimester pregnancy termination is considered to be safe and effective but studies have highlighted many systemic side effects i.e. pyrexia, vomiting and diarrhea[3,4]. Misoprostol was the 1st synthetic prostaglandin analogue available for the treatment of peptic ulcer. Impressed by its stimulant actions on the uterus, it has been widely used in obstetrics and gynaecology practice since 1993 because of its effectiveness, low cost, stability in light and hot climate conditions and ease of administration[5].

A large number of studies have shown that misoprostol is safe and effective in 1st trimester abortion[6] in combination with mifepristone, second trimester abortion[7-9] and labour induction[10,11]. We conducted this study at Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar to compare the two drugs misoprostol and prostaglandin F2 alpha for second trimester pregnancy termination in terms of induction delivery interval, cost and hospital stay and side effects with the hope to provide the most effective and safest way for pregnancy termination.

METHODOLOGY

This comparative quasi experimental study was conducted in Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar from September 2006 to August 2007. Total 100 pregnant women were included in the study who were admitted for mid-trimester therapeutic termination of pregnancy while grand multigravidas (P>5) patients with uncontrolled hypertension, cardiac disease, asthmatics and previous caesarian section were excluded from the study. Study was started after taking permission from hospital ethical committee. After taking informed consent, detailed history, general physical, systemic and local examination was done, base line investigations were done and patients were randomly allocated into 2 groups by lottery method. Patients in group-I were induced with one tablet misoprostol 200ug vaginally. Patients were accessed after 6 hours by vaginal examination and dose was repeated if needed. Maximum dose was 600ug. The induction delivery interval i.e. time interval between insertion of 1st tablet and expulsion of products of conception was noted. Patients were augmented with 30 units of syntocinon in 1000cc of ringer lactate/ normal saline infusion if products of conception were not expelled despite the open os and evacuation and curettage (E&C) was done. Drug cost, hospital stay and side effects were noted. All these findings including demographic data of the patient were entered in a structured proforma.

To group-II patients after pelvic examination foley's catheter 16F was passed into the cervix and retained with 30cc of sterile water. Injection PGF2α 1cc was diluted in 19ml normal saline in a sterile syringe of 20 cc thus making a solution containing 250 micrograms per ml. This solution was instilled extra-amniotically via foley's catheter after clamping the catheter in a dose of 3cc stat and repeated at the dose of 1cc per hour till the expulsion of catheter. The dose was repeated 3 times if the patient fail to expel the catheter. Criteria for augmentation was same as for group-I. Induction delivery interval and other data was entered in proforma. All patients were given prophylactic antibiotic cover intravenously from hospital. Data was analyzed in SPSS version 16. Student T test and chi-square test was applied for comparing categorical variables and continuous variables.

RESULTS

Total 100 patients were randomly allocated into 2 groups equally who were all in their second trimester (i.e. between 12-24 weeks), presenting either with missed abortion or congenital fetal abnormalities incompatible with life. Mean age was 27 years in group-I and 29 years in group-II. In both groups primigravidas were 22% while multigravidas were 78%. Mean period of gestation was 17 weeks in group-I and 21 weeks in group-II. Indications for termination of pregnancies were missed abortion n=39 and congenital abnormality of fetus n=11 in group-I. While in group-II n=44 patients had missed abortion and n=6 patients had congenital abnormality of fetus. Mean induction delivery interval in group-I was 14.76 hours and in group-II was 31.72 hours (P <.000) [Table 1]. In group-I, n=30 (60%) had stayed in hospital for 2 days while in group-II, n=42 (84%) patients had stayed in hospital for 3 days (P <.000). Mean duration of hospital stay was 37.24 hours in group-I and 56.62 hours in group-II (P <.000) [Table 2].

Average cost of misoprostol was 139 rupees while average cost of PGF2α was 662 rupees (P <.000) [Table 3]. Success rate was 96% in group-I and 100% in group-II. Side effects in group-II were fever in 8% women, nausea and vomiting in 8% women and urinary tract infection in 12% women while none of the side effects were noted in group-1 (Table 4).

Table 1: Induction delivery interval in relation with parity (Primigravidas vs. multigravidas)

Group	Parity status	Mean	Frequency
Misoprostol Group	PG	19.45 hours	n=11 (22%)
	MG	13.44. hours	n=39 (78%)
	Total	14.76. hours	n=50
PGF2α	PG	26.64 hours	n=11 (22%)
	MG	33.15 hours	n=39 (78%)
	Total	31.72 hours	n=50
Total	PG	23.05 hours	n=22 (22%)
	MG	23.29 hours	n= 78 (78%)
Total		23.24 hours	1000

P<.000

Table 2: Distribution of Cases According to Hospital Stay (n=100)

Group	Mean duration	Frequency
Misoprostol Group	37.24 hours	n=50(50%)
PGF2α	56.62 hours	n=50 (50%)

P<.001

Table 3: comparison of drug cost in both groups (n=100)

Group	Mean	Frequency
Misoprostol Group	139.61 Rs	n=50 (50%)
PGF2α Group	662.91 Rs	n=50 (50%)

Table 4: comparison of side effects in both groups (n=100)

Side effects	Group-I	Group-II	Total
Fever	0 (0%)	n=4 (8%)	n=4 (4%)
Nausea & Vomiting	0 (0%)	n=4 (8%)	n=4 (4%)
UTI	0 (0%)	n=6 (12%)	n=6 (6%)

P < .001

DISCUSSION

In this study, mean induction delivery interval was 14.76 hours in the misoprostol group and 31.72 hours in PGF2α group P < .000 and in Group-I 86% of patients aborted successfully within 24 hours. Success rate was 96% in group-I while it was 100% in group-II. Same study was conducted by Kapp et al[12] and induction delivery interval was 13.1 hours with misoprostol and 29.6 hours with PGF2α (P < .001). In a study by Altaf et al, induction delivery interval was 16.09 + 9.38 hours with misoprostol and 20.24 ± 11.57 hours with PGF2α group. While in the study by Imran et al, induction delivery interval was 9.02 ± 4.57 hours with misoprostol and with PGF2α it was 16.04 ± 6.22 hours and successful termination of pregnancy was obtained in 96% cases with misoprostol. Our study is consistent with all the three studies in the sense that induction delivery interval is shorter with misoprostol group compared with PGF2α group. Iftikhar et al reported induction delivery interval of sixteen hours with vaginal misoprostol for second trimester termination of pregnancy which is consistent with our study[13].

Induction delivery interval in group-II was 31.72 hours in our study. It was 11.99 ± 6.11 hours in Mohyuddin et al study[14], 20 hours in Chohan et al study[15] and 20.34 hours in Ejaz et al study[16]. The longer induction delivery interval in our study compared to other studies can be due to instability of PGF2α at high temperature or may be the cold chain was not maintained properly in shops. Despite the longer induction delivery interval success rate with PGF2α in our study was 100% which is consistent with studies by Kapp et al, Chohan et al and Rohi M[12,15,17]. Success rate was 94% in quddusi H et al study[4]. Moreover induction delivery interval was greater in primigravidas compared to multigravidas in group-I, 19.45 vs. 13.44 hours, while in group-II it was reverse i.e. more in MG compared to PG i.e. 33.15 vs 26.64 hours. The longer induction delivery interval in primigravidas was probably due to unprimed cervix that needs higher dose for priming[16,18]. Hospital stay was significantly shorter in group-I [compared to group-II 37.24 hours vs. 56.62 hours which is very significant statistically P < .000. A study by Hamoda H et al has shown that misoprostol is acceptable to most patients for pregnancy termination in home settings[19]. So hospital stay in patients using misoprostol will be significantly shorter compared with PGF2α. Moreover according to Hossain et al study successful pregnancy termination allows shorter hospital stay[20].

Mean drug cost was 139.61/- in group-I patients and 662.91/- in group-II patients. Difference is very significant statistically P <.000. In group-I drug cost was 55/- in 26% patients, 110/- in 22% patients and 155% in 52% patients. While in group-II drug cost was 400/- in 36% patients, 800/- in 54% patients and 1200/-in 10% patients. Islam et al[21] and Halimi et al[22] also found misoprostol cost effective drug compared with prostaglandin F2 alpha. According to Hossain N et al, misoprostol is very cost effective drug for developing countries like Pakistan. This cost effectiveness is well recognized in developed countries as well as evident from study of Ramsey PS et al[23]. Regarding side effects of drugs like fever, nausea and vomiting, diarrhea and urinary tract infection

we observed no side effects in group-I, while in group-II 8% had fever (temperature of 100F) 8% had nausea and vomiting and 12% had urinary tract infection but the difference between the two groups was not significant statistically (p<.001).

Quddusi et al found significantly increased incidence of prostaglandin associated pyrexia, vomiting and diarrhea in PGF2 alpha compared with misoprostol[4]. Pyrexia is common with PGF2 alpha because the cold chain of this drug is not maintained in medical stores, so they are not working properly and one patient may require two to three injections and intracervical catheter may remain for 3-4 days, which is source of infection. However in our study the occurrence of these complications were low because prophylactic antibiotics were given to all patients in group-II. However, PGF2 alpha due to low temperature storage requirements needs frequent attendance by medical staff and is inconvenient for the patients because of cervical catheter for several days, cost and side effects.

A study by Altaf et al shows clinically insignificant side effects in misoprostol group compared to PGF2-alpha[24]. Nausea and vomiting are more common with oral route of misoprostol compared to vaginal as evident from study of Javed et al[25]. In our study we used vaginal route, so nausea and vomiting were not seen. Menakaya et al reported minimal side effects with misoprostol in management of missed abortion in second trimester[26].

CONCLUSION

Misoprostol is superior to PGF2α in terms of induction delivery interval and is cost effective and has minimal side effects with vaginal route. Shorter induction delivery interval leads to shorter hospital stay.

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