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ORIGINAL ARTICLE

Efficacy of oral versus vaginal misoprostol in the management of first trimester incomplete miscarriage.

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ABSTRACT… Objective: To compare the efficacy of oral versus vaginal misoprostol in first trimester incomplete miscarriage. **Study Design:** Cross-sectional study. **Setting:** Gynae B Unit of Lady Reading Hospital, Peshawar. **Period:** November 2017 to January 2018. **Material & Methods:** In this study 274 patients (i.e. 137 in each group) with incomplete miscarriage, who have gestational age of less than or equal to 12 weeks were included by convenience sampling. Women in group A had received 800 microgram oral misoprostol and women in group B had received 800 microgram vaginal misoprostol. In both groups same dose was repeated 4 hours after initial dose if the patient had not passed the product of conception. Patient who had no products of conception on pelvic ultrasound or Transvaginal scan were discharged from hospital. On the other hand patients found to still have products of conception were managed by surgical evacuation on next day. **Results:** In Group A (oral misoprostol) was effective in n=115 (84%) patients and ineffective in n=22(16%) patients and Group B (vaginal misoprostol) was effective in n= 125(91%) patients and ineffective in n=12(9%) patients. No significant difference was found between the efficacies of the two routes. Age distribution among two groups was analyzed as in Group A mean age was 23.9±3.7 years while in Group B it was 23.7±3.9 years. Mean gestational age in group A was 68.8±1.6 days and in group B was 68.7±1.3 days. Insignificant difference was found when the age and gestational age of the patients of group A and B were compared. **Conclusion:** Vaginal misoprostol is equally effective as oral misoprostol in terms of expulsion of products of conception in patients with incomplete miscarriage.

Key words: First Trimester, Gestational Age, Misoprostol, Pregnancy.

INTRODUCTION

The Worlds Health Organization defines miscarriage as expulsion of fetus or embryo weighing 500gm or less and also gestational limit of less than 22 completed weeks of gestation.[1] An incomplete miscarriage involves vaginal bleeding, cramping, dilatation of cervix and incomplete passage of the products of conception.[2] Classically, the fetus has been passed, but some pieces of the placenta still remain in the uterus. The cervical oss remains open, and bleeding may be heavy. Incomplete miscarriage can be due to chromosomal abnormalities, hormonal problems, structural problems (shape of uterus), cervical issues, environmental factors, immunological causes, medications used for causing abortion and infections like German measles, cytomegalovirus, chlamydia and herpes simplex.[3,4]

Early miscarriage occurs in 10-30% of all pregnancies while 10-15% of all clinically recognized pregnancies.[5,6,7] Almost 50-70% of miscarriages are due to chromosomal abnormalities. Mostly miscarriages need proper and immediate treatment. Incomplete miscarriage is one of them which if not treated appropriately may result in various complications like psychological distress, prolong bleeding, longer cramping, increased risk of infection which can be dangerous if not treated immediately.[8]

Treatment options for incomplete miscarriage include expectant management, medical management and surgical management. Expectant management has low success rate.

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Surgical management has high success rate but associated with major and minor morbidity like haemorrhage, infection, uterine adhesions and uterine perforation.[9] Medical management with misoprostol is a reasonable alternative to universal surgical evacuation of the uterus in incomplete miscarriage. It is safe, inexpensive and effective method of treating incomplete miscarriage.[10]

Misoprostol is a synthetic prostaglandin E_1 analogue used in a number of clinical uses in the practice of obstetrics and gynaecology, including medical management of miscarriage, cervical ripening before surgical procedure, induction of labour and the treatment of postpartum haemorrhage. World Health Organization has kept misoprostol on the list of essential medicines because of its extensive applications in reproductive health.[11] Moreover, it is cheaper and can be stored at room temperature. It can be given orally, vaginally and rectally but oral and vaginal routes are more common.[8]

Efficacy of misoprostol therapy can be influenced by route of drug administration. Both oral and vaginal routes are considered as noninvasive. Patients usually prefer oral route as its natural and culturally acceptable. On the other hand vaginal route by passes the first pass effect and is associated with less systemic adverse effects which oral route possesses.[12] However, very less studies are done to compare the effectiveness of oral and vaginal misoprostol in managing incomplete abortion. If results of the present study show more or equal efficacy of vaginal route as compare to oral route, it will provide a good insight to the existing protocols for the management of incomplete miscarriage by avoiding systemic side effects and providing good efficacy.

MATERIAL & METHODS

This cross-sectional study was performed in Obstetrics and Gynaecology unit 'B' of Postgraduate Medical Institute (PGMI) Lady Reading Hospital, Peshawar after ethical approval. Duration of study was 3 months; November 2017 to January 2018. Total sample size calculated was 274 i.e. 137 in each group, using 91.9% efficacy of oral misoprostol and 79.6% efficacy of vaginal misoprostol[13], 80% power of test and 5% level of significance.[14] Patients with incomplete miscarriage (confirmed by U/S), who have gestational age of less than or equal to 12 weeks were included in the study by convenience sampling. Patients with contraindication to misoprostol, uterus size more than 12 weeks, scar in uterus i.e. caesarean section or myomectomy scar, signs of severe infection like foul smelling discharge, fever >39°C, pulse >110/min were excluded from the study.

History was taken in detail from each subject. Period of gestation was calculated by dates. Per vaginal examination of patients were done to determine uterine size and pelvic/transvaginal scan (TVS) was done for the presence or absence of retained products of conception. After the diagnosis of incomplete miscarriage was done, study was explained to the patients and written informed consent was taken by maintaining their confidentiality.[15,16,17] Women in group A had received 800 microgram oral misoprostol and women in group B had received 800 microgram vaginal misoprostol. In both groups same dose was repeated 4 hours after initial dose if the patient has not passed the product of conception, by repeating pelvic/TVS. Patients who have no products of conception on ultrasound (pelvic/TVS) were discharged from the hospital. On the other hand patients found to still have products of conception on TVS were managed by surgical evacuation on next day.

Data Analysis

Data was analysed by using SPSS16 version quantitative variable like age and gestation age was described as mean and standard deviation (SD). Categorical variable like efficacy was described in terms of frequencies and percentages. Efficacy of the drugs administered through different routes between the two study groups was compared by Chi-square test. Efficacy was stratified among age and gestational age to see the effect of modifiers post stratification chi-square was also applied. P-value less than or equal to 0.05 was considered significant.

RESULTS

Total patients were 274; they were divided in to two groups of 137 each. Women in group A received 800 microgram misoprostol orally and women in group B received 800 microgram misoprostol vaginally. Regarding efficacy, oral misoprostol (Group A) was effective in 115(84%) patients while vaginal misoprostol (Group B) was effective in 125(91%) patients. An insignificant difference of p-value 0.06 was found when the efficacy of the two groups were compared.

In Group A mean age was 23.9±3.7 years while in Group B it was 23.7±3.9 years. Further subdivisions and details regarding age are shown in Table-I. Mean gestational age in group A was 68.8±1.6 days and in group B was 68.7±1.3 days (Table-II). No significant difference was found between the age and gestational age of the two groups. Stratification of efficacy with respect to age and gestational age is given in Table-III and IV respectively.

Age in Years	Group A (Oral Misoprostol) (n=137)	Group B (Vaginal Misoprostol) (n=137)
16-25	14(10%)	16(12%)
26-35	41(30%)	44(32%)
36-45	82(60%)	77(56%)
Total	137	137
Mean+SD	23.9±3.7 years	23.7±3.9 years

Table-I. Age of the patients. (n=274)

Gestation Age in Weeks	Group A (Oral Misoprostol) (n=137)	Group B (Vaginal Misoprostol) (n=137)
< 6	21(15%)	16(12%)
7-12	116(85%)	121(88%)
Total	137	137
Mean+SD	68.8±1.6 days	68.7±1.3 days

Table-II. Gestation age of the patients. (n=274)

Age in Years	Efficacy	Group A (Oral Misoprostol) (n=137)	Group B (Vaginal Misoprostol) (n=137)	P-Value
16-25	Effective	12	15	0.46
	Non-effective	2	1	
Total		14	16	
26-35	Effective	34	40	0.27
	Non-effective	7	4	
Total		41	44	
36-45	Effective	69	70	0.19
	Non-effective	13	7	
Total		82	77	

Table-III. Effect of age on efficacy of oral and vaginal misoprostol. (n=274)

Gestational Age (Weeks)	Efficacy	Group A (Oral Misoprostol) (n=137)	Group B (Vaginal Misoprostol) (n=137)	P-Value
< 6	Effective	18	15	0.43
	Non-effective	3	1	
Total		21	16	
7-12	Effective	97	110	0.09
	Non-effective	19	11	
Total		116	121	

Table IV. Effect of gestational age on efficacy of oral and vaginal misoprostol. (n=274)

DISCUSSION

Our study in Pakistan was performed to compare the efficacy of oral and vaginal misoprostol in the treatment of first trimester incomplete miscarriage. The results of this study showed that misoprostol was found almost equally effective in both group A (oral misoprostol) and group B (vaginal misoprostol). An insignificant difference of p-0.06 was found between the efficacies of the two groups. No significant effect of age and gestational age was found on the efficacy of oral and vaginal misoprostol.

Pang et al., performed a randomized control trial (prospective) to compare the efficacy of oral and vaginal misoprostol (800 µg) to manage incomplete miscarriage medically. Results confirmed the proper evacuation of uterus in 64.4% of cases who received oral misoprostol and 61.1% in cases treated with vaginal misoprostol. No significant difference was found between the efficacies of the two routes.[10] Ngai *et al*. also found the same results.[18] The results of these studies are in accordance with the result of our study, as we also found no significant difference between the efficacies of the two routes.

A study was performed by Shokry and his colleagues in a hospital which was funded by Middle East Fertility Society. They gave the misoprostol vaginally to the patients attending their hospital who were diagnosed with incomplete miscarriage. Misoprostol by vaginal route was found to effectively evacuate the uterus from the products of conception in 79.6% of cases (Shokry).[13] Kayastha et al also conducted a study in the obstetrics and gynaecology department of a tertiary care hospital of Nepal, they treated the patients of incomplete miscarriage with oral misoprostol which showed beneficial effects by properly evacuating the uterus in 91.9% of cases.[14] The results of these studies are similar with our study as 91.2% was the effectiveness of the vaginal misoprostol.

Another study was performed in three major hospital of Vietnam, the patients presenting with incomplete miscarriage were included in the study to find the effectiveness of oral misoprostol in complete uterine evacuation from products of conception. Three hundred and two patients were enrolled in the study. Majority of the participants (96.3%) successfully passed the products of conception after taking oral misoprostol. Uterine evacuation was later on confirmed by study clinicians in every single participant.[19] We also found good efficacy (81.7%) of oral misoprostol in uterine evacuation in first trimester.

Though vaginal route has many advantages but still certain studies have reported that many women prefer oral route as it is natural, convenient and culturally acceptable.[20] Curettage needed in our study for uterine evacuation where misoprostol failed was less in vaginal route as compare to oral route.

In conclusion, both oral and vaginal misoprostol are equally effective in medical evacuation of incomplete miscarriage in the first trimester. Various studies have shown that vaginal route avoids first pass effect and is associated with minimum adverse effects.[10] Therefore, we suggest that the vaginal route for misoprostol administration should be preferred.

CONCLUSION

Our study concludes that oral and vaginal misoprostol are equally effective in terms of expulsion of products of conception at uterine size of <12 weeks.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Laiyla Shinwari		
3	Rehana Rahim	Design of the study, drafting the article & revising it critically for important intellectual content, and final approval of version.	
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