

**Research Article****Comparative study between manual vacuum aspiration (MVA) and medical treatment in the management of first trimester missed miscarriage****Shazia Khanam, Qurat UlAin  
and Faqeeha Tehreem**<sup>1</sup>Assistant Professor, Department of Obstetrics & Gynecology,

Bolan Medical Complex/ Civil Hospital, Quetta

<sup>2</sup>Woman Medical Officer, THQ Hospital, Shorkot<sup>3</sup>Woman Medical Officer, THQ Hospital, Shorkot**ABSTRACT:****Objective:** To compare manual vacuum aspiration (MVA) and medical treatment in the management of first trimester missed miscarriage.**Material and methods:** This comparative was done at Department of Obstetrics and Gynecology, Bolan Medical Complex/Civil Hospital Quetta from August 2016 to February 2017. Total 92 patients with first trimester missed abortion with less than 12 weeks gestation were included in this study. MVA was performed in Group A while group B managed with medical treatment and efficacy of treatment was assessed.**Results:** Mean age of the patients was  $29.77 \pm 6.786$  years, mean age of patients of group A was  $30.61 \pm 6.754$  years and mean age of patients of group B was  $28.93 \pm 6.787$  years. Mean gestational age was  $5.87 \pm 3.592$  weeks, mean gestational age of patients of group A was  $6.09 \pm 3.699$  weeks and mean gestational of patients of group B was  $5.65 \pm 3.510$  weeks. Out of 46 patients of group A, treatment was found effective 42 (91.30%) patients. Among the 46 patients of group B, efficacy of treatment was noted in 32 (69.57%) patients. Efficacy rate was significantly higher in group A as compared to group B (91.30% vs 69.57%) with p value 0.009.**Conclusion:** Results of this study revealed that MVA is better treatment modality as compared to medical management (misoprostol intravaginally). Efficacy rate was significantly higher in MVA group as compared to medical treatment group. In older age group MVA group was found with significantly higher rate of efficacy as compared to medical management group.**Key words:** Manual vacuum aspiration, dilatation and evacuation, incomplete abortion**INTRODUCTION**

Traditionally, the first trimester miscarriage, is terminated by surgical evacuation of the uterus.<sup>1,2</sup> Surgical method dates back to the late of the 19th century after the first sharp curettes were described.<sup>3</sup> Although, this procedure was introduced to reduce the risk of infection and hemorrhage, it is reported to be associated with many complications including cervical trauma, perforation of the uterus and endometritis.<sup>4</sup> In addition, uterine synechia, reduced fertility, tubal

damage and pelvic pain have been reported as long term complications.<sup>4</sup> In recent times as a result of positive experiences with prostaglandin analog (most commonly misoprostol), the medical termination of the first trimester miscarriage is accepted as a safe and effective alternative.<sup>5</sup> However, this method is not without its inherent complications like the need for emergency surgical evacuation, pain, an increase in induction

abortion time, and also an increase in the analgesic requirement.<sup>3,5</sup>

Another way to treat first trimester missed miscarriage is by means of manual vacuum aspiration. It is the most common method in our setup believe to be safe and cost effective in experienced hands. But even with advancement in medical science, unsafe abortion related complications contribute to 10 to 13% in developing countries.<sup>6</sup>

We would conduct study in the department of obstetrics and gynaecology, Civil Hospital, Quetta, for our population that mostly belongs to lower socio-economic class. We will compare the efficacy of both methods of uterine evacuation with misoprostol or with manual vacuum aspiration. It will provide a new guideline for the management of miscarriage in first trimester in our population.

#### **OPERATIONAL DEFINITION**

**Efficacy:** Efficacy was measured in term of complete abortion:

**Complete Abortion:** When the uterine cavity is empty on pelvic USG.

**Manual Vacuum Aspiration (MVA):**

MVA was performed using a flexible "Ipas Easy Grip" cannula attached to a 60 ml syringe (aspirator), with a double locking valve mechanism (IPAS Chapel Hill NC 27514 USA).

**Medical Management:**

800µg misoprostol was given intravaginally.

**First Trimester Missed Abortion:**

Diagnosis was made by the presence of all of them:

1. Regression of pregnancy symptom like nausea, vomiting, morning sickness.
2. Smaller size of uterus in relation duration of pregnancy on bimanual pelvic examination.
3. Absent cardiac activity on ultrasound.

#### **MATERIAL AND METHODS**

This comparative was done at Department of Obstetrics and Gynecology, Bolan Medical Complex/Civil Hospital Quetta from August 2016 to February 2017.

#### **Inclusion Criteria:**

- Patients with first trimester missed miscarriage of less than 12 weeks gestation diagnosed by ultrasound showing gestational sac of less than 25 mm in diameter with no fetal cardiac activity.
- Age 18 to 40 years.
- Primary para, multi para and grandmultipara.

#### **Exclusion Criteria:**

- Patients with known hypersensitivity to misoprostol.
- Gestation >12 weeks.
- Patients having ectopic pregnancy or molar pregnancy.
- Patients with septic abortion.
- Patients with previous c-section.

#### **DATA COLLECTION PROCEDURE**

Total 92 patients with first trimester missed abortion were included in this study after scrutinized by inclusion criteria and after taking written consent from Institutional Review Board. Written consent was taken from every patient. All included patients were offered to pick up a slip from total mixed up slips (half-slips was contain letter "A" and other half-slips contain letter "B") and she was placed in that group (Group-A or Group-B according to slip). In this way two groups were made. In group A Manual Vacuum Aspiration was done and in Group B Misoprostol was given intra virginally.

In Group A, prophylactic antibiotic (Doxycycline 100 mg) was given 1 hour before the procedure and oral analgesic (tab valium and tab brufen) was also given. Local analgesia in the form of paracervical block was given. Uterine cavity was evacuated with manual vacuum aspiration. Effectiveness was measured in terms of complete evacuation, which was confirmed peroperatively when pink or red foam without RPOC's passed through the cannula. Incomplete evacuation was diagnosed when products of conception was passing continuously inspite of inserting cannula more than 4 times and another procedure was

required to evacuate the uterus. Second group consisted of patients receiving misoprostol intra vaginally. Each case received misoprostol 800µg per vagina with 2.5ml hydroxyethyl gel. The misoprostol was obtained as white powder made by crushing tablets of Cytotec (Searle, Skokie, Illinois, USA). The white powder was mixed with repacked sterile 2.5ml hydroxyethyl gel (SmithKline, Glaxo, Karachi, Pakistan) and the mixture was drawn into a sterile 5ml disposable syringe without a needle. This was then squirted into posterior vaginal fornix and the time was noted. Pelvic USG was performed, if found the RPOCs then 400µg misoprostol was repeated at six hourly intervals for maximum two doses. Final outcome was assessed after 18 hours (on completion of 3 doses). Efficacy of both groups was noted in pre-designed proforma. Demographic data of all the patients was also be entered in performa.

#### DATA ANALYSIS PROCEDURE:

All the data was entered in SPSS V17 for statistical analysis. Quantitative variable like age, gestational age was presented as mean  $\pm$  SD, while qualitative variable like efficacy and parity was presented in frequency and percentages. Chi-square test was applied to compare the efficacy in both groups. Stratification was done for age, gestational age and parity. Post stratification. Chi-square test was applied to see the level of significance. P-values  $\leq$  0.05 was considered statistically significant.

#### RESULTS

Total 92 patients were selected for this study. Mean age of the patients was  $29.77 \pm 6.786$  years, mean age of patients of group A was  $30.61 \pm 6.754$  years and mean age of patients of group B was  $28.93 \pm 6.787$  years. Mean gestational age was  $5.87 \pm 3.592$  weeks, mean gestational age of

patients of group A was  $6.09 \pm 3.699$  weeks and mean gestational of patients of group B was  $5.65 \pm 3.510$  weeks.

Out of 46 patients of group A, treatment was found effective 42 (91.30%) patients. Among the 46 patients of group B, efficacy of treatment was noted in 32 (69.57%) patients. Efficacy rate was significantly higher in group A as compared to group B (91.30% vs 69.57%) with p value 0.009. (Table 1) In age group 20-30 years, treatment was found effective in 18 (85.71%) patients of group A while in 21 (77.78%) patients of group B. But the difference of efficacy was statistically insignificant. In age group 31-40 years, efficacy of treatment was noted in 24 (96%) patients of group A and in 11 (57.89%) patients of group B. Difference of efficacy of treatment was statistically significant between the both groups. (Table 2) In 1-6 weeks gestation group, treatment was found effective in 22 (84.62%) patients and 20 (68.97%) patients respectively in group A and B and the difference was insignificant. In 7-12 weeks gestation group, efficacy of treatment was noted in 20 (100%) patients of group A while in 12 (70.59%) patients of group B and the difference was significant. (Table 3)

Treatment was found effective in 8 (100%) primary paras of group A while in 11 (68.75%) primary paras of group B but the difference of efficacy was not statistically significant. In multipara group, treatment was effective in 15 (78.95%) patients and 12 (80%) patients respectively in group A and B but the difference was statistically significant. In grand multipara group, efficacy of treatment was seen in 19 (100%) patients of group A while in 9 (60%) patients of group B and difference of efficacy between the both groups was statistically significant. (Table 4)

**Table 1:** Comparison of efficacy for both groups

Group	Efficacy		Total	P value
	Yes	No		
A	42 (91.30%)	4 (8.70%)	46	0.009
B	32 (69.57%)	14 (30.43%)	46	

**Table 2:** Comparison of efficacy for age groups

Group	Efficacy		Total
	Yes	No	
<b>Age group 20-30 year (P = 0.485)</b>			
A	18 (85.71%)	3 (14.29%)	21
B	21 (77.78%)	6 (22.22%)	27
<b>Age group 31-40 years (P = 0.002)</b>			
A	24 (96%)	1 (4%)	25
B	11 (57.89%)	8 (42.11%)	19

**Table 3:** Comparison of efficacy for different gestational age groups

Group	Efficacy		Total
	Yes	No	
<b>1-6 weeks (P = 0.173)</b>			
A	22 (84.62%)	4 (15.38%)	26
B	20 (68.97%)	9 (31.03%)	29
<b>7-12 weeks (P = 0.009)</b>			
A	20 (100%)	0	20
B	12 (70.59%)	5 (29.41%)	17

**Table 4:** Comparison of efficacy for parity

Group	Efficacy		Total
	Yes	No	
<b>Primary para (P = 0.130)</b>			
A	8 (100%)	0	8
B	11 (68.75%)	5 (31.25%)	16
<b>Multipara (P = 1.00)</b>			
A	15 (78.95%)	4 (21.05%)	19
B	12 (80%)	3 (20%)	15
<b>Grand multipara (P = 0.004)</b>			
A	19 (100%)	0	19
B	9 (60%)	6 (40%)	15

## DISCUSSION

The objective of present was to compare the efficacy of manual vacuum aspiration (MVA) and medical treatment in the management of first trimester missed miscarriage.

Mean age of the patients was  $29.77 \pm 6.786$  years, mean age of patients of group A was  $30.61 \pm 6.754$  years and mean age of patients of group B was  $28.93 \pm 6.787$  years. Mean gestational age was  $5.87 \pm 3.592$  weeks, mean gestational age of patients of group A was  $6.09 \pm 3.699$  weeks and mean gestational of patients of group B was  $5.65 \pm 3.510$  weeks.

Out of 46 patients of group A, treatment was found effective 42 (91.30%) patients. Among the 46 patients of group B, efficacy of treatment was noted in 32 (69.57%) patients. Efficacy rate was significantly higher in group A (MVA group) as

compared to group B (Medical Management) (91.30% vs 69.57%) with p value 0.009.

Biqueet al<sup>7</sup> have compared the efficacy of MVA with that of the misoprostol for treatment of incomplete abortion. Follow-up at seven days' post-treatment reported success rate of 100% for MVA and 91% for misoprostol (100% vs. 91%; p 0.002). The results of the study favor manual vacuum aspiration as the preferred method for uterine evacuation during first trimester of pregnancy. This method is faster and more efficacious than medical termination with misoprostol especially at 9-12 weeks of gestation.<sup>8</sup> In one study by Tasnim N et al,<sup>9</sup> complete evacuation was achieved in 89.6% with manual vacuum aspiration. In a study by Hemlin J et al<sup>10</sup> success rate with manual vacuum aspiration was 95.2%. Edwards S et al<sup>11</sup> also reported success rate with manual vacuum aspiration as 98%. Ansari R et al<sup>12</sup> found success rate with manual

vacuum aspiration as 97.7%. All these studies are in agreement with our findings.

The success rates of medical evacuation vary from 25% up to 97% for oral, sublingual or vaginal misoprostol in different studies. These variations between studies probably reflect the different misoprostol regimens used, routes of administration, and the definitions of success rate.<sup>13</sup>

In one study by Shuaib AA et al<sup>13</sup> 52 women were allocated to receive intravaginal misoprostol, 80.7% achieved a successful complete expulsion of the products of conception. Shankar M et al<sup>14</sup> also concluded that 77.3% women achieved successful complete medical evacuation by receiving misoprostol. Shah N et al<sup>15</sup> also found 48% success rate with intravaginal misoprostol for the complete evacuation of first trimester missed abortion. Results of all these studies are also in agreement with our study. In our study mean age of the patients was  $29.63 \pm 6.68$  years, mean age of the patients of study group A was  $30.23 \pm 6.72$  years and mean age of patients of group B was  $29.02 \pm 6.65$  years. The mean age of the study population and the mean gestational age in our study are also comparable with that of Gazvani et al 2004.<sup>16</sup>

### CONCLUSION:

Results of this study revealed that MVA is better treatment modality as compared to medical management (misoprostol intravaginally). Efficacy rate was significantly higher in MVA group as compared to medical treatment group. In older age group MVA group was found with significantly higher rate of efficacy as compared to medical management group.

### REFERENCES

1. Shankar M, Economides DL, Sabin CA, Tan B, Kadir A. Outpatient medical management of missed miscarriage using misoprostol. *J ObstetGynaecol* 2007;27(3):283–6.
2. Coughlin LB, Roberts D, Haddad NG, Long A. Medical management of first trimester miscarriage (blighted ovum and missed abortion): is it effective? *J ObstetGynaecol* 2004;24(1):69–77.
3. Harris LH, Dalton VK, Johnson TRB. Surgical management of early pregnancy failure: history, politics, and safe cost-effective care. *Am J ObstetGynecol* 2007;196:445e1–5.
4. El-Sayed MM, Mohammed SA, Jones MH. Expectant management of first-trimester miscarriage. *J ObstetGynaecol* 2009;29(8):681–5.
5. Chia KV, Ogbo VI. Medical termination of missed abortion. *J ObstetGynaecol* 2002;22(2):184–6.
6. Buckett W, Regan L. Sporadic and recurrent miscarriage. In: Shaw RW, Soutter WP, Stanton SL, editors. *Gynaecology*. 3<sup>rd</sup> ed. United Kingdom: Elsevier Science; 2003; 343-59.
7. Bique C, Ustá M, Debora B, Chong E. Comparison of misoprostol and manual vacuum aspiration for the treatment of incomplete abortion. *Int J Gynaecol Obstet*. 2007;98:222-6.
8. Brown HC, Jewkes R, Levin J, Dickson-Tetteh K, Rees H. Management of incomplete abortion in South African public hospitals. *BJOG*. 2003;110:371-7
9. Tasnim N, Mahmud G, Fatima S, Sultana M. Manual vacuum aspiration: a safe and cost-effective substitute of electric vacuum aspiration for the surgical management of early pregnancy loss. *J Pak Med Assoc*. 2011;61(2):149.
10. Hemlin J, Möller B. Manual vacuum aspiration, a safe and effective alternative in early pregnancy termination. *ActaObstetGynecol Scand*. 2001 Jun;80(6):563–7.
11. Edwards S, Tureck R, Fredrick M, Huang X, Zhang J, Barnhart K. Patient acceptability of manual versus electric vacuum aspiration for early pregnancy loss. *J Womens Health (Larchmt)*. 2007 Dec;16(10):1429–36.

12. Ansari R, Rathore S, Mustafa B. Manual vacuum aspiration: a safe and effective alternative for the surgical management of early pregnancy loss. [cited 2014 Aug 14]; Available from: <http://www.annals-ashkmdc.org/pdfs/2014/1/6.pdf>.
13. Shuaib AA, Alharazi AH. Medical versus surgical termination of the first trimester missed miscarriage. *Alexandria Journal of Medicine*. 2013 Mar;49(1):13–6.
14. Shankar M, Economides DL, Sabin CA, Tan B, Kadir RA. Outpatient medical management of missed miscarriage using misoprostol. *J ObstetGynaecol*. 2007 Apr;27(3):283–6.
15. Shah N, Azam SI, Khan NH. Sublingual versus vaginal misoprostol in the management of missed miscarriage. *J Pak Med Assoc*. 2010;60(2):113.
16. Gazvani R, Honey E, MacLennan FM. Manual vacuum aspiration (MVA) in the management of first trimester pregnancy loss. *Eur J ObstetGynecolReprod Biol*. 2004; 112:197-200.