

Outcome of Intra-amniotic Hypertonic Saline Instillation for Second-Trimester Abortion

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ABSTRACT

Objective: To evaluate the efficacy and safety of intra-amniotic hypertonic saline instillation for second trimester abortion.

Methods: The pregnant women whose pregnancies were complicated by serious fetal abnormalities, trisomy 21 and thalassemia HbE disease, were admitted at Siriraj Hospital from January 1, 2009 to April 30, 2010. The patients were legally induced abortion by intra-amniotic hypertonic saline instillation.

Results: A total of 42 pregnant women were retrospectively studied. The average gestational age was 22.4 ± 2.2 weeks. The average instillation-abortion time was 34.8 ± 18.2 hours. All abortuses were dead at the time of abortion. The number of complete abortions were 39 cases (92.9%). There were no serious complications in this study.

Conclusion: Intra-amniotic hypertonic saline instillation for second trimester abortion should be considered as a good method in terms of efficacy and safety.

Keywords: Intra-amniotic hypertonic saline instillation, second trimester abortion

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INTRODUCTION

Abortion is defined as termination of pregnancy before the fetus is viable. Termination of pregnancy in first trimester is safer than second trimester. Bastlett et al¹ reported during 1988-1997, the overall death rate for women obtaining legally induced abortions was 0.7 per 100,000 legal induced abortions. The risk of death increased exponentially by 38% for each additional week of gestation. There is still a gradual increase in second-trimester abortion because of wide scale introduction of prenatal screening programs. Sometimes women whose pregnancies are complicated with serious fetal abnormalities such as cardiovascular and skeletal malformations, are detected later than 20 weeks gestation. In the case of trisomy 21, most fetuses are diagnosed later than 20 weeks gestation because the chromosome culture needs 4 weeks after amniocentesis. After final diagnosis, termination of pregnancy took place later because of parental dilemmas concerning termination of pregnancy.² A legal abortion must not be allowed to result in a live birth. For termination after 21 weeks, the chosen method

should ensure that the fetus is not alive. Live birth makes psychiatric trauma for patients and medical personals. This is a matter of concern especially for late terminations without fetal malformations when according to local guidelines one has to resuscitate if the fetus is born alive.³ Interpretation of the British law means that abortion must not result in the birth of living child.⁴

At present time, any non invasive medical method of abortion is very popular. The most effective medical method is combining a prostaglandin analogue with mifepristone, which has fewer side effects and complications.⁵ When medical abortion is chosen, clinicians are required to ensure that the fetus is dead at the time of abortion. Agents used for feticide are hypertonic saline, 1% lidocaine and potassium chloride⁴⁻⁶. Grimes and Cates⁷ reported the comparative efficacy and safety of intra-amniotic prostaglandin F2 alpha or hypertonic saline for second-trimester abortion. They suggested that PGF2 alpha induces abortion faster than saline, but PGF2 alpha is associated with a higher rate of unpleasant gastrointestinal side effects, incomplete abortion, hemorrhage and surgical reevaluation. The rate of live-born fetuses after PGF2 alpha-induced abortion times is more than of hypertonic saline.

Hypertonic saline instillation started to be more widely used in late 1960⁸. Toppozada and Ismail⁹ reported hypertonic saline instillation use after 15 weeks gestation can cause hypernatremia or coagulopathy and takes up to 72 hours unless augmented with oxytocin. Suthutvoravut et al¹⁰, reported 62

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cases of hypertonic saline instillation, in which the complications were 8 cases of retained placenta, 1 case of hemorrhage and 2 cases of fever.

Objective

The study protocol was approved by Siriraj Institutional Review Board (EC Number: 431/2010). The aim of this study was to evaluate the outcome of hypertonic saline instillation for second-trimester pregnancy abortion in terms of instillation abortion time, post-abortion curettage, hemorrhage and infection after abortion.

MATERIALS AND METHODS

This was a retrospective study of patients who underwent second-trimester abortion using hypertonic saline instillation. Exclusion criteria were maternal cardiac or renal problems, hypertension and/or severe anemia.¹¹ After emptying of the bladder, the midline and mid point between fundus and pubic symphysis was infiltrated with 1% xylocain, by a spinal needle No 20G which was inserted into the amniotic sac. To be sure that the needle was in the right place, a free flow of amniotic fluid was established before instillation of 150-200 ml., of 20% sodium chloride. If the process of abortion was not started on the second day, the attending doctor augmented uterine contraction with oxytocin 10 units in 500 ml. of half strength saline. If uterine contraction was not effective, 10 units of oxytocin were added for each 100 c.c. reduction of saline solution until uterine contraction became effective.

RESULTS

From medical records reviewed of pregnant women admitted for hypertonic saline instillation pregnancy termination during January 1, 2009-April 30, 2010 there were 42 cases. Patient characteristics (Table 1) were average age 31.6 ± 6.8 years, gestational age (GA) 22.4 ± 2.2 weeks and gravida 1.8 ± 1.0 . Indications for pregnancy termination were 20 cases of β -thalassemia hemoglobin E diseases, 14 cases of trisomy 21 and 8 cases of congenital abnormalities. The average ages for β -thal E, trisomy 21 and congenital abnormalities were 28.5 ± 5.8 years, 37.5 ± 3.4 years and 29.1 ± 6.7 years respectively. (Table 2). The average gestational ages were 22.2 ± 2.2 weeks, 22.6 ± 1.9 weeks and 22.4 ± 2.8 weeks in β -thal E, trisomy 21 and congenital abnormalities respectively (Table 3). There were 18 cases (38.1%) who aborted without oxytocin augmentation, and 26 cases (61.9%) needed oxytocin augmentation. (18+26 cases = 44 cases, but above 42 cases are reported.) The average instillation abortion time was 34.8 ± 18.2 hours (Table 4). There were 8 cases who needed uterine curettage immediately after abortion, but only 3 cases were proved incomplete abortion by pathological finding later, (Table 5). There were no serious complications such as bleeding more than 500 ml., fever or infection. All abortuses were dead at the time of abortion and only two cases aborted after 72 hours.

DISCUSSION

Termination of second-trimester pregnancy is still gradually increasing because of the wide scale introduction of prenatal screening programs. Such programs can detect women whose pregnancies are complicated by serious fetal abnormalities such as cardiovascular and skeletal malformation.¹² When medical abortion is chosen in many settings, clinicians are required to ensure that the fetus is dead at the

time of abortion.¹³ Hypertonic saline instillation has proven to be the method of choice for second-trimester pregnancy termination. At present, medical abortion is popular because it is a non-invasive and effective method. A major problem in medical abortion is some fetuses are still alive at the time of abortion especially in cases of gestational age more than 20 weeks. Using feticide before termination of late abortion by injection of hypertonic saline, 1% lidocaine and potassium chloride intracardiacally is also invasive.⁴

Our retrospective study showed that hypertonic saline instillation is beneficial for late second-trimester pregnancy termination. Thirty five from 42 cases (83.3%) had gestational age more than 20 weeks but all abortus were dead at the time of abortion. There were 38 cases (90.5%) which could abort within 48 hours, This result was equal to Prachasilchai et al¹⁴ who reported a success rate of second-trimester pregnancy termination by using misoprostol within 48 hours was 89.5%.

There were 16 cases (38.1%) who could abort without oxytocin augmentation. Only 6 out of 42 cases (14.3%) needed immediate post-abortion uterine curettage, but only 3 cases (7.1%) were pathologically proven for incomplete abortion. The mean instillation abortion time in this study was $34.78 \pm$

TABLE 1. Demographic data of 42 cases.

Characteristics	Minimum	Maximum	Average
Age (yrs)	18	44	31.64 ± 6.77
GA (wks)	18	27	22.4 ± 2.23
Gravida	1	5	1.8 ± 1.0

TABLE 2. Age of pregnant women in three groups.

Age (yrs)	β -thal E		Trisomy 21		Anomalies	
	No.	%	No.	%	No.	%
≤ 30	10	50.0	-	0	2	25.0
31-34	6	30.0	4	28.6	2	25.0
≥ 35	4	20.0	10	71.4	4	50.0
Total	20	100.0	14	100.0	8	100.0
Average	28.5 ± 5.8		37.5 ± 3.4		29.1 ± 6.7	

TABLE 3. Gestational age in three different groups.

Age (yrs)	β -thal E		Trisomy 21		Anomalies	
	No.	%	No.	%	No.	%
≤ 20	4	20.0	1	7.1	2	25.0
21-23	11	55.0	8	57.1	2	25.0
≥ 24	5	25.0	5	35.7	4	50.0
Total	20	100.0	14	99.9	8	100.0
Average	22.2 ± 2.2		22.6 ± 1.9		22.4 ± 2.8	

TABLE 4. Instillation-abortion time (hours).

Time	Without oxytocin		With oxytocin		Cum.	
	No.	%	No.	%	No.	%
≤ 24	10	23.8	2	4.8	12	28.6
25-48	6	14.3	20	47.6	26	61.9
≥ 49	0	0	4	9.5	4	9.5
Total	16	38.1	26	61.9	42	100.0
Average	34.8 ± 18.2 hours.					

TABLE 5. Complications.

Complications	No.	%
Incomplete abortion	3	7.1
Fever after abortion	0	-
Abortion after 72 hrs.	2	4.8

18.17 hours which compares with a previous study in Thailand of 30.19 ± 11.25^{10} hours.

Comparing indications for pregnancy termination from a previous study; Suthutvoravuts et al.,¹⁰ reported 51.6% unwanted pregnancies and 24.2% pregnancies from rape. Herabutya and O-Prasertsawat¹⁵ reported the most common complications were 63.3% retained placenta, 3.3% having fever, and 0.8% having blood loss more than 500 ml. In our study, there were only 3 cases (7.1%) of incomplete abortion which needed immediate uterine curettage.

In this study, among the trisomy-21 group, 10 out of 14 cases (71.4%) were aged 35 years and more. There were 15 out of 20 cases (75.0%) in β -thal E and 13 out of 14 cases (92.9%) in trisomy 21 in which the gestational ages were more than 20 weeks. These two groups were at risk for live fetus after birth because of no physical abnormalities.

CONCLUSION

Hypertonic saline instillation is still beneficial in late second-trimester pregnancy termination, because all abortuses were dead at the time of abortion, which reduced the maternal and health personnel feeling less psychiatric trauma. There were no serious complications similar to previous reports if the cases were selected properly and the procedures were monitored carefully.

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