



Is Induced Abortion a Risk Factor for Ectopic Pregnancy? A Case Control Study

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Abstract

Introduction: *The incidence of ectopic pregnancy is increasing worldwide. Similarly need for contraception is also on a rise. Even though most commonly adopted contraceptive practice is sterilization in India the incidence of induced abortion is also rising. This study was done to assess whether previous history of induced abortion is a risk factor for ectopic pregnancy.*

Materials and Methods: *This is a prospective study conducted at conducted at Sree Avittom Thirunal Hospital, Govt Medical College, Trivandrum, Kerala, South India- a major tertiary care hospital. A total of 250 patients including 125 cases of ectopic pregnancy diagnosed by USS and serial Bhcg assay and 125 controls of similar socio demographic profile who attended Gynaec OPD for various complaints as controls were included in this study. Data collected with structured questionnaire regarding risk factors and details of prior induced abortion. Statistical analysis done by SPSS software.*

Results: *Study established role of prior induced abortion as one of the risk factors for ectopic pregnancy. Even if it is a single abortion the occurrence of ectopic pregnancy is statistically significant (P value 0.002).*

Keywords: *Ectopic Pregnancy, Risk factor, Induced abortion.*

Background

An ectopic pregnancy is defined as pregnancy occurring outside the uterine cavity, usually in an adjacent site. In over 95 % cases of ectopic pregnancy the primary site is the fallopian tube and the remainder will be in abdominal cavity, the ovary or the cervix. The prevalence of ectopic pregnancy among women who go to an emergency department with first trimester bleeding, pain or both ranges from six to sixteen percentage. The incidence of ectopic pregnancy has been increasing for years and currently two to

three times higher than it was 20 or 25 years ago. Previous history of ectopic pregnancy is considered to be the most important risk factor for recurrent ectopic pregnancy, there is a 7 to 13 fold increased risk for subsequent ectopic pregnancy.

In modern world there is a pressing need for limiting the family size at a personal level and for the control of population at a national level, especially in a limited resource country like India. Reproductive health and medical grounds are the other considerations for birth control.

Contraceptive practices and their failure is an important risk factor for ectopic pregnancy. Based on NFHS -4 data (2015-2016) female sterilization is still the most popular contraceptive method. According to the study published in Lancet Global Health (the study was conducted jointly by researchers at International Institute for Population Sciences, IIPS Mumbai; the Population Council, New Delhi; and the New York based Guttmacher Institute) an estimated 15.6 million abortions were performed in the country per year.

Recently there is an increase in the incidence of ectopic pregnancy as well as in the incidence of induced abortion. Is induced abortion a risk factor for ectopic pregnancy? In this study we tried to assess whether induced abortion is a risk factor for ectopic pregnancy. This study was conducted at Sree Avittom Thirunal Hospital, Govt. Medical College, Trivandrum - A major tertiary care referral hospital in Kerala, South India. Analysis of this study will help in identifying other risk factors for ectopic pregnancy.

Materials and Methods

This is a prospective case-control study conducted at Sree Avittom Thirunal Hospital, Govt. Medical College, Trivandrum, Kerala. After obtaining approval of study protocol by the Institutional Research Committee and State Board of Medical

Research Medical College, Trivandrum study was done during the period of 12 months from March 2013 to February 2014. Written informed consent was obtained from all participants before interview.

Study included 250 patients; 125 patients diagnosed as ectopic pregnancy by menstrual history, symptoms, physical examination and confirmed by serial beta-HCG and trans vaginal ultrasound and 125 women who attended Gynaec OPD for various gynecological complaints, of comparable age group.

Data collected with a structured questionnaire by personal interview regarding women's socioeconomic status, prior reproductive history such as previous spontaneous abortions, induced abortions, time period of gestation at which abortion done, method of abortion, any post abortion complications, previous h/o ectopic pregnancies, h/o infertility treatment and its details, the mode of treatment patient undergoing. Data were analyzed by using SPSS software, qualitative data analyzed by Chi-square test and quantitative data analyzed by using t-test. P value of < 0.05 was considered statistically significant. Logistic regression analysis was performed including variables with significant P value. Adjusted odds ratio was calculated, which gave an additional dimension to the study which becomes significant at the community level.

Results

Table 1 Socio – Demographic Profile of Participants

Profile		Ectopic Pregnancy (N = 125)		Women who attended OPD (N = 125)		P value
		N	%	N	%	
Age	>30	32	25.6	60	48	0.41
	<30	93	74.4	65	52	
Education	Upto 10 th	44	35.2	49	39.2	
	Plus Two and Higher	81	64.8	76	60.8	
Occupation	Housewife	116	92.8	98	78.4	
	Employed	9	7.2	27	21.6	
SES	Upper Lower/Lower	73	58.4	60	48	
	Lower Middle / Upper Middle	52	41.6	65	52	
Residence	Rural	83	66.4	74	59.2	
	Urban	42	31.6	51	40.8	

Both groups were comparable on the basis of socio demographic profile

Table 2 Prior induced abortion

Induced abortion	Ectopic Pregnancy (N = 125)	Ectopic Pregnancy (N = 125)	Patients attended OPD (N =125)	Patients attended OPD (N =125)	Chi 2	P value
	N	%	N	%		
Yes	34	27.2	5	4	9.856	0.002
No	91	72.8	120	96		
Total	125	100	125	100		

Among ectopic cases 27.2 % had history of induced abortion while only 4% had history of induced abortion among control group. P value is significant 0,002.

Table 3 Period of gestation at which abortion done

Period of gestation at which MTP done	Ectopic Pregnancy (N = 125)	Ectopic Pregnancy (N = 125)	Patients attended OPD (N =125)	Patients attended OPD (N =125)
	N	%	N	%
< 8 weeks	14	40	2	50
8 to 13 weeks	20	60	2	50
Total	34	100	4	100

Ectopic pregnancy patients with history of induced abortion, 60 % had MTP between 8 to 13 weeks.

Table 4 Method of MTP

Method of MTP	Ectopic Pregnancy (N = 125)	Ectopic Pregnancy (N = 125)	Patients attended OPD (N =125)	Patients attended OPD (N =125)
	N	%	N	%
Medical	19	55.8	4	100
Surgical	15	44.11	0	0
Total	34	100	4	100

Medical method was the commonest MTP method of choice for both cases and control.

Table 5 Complications following MTP

Complication following MTP	Ectopic Pregnancy (N = 125)	Ectopic Pregnancy (N = 125)	Patients attended OPD (N =125)	Patients attended OPD (N =125)
	N	%	N	%
Pain	1	2.9	0	0
Bleeding	3	8.8	1	25
Infection	0	0	0	0
None	30	88.2	3	75
Total	34	100	4	100

None of the cases or controls had significant complication after MTP.

Table 6 Time period since MTP

Time since MTP	Ectopic Pregnancy (N = 125)	Ectopic Pregnancy (N = 125)	Patients attended OPD (N =125)	Patients attended OPD (N =125)
	N	%	N	%
< 6 months	4	10	0	0
6 months to 1 year	4	10	0	0
1 year to 2 year	20	60	0	0
2 years to 4 years	6	20	2	50
>4 years	0	0	2	50
Total	34	100	4	100

Majority of cases and controls had induced abortion more than 1 year back.

Discussion

In the present study it was found that history of induced abortion is a significant risk factor for

ectopic pregnancy. 27.8 % of patients with ectopic pregnancy had history of induced abortion while only 4% of non pregnant controls of similar socio

demographic profile who attended Gyneac OPD for various reasons had induced abortion. In a study by Ann Ashengrau Levin et al, it was proved that prior induced abortion was a risk factor for ectopic pregnancy particularly for women who have had abortions plus pelvic inflammatory disease or multiple abortions.

In a case control study by Catherine Tharaux et al including 85 multigravid women with an ectopic pregnancy and 498 multigravid delivery comparison subjects, they found a crude relative risk of 1.6 for ectopic pregnancy in women with history of previous one induced abortion.

In our study medical abortion rather than surgical abortion is more associated with ectopic pregnancy. According to a study published in NEJM 2007, there was no evidence to suggest that previous medical abortion compared with previous surgical abortion increases the risk of ectopic pregnancy. In our study also there is no statistically increased risk of ectopic pregnancy following medical abortion compared to surgical methods. Current study also showed no particular post abortion complication as a particular risk for ectopic pregnancy. The time period between abortion and occurrence of ectopic pregnancy is also variable. Sixty percentage of ectopic pregnancy patients had induced abortion one to two year back.

A study from Greece showed that incidence of ectopic pregnancy increases with prior history of induced abortion and the increased risk was there for both single as well as multiple aborters. But criticism for this study is that abortion is illegal in Greece, so post abortal infection was high and which might be a contributory factor for increased ectopic pregnancy.

Data from a Japanese study showed that previous history of induced abortion even single or multiple was associated with a relative risk of 1.3 for developing ectopic pregnancy.

Conclusion

Ectopic pregnancy is an acute emergency in an young age female. Even though contraceptive

practices and its failure were considered as important risk factors, this study established the role of induced abortion as another risk factor. A majority of cases of ectopic pregnancy are of unknown factors. Further studies are needed to conform the number of prior induced abortions, methods of abortions and post abortion sequences associated to the occurrence of ectopic pregnancy.

References

1. Williams Gynecology, 3rd edition
2. Beral V, An epidemiological study of recent trends in ectopic pregnancy. .Br J Obstet Gynaecol. 1975 Oct;82(10):775-82
3. NOEL S. WEISS, MD, DRPH, JANET R. DALING, PHD, AND WONG Ho CHOW, PHD, Control definition in case-control studies of ectopic pregnancy. <https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.75.1.67>
4. L Weström, L P Bengtsson, and P A Mårdh, Incidence, trends, and risks of ectopic pregnancy in a population of women.Br Med J (Clin Res Ed). 1981 Jan 3; 282(6257): 15–18.
5. NFHS-4 - National Family Health Survey, rchiips.org/NFHS/NFHS-4Report.shtml
6. National Estimate of Abortion in India Released, <https://www.guttmacher.org/news>
7. A A Levin, S C Schoenbaum, P G Stubblefield, S Zimicki, R R Monson, and K J Ryan, Ectopic pregnancy and prior induced abortion.Am J Public Health. 1982 March; 72(3): 253–256.
8. Tharaux-Deneux, Catherine; Bouyer, Jean; Job-Spira, Nadine; Coste, Joël; Spira, Risk of Ectopic Pregnancy and Previous Induced Abortion, American Journal of Public Health . Mar98, Vol. 88 Issue 3, p401-405.
9. Virk J¹, Zhang J, Olsen J. Medical abortion and the risk of subsequent adverse pregnancy outcomes. N Engl J Med. 2007 Aug 16;357(7):648-53.

10. Panayotis P. Panayotou, M.D. et al,
Induced abortion and ectopic pregnancy,
AJOG, October 15, 1972Volume 114,
Issue 4, Pages 507–510
11. Sawazaki C, Tanaka S: The relationship
between artificial abortion and extrauterine
pregnancy. In: Harmful Effects of Induced
Abortion. Tokyo: Family Planning
Federation of Japan, 1966; 49-63.