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Research Article

## Factors influencing fertility outcome after ectopic pregnancy: a descriptive observational study

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### ABSTRACT

**Background:** Ectopic pregnancy is the commonest gynecological emergencies. If not treated timely, threatens the life but also places major morbidity on future fertility. This study performed to determine the future pregnancy outcomes following surgical management of ectopic pregnancy and factors influencing the outcome.

**Methods:** Prospective observational study conducted at Tertiary Hospital. Records of patients with ectopic pregnancy between 2005 to 2010 traced, interviewed about fertility outcomes and the risk factors using a structured questionnaire. Patients followed for 3 years from index ectopic pregnancy. The main outcome measure was the occurrence of intrauterine pregnancy or ectopic pregnancy at 3 years of follow-up after the index ectopic pregnancy.

**Results:** 64 patients with primary ectopic formed the basis of the study. 84.37% of patients undergone radical surgery (salpingectomy) and 15.62% forming the conservative group (Salpingotomy/milking) were included. In 3 years follow up, 40% of conservative group and 59% of radical group had intrauterine pregnancy. 30% in conservative group and 46% of radical group had term delivery. 20% of conservative group and 18.51% in radical group had repeated ectopic. Incidence of term delivery in patients with the past history of sub fertility was 25% and without subfertility 46%. 17% with tubal pathology and 63% with normal tube had term pregnancy. 37% aged more than 30 years and 44.64% aged less than 30 years had term pregnancy.

**Conclusions:** Subfertility, tubal pathology and age will influence on future fertility outcome following ectopic pregnancy. Radical or conservative surgery does not have influence on future pregnancy outcome.

**Keywords:** Ectopic pregnancy, Subfertility

### INTRODUCTION

Ectopic pregnancy is the commonest gynecological emergencies. If not treated timely, places major morbidity upon future fertility and family. Progress in terms of early diagnosis and medical management has taken place in developed countries, shifting the clinician's concern away from immediate health of the women towards preserving her subsequent fertility. However, in developing countries, main modality of

treatment for ectopic pregnancy has been laparotomy and surgery hampering fertility as most of the patients.<sup>1</sup>

Several risk factors have been identified for ectopic pregnancy like pelvic inflammatory disease especially with Chlamydia trachomatis, tubal surgeries, use of intrauterine devices, multiple sex partners, smoking, induction of ovulation by clomiphene, previous pelvic surgeries and age.<sup>2</sup>

The purpose of this study was to evaluate the reproductive performance such as term pregnancy rate and repeat ectopic pregnancy rate after conservative or radical surgery for tubal pregnancy and to investigate whether age, subfertility or tubal pathology can influence the subsequent fertility.

## METHODS

Prospective observational study conducted at Tertiary Hospital. Medical records of patients who were surgically managed for ectopic pregnancy between January 2005 to December 2010 were traced. They were called back to the hospital by phone calls explaining about the study and asking for their willingness to participate in the study. Women willing to participate were interviewed using a structured questionnaire.

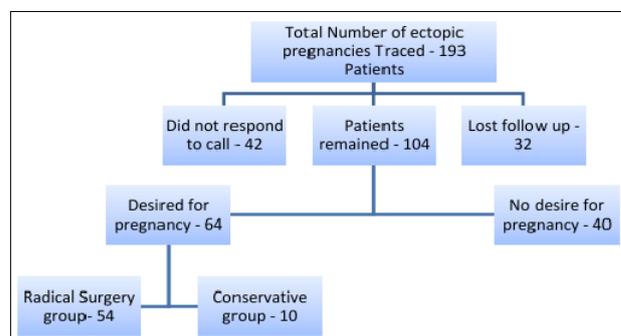
The basic information collected from each woman included: Socioeconomic status, sexual, gynecological, reproductive and surgical history, use of contraception, ovulation induction prior to Ectopic Pregnancy. The characteristics of the index ectopic pregnancy such as age, parity, side, site, tubal rupture, surgical treatment and tubal pathology given are noted from respective Medical records. Any patient who was not intending to become pregnant and those who conceived with IVF were excluded from the analysis. Patients were classified into two groups. Radical surgery group comprised patients who undergone salpingectomy and conservative group comprising patients with salpingotomy or milking of tubes. Both the groups followed for period of 3 years from index ectopic pregnancy. During follow up visits all were enquired about their reproductive status. The main outcome measure was the occurrence of an intrauterine pregnancy or ectopic pregnancy during the follow up period.

## RESULTS

Total number of deliveries conducted was 93384. As mentioned in Figure 1, a total of 64 patients with primary ectopic formed the study group. Incidence of EP was 0.2%. Mean age of patients was 24 years (Range 19-40). Based on the type of surgery performed, conservative group comprised of 10 patients. Among them, 7 patients underwent milking of the tube and 3 patients underwent salpingotomy. Patients who underwent conservative procedures were followed up with  $\beta$ HCG and none of them required any further procedure. 'Radical group' comprised of 54 patients who underwent partial salpingectomy. 58% belonged to the low socio economic status and 42% of the sample was from a middle socio-economic status. And none in high socio-economic status. 52% of the ectopic pregnancies occurred in the right tube and 48% in the left tube.

Considering the site of ectopic pregnancy, 97% of cases occurred in the fallopian tube and 3% in the ovary and rudimentary horn. Among tubal pregnancies 76% were

ampullary and 14% were isthmal. Considering the presentation, 78.12% presented as ruptured ectopic pregnancy, 17.1% as tubal abortion and 4.68% presented at unruptured stage.



**Figure 1: Total number of ectopic pregnancies traced.**

Laparotomy was performed for all the patients. Among them 84.37% underwent Salpingectomy, 4.6% underwent Salpingotomy and milking in 10.90%. None of the patients in conservative group had repeat laparotomy for persistent ectopic.

Baseline characters mentioned in Table 1. Tubal pathology was most common risk factor being 60% in conservative group and 39% in radical group. Majority of these patients had peri tubal adhesions and few patients had hydrosalpinx. Previous LSCS was second common risk factor in both groups. Subfertility was more common conservative group than in the radical group.

**Table 1: Baseline characteristics and risk factors.**

Parameter	Conservative group (n=10)	Radical group (n=54)
Mean age (SD) (years)	23 (5%)	23 (6%)
Nulliparity	3 (30%)	12 (22.2%)
Previous tubal surgery	1 (10%)	3 (5.5%)
Previous LSCS	3 (30%)	24 (44%)
Previous PID	2 (20%)	7 (12.96%)
Homolateral tubal pathology	3 (30%)	11 (20.37%)
Contralateral tubal pathology	3 (30%)	10 (18.51%)
Subfertility at time of EP	2 (20%)	6 (11.11%)

**Table 2: Antecedent pregnancy outcome.**

	Conservative (n=10)	Radical (n=54)
Intrauterine	4 (40%)	32 (59.25%)
Abortion	-	3 (5.5%)
Term delivery	3 (30%)	25 (46.29%)
On-going pregnancy	1 (10%)	3 (5.5%)
Ectopic	2 (20%)	10 (18.51%)

Considering antecedent pregnancy outcome as mentioned in Table 2, Percentage of term delivery among both groups were comparable. Incidence of repeat ectopic pregnancy was same in both groups and was higher compared to overall incidence (0.2%).

As mentioned in Table 3, intra uterine pregnancy percentage among patients with history of subfertility

was comparable. But repeat ectopic pregnancy rate is tripled in patients with past history of subfertility. In patients aged more than 30 years occurrence of intra uterine pregnancy was 25% compared to 62% in patients with less than 30 years. Occurrence of repeat ectopic pregnancy in patients with tubal pathology was 39% compared to 2.77% in women with normal tubes.

**Table 3: Effect of risk factors on outcome.**

Effect of risk factors on outcome						
Effect of tubal pathology						
Abnormal tubal pathology (n=28)				Normal tube (n=36)		
Group	Conservative (n=7)	Radical (n=21)	Total (n=28)	Conservative (n=3)	Radical (n=33)	Total (n=36)
Intrauterine pregnancy	1	5	6 (21.42%)	3	27	30 (83.33%)
Ectopic pregnancy	2	9	11 (39.28%)	0	1	1 (2.77%)
Effect of subfertility						
Past history of subfertility (n =8)				No history of subfertility (n =56)		
Group	Conservative (n=2)	Radical (n=6)	Total (n=8)	Conservative (n=8)	Radical (n=48)	Total (n=56)
Intrauterine pregnancy	1	2	3 (37.5%)	3	30	33 (58.92%)
Ectopic pregnancy	1	3	4 (50%)	1	7	8 (14.28%)
Effect of age						
Age >30				Age <30		
Group	Conservative (n=2)	Radical (n=6)	Total (n=8)	Conservative (n=8)	Radical (n=48)	Total (n=56)
Intrauterine pregnancy	-	3	2 (25%)	4	30	34 (62.70%)
Ectopic pregnancy	1	1	2 (25%)	1	9	10 (17.85%)

**DISCUSSION**

The choice of treatment in ectopic pregnancy depends to a large on the characteristics of the women like parity, age, condition of contralateral tube, and fertility status. An ectopic first pregnancy reduces possibility of second conception leading to clinical pregnancy with in next 2 years in comparison with an initial miscarriage.<sup>4</sup> In our study 88% underwent radical surgery and 12% conservative surgery. Radical surgery was done for the patients who had normal contralateral tube, ruptured ectopic with relatively more haemoperitonium, parous women, whereas conservative surgery like salpingectomy or milking was done for abnormal contralateral tube, nulliparous and tubal abortion cases. Thought the motive behind conservative surgery is to have intrauterine pregnancy later; by leaving repaired tube the chance of tubal block, recurrence and residual disease is possible. So the risks and benefits are not weighed so for. In our study 40% in conservative group 59.25% in radical group

had intrauterine pregnancy without much significant difference. Some authors claim a subsequent live birth in only one third of the cases<sup>5,6</sup> although higher rates have been reported.<sup>7-9</sup> The risk of repeat ectopic pregnancy was comparable in the 2 groups, 20% in the conservative treatment group and 18.49% in the radical treatment group. This agrees with many research studies<sup>10</sup> although some decreased rates of recurrent ectopic pregnancy have been reported with the conservative procedure.<sup>5,7</sup> Our study showed that preexisting conditions influence fertility outcome than the type of surgery perse. Only 25% of patients who had history of subfertility had intrauterine pregnancy compare to 46.42% without subfertility history. Therefore patients with subfertility history tend to have worst outcome irrespective of surgery. Secondly those patients age <30 had more intrauterine pregnancies compare to >30 years. It is believed that fertility decreases by 9% with each year of a woman’s age after 30, due to the aging effect on the ovum.<sup>11</sup> Thirdly patients with normal tube had better

outcome compare to women with abnormal tube. Occurrence of repeat ectopic was more commonly seen in patients with abnormal tube compare to normal tube. Tubal pathology influences the occurrence of ectopic.

Our study was observational and had few patients which reflected the events of day to day gynecological practice and most of the patients were managed surgically. Till date only one randomized controlled study which concluded that there is no significant difference either between medical and surgical treatment or conservative and radical surgery. Once surgery is necessary, in more active ectopic pregnancies, should lead to a reconsideration of the balance between considerations of initial recovery and those of fertility preservation.<sup>12</sup> In the treatment of tubal ectopic laparoscopic treatment remain cornerstone of the treatment.<sup>13</sup> Laparoscopic salpingotomy has shown higher pregnancy rates compare laparotomy.<sup>14</sup> Our study did not have laparoscopic surgeries to compare with laparotomy. Contrary to conventional wisdom the chance of subsequent intrauterine pregnancy were similar in all EP patients regardless of whether their treatment was radical or conservative.<sup>15</sup> Medical therapy of ectopic pregnancy is appealing over surgical options for a number of reasons, including eliminating morbidity from surgery and general anesthesia, potentially less tubal damage, less cost and need for hospitalization. Some small studies have shown that tubal patency and future reproductive outcomes are significantly improved in women managed expectantly compared with those who underwent surgery.<sup>16,17</sup>

## CONCLUSIONS

Subfertility, tubal pathology and age will influence on fertility outcome following ectopic pregnancy. Radical or conservative surgery does not have influence on future pregnancy outcome.

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