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**Reproductive Outcomes after Microsurgical Reversal
of Tubal Sterilization in Women 36 Years Age or Older**

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= Abstract =

Objective : To determine the reproductive outcomes of women undergoing microsurgical reversal of tubal sterilization at age 36 years or older.

Materials and Methods : A series of 133 patients who received microsurgical reversal of the previously sterilized fallopian tubes at Seoul National University Hospital from July, 1980 to January, 1992 was reviewed and evaluated for clinical characteristics, pregnancy rates, and factors influencing the outcome of tubal reversal.

Results : Of 133 patients, 78(58.6%) had been sterilized by laparoscopic cautery. Loss of children was a leading cause for tubal reversal. The mean interval from tubal sterilization to tubal reversal was 65.0 months. The overall pregnancy rate was 52.6%(70/133), and the mean interval was 9.4 months from tubal reversal to pregnancy. Excluding 7 patients who were lost to follow-up, 76 pregnancies were confirmed in 63 patients with the delivery rate per patient of 66.7%(42/63). There were no significant differences in age, duration of tubal sterilization, postoperative tubal length between pregnant and non-pregnant groups.

Conclusions : Microsurgical reversal of tubal sterilization could be a justifiable method in women 36 years age or older.

Key Words : Tubal sterilization, Microsurgical tubal reversal, Age, Pregnancy rate

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(tubal sterilization)

가 ,
가 .

가 ,
가 ,
(tubal reversal, tubal reanastomosis) 가 가

1959 Wilz

60-80%

(McCormick et al., 1979; Gomel, 1980; Winston, 1980; Rock et al., 1982; DeCherney et al., 1983; Henderson, 1984).

Seiler (1983) 35

가

40

40-60%

(Trinbos-Kemper, 1990; Glock et al., 1996; , 1996).

1980 7 1992 1 139

36 41 133

1.

1980	7	1992	1	139
			36	41
				133

(basal body temperature, BBT) , (hysterosalpingography, HSG),
 (postcoital test, PCT), 가
 가 .

(finbriectony)

가 .

2.

(, 1984;
 , 1997; Kim et al., 1997).

microscissor , , ,
 (cornual portion, C), (isthmic portion, I),
 (ampullary portion, A) .
 methylene blue , methylene
 blue

6-0 polyglycolic acid(Dexon) (mesosalpinx)
 7-0, 8-0 polyglactin(Vicryl)
 2, 6, 10 3 ,
 (Surgical Microscopic System SMS-ST, Applied Fiberoptics,
 USA) X6 ,
 (unipolar electrocautery) 2-0
 monofilament nylon splint , 7
 hydrocortisone 1gm heparin 1,000IU lactated
 Ringer's solution 200ml
 conjugated equine estrogen(CEE, Premarin) 가
 (hydrotubation) 12
 (HSG)

3.

chi-square test, Student's t-test, one-way analysis of
 variance (ANOVA) , $p < 0.05$

1.

133 37.3 ± 1.3 (mean ± SD, : 36 - 41)
, 65.0 ± 38.0 (3 - 179)
(Table 1).

89 (66.9%) 가 ,
26 (19.5%) .
78.1%(104/ 133) 가 , Yoon's ring
12.0%(16/ 133),
mi nilaparotomy 6.0%(8/ 133),
3.9%(5/ 133) .

2.

isthmic-ampullary(I-A) 가 67 (50.4%) 가
, isthmic-isthmic(I-I) 가 34 (25.6%), cornual-ampullary(C-A) 가 15 (11.3%),
cornual-isthmic(C-I) 가 12 (9.0%), ampullary-ampullary(A-A) 가 5 (3.8%)
(Table 2).

6.5 ± 1.5cm(3.0 - 11.5) .

3.

133

70

52.6%(70/ 133) (Table 3).

70 가 , 63
 . 63 11 2 , 1 3
 , 76 . 76
 44 (57.9%) 43 (56.6%) , 1 (1.3%) .
 22 (29.0%) , 1 (1.3%), 9 (11.8%) .
 63
 42 (66.7%) .

2 11 5 1 1
 , 2 2 , 1 2 , 1 1 1
 , 1 1 1 , 1 2
 . 3 1 3

(Table 4).

Table 1. Clinical characteristics in 133 patients undergoing microsurgical tubal reversal

	Mean \pm SD	Range
Age (years)	37.3 \pm 1.3	36 - 41
Duration of sterilization (months)	65.0 \pm 38.0	3 - 179
	No.	%
Reasons for tubal reanastomosis		
Loss of child	89	66.9
Remarriage	26	19.5
Change of attitude	16	12.0
Handicapped child	2	1.5
Types of tubal ligation		
Laparoscopic T/L		78.1
Cautery	78	58.6
Ring	26	19.5
C/S + T/L	16	12.0
Mnilap. T/L	8	6.0
Postpartum T/L	5	3.9
Duration of sterilization (years)		
< 1	7	5.3
1 - 2	16	12.0
2 - 3	15	11.3
3 - 4	12	9.0
4 - 5	12	9.0
5 - 6	14	10.5
6 - 7	20	15.0
7 - 8	16	12.0
8 - 9	6	4.5
9 - 10	4	3.0
> 10	11	8.4
Total	133	100.0

C/S + T/L : Tubal ligation on Cesarean section

Mnilap. T/L : Tubal ligation via minilaparotomy

Table 2. Distribution of tubal reanastomosis procedure and postoperative tubal length

	No.	%
Types of reanastomosis		
Cornual - Isthmic (C-I)	12	9.0
Cornual - Anpullary (C-A)	15	11.3
Isthmic - Isthmic (I-I)	34	25.6
Isthmic - Anpullary (I-A)	67	50.4
Anpullary - Anpullary (A-A)	5	3.8
Postoperative tubal length(cm)		
< 3	1	0.7
3 - 4	7	5.3
4 - 5	24	18.0
5 - 6	33	24.8
6 - 7	36	27.1
7 - 8	15	11.3
8 - 9	13	9.8
9 - 10	3	2.3
> 10	1	0.7
Total	133	100.0

Table 3. Reproductive outcomes in 63 pregnant patients by age at time of tubal reversal.

	Age (years)						Total
	36	37	38	39	40	41	
Nb. of patients	24	19	12	3	4	1	63
Nb. of pregnancies	26 ^a	24 ^b	18 ^c	3	4	1	76
Reproductive outcomes							
Full-term delivery	17	14	6	3	3	-	43
Preterm delivery	1	-	-	-	-	-	1
Spontaneous abortion	4	6	10	-	1	1	22
Artificial abortion	-	1 ^d	-	-	-	-	1
Ectopic pregnancy	4	3	2	-	-	-	9
Nb. of patients taking home baby	17	13	6	3	3	0	42

a : including one woman with a preterm and a full-term deliveries and one woman with a spontaneous abortion and a full-term delivery

b : including three women with a spontaneous abortion and a full-term delivery, one woman with two full-term deliveries, and one woman with two tubal pregnancies

c : including two women with two spontaneous abortions, one woman with three spontaneous abortions, one woman with a spontaneous abortion and a full-term delivery, and one woman with a full-term delivery and a tubal pregnancy

d : therapeutic termination due to acute hepatitis

Table 4. Comparison of various parameters between pregnant and nonpregnant groups

	Pregnant	Nonpregnant	p value
Age (years)	37.2 ±1.3	37.4 ±1.3	0.236
Duration of sterilization (months)	67.5 ±34.2	62.2 ±42.3	0.424
Types of tubal ligation			NS
Laparoscopic T/L	54	50	
Cautery	39	39	
Ring	15	11	
C/S + T/L	8	8	
Mni lap. T/L	5	3	
Postpartum T/L	3	2	
Types of tubal reanastomosis			NS
Cornual - Isthmic (C-I)	5	7	
Cornual - Ampullary (C-A)	7	8	
Isthmic - Isthmic (I-I)	21	13	
Isthmic - Ampullary (I-A)	35	32	
Ampullary - Ampullary (A-A)	2	3	
Postoperative tubal length (cm)	6.7 ±1.4	6.3 ±1.5	0.122
Interval from TR to pregnancy (months)	9.4 ±7.9	-	
Total	70	63	

Mean ±SD

가 . 1959 Walz가
, 1967 Swolin

가

Siegler (1985)

60%

(1984), (1988), (1990), (1997)

가

가

가,

35-37

(Seiler, 1983; Richardson et al., 1987; Faddy and Gosden, 1995).

37 가

(Rosengeld and Garcia, 1976;

Seiler, 1983), (1984)

가

Trinbos-Kemper (1990), Glock (1996),

(1996) 40

43% - 58%

가

36 133
 52.6%(70/133)
 ,
 40 Trinbos-Kemper (1990) 48.7%(38/78), Glock
 (1996) 42.8%(18/42), (1996) 58.1%(25/43)
 (take home baby rate)
 63 가 42 66.7%
 Trinbos-Kemper (1990) 43.6% Glock (1996) 14.3% (1996) 46.5%
 76 22 (28.9%), 67 22 (32.8%)
 Trinbos-Kemper (1990) 23.7%(9/38), Glock (1996) 55.6%(10/18), (1996) 28.0%
 (7/25) 가 76 9 (11.8%)
 , Trinbos-Kemper (1990) 7.9%(3/38), Glock (1996) 2.4%(1/42), (1996)
 2.3%(1/43)
 36 가
 40 가 , Trinbos-Kemper (1990) 42
 가 가 (1996)
 가 가
 40 가
 Glock (1996) 44 1
 44 FSH 가 가
 가 42
 44 4 ,
 가

, , ,

377

Antoine (1983)

40%

가

36

가

(IVF-ET)

가

36

1980 7 1992 1 139

36 133 , ,

1. 133 78 (58.6%)

2. 가 ,

65.0 .

3. 52.6%(70/ 133) ,

9.4 .

4. 70 가 63 76

68.3%(43/ 63) ,

56.6% (43/ 76) .

22 (29.0%),

1 (1.3%),

9 (11.8%) .

5. , ,

가 .

36

가

. : 1,118
. 1997, 40, 1652.
. 가
. 1988, 31, 951.
.
1990, 33, 492.
.
1984, 27, 1487.
. 40 1996,
39, 316.

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