

난관 불임환자에서 난관 개통술시 진단복강경의 효용성

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Efficacy of Diagnostic Laparoscopy for TFTC (Transcervical Fallopian Tube Catheterization) in Tubal Infertility Patients

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Objective: To evaluate whether diagnostic laparoscopy before transcervical fallopian tube catheterization (TFTC) would improve tubal recanalization rate and pregnancy rate in patients with bilateral proximal tubal blockage in hysterosalpingogram (HSG).

Methods: The retrospective study was performed in those underwent TFTC from January 1998 to December 2001. A total of 50 patients with bilateral proximal tubal blockage in HSG were subjected to TFTC sequentially using repeated HSG (rHSG), selective salpingography (SS) followed by tubal catheterization (TFTC). Each procedure was terminated once patency had been achieved without proceeding to the next technique.

In Group A patients (n=35, 64 tubes), diagnostic laparoscopy was performed before TFTC was taken to exclude the tube combined with peritubal adhesion or distal tubal pathology. In Group B, patients (n=15, 26 tubes) were performed TFTC without diagnostic laparoscopy.

Results: There were significant difference in clinical pregnancy rate (45.7% vs 15.4%, p=0.034) but no differences were found in recanalization rate (75.0% vs 73.1%) and complication rate (8.6% vs 13.3%). Although there is no significant difference, more tubes were canalized by SS, which means tubal obstruction rather than occlusion, in Group A (25.0% vs 5.3%, p=0.069).

Conclusion: Diagnostic laparoscopy would be effective in the selection of tube for the relatively inexpensive and less invasive TFTC or patients in need of assisted reproductive technologies. With the tubes without combined peritubal adhesion or distal tubal pathology, pregnancy rate was significantly increased.

Key Words: Diagnostic laparoscopy, Selective saipingography, Tubal catheterization

20~30% 가
 ,^{1,2}
 (hystero-
 salpingography, HSG), (sal-
 pingo-sonography) , (chla-
 mydia antibody test) (bilateral proximal tu-
 bla blockage)

가 (proximal tubal blockage)
 10~25%^{3,4}

(saipingitis isthmica nodosa, SIN) 가

Ruibn⁵ (obstruction) 1.
 (occlusion) 1988 1 2001 12
 (spasm) plugging by amorphous material
 가 가

가 (selective salpingogram, SS) (bilateral tubal
 blockage) 가

(mucus plug) (TFTC)
 가 (proximal tubal blockage)
 가⁶ (Figure 1).
 가 stippled or honeycom-
 bed appearance

(transcervical fallopian tube catheterization, TFTC)¹²
 ,⁷⁻¹⁰ 가

¹¹ (Group A, 35)

가 (Group B, 15)

fimbriolysis, ,
 fimbrioplasty 2.
 가 (peritubal adhesion)



Figure 1. Bilateral tubal blockage on HSG: Lt. tube, proximal blockage and Rt. tube, distal blockage.



Figure 2. 3-coaxial cathter. The diameters of the inner, middle, outer cathters are 3.0 F, 5.5 F, 9.0 F.

(repeated hysterosalpingogram, rHSG)
 (SS)
 (SS)
 (obstruction)
 (occlusion)
 (TFTC)
 3 doxycycline 100 mg 1 2
 atropin
 3
 tenaculum forceps
 9-F
 5.5-F coaxial
 (ute-
 rine conus)
 (methylene blue)
 chromotubation
 chromotubation

5.5-F conus 3-F
 0.018 inch Terumo wire
 guide wire가
 3-F
 (Figure 2, 3).
 3-F 5.5-F
 가
 3-F 가
 가
 (ampulla)
 (Figure 4).
 3.
 10
 mm telescope
 veress needle , veress needle
 가
 (methylene blue)
 chromotubation ,
 chromotubation



Figure 3. Lt. tube with proximal blockage is catheterized with 3-coaxial catheter. 9.0 F in uterine cavity, 5.5 F at conus (SS), 3.0 F catheter in fallopian tube (TFTC).

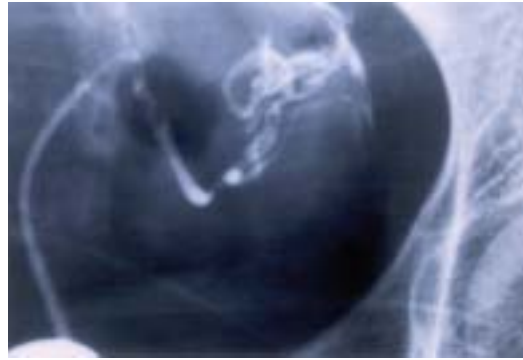


Figure 4. Successful canalization: contrast media is spilled into peritoneal cavity on SS.

3
4.
SAS
Wilcoxon singled-rank test
, $p < 0.05$
1.
(Group A, 35)
(Group B, 15)
가 (Table 1).
2.
(bilateral proximal tubal blockage) 가
(Group A, 35) 70
(n=6) 64
48
(75.0%).
(rHSG), (SS),
(TFTC)
5 (10.4%), 12 (25.0%), 31 (64.6%)

(Table 2).
(Group B, 15)
30
(n=4) 26
19
(73.1%), (rHSG),
(SS), (TFTC) 4
(21.1%), 1 (5.3%), 14 (73.7%)
(Table 2).
(rHSG)
72.9% (43/59), 68.2% (15/
22)
가 (SS)
Group A 12 , Group B 1
20.3% (12/59), 4.5% (1/22)
(Table 2).
(TFTC) 31 , 14
66.0% (31/47), 66.7% (14/21)
(Table 2).
Group A
(uterine conus) (fimbriae)
(occlusion)
가 (obstruction)
가 .

Table 1. Comparison of clinical characteristics

	Group A	Group B	p-value
Patients (n)	35	15	
Tubes (n)	65	26	
Mean age (yr)	32.9±4.6	32.9±6.3	NS
Infertility duration (mon)	26.0±21.7	39.1±39.2	NS
1° infertility (n)	15	3	
2° infertility (n)	20	12	

NS: not significant

Table 2. Distribution of tubal canalization and tubal canalization rate (*) at each procedure of TFTC

	Patients (n)	Tubes (n)	Canalized tube (n) Canalization rate (%)*	Tubal canalization (n)		
				rHSG	SS	TFTC
Group A	35	64	48	5	12	31
			75.0%*	10.4% (5/48)	25.0% (12/48)	64.6% (31/48)
Group B	15	26	19	4	1	14
			73.1%*	21.1% (4/19)	5.3% (1/19)	73.7% (14/19)
p-value			NS	NS	NS	NS

Group A 16 , 2
 Group B 7
 27.1% (16/59), 31.8% (7/22)
 4.
 3. (Group A)
 3 (Group A)
 B) 2 (Group B)
 16 , 2 45.7% (16/32), 15.4% vs 13.3%)
 (2/13) clinical pregnancy rate
 가 . Group A 16 3 5. chromotubation
 13 , Group B 2
 40.6% (13/32), 15.4% (2/13) (Group A, 35) 가
 delivery rate methylene blue
 (Table 3). (chromotubation) 31
 Group A 13 , 7 62
 , 2 , 6 58
 , Group B

Table 3. Clinical pregnancy rate and Delivery rate after TFTC

	Patients (n)	F/u loss (n)	After TFTC		
			Clinical pregnancy rate	Abortion	Delivery rate
Group A	35	3	16 50.0% (16/32)	3	13 40.6% (13/32)
Group B	15	2	2 15.4% (2/13)	0	2 15.4% (2/13)
p-value			0.035		0.111

Table 4. Tubal canalization, Clinical pregnancy according to chromotubation in Group A

Group A	Patients (n)	Tube (n)	Tubal canalization (n)	Clinical pregnancy (n)
Chromotubation, (+)	7	10	6 60.0% (6/10)	5 71.4% (5/7)
Chromotubation, (-)	24	48	37 77.1% (37/48)	10 41.7% (10/24)
p-value			NS	NS

antibody test, CAT),
 가 24 (tube n=48) chromotubation tubal blockage
 7 (tube n=10) chromotubation
 1990
 (TFTC)
 chromotubation 37
 10 77.1% C.trachomatis IgG cut-off level
 41.7% clinical pregnancy rate 8 74% 92%
 chromo- positive likelihood ratio (LR+)가 2.6
 motubation 6 9.1 가 .¹³
 , 5 60.0%
 71.4% clinical pregnancy rate chromotu-
 bation
 (Table 4).

가
 25~ 가 58% 77%
 35% , 25%, 40%
 - (sal-
 pingo-sonography), (chlamydia ,¹³

18

1966, ¹⁹ Lang ²⁰

(rHSG) 7.8% (5/64) 15.4% (4/26)

(SIN) 가

stippled or honeycombed appearance 가

(diverticulum) nodular hyperplasia 가

가 stippled or honeycombed appearance, 33~45%

ance 21,22

(odstruction) 7~25% (resection and anastomosis) 20.3% 4.5%

14,15

7~25%

(proximal tubal blockage) 가 (isthmic portion) 가

(uterotubal junction) 2~3 cm (proximal portion), (interstitial), (isthmic) 가, 33% (distal) ²³

10~20% ^{16,17} fibrosis, fold

(mucus plugs) agglutination

amorphous material ²⁴ ciliated epithelium (pyosalpinx)

stippled or honeycombed appearance 11% tubal blockage가

가 가 가 23%, 54% 가 ²⁵

1954 Ruibn (obstruction) (occlusion) ⁵ 7~14%

plugging by amorphous material 가 ^{26,27} (uterine conus) (fimbriae) (occlusion)

glucagon, diazepam, isoxuprine, terbutaline (spasmolytic agent) (12/48, 25.0%)

(obstruction) 가 2
8.6%, 13.3%

가
가 , 15~34%
fimbriolysis, fimbrio- 가 21,22 debris

plasty ,
가 가 13
40.6%

2 , 6 15.4% 2
. Golden-

berg Magendantz 가
64 가
55% 47% (obstruction)
28 35~45%

metrosalpingo-anastomosis
(macro-surgical uterotubal im-
plantation) Watkins 가
1970 34%
1970
(micro-surgical tubocornual anas-
tomosis) 37~56%
29
1977
(trans-
cervical ballon tuboplassty) fluoroscopy, hysteros-
copy, falloscopy sonography
85%
30% 30,31
3~11%

72.9% (43/59), 68.2% (15/22)

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1. Musich J, Behrman S. Surgical management of tubal obstruction at the uterotubal junction. *Fertil Steril* 1983; 40: 423-40.
2. Serafini P, Batzofin J. Diagnosis of female infertility, a comprehensive approach. *J Reprod Med* 1989; 34: 29-40.
3. Novy MJ, Thurmond AS, Patton P, Uchida BT, Rosch J. Diagnosis of cornual obstruction by transcervical fallopian tube cannulation. *Fertil Steril* 1988; 50: 434-40.
4. Sulak PJ, Letterie GS, Coddington CC, Hayslip CC, Woodward JE, Klein TA. Histology of proximal tubal occlusion. *Fertil Steril* 1987; 48: 437-40.
5. Rubin I. Uterotubal insufflation: value in the treat-

- ment of tubular obstruction to ovular migration. *Fertil Steril* 1954; 5: 311-24.
6. DeCherney AH. Anything you can do you can do better- or differently! *Fertil Steril* 1987; 48: 374-6.
 7. Confino E, Freiberg J, Gleicher N. Transcervical balloon tuboplasty. *Fertil Steril* 1986; 46: 963-6.
 8. Confino E, Freiberg J, Gleicher N. Preliminary experience with transcervical balloon tuboplasty. *Am J Obstet Gynecol* 1988; 159: 370-5.
 9. Platia MP, Krudy AG. Transvaginal fluoroscopic recanalization or proximally occluded oviduct. *Fertil Steril* 1985; 44: 704-6.
 10. Jansen RP, Anderson JC. Catheterization of the fallopian tubes from the vagina. *Lancet* 1987; 8: 309-10.
 11. , , .
 .
 1992; 35: 1045-53.
 12. Creasy J, Clark RL, Cuttino JT, Groff T. Salpingitis isthmica nodosa: radiologic and clinical correlates. *Radiology* 1985; 154: 587-600.
 13. Johannes LH, Jolande A. Diagnosing the Tubal Factors-Laparoscopy vs. Traditional Techniques. In: M. Filicor, C. Flamigini, editor. *Treatment of infertility: the new frontiers. Communications Media for Education*; 1998. p.67-74.
 14. Grant A. Infertility surgery of the oviduct. *Fertil Steril* 1971; 22: 496-503.
 15. Winston RM. Microsurgical tubocornual anastomosis for reversal of sterilization. *Lancet* 1977; 1: 284-5.
 16. Winfield AC, Pittaway D, Maxson W, Daniell J, Wentz AC. Apparent cornual occlusion in hysterosalpingography: reversal by glucagon. *Am J Roentgenol* 1982; 139: 525-7.
 17. Haney AF, Hammond MG. Infertility in women exposed to diethylstilbestrol in utero. *J Reprod Med* 1983; 28: 851-6.
 18. World Health Organization. A new hystero-graphic approach to the evaluation of tubal spasm and spasmodic agents. *Fertil Steril* 1983; 39: 105-7.
 19. Corfman PA, Taylor HC. An instrument for transcervical treatment of the oviducts and uterine cornua. *Obstet Gynecol* 1966; 27: 880-4.
 20. Lang EK, Dunaway HE, Rongier WE. Selective osteal salpingography and transvaginal catheter dilation in the diagnosis and treatment of fallopian tube obstruction. *Am J Roentgenol* 1990; 154: 735-40.
 21. Thurmond AS. Pregnancies after selective salpingography and tubal recanalization. *Radiology* 1994; 190: 11-5.
 22. Hovsepian DM, Bonn J, Eschelmann DJ, Shapiro MJ, Sullivan KL, Gardiner GA Jr. Fallopian tube recanalization in an unrestricted patient population. *Radiology* 1994; 190: 137-41.
 23. Lang EK, Dunaway HE. Efficacy of salpingography and transcervical recanalization in diagnosis, categorization and treatment of fallopian tube obstruction. *Cardiovasc Intervent Radiol* 2000; 23: 417-22.
 24. Droegemueller W. Infections of the upper genital tract. In: Mishell D, Stenchever M, Droegemueller W, Herbst A, editors. *Comprehensive gynecology*. 3rd ed. St. Louis: Mosby-Year Book Inc. 1997; 661-90.
 25. Westrom L, Joesoef R, Reynolds G, Hagdu A, Thompson SE. Pelvic inflammatory disease and infertility: a cohort study of 1,844 women with laparoscopically verified disease and 657 control women with normal laparoscopic results. *Sex Transm Dis* 1992; 19: 185-92.
 26. Fortier J, Haney A. The pathologic spectrum of uterotubal junction obstruction. *Obstet Gynecol* 1985; 65: 93-8.
 27. Punnonen R, Soederstroem K, Alanen A. Isthmic tubal occlusion: etiology and histology. *Acta Eur Fertil* 1984; 15: 39-42.
 28. Goldenberg RL, Magendantz HG. Laparoscopy and the infertility evaluation. *Obstet Gynecol* 1976; 47: 410-5.
 29. Gomel V. Tubal reanastomosis by microsurgery. *Fertil Steril* 1977; 28: 59-65.

30. Kumpe DA, Zwerdinger SC, Rothbarth LJ, Durham JD, Albercht BH. Proximal fallopian tube occlusion: diagnosis and treatment with transcervical fallopian tube catheterization. *Radiology* 1990; 177: 183-7.
31. LaBerge JN, Ponec DJ, Gordon RL. Fallopian tube catheterization: modified fluoroscopic technique. *Radiology* 1990; 176: 283-4.
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