Fluoroscopic Guided Fallopian Tube Recanalisation

Lt Col S Bhargava*, Surg VAdm Punita Arora SM, VSM⁺, Lt Col S Mohan[#]

Abstract

Background: Fluoroscopic fallopian tube recanalisation is a procedure that relieves proximal fallopian tube obstruction with minimal trauma. Commercially available fallopian tube catheterization sets are costly and cumbersome to use. The modified technique used is easy, less traumatic and lessens the procedure and fluoroscopy time.

Material and Methods: A headhunter catheter cut 40cm from its tip was introduced into the uterus under direct vision over a 0.035" guide wire. A 50-cm headhunter 3F catheter was passed through tubal ostium. Microguide wire 0.018" (Terumo) was passed into the fallopian tube. On successful recanalisation free peritoneal spill was seen in the peritoneum on injecting contrast through the microcatheter. Fluoroscopic guided fallopian tube recanalisation (FTR) was performed in 21 cases.

Results: The procedure was successful with recanalisation of fallopian tubes in 15 cases. Pregnancy was seen in 3 cases (14.2%). Primary infertility was 71.4% and secondary infertility 28.6%. The mean time of the procedure was 21 minutes with a minimum of 10 minutes and maximum of 40 minutes. The fluoroscopy time was between 4 minutes to 20 minutes with a mean of 11 minutes. The patients who conceived had an average age of 28.2 years.

Conclusion: The modified technique is simpler to perform with low cost, less trauma and procedure time with good results. This study highlights the need of using modified technique for ease of the procedure and reducing fluoroscopy time.

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Key Words: Infertility; Female; Fallopian tubes

Introduction

The obstruction of fallopian tube in its proximal portion has been a diagnostic and therapeutic dilemma since its recognition more than 50 years ago. Development of fluoroscopically guided fallopian tube catheterization over last decade has improved the evaluation of this condition with better visualization of distal fallopian tube. A procedure that relieves proximal tubal obstruction, whatever be the cause, with minimal trauma to the tube would clearly be an advantage. There are commercially available fallopian tube catheterization sets. These are costly and cumbersome to use. Modified technique as used by us is easier to use, less traumatic and decreases procedure and fluoroscopy time.

Material and Methods

Women with unilateral or bilateral proximal tube obstruction by HSG (Fig 1) or laparoscopy are candidates for this procedure. The procedure is performed 3 to 7 days after menstrual period. Informed consent was obtained in all cases. The explanation of the procedure and its benefits allayed most of the anxiety. Fluoroscopic fallopian tube recanalisation (FTR) was performed on GE medical system Advantax Legacy. Patient was placed in lithotomy position, and the parts prepared with betadine. Tablet Calmpose 10 mg was given orally 30 minutes prior to the procedure. Injection Buscopan

20 mg was given intravenously before the procedure. The cervix was held with volsellum forceps. A headhunter catheter was cut 40 cm from its tip and introduced into the uterus

Fig. 1 : Bilateral fallopian tube cornual block

*Classified Specialist (Radiology & Interventional Radiology), Military Hospital (Cardio Thoracic Centre), Pune-40, *Director General Medical Services (Navy), Naval Head Quarters, New Delhi, [#]Classified Specialist (Obstetrics and Gynaecology), Command Hospital (Central Command), Lucknow.

Fig. 2 : Microcatheter and microguide wire in left fallopian tube

under direct vision over a 0.035" guide wire. The catheter tip was guided to the diseased cornu of the uterus. Small amount of contrast media with 300 mg of iodine / ml was injected through the catheter to confirm the position. A 50 cm headhunter 3F catheter was passed through tubal ostium via 7F catheter. Microguide wire 0.018" (Terumo) was passed into the fallopian tube (Fig. 2). On successful recanalisation contrast was injected through the microcatheter. Free peritoneal spill was seen in the peritoneum in successful cases (Fig. 3). The procedure was regarded as failure when after 10 minutes of attempt, the tube was not recanalised. Patients were allowed to go home after one-hour rest. Oral analgesics were given in case of abdominal pain.

The procedure was performed in 21 cases between the year 1999 and 2001. In 15 cases the procedure was successful with recanalisation of fallopian tubes. Patients were followed up every three months for possible pregnancy for a period of one year.

Results

The procedure was well accepted by the patients. There was no difficulty in engaging the headhunter 7F to the cornu of the uterus. The catheter moved from one cornu to other with ease. It was easy to push 3F catheter through this catheter. The microguide wire 0.018" could be moved freely back and forth as desired. The hands of operator were reasonably away from radiation and at the same time the assembly was comfortable to use.

Mean age was 29.2 years, the minimum being 23 years and the maximum was 40 years. Minimum period since marriage was 3 years and the maximum was 16 years with a mean of 8 years.

Success was achieved in 76.2% and failure was 23.8%. Pregnancy was seen in 3 cases (14.2%). Primary infertility was observed in 71.4% cases and secondary infertility in 28.6% cases. The mean time of the procedure was 21 minutes with a minimum of 10 minutes and maximum of 40 minutes. The fluoroscopy time was minimum of 4 minutes and maximum of 20 minutes with a mean of 11 minutes. The patients who conceived had an average age of 28.2 years. These patients

Fig. 3 : Free peritoneal spill in pelvis on left side

developed pregnancy with a mean period of 5 months. All patients could not be followed up being from different parts of country. Nine cases showed bilateral occlusions. Out of these, 6 cases could be successfully recanalised, while in one case only one tube could be recanalised. Two cases were totally unsuccessful. Two patients with cornual block showed a second block distally and another showed hydrosalpinx with distal tubal occlusion.

Discussion

The procedure was well accepted by all patients. Technical success was observed in 76.2% cases. In a follow up of one year, 3 cases conceived. Use of selective salpingography and fallopian tube recanalisation has revolutionized the diagnosis and treatment of infertility. Selective salpingography, a diagnostic procedure in which the fallopian tube is directly opacified through a catheter placed in the tubal ostium, has been used since the late 1980s to differentiate spasm from true obstruction and to clarify discrepant findings from other tests. In fallopian tube recanalisation, a catheter and guide wire system is used to clear proximal tubal obstructions. The recanalisation procedure is simple for interventional radiologists to perform and is successfully completed in most patients. Pregnancy rates after the procedure has been variable.

Thurmond et al found recanalisation procedure simple and performed successfully in most cases (71%-92%). Pregnancy rates after the procedure have been variable with an average of 30% [1].

The rate of ectopic pregnancy is approximately 10% and that of early tubal reocclusion is less than 30%. Selective salpingography and fallopian tube recanalisation is recommended as the first intervention in patients with obstruction of the proximal fallopian tube [2]. In our experience no ectopic pregnancy was reported. Follow-up hysterosalpingography after an average of 6 months

(50%) demonstrated reocclusion of both tubes [3].

Standard fallopian tube catheterization set (Cook) is commercially available. In the modified technique described there are various advantages. The catheter is at cornu when the fluoroscopy is switched on. There is better control of cervix and easier manipulation. The polyurethane wire 0.018" (Terumo) is kink resistant, self-orifice seeking and passes for a longer length into the fallopian tube. The J-tip of the guide wire helped in change of direction. Since the wire is hydrophilic the movement of guide wire was smooth. It could take the tortuous turn of the fallopian tube. As a result the overall fluoroscopy time is reduced and the procedure becomes cheaper and easy to perform.

Various authors have modified the standard technique. Forceful ostial injection alone of contrast material was able to open and/or depict the fallopian tube [4]. A simplified technique of fallopian tube catheterization is also described in which the tube is recanalized with a guide wire alone. For improving the results of transvaginal catheterization and recanalization of the fallopian tubes and to increase its marginal safety, catheterization was performed under digital road mapping guidance when required. The improved catheterization technique enables good results in the diagnosis and treatment of proximal tubal obstructions [5]. Others have used metal self-retaining uterine cannula and catheter set [6].

Hedgpeth PL et al found absorbed radiation dose to the ovaries during radiographic fallopian tube recanalisation with use of thermoluminescent dosimeters placed in the vaginal fornix. With an average fluoroscopic time of 8.5 minutes $\pm$ 5.5 and an average of 14 $\pm$ 5 105

mm spot radiographs obtained, the average absorbed dose to the ovaries was 8.5 mGy $\pm$ 5.6 [7]. In this procedure the patient receives radiation. Using small field of radiation and intermittent fluoroscopy can minimize this. Images should be obtained by saving the fluoroscopic screen instead of exposure. These simple measures can reduce the dose of radiation to the ovaries over standard method in which exposures are taken to record the recanalisation.

The modified technique is simpler to perform with lesser trauma and procedure time with good results. This study highlights the need of modified technique of fluoroscopic fallopian tube recanalisation for ease of the procedure and reducing fluoroscopy time.

References

1. Thurmond AS, Machan LS, Maubon AJ, et al. A review of selective salpingography and fallopian tube catheterization. *Radiographics* 2000; 20(6):1759-68.
2. Thurmond AS. Selective salpingography and fallopian tube recanalisation. *AJR Am J Roentgenol* 1991;157(2):415.
3. Thurmond AS, Rosch J. Nonsurgical fallopian tube recanalisation for treatment of infertility. *Radiology* 1990;177(2):589-90.
4. Thurmond AS, Rosch J. Fallopian tubes: improved technique for catheterization. *Radiology* 1990 Feb;174(2):572-3.
5. Millward SF, Claman P, Leader A, Spence JE. Technical report : fallopian tube recanalisation – a simplified technique. *Clin Radiol* 1994;49(7):496-7.
6. LaBerge JM, Ponc DJ, Gordon RL. Fallopian tube catheterization: modified fluoroscopic technique. *Radiology* 1990;176(1):283-4
7. Hedgpeth PL, Thurmond AS, Fry R, Schmidgall JR, Rosch J. Radiographic fallopian tube recanalisation: Absorbed ovarian radiation dose. *Radiology* 1991;180(1):121-2.

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