

## Selective salpingography and tubal catheterization in infertile women

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Salpingographie sélective et cathétérisme des trompes dans l'infertilité d'origine tubaire proximale

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### R É S U M É

**Prérequis :** La salpingographie sélective (SS) et le cathétérisme tubaire (TC) ont révolutionné le diagnostic et le traitement des obstructions tubaires proximales.

**But:** Evaluer les résultats de cette technique dans notre service en les comparant à ceux de la littérature.

**Méthodes:** La salpingographie sélective a été réalisée chez des patientes infertiles ayant une obstruction proximale et bilatérale des trompes. Les résultats étaient évalués avec un recul de 12 mois.

**Résultats:** Nous avons inclus 12 patientes. Après SS/TC, une recanalisation tubaire a été observée dans 8 cas. Dans les suites des cas réussis, une grossesse spontanée est survenue chez 4 patientes.

**Conclusion :** SS /TC est une technique simple et reproductible qu'on peut proposer de première intention en cas d'infertilité d'origine tubaire proximale.

### S U M M A R Y

**Background:** Use of selective salpingography (SS) and fallopian tube catheterization (TC) has revolutionized the diagnosis and treatment of proximal tubal infertility.

**Aim:** To evaluate results of women treated for proximal tubal obstruction by selective salpingography and tubal catheterization.

**Methods:** Selective salpingography was performed in women with proximal bilateral tubal obstructions. Follow-up ranged from 4 to 12 months.

**Results:** twelve patients had been shown to have bilateral proximal obstruction of the fallopian tube. After SS/TC, patency was achieved in 8 cases. Spontaneous conceptions occurred in 4 women.

**Conclusion:** SS and TC should be used more widely because it is simple and effective in case of proximal tubal blockage.

### M o t s - c l é s

Infertilité ; obstruction tubaire proximale ; salpingographie sélective; cathétérisme tubaire.

### Key - words

Infertility; proximal tubal obstruction; selective salpingography; tubal catheterization

Tubal obstruction remains a major cause of infertility [1]. In spite of IVF success rates in case of tubal obstruction, many patients cannot afford or unwilling to undergo IVF. In women with bilateral proximal tubal obstruction, selective salpingography was performed. This procedure is used for the diagnosis and the treatment of proximal tubal blockage. Conception following this procedure occurs for relatively short periods [2].

The aim of this study was a retrospective evaluation of results of women treated for proximal tubal obstruction by selective salpingography and tubal catheterization.

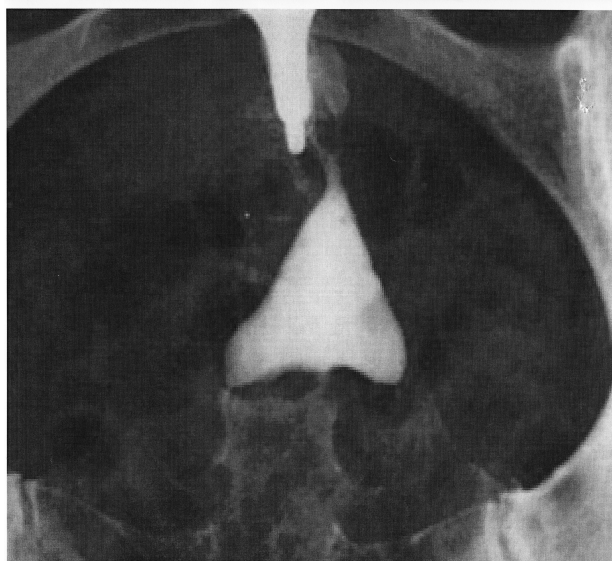
## PATIENTS AND METHODS

A retrospective cohort study was performed in the department of gynaecology obstetric Mahmoud El Matri ARIANA between 2002 and 2007. Only women with proximal bilateral tubal obstructions and any other identified cause for their infertility were selected for this study. Proximal tubal occlusion was demonstrated in hysterosalpingography and in laparoscopy. Selective salpingography was performed in all these patients. This procedure salpingography was performed by a radiologist in an X-ray room. It involves hysteroscopic insertion of a cannula to the tubal ostia and injection of radio-opaque material into each tube. Women who don't achieve radiologic demonstration of patency by selective salpingography undergo selective catheterization using using a 5F wire guide to catheterize tubes.

## RESULTS

Of the 180 women who underwent hysterosalpingography (HSG) for management of infertility, twelve (n=12) had been shown to have bilateral proximal obstruction of the fallopian tube (figure 1).

**Figure 1 :** Bilateral proximal obstruction on HGS



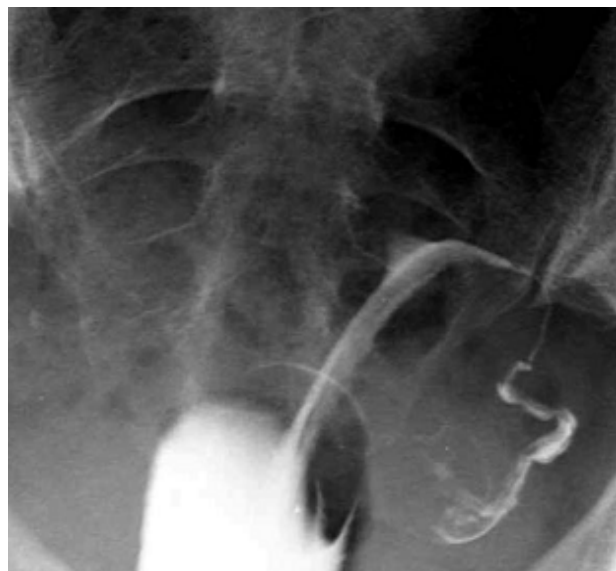
This tubal abnormality was been also demonstrated in laparoscopy. For this study, we have included all these patients (n=12). The mean patient's age is 34 years (range 25 to 42 years) and the mean duration of infertility was 4.7 years (range 2.2 to 8 years). Eighty percent of patients (80%) presented with primary infertility and 20% with secondary infertility.

Patency was achieved with selective salpingography (SS) in 8 cases. In 2 cases of these the simple injection of contrast medium allowed the desobstruction of both fallopian tubes. In the 6 remaining cases recanalisation had been performed using tubal catheterization (TC) (figures 2, 3).

**Figure 2 :** Tubal catheterization on the left fallopian tube



**Figure 3 :** After TC tube open and looks normal



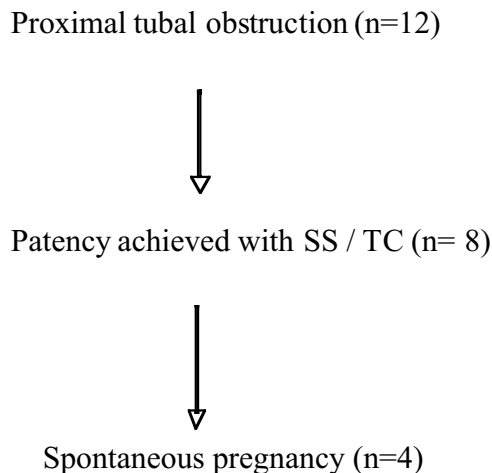
Occlusion at the isthmic portion of the tube was been founded in all cases. This procedure of recanalisation was attempted without complications. The most frequent side effects were slight pain and nausea. In the 4 remaining cases, the recanalisation was impossible to perform and proximal tubal blockage persisted after TC (Table1).

**Table 1 :** Success rate of selective salpingography

Intervention	n	Patency	Pregnancy	Ectopic pregnancy
SS	2	2	1	0
SS + TC	10	6	3	0
Total	12	8	4	0

Four women in which the procedure was succeeded conceived spontaneously during the 4- to 12-month follow-up period, and delivered healthy babies. No extra uterine pregnancies or serious complications were reported. We can conclude that the rate of success of SS and TC is over 70% and pregnancy rate is 30% (Figure 4).

**Figure 4 :** Flow chart of overall patency and pregnancy rate



## DISCUSSION

Tubal disease is the cause of female infertility in approximately 30% of women [1] and 10-25% of these are due to proximal tubal obstruction [1]. Selective salpingography represent an approach in the diagnosis and treatment of proximal tubal abnormalities. The common indications for selective salpingography are to differentiate spasm from true obstruction

[3]. In addition to that it allows clarifying findings from an equivocal hysterosalpingogram. Isthmic as well as intamural blockages were included. The tubal obstruction may due to amorphous materials occluding the tubal lumen, inflammatory changes and adhesions [4]. The use of selective salpingography and fallopian tube recanalization has revolutionized the diagnosis and treatment of infertility [3].

Diagnostic procedure has been used since 1980 [3]. It consists on opacification of the fallopian tube directly through a catheter placed in the tubal ostium.

The objective is to differentiate spasm from true obstruction and to clear it with a catheter and guide wire system.

## Technique

Selective salpingography is performed during follicular phase of the cycle. It consists on diagnostic test in which the fallopian tube is directly opacified by injecting contrast medium through a catheter placed in the tubal ostium. Fallopian tube recanalization is a therapeutic procedure to open the fallopian tube by passage of a guide wire and catheter through a proximal fallopian tube obstruction.

The procedure requires a cervical cannulation with an occlusive catheter large enough to allow coaxial passage of a 5-F diagnostic catheter. The occlusive catheter can be fixed with an endocervical or endouterine balloon. The uterine cavity is opacified with an injection of soluble contrast agent. If the fallopian tubes do not fill with contrast agent when the uterus is opacified, or if the images of the fallopian tubes are inadequate for diagnostic purposes, a 5-F curved catheter is advanced over a guide wire and wedged into the cornual region. Gentle injection of contrast agent will result in a selective salpingogram. When the fallopian tube is patent, radiographs are taken and the catheter is directed over a guide wire into the opposite cornual region.

If selective salpingography reveals a proximal fallopian tube obstruction, a 3-F tapered catheter preloaded over an 0.015-inch guide wire is gently advanced through the obstruction via the cornual catheter. If this guide wire does not pass easily, the obstruction may be crossed with a 0.016-inch diameter [5].

Technical success of selective salpingography depends on patient calm and comfort. So tension may make the procedure more difficult and may cause tubal spasm. Some practitioners give the patient sedatives [5]. Prophylactic antibiotics are not given systematically [3]. Those that do, prescribe oral doxycycline 200mg daily for 5 days [3].

## Complications

Selective salpingography is minimally invasive methods of achieving fertility in selected patients. Complications of fallopian tube recanalization are rare [6]. Tubal perforation, vasovagal response, and adnexal infection are possible [6]. The most frequent side effects were slight pain, bleeding and nausea. The greatest difficulties encountered were a lack of cooperation in patients because of pain [3]. This situation is frequently due to a strongly flexed or distorted uterus [3]. Ba SD and al [7] reported one perforated tube which had no serious consequences. None of the patients died.

Because of the fallopian tube is a relatively thick structure which is not catheterized easily by the guide wires, a tubal perforation may occur [7]. This complication is manifested as contrast agent free in the peritoneal cavity. Tubal perforation occurs 2% of the time [3]. This risk is increased in case of mucosal abnormalities or peritubal adhesions.

Pelvic infection following fallopian tube recanalization is not reported until to day. The use of prophylactic antibiotic by majority of practitioners may reduce this risk [7].

## Outcomes of tubal recanalization

### Recanalization Rates

Fallopian tube recanalization has now been performed in a large number of patients. Many patients with proximal tubal occlusion have bilateral involvement. In this way, recanalization of both tubes is easily attempted during the same procedure [8].

Results reported to date indicate that recanalization of the proximal fallopian tube was successful in 71%–92% of recanalizations attempted [8], 70% in our study. Fallopian tube catheterization and recanalization failed in a few patients [3]. For Ba SD and al [7] catheterization failed in 11.3% of cases. If fallopian tube occlusion is due to salpingitis isthmica nodosa, recanalization may be technically more difficult. In case of congenital malformation, the procedure may be impossible also. Failure to recanalize after a successful catheterization of the tube is caused by fibrotic scarring of the tube from salpingitis, endometriosis, or surgery [3, 8].

Patients who had failed to achieve patency with selective salpingography were proposed to perform balloon tuboplasty [5]

### Pregnancy Rates

Many studies show that tubal catheterization has a positive impact on conception rates. Pregnancies were reported throughout the follow-up period ranged from 16 to 56 months [9]. Pregnancy rates have been variable, reflecting perhaps the diversity of the patient populations. The average pregnancy rate in literature is about 30% [9]. For Ba SD et al [7], forty-nine women from a total of 122 who underwent SH-TC, conceived spontaneously during the 2- to 12-months follow-up period, and 39 of these women delivered healthy babies. Rawal N et al [6] reported in their study that tubal patency was achieved in 11 patients out of 14 who underwent SS-TC (78%). Four women achieved spontaneous pregnancy (success rate 28.57%) within

1 year of treatment. For Hisao Hosada et al [10], selective salpingography was associated with a 35.7% patency rate, and 27.3% of these patients conceived.

Spyros Papaioannou et al [9] presented their study as tubal disease was found in 31.4% of the tubes examined. Of tubes proximally blocked at selective salpingography, 52.1% were found to be normal after tubal catheterization. Proximal tubal blockage (bilateral or unilateral) was detected in 34.8% of women.

This was reduced to 5.5% after tubal catheterization. Spontaneous conceptions occurred in 21.9% of the women. In total, 36.2% conceived without IVF or ICSI (spontaneously)

In another analysis, Papaioannou et al [11] reported that selective salpingography and tubal catheterization was performed in 218 infertile women with proximal tubal blockage. Follow up ranged from 16 to 56 months. A total of 47.2% of spontaneous conceptions and 43.2% of all conceptions, apart from those achieved by IVF or ICSI treatments, occurred after the first 12 months following selective salpingography and tubal catheterization.

The lowest pregnancy rate reported after successful recanalization of proximal tubal occlusion was 9% and occurred in a population with a high prevalence of coexistent distal tubal disease [12].

The highest pregnancy rate was 58% after an average follow-up of 1 year [12]. This rate was recorded in a population without distal tubal disease as documented with laparoscopy [12].

## CONCLUSION

Selective salpingography and tubal catheterization might have a wider role in the management of the infertile couple. It represents an option which provides more accurate diagnosis of tubal condition and offers the opportunity for effective treatment. Different results suggest that this procedure should be the first-line treatment of infertility caused by proximally obstructed fallopian tubes. It should be used more widely because it is simple and more cost-effective than the surgical management of tubal obstruction and artificial insemination. The future challenge is to develop better methods of patient selection, such as the use of diagnosis falloscopy or salpingoscopy to demonstrate mucosal abnormalities and to identify good-prognosis patient's early referred for tubal surgery or IVF.

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