

# Selective salpingography in the treatment of tubal occlusion – preliminary report

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## Introduction:

Tubal disease affects 25-30% of couples with infertility [Rawal 2005]. Proximal tubal obstruction accounts for approximately 10-25% of tubal disease [Session 1997, Verma 2009]. The factors responsible for this condition are diverse and include infection, pelvic surgery and endometriosis. Treatments for infertility associated with tubal factor include selective salpingography with tubal cannulation, reconstructive surgery or in vitro fertilization (IVF) [ASRM 2008].

## Objective:

To evaluate the efficacy of selective salpingography(SS), for the recanalization of tubal occlusion (TO) as a part of NaProTECHNOLOGY (NPT) treatment of infertile couples.

## Material and methods:

This study is a retrospective analysis of medical records of 52 infertile women who underwent treatment in Maternity and Life Clinic in Lublin (Poland). All women were presented with hysterosalpingographic (HSG) or laparoscopic (LPS) findings of uni- or bilateral TO and underwent repeat HSG and if necessary selective tubal catheterization in the Department of Interventional Radiology Medical University of Lublin (Poland). The relevant data were abstracted from medical records and entered into a computerized database. Obtained data were analyzed statistically (Statistica StatSoft). Review of english language literature about SS and tubal factor in infertility was conducted. The retrospective study has an approval of the Local Ethics Committee.

## Technique of the procedure and results:

All described couples underwent treatment of infertility with NPT. After initial diagnosis and treatment of conditions affecting fertility, couples with previous diagnosis of TO were referred for SS and a trial for restoration of tubal patency. Before the procedure, patients received papaverine (80mg im) to prevent tubal spasm and underwent premedication with ketoprofen (100mg iv) or morphin (10mg sc). Also, antibiotic prophylaxis was used. Preliminary HSG was performed at the beginning of the procedure in all cases and revealed tubal obstruction in 34 (65,4%) patients (48 tubes) – unilateral in 20 cases, bilateral in 14 cases. All patients with TO underwent, in follicular phase of the cycle, SS with tubal catheterization under fluoroscopy (Artis Zee Ceiling - Siemens). The 12F mother catheter was introduced into uterine cavity by a gynaecologist. An interventional radiologist performed the remaining part of the procedure. Obstructed fallopian tube was catheterized with coaxial catheter – a guide wire system (SlipCath KMP, Cook Medical). An attempt to overcome the obstructed segment was undertaken with appropriately selected micro catheters. There were no major complications. No patient required an inpatient admission following the procedure. Successful recanalization was achieved in 32 (94,1%) patients (36 tubes-75%). The mean follow-up interval was 19 months. All couples were still involved in the treatment according to NPT protocol. Biological markers of fertility were monitored with the Creighton Model FertilityCare System (CrMS). In certain cases induction of ovulation was used. After successful selective tubal catheterization 6 patients (18,76%) conceived, three of them were presented with bilateral TO before procedure. The median procedure-conception interval was 6,3 months.

## Discussion:

Patency of fallopian tubes is crucial for natural conception. Their fimbriated ends, which are opened to the peritoneal cavity, sweep over the ovary allowing the ovulated egg to be pulled inside the tubes where fertilization occurs [Thurmond 2008]. Disease or damage of fallopian tubes may be attributed to impaired ovum transport due to fimbrial damage or adnexal adhesions, which increases risk for ectopic pregnancy due to impaired embryo transport. Screening for TO is defined as a part of the initial assessment of infertility [Cobellis 2012]. Treatments for infertility associated with tubal factor include selective salpingography with tubal cannulation, reconstructive surgery or in vitro fertilization (IVF) [ASRM 2008, Lang 1998]. SS as a minimally invasive approach is in our opinion preferable method, which should be considered as a first line treatment before applying more advanced and invasive procedures. It has both diagnostic and therapeutic role. During the procedure the catheter is directly placed in the tubal ostium, which helps differentiate spasm from a true tubal obstruction. By introducing catheter more distally, tubal occlusion can be cleared. [Verma 2009]. Tubal spasm which occurs especially during high pressure injection of contrast during traditional HSG may give a false positive diagnosis of proximal TO (ranging from 16 to 50% of cases) [Kodaman 2004, Cobellis 2012]. Even if the TO was confirmed both by HSG and LPS and a dye test, about 35% of tubes showed patency at SS [Cobellis 2012]. Elimination of this effect is clinically important because decision making is based on a diagnosis of TO. However it should stay in mind that an intermittent tubal spasm might suggest an underlying tubal pathology and that not all anatomically patent fallopian tubes are fully functional for fertility purposes [Kodaman 2004, Papaioannou 2004]. Use of this minimally invasive approach avoids the risks of anaesthesia and of surgery associated with tubal surgery and complications of ovarian hyper stimulation and multiple pregnancies associated with IVF [Verma 2009]. According to the published data successful recanalization was achieved in 80% of cases which is comparable with our results – 75% unblocked tubes. The reported pregnancy rates after tubal recanalization range from 6 to 67%. Nevertheless most authors agree on an average of 20-25% of infertile couples achieving pregnancy after tubal catheterization which is similar to our result [Maubon 2001]. Most of the pregnancies occur in the first 6 months after the procedure, which is also similar to our results [Maubon 2011]. In our group 20 and 14 patients were presented with uni- and bilateral TO respectively. Three from six pregnancies, which occurred after SS, were in women with bilateral TO. Some authors claimed that unilateral tubal blockage diagnosed on HSG has no effect on success rate in stimulated IUI cycles, but in opposite other found that in IUI cycles cumulative pregnancy rate is almost 50% lower in patients with unilateral TO compared to patients with patent tubes and idiopathic infertility (26 vs 44%) [Ebrahimi 2011, Berker 2014]. In our opinion restoration of tubal patency is an important step in therapeutic process for couples who refuse to undergo treatment with artificial reproductive techniques. We must remember that infertility is a chronic and multifactorial condition, which requires treatment of all underlying causes. Therefore in our practice we use the treatment protocol based on NaProTechnology as a holistic method, which provides medical and surgical treatment which cooperates completely with the reproductive system [Hilgers 2011]. Proper treatment of tubal factor is only one step in the whole treatment protocol, but it is necessary for achieving pregnancy during natural cycles.

SS seems to be a safe method with low rate of complications (pain, small tubal tear, perforation, pelvic and peritoneal infection, bleeding, risk of ectopic pregnancy) [Maubon 2001]. They can be avoided by proper selection of candidates, use of premedication, antibiotic prophylaxis and hydrophilic guidewires. The risk of reocclusion is evaluated to be about 50% after one year. The risk of ectopic pregnancy is higher than in general population, but lower than after microsurgery [Maubon 2001].

## Conclusions:

SS can be considered a safe method for the treatment of TO with high technical success rate which increases chances of pregnancy. We suggest that SS should be applied before more expensive and complex procedures.



Fig.1 Catheterization of left fallopian tube



Fig.2 Catheterization of uterine os of right fallopian tube



Fig. 3 Patent tubes after bilateral catheterization

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