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Restoring the patency of fallopian tubes using the transcervical selective hysterosalpingography methods - a clinical case analysis

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Abstract

Introduction: Infertility caused by tubal occlusion is a relatively frequent affliction among women of child-bearing age. A common cause of tubal occlusion are mucous plugs accumulated inside the fallopian tubes, which results in blocking them. Selective hysterosalpingography (SHSG) is a method of removing the obstruction located in a proximal section of the fallopian tube. The most serious complication developed from this procedure is a fallopian tube perforation, however, it affects less than 1% of patients who undergo the

treatment. The clinical success of recanalization of the fallopian tubes is estimated at about 85-88% and the frequency of successful pregnancies after the treatment is about 27%.

Aim: To show the usage and effectiveness of SHSG in diagnosis and treatment in the obstruction of proximal section of fallopian tube.

Case report: The patient, 33 years old, diagnosed with primary infertility, qualified to the SHSG at Independent Public Clinical Hospital No. 4 in Lublin. The first stage of SHSG was the insertion of a catheter into the uterine cavity and introduction of a contrast agent to the uterine cavity. The fallopian tubes did not release the contrast into the peritoneal cavity. After increasing the contrast, delivery pressure agent obtained the free flow of the contrast agent into the peritoneal cavity through the right fallopian tube. The uterine outlet of the left fallopian tube was selectively catheterized and a micro tool was inserted into the left fallopian tube. As the result, both fallopian tubes were unblocked.

Summary: SHSG is a non-invasive and safe method of removing the obstruction located in the proximal section of the fallopian tube. Women subjected to SHSG can return to their normal activities in a few hours after treatment.

Key words: female infertility, transcervical fallopian tube recanalization, selective hysterosalpingography, proximal tubal occlusion.

Introduction

Female infertility is defined by the World Health Organization as the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse among women up to the age of 35, or 6 months among women aged over the 35. The main cause of about 30% of female infertility causes is partial or complete tubal occlusion [1,2]. About 10–25% of infertile women are diagnosed with proximal tubal occlusion (PTO) [3].

It can be present on one or both sides and appear in each part within the fallopian tube, being classified as a proximal or peripheral lesion. The occlusion of the fallopian tube can be caused by obstacles in the fallopian tube, inflammatory changes of the ovaries and fallopian tubes, endometriosis or pelvic surgery in the area of pelvis minor. The common cause of tubal occlusion are collected mucous plugs blocking the fallopian tubes [4].

Transcervical selective hysterosalpingography (SHSG) and cannulation of the fallopian tube helps to differentiate the fallopian tube contraction from the real obstruction. The clinical success of recanalization of the fallopian tube is estimated at about 85-88% and the frequency of successful pregnancies after treatment is about 27% [4,5]. The women subjected to SHSG can return to their normal activities after a few hours.

SHSG procedure should be performed by the 10th day of the patient's menstrual cycle in order to minimize the likelihood of a patient's pregnancy [6]. It is extremely important to properly prepare for this procedure, including sexual abstinence in the menstrual cycle with SHSG (or testing the serum human chorionic gonadotropin (HCG) level), fasting for 6 hours before the procedure, and the provision of the medical documentation. The doctor may also order a vaginal culture test –performed 7 days before the expected menstruation before the cycle in which SHSG will be conducted as well as during patient's admission to the ward. Pharmacological preparation includes the use of intravaginal anti-inflammatory drugs as well as prophylactic antibiotic therapy.

The procedure is held in sterile conditions; the patient's perineum is shaved, disinfected and covered. To improve the patient's comfort, intravenous sedative medication is usually given, and cervical anesthesia become unnecessary [1].

The first stage of SHSG is the insertion of a catheter into the uterine outlet of the fallopian tube with the subsequent administration of a contrast agent to find the level of obstruction and attempt to remove the problem by applying pressure. If the method is unsuccessful, the next step is to try to open the fallopian tube with the proper micro tools. After obtaining the patency, a control salpingography should be performed, the confirmation of the success of the treatment is the outflow of the contrast agent into the peritoneal cavity.

Aim of the work

The aim of this work, based on the presented clinical case, was to show the usage and effectiveness of SHSG in diagnostics and treatment of the obstruction of a proximal section of fallopian tube.

Case description

The patient, 33 years old, after 6 months of ineffective attempts to become pregnant, came to the Infertility Treatment Clinic in Kielce, from where she was referred to the specialist hospital in Warsaw. The patient was diagnosed with primary infertility. In the interview, the patient stated that her menstrual cycles were irregular. She was diagnosed with an ovulation disorder, which was then stimulated with the administration of letrozole, while the rupture of the follicle was induced by using chorionic gonadotropin. Supplementation with special vitamins, betaine hydrochloride, selenium, zinc and probiotics was recommended. After 4 months, further attempts to become pregnant were made, which were ineffective for another year. After that time, HSG was performed, which showed bilateral obstruction of the fallopian tubes in the proximal section, which subsequently qualified the patient for SHSG at Independent Public Clinical Hospital No. 4 in Lublin.

After inserting a 12F hysterosalpingography catheter into the uterine cavity, a contrast agent was introduced to obtain a contour of the uterine cavity. The fallopian tubes filled with the agent, but they did not let the contrast into the peritoneal cavity (Figure 1).



FIGURE 1

Figure 1. Preliminary hysterosalpingography showed bilateral obstruction of the fallopian tube in the proximal section.

After increasing the delivery pressure contrast agent, patency was obtained as well as a free flow of the contrast agent into the peritoneal cavity through the right fallopian tube, while the left one did not let the contrast agent pass through (Figure 2).



Figure 2. After increasing the delivery pressure contrast agent, patency was obtained as well as the free flow of the contrast agent into the peritoneal cavity through the right fallopian tube.

The uterine outlet of the left fallopian tube was selectively catheterized and the atraumatic, hydrophilic micro tools were used, providing patency and the free flow of contrast to the peritoneal cavity (Figure 3).

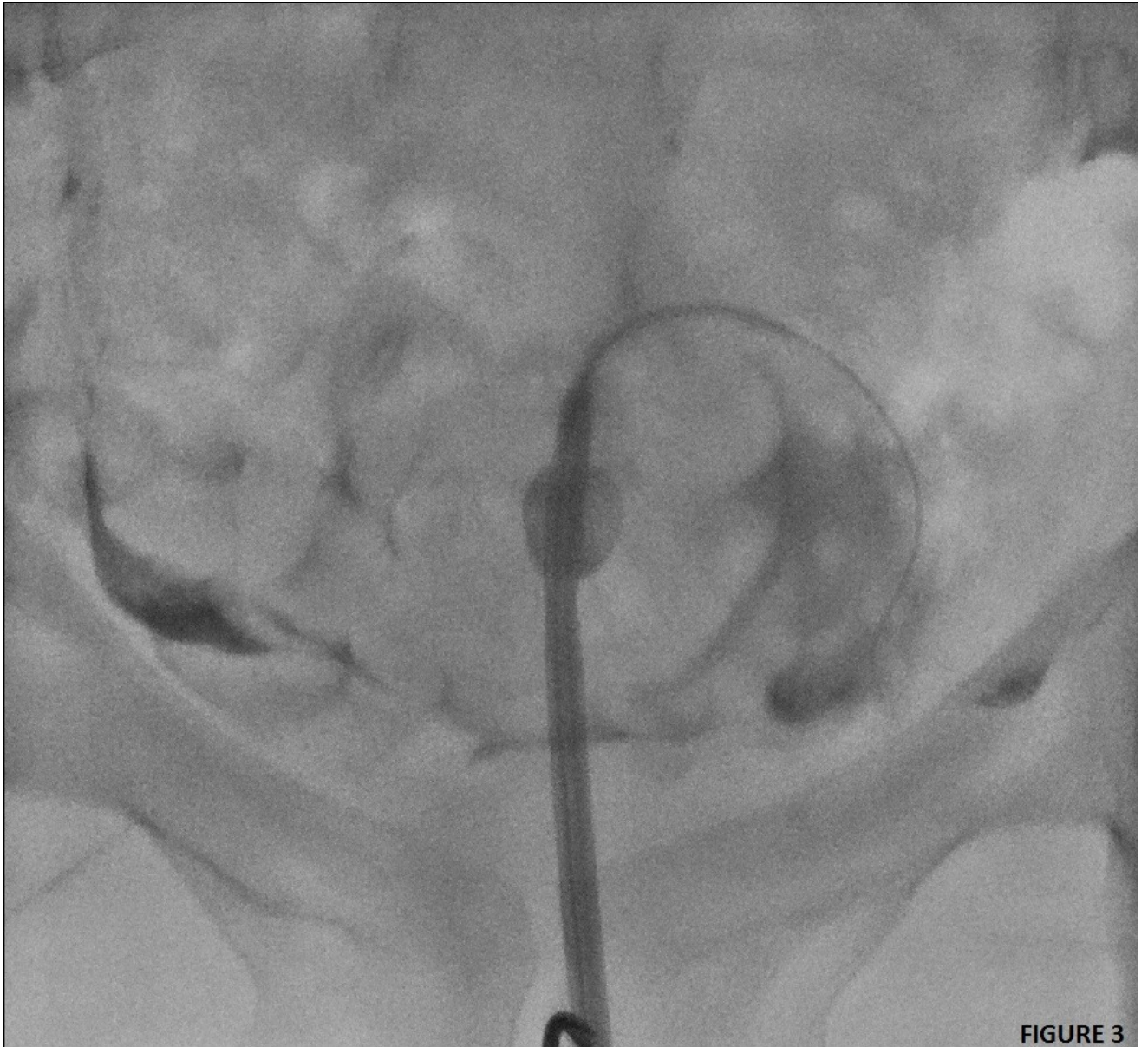


FIGURE 3

Figure 3. The uterine outlet of the left fallopian tube was selectively catheterized and micro tools were introduced to the left fallopian tube.

As the result, both fallopian tubes were unblocked. Doctor obtained an outflow of the contrast medium through the both fallopian tubes into the peritoneal cavity in the control hysterosalpingography (Figure 4).

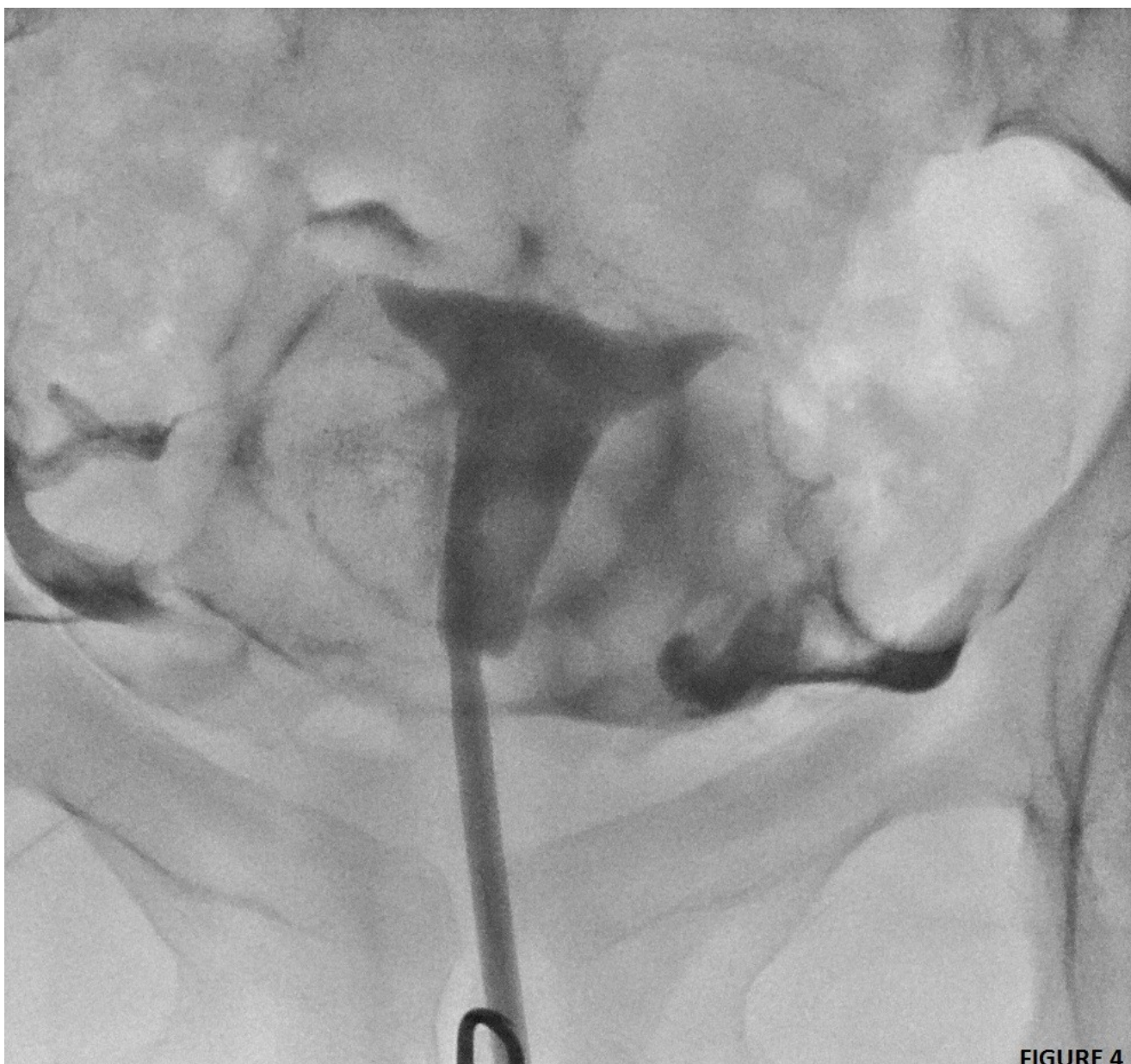


FIGURE 4

Figure 4. In control hysterosalpingography the outflow of the contrast medium through both fallopian tubes into the peritoneal cavity.

The procedure had been conducted without complications; the patient prophylactically received an antibiotic (doxycycline) and intravenously ketoprofen. The woman left the hospital after a few hours after the procedure.

In the second cycle after the SHSG, she made a successful attempt to become pregnant, which proceeded without complications. The child was born at the assumed day of delivery, weighed 3710 g and measured 58 cm. The newborn's condition was rated at 10 points on the Apgar scale.

Discussion

SHSG is an effective method of diagnostics and treatment of the fallopian tubes obstruction. A randomized controlled trial reported that SHSG was a better diagnostic examination for obstruction localized in the proximal section of the fallopian tube than

laparoscopy and dye in the group of 273 women [7]. The literature reports the technical success of the SHSG procedure at 85-88%. The complication of the patency includes: organ perforation (2%), ectopic pregnancy (3-9%) or infection (1%) [5,8]. Surgery reconstruction of the proximal section obstruction of the fallopian tubes is less effective and brings a significant risk (about 20%) of ectopic pregnancy [9,10]. The fertility rate among women with infertility caused by the obstruction of the fallopian tube is about 30%. After the unblocking of the fallopian tubes, a third of the women experience re-blocking of the tubes [11,12]. In that case, it is possible to repeat the described procedure.

In a study of 54 patients with diagnosed bilateral PTO confirmed in HSG or laparoscopy, 45 patients underwent procedure of the SHSG. A total of 78 fallopian tubes were recanalization. After 6 months, 12 of those women became pregnant, which testifies about 27% clinical successes [4].

The SHSG procedure can prevent the patient from undergoing an invasive surgery treatment. It also has the superiority of minimizing the risks of ovarian stimulation syndrome and multiple pregnancies using in vitro fertilization (IVF) treatment which is much more costly and invasive. [13]. The literature reported similar savings with tubal cannulation over IVF treatment for all women with PTO. Other thing that provides an advantage of SHSG over IVF are religious considerations. For some women the IVF is incompatible with their beliefs, rather than only a solution to give them a chance to having children. It is selective to catheterize the fallopian tube, if the obturation is located in the proximal section. The clinical pregnancy rate after IVF in 2014, in the UK, was 36.3%. This is the percentage referring to patients of all ages and all causes of infertility who underwent the treatment with their own fresh eggs. This figure describes a clinical pregnancy per cycle started, it is not substantially greater than our pooled clinical pregnancy rate of 27% after the tubal catheterization for PTO [14].

Conclusions

SHSG is a non-invasive, safe and effective method of removing the obstruction located in the proximal section of the fallopian tube. This procedure is a promising alternative to the other more invasive methods, laparoscopy or laparotomy for example. SHSG is recommended by the American Society of Reproductive Medicine in preference to other, more invasive methods of fallopian tube recanalization [1]. This procedure is performed in an outpatient settings, and the patient is able to return to daily duties within the next days.

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