

Clinical factors determining pregnancy outcome after microsurgical tubal reanastomosis

Sylvie Gordts, M.D., Rudi Campo, M.D., Patrick Puttemans, M.D., and Stephan Gordts, M.D.

Leuven Institute for Fertility and Embryology, Leuven, Belgium

Objective: To evaluate pregnancy rates after tubal microsurgical anastomosis.

Design: Retrospective study.

Setting: Private tertiary care center.

Patient(s): Two hundred sixty-one women undergoing tubal microsurgical anastomosis.

Intervention(s): Tubal anastomoses were performed by minilaparotomy using microsurgical principles and approximating proximal and distal tubal ends in a two-layer technique with 8-0 ethylon.

Main Outcome Measure(s): Pregnancy outcome was analyzed for the technique of sterilization, location of anastomosis, tubal length, age, and semen parameters.

Result(s): After exclusion of 89 patients lost to follow-up (34%) and 8 who did not attempt to conceive, 164 of the 261 patients were analyzed. The overall intrauterine pregnancy rate was 72.5%, with a miscarriage rate of 18% and a tubal pregnancy rate of 7.7%. Related to age, the cumulative intrauterine pregnancy rate was, respectively, 81%, 67%, 50%, and 12.5% for patients <36, 36–40, 40–43, and >43 years. Mean time to pregnancy was respectively 6.9, 6.2, and 12.7 months, respectively, for patients aged <36, 36–39, and 40–43 years. According to the type of sterilization, intrauterine pregnancies occurred in 72% after ring sterilization, 78% after clip sterilization, 68% after coagulation, and 67% after Pomeroy sterilization. Intrauterine pregnancies and ectopic pregnancies, respectively, occurred in 80% and 3.4% in the isthmo-isthmic, 63% and 18% in the isthmo-ampullar, 75% and 8.3% in the isthmo-cornual, 100% and 0% in the ampullo-ampullar, and 60% and 0% in the ampullo-cornual anastomosis groups. Tubal length after anastomosis did not influence the pregnancy rate. In case of fertile sperm, the pregnancy rate was found to be 80%, and it decreased to 50% in case of subfertile semen.

Conclusion(s): Our results clearly demonstrate the validity of tubal microsurgical anastomosis, establishing a quasinnormalization of the fertility potential and offering the opportunity for a spontaneous conception. (*Fertil Steril*® 2009;92:1198–202. ©2009 by American Society for Reproductive Medicine.)

Key Words: Microsurgery, tubal anastomosis, pregnancy

Tubal sterilization is a widespread method of contraception. A change in marital status is the most common reason for request of fertility restoration. This is not to be wondered at, taking into account the high divorce rate, certainly in the developed countries. Furthermore 3%–8% of women who undergo this operation come to express regret (1–3) despite the careful consideration and thought which should precede any decision concerning tubal ligation.

Results of tubal reversal dramatically improved with the introduction of microsurgical techniques and the principle of gentle tissue handling in the early 1970s. Using microsurgical techniques, reported pregnancy rates vary between 57% and 84% (4–6), with a risk for ectopic pregnancy of 2%–7%.

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Reprint requests: Stephan Gordts, Leuven Institute for Fertility and Embryology, Tienesevest 168, 3000 Leuven, Belgium (FAX: 003216270197; E-mail: lifelieven@lifelieven.be).

As expected, pregnancy rates are negatively influenced by age; nevertheless, pregnancy rates up to 45%, with an abortion rate of 26%, have been reported (7, 8) in patients at an advanced reproductive age.

The issue of tubal length is still controversial, but lower pregnancy rates have been described once tubal length is <4 cm, with a longer period between intervention and conception (9).

Although the laparoscopic access yields the advantage of avoiding a laparotomy and offering the possibility of a certain degree of magnification at a short distance of the tubal ends, the quality of performance in case of tubal anastomosis in unexperienced versus very skilled hands can be questioned (10, 11). It has yet to be proven if some of the inconveniences of the laparoscopic approach will be overcome by use of a robotic system (12, 13).

In the present study, the pregnancy outcome and potential influencing factors in a continuous series of 261 patients after microsurgical tubal anastomosis were analyzed.

MATERIALS AND METHODS

A total of 261 sterilization reversals were performed between January 1985 and December 2005. The same surgeon performed all procedures. Microsurgical techniques and principles of gentle tissue handling were applied in all cases; magnification using the operating microscope allowed precise dissection and accurate approximation of the different layers of the proximal and distal tubal segments. Drying of the peritoneal surface was avoided by continuous irrigation with Hartman solution (14, 15) during the entire procedure. After opening of the abdomen by a minilaparotomy, the uterus and tubo-ovarian organs were exteriorized. The microsurgical technique comprised two main phases: careful preparation of the healthy tubal segments by removal of the blocked tubal fragments, followed by the anastomosis using a two-layer technique with 8-0 ethilon. A tubal splint was sporadically used and mostly reserved to those cases with a large discrepancy in the diameter of the lumen. The splint was always removed before closure of the last stitch. Whenever possible, tubal anastomosis was performed bilaterally; in nine cases, only a unilateral anastomosis was possible because of a previous total or partial salpingectomy.

Before closing, the abdomen was extensively rinsed, leaving up to 200 mL Hartman intra abdominally. No prophylaxis with antibiotics was given. Patients mostly left the hospital after 2–3 days. Follow-up was by successive contacts with the patients at the outpatient clinic and/or by letter to patients and their general practitioners. The fertility results were analyzed according to several parameters: sterilization technique, location of the anastomosis, tubal length after anastomosis, semen parameters, and age at the time of the intervention.

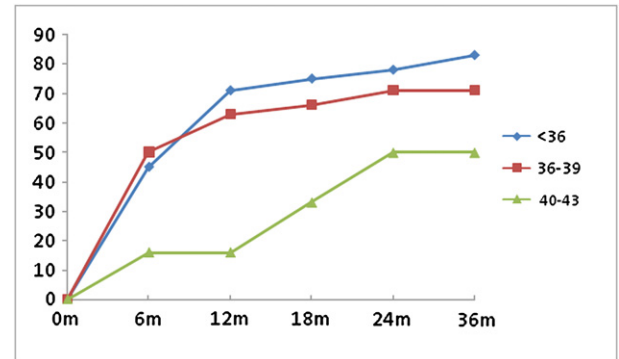
Statistical analysis was performed using the Fisher exact test. A multivariate analysis was performed with the SAS System for Windows, version 8.2 (SAS Institute, Cary, NC). To know which variables had an influence in “getting pregnant” and in “the time to get pregnant,” a Proc Logistic and a Cox regression model (Proc Lifetest), respectively, analysis was performed.

RESULTS

Because 89 patients (34%) were lost to follow-up, outcome was evaluated in 172 patients. Mean age was 33.8 years (SD ± 4.8). Tubal sterilization had been carried out using various methods: Pomeroy technique in 2%, Falope-ring in 54%, clips in 23%, and electrocoagulation in 13%. After tubal reversal, eight patients did not attempt to conceive. Pregnancy outcome after tubal anastomosis was evaluated for the remaining group of 164 patients. In total, 129 pregnancies were achieved. The overall intrauterine pregnancy (IUP) rate was 72.5%, with a live birth rate of 60%. Spontaneous abortion occurred in 22 (18%) and extrauterine pregnancies (EUP) in 10 patients (7.7%). Mean time between intervention and conception was 8.4 months (SD ± 9). Cumulative pregnancy rates, reflecting the number of patients pregnant after

FIGURE 1

Cumulative pregnancy rate and age.



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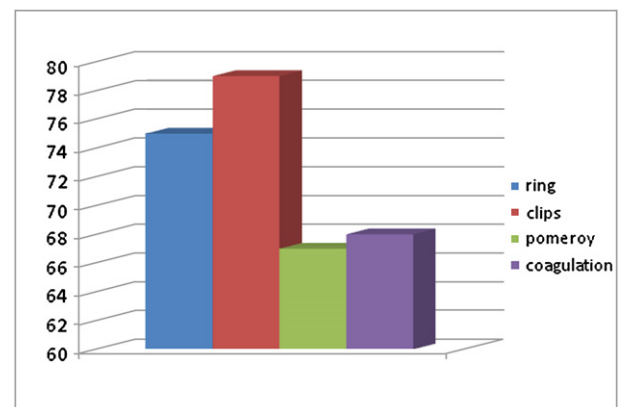
6, 12, 18, and 24 months, were, respectively, 43%, 64%, 68%, and 72%. Out of all the pregnancies, 56% were achieved in the first 6 months and 83% within 1 year.

Age

Age was a significant predictive factor in pregnancy outcome. The cumulative IUP rate for women <36 years old was 81% (84 of 104), 36–39 years old 67% (31 of 46), 40–43 years old 50% (3 of 6), and >43 years old 125% (1 of 8). Mean time to pregnancy was 6.9, 6.2, and 12.7 months, respectively, for patients aged <36, 36–39, and 40–43 years. After 1 year, the cumulative pregnancy rate was, respectively, 71%, 63%, and 16% (Fig 1). When a multivariate analysis was done, age had an influence in “getting pregnant” ($P=.0002$; Proc Logistic) and in “the time to get pregnant” ($P=.0230$; Proc Lifetest). The other variables did not have an influence in both outcomes (NS).

FIGURE 2

Intra-uterine pregnancy rate analyzed according to the type of sterilization.



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