Patient Satisfaction and Tolerability with the Evie® Slow-Release Insemination Device: Pilot Study

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Abstract

Introduction: Slow-release insemination (SRI) may increase pregnancy rates compared to traditional intrauterine insemination (IUI). Studies performed in Europe have found that pregnancy rates for SRI are two to three times higher than bolus IUI. The purpose of this study is to determine patient satisfaction and tolerability of the Evie® SRI device for US population.

Methods: This was a prospective, randomized control trial of 21 women age ≤39 with unexplained infertility who were undergoing their first IUI cycle. There were two groups – one group received traditional in-office IUI and the other group received the Evie® SRI device. After the insemination procedure, both groups received a standardized survey. Satisfaction was measured using the average of three survey questions regarding patient preference for this type of insemination again (score 0-4, higher score is more satisfaction), comfort was measured with a survey question about physical comfort during insemination (score 0-4, higher score is more comfort), and pain was measured with an average of seven numeric pain rating scales for various times throughout the insemination procedure (score 0-10). Pregnancy rates were monitored with serum βHCG levels 2 weeks after insemination.

Results: There was no significant difference in satisfaction, comfort, or pain between women receiving traditional IUI or Evie® SRI device.

Conclusions: Patient satisfaction and tolerability with Evie® SRI device is comparable to traditional in-office, intrauterine insemination. If additional studies confirm that pregnancy rates with slow-release insemination are superior to traditional IUI, our results suggest that this approach would be well-accepted by our patients with infertility.

Background

Slow-release insemination (SRI) may increase pregnancy rates compared to traditional intrauterine insemination (IUI). To date there has been very little published data about SRI. However, the SRI technique has been used and studied in Europe, and it is currently transitioning to the US market. One study found that pregnancy rates for SRI were three times higher than bolus IUI (63.1% vs. 22%) (1). While patients were initially apprehensive about the slow-release method of insemination, they noted a shift of preference during the study toward the "automated" insemination with an intrauterine catheter and slow-release infusion pump. This study utilized a "self-retaining intrauterine catheter" (a pump with a leg strap) to overcome the disadvantage of decreased activity during SRI. In addition to easier ambulation, an SRI infusion pump may also increase local prostaglandin production which may improve movement of sperm through the fallopian tube (1). The preliminary results of another clinical study performed in 2008 in Germany and Israel comparing traditional IUI and SRI shows that the pregnancy rate using SRI is almost two and a half times higher per cycle compared to traditional IUI (7/45 [15.55%] vs. 3/45 [6.66%]) (communication with Norgenix).

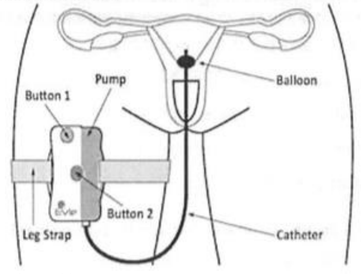
Evie® is a slow release insemination device that is FDA approved. This device has been used in Europe, it has not yet been used at Carolinas HealthCare System, by the Women's Institute. The technique for using this device involves loading a pump syringe with the prepared sperm, placing a balloon-secured catheter and syringe in the patient's sounded uterus, and connecting the insemination syringe to the catheter (Figure 1). The slow-release insemination occurs for 4 hours after the insertion of the catheter. The removal procedure, which can be performed by the patient if desired, involves deflating the catheter balloon and removing the catheter (Appendix A). The list price for an Evie® device kit is $499.00 (Appendix B).

Traditional IUI is one of the treatment modalities for infertility that allows sperm to bypass the cervix and shortens the distance to the fallopian tubes for fertilization. The pregnancy rates for IUI with clomiphene citrate for couples with relatively unexplained infertility have been found to be 7.6% (for women 21-39 years old with up to 3 cycles of IUI with clomiphene) (2).

Methods

- The study population included twenty-one Infertile women age ≤39 undergoing first IUI cycle for relatively unexplained infertility.
- After informed consent was signed, women began steps of a clomiphene insemination cycle after completing an evaluation for infertility. As is standard in our practice, clomiphene 50 mg was prescribed for 5 days beginning on cycle day 3 to day 7, and ultrasound and estradiol obtained between days 11-13. HCG (Ovidrel®) injection was administered when lead follicle is 18 mm or greater, and IUI performed 24 to 36 hours later.
- Women were assigned to either traditional in-office IUI or Evie® SRI device. Randomization, by random number allocation, occured during sperm preparation since the volume of sperm is different for traditional IUI and SRI.
- Two trained nurses performed all inseminations at the CMC Women's Institute. Women undergoing traditional IUI presented to clinic for insemination, approximately 24-36 hours after Ovidrel® injection. Traditional IUI began with placement of a speculum to visualize the cervix. A catheter was inserted through the cervix and into the uterus, and 0.5mL of washed, prepared sperm was slowly injected through the catheter.
- Women assigned to Evie® slow-release insemination device presented to clinic for insertion of device also approximately 24-36 hours after Ovidrel® injection. A speculum was first placed to visualize the cervix, and a catheter is placed as described in the Evie® instructions. Instructions for use and removal will be given during the visit. Women were instructed to keep Evie® in place for 4 hours after insertion, then remove Evie® device as instructed.
- At the clinic visit for insemination, both groups received a standardized cramping surveys using the Numerical Rating Scale (NRS) for pain. Pain was measured with an average of seven numeric pain rating scales for various times throughout the insemination procedure (score 0-10).
- On the day after insemination, participants were called and asked survey questions over the phone about the insemination experience. The SF-36 survey, which is standardized survey to measure health status, was modified to reflect the insemination procedure, and questions have been added to the end of the survey to assess preference of traditional IUI and SRI. Satisfaction was measured using the average of three survey questions regarding patient preference for this type of insemination again (score 0-4, higher score is more satisfaction), comfort was measured with a survey question about physical comfort during insemination (score 0-4, higher score is more comfort).
- Pregnancies were followed using urine pregnancy tests, serum βHCG levels (2 weeks after insemination), and first trimester ultrasounds.
- Statistical analysis was performed with Wilcox rank sum test and Fisher's exact test.

Figure1: Evie® SRI device illustrated in situ



From Appendix A, Norgenix Evie Instructions for Use (5)

Results

Table 1: Demographic Data for Study Participants

	Traditional IUI (N=11)	Evie® SRI (N=10)	p-value
Age (years)[a]	31.5 (2.1)	32.7 (3.2)	0.30
BMI[b]	27.1 (8.1)	28.6 (7.7)	0.57
Length of Infertility (months)[b]	15.4 (4.4)	22.4 (14.1)	0.25

Data are reported as mean (standard deviation) with either Student's t-test[a] or Wilcox rank sum test[b] p-value

There were not significant differences between the baseline demographic data of the two study groups.

Table 2: Results of Survey Scores and Pregnancy Rates for Two Study Groups

	Traditional IUI (N=11)	Evie® SRI (N=10)	p-value
Satisfaction	2.9 (0.6)	3.3 (0.6)	0.34
Comfort	1.8 (1.2)	1.7 (1.2)	0.81
Pain	1.9 (1.4)	2.2 (1.6)	0.65
Pregnancy	0 (0%)	1 (10%)	0.48

Data are reported as mean (standard deviation) with either Student's t-test[a] or Wilcox rank sum test[b] p-value (except prengnacy where data are frequency (%) with Fisher's exact test p-value)

There were no significant differences between the two groups in scores of satisfaction, comfort, or pain during the insemination procedures. Additionally, pregnancy rates were higher for the SRI group than for the traditional IUI, however this difference was not statistically significant.

Conclusions

- There were no significant differences between the two groups for satisfaction, comfort, or pain scores.
- Patient satisfaction and tolerability with Evie® SRI device is comparable to traditional in-office, intrauterine insemination.
- If additional studies confirm that pregnancy rates with slow-release insemination are superior to traditional IUI, our results suggest that this approach would be well-accepted by our patients with infertility.

References

1. Muharib NS, Gadir AA, Shaw RW. Slow release intrauterine insemination versus the bolus technique in the treatment of women with cervical mucus hostility. Hum Reprod 1992; 7(2): 227-9.
2. Reindollar RH, Regan MM, Neumann PJ, Levine BS, Thornton KL, Alper MM, Goldman MB. A randomized clinical trial to evaluate optimal treatment for unexplained infertility: the fast track and standard treatment (FASTT) trial. Fertil Steril 2010; 94(3): 888-99
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5. Appendix A and Appendix B. Norgenix product information for Evie® slow-release insemination device and instructions for use.