

# A randomized study of the effect of 10 minutes of bed rest after intrauterine insemination

Ahmed Saleh, F.R.C.S.C., Seang Lin Tan, M.R.C.O.G., Marinko M. Biljan, M.R.C.O.G., and Togas Tulandi, F.R.C.S.C.

Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, McGill University, Montreal, Quebec, Canada

**Objective:** To evaluate the effects of 10 minutes of bed rest after intrauterine insemination (IUI) on the pregnancy rate.

**Design:** Prospective randomized study.

**Setting:** University teaching hospital.

**Patient(s):** One hundred sixteen couples with unexplained infertility.

**Intervention(s):** Patients were prospectively randomized either to immediate mobilization after IUI (group I) or to remain in a supine position for 10 minutes after the procedure (group II).

**Main Outcome Measure(s):** Cumulative pregnancy rate.

**Result(s):** Ninety-five couples were included in the analysis. Group I consisted of 40 couples (90 cycles), and group II consisted of 55 couples (120 cycles). The pregnancy rate per couple in group I (4 of 40 [10%]) was significantly lower than in group II (16 of 55 [29%]). The pregnancy rate per cycle in group I (4.4%) was also lower than in group II (13.3%). With use of life-table analysis, the cumulative probability of pregnancy in group II was significantly higher than in group I.

**Conclusion(s):** A 10-minute interval of bed rest after IUI has a positive effect on the pregnancy rate. We recommend that mandatory bed rest for 10 minutes after IUI should be adopted into a standard practice. (*Fertil Steril*® 2000;74:509–11. ©2000 by American Society for Reproductive Medicine.)

**Key Words:** Intrauterine insemination, unexplained infertility, bed rest, pregnancy rate

In 1951, Rubenstein et al. (1) showed that motile spermatozoa could be found in the fallopian tube within 30 minutes after intracervical insemination. In fact, spermatozoa are found in the tube within 5 minutes of deposition in the upper vagina (2). Intrauterine insemination (IUI) is a procedure in which spermatozoa are deposited directly into the uterine cavity and bypassing the cervix, resulting in increased number of spermatozoa close to the fertilization site. Despite its wide use, to date there is no consensus whether the patients could immediately mobilize or have to remain supine for a time after IUI. The impact of these two approaches on the pregnancy rate is unclear.

In this study, we evaluated the effects of 10 minutes of bed rest after IUI on the pregnancy rate.

## MATERIALS AND METHODS

From April 1998 to October 1999, 116 couples with unexplained infertility attending the McGill Reproductive Center were recruited for the study. The Research and Ethics Board of the Royal Victoria Hospital approved the study. All participants underwent complete infertility investigations. The diagnosis of unexplained infertility was made by confirming ovulation with midluteal progesterone, hysterosalpingogram (HSG), and/or laparoscopy to confirm tubal patency. All male partners had normal semen analysis according to World Health Organization criteria (3).

Participation in the study was offered to the couples with female age of <38 years, infertility of 1–3 years' duration, and either normal laparoscopy or after laparoscopic excision of minimal or mild endometriosis. Patients who

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Reprint requests: Togas Tulandi, M.D., McGill Reproductive Center, Women's Pavilion, 687 Pine Avenue West, Montreal, Quebec, Canada H3A 1A1 (FAX: 514-843-1448; E-mail: togas.tulandi@muhc.mcgill.ca).

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TABLE 1

Comparison between patients mobilized immediately after IUI (group I) and those who remained in supine position for 10 minutes after the procedure (group II).

	Group I (immediate mobilization) (n = 40)	Group II (supine for 10 minutes) (n = 55)
Age (y)	32.8 ± 3.2	32.0 ± 3.3
Duration of infertility (mo)	25.7 ± 8.4	25.0 ± 7.8
Primary infertility (%)	26 (65)	40 (73)
No. of cycles	90	120
No. of cycles per couples	2.3 ± 0.8	2.1 ± 0.8
No. of follicles ≥18 mm	1.2 ± 0.3	1.2 ± 0.4
Endometrial thickness (mm)	7.50 ± 1.2	7.74 ± 1.7
No. of motile spermatozoa inseminated at the 1st insemination (×10 <sup>6</sup> )	41.0 ± 26.8	43.0 ± 39.3
No. of motile spermatozoa inseminated at the 2nd insemination (×10 <sup>6</sup> )	27.6 ± 20.1	24.8 ± 18.6
Pregnancy rate per cycle (%)	4.4	13.3 <sup>a</sup>
Cumulative pregnancy rate (%)	10.0	29.0 <sup>a</sup>

Values are means ± SD.

<sup>a</sup>  $P < .05$  compared with group I.

Saleh. 10 minutes of bed rest after IUI. *Fertil Steril* 2000.

had  $<5 \times 10^6$  motile spermatozoa after sperm preparation in any of the cycles were excluded from the study.

At the time of insemination, the couples were randomized into two groups with use of a computer-generated random table numbers with sealed envelopes. Patients randomized into group I were allowed to mobilize immediately after IUI, whereas patients randomized into group II were requested to remain in supine position for 10 minutes after the procedure. Each participant had a maximum of three treatment cycles. All women received 100 mg p.o. of clomiphene citrate from days 5–9 of the menstrual cycle. A baseline transvaginal ultrasound scan (TVU) was performed on day 3 of the menstrual cycle to rule out preexisting ovarian cyst(s) and a second TVU on day 12 of the cycle to monitor follicular growth. Subsequent scans were performed at 1- to 2-day intervals until the mean diameter of the dominant follicle reached  $\geq 18$  mm.

An injection of 10,000 IU hCG (Profasi HP; Serono Canada, Toronto, Ontario) was then given to trigger ovulation. Sperm preparation was performed with use of the Percoll method. Two inseminations were performed 24 and 48 hours after the administration of hCG. Pregnancies were confirmed by rising  $\beta$ -hCG titers followed by sonographic confirmation of the presence of fetal heart.

The data were analyzed with use of Student's *t*-test,  $\chi^2$  test, and life-table analysis. To detect a 15% difference in the fecundity rate between the two groups with 5% level of significance and a power of 80%, a total of 226 cycles (113 cycles per group) were needed. These estimates were based on the fecundity rate of 10% per cycle in group I.

## RESULTS

Of the total 116 couples recruited, 21 couples were excluded because of poor sperm concentration at the time of insemination ( $n = 8$ ), or spontaneous pregnancy ( $n = 5$ ); in addition, five couples withdrew from the study after randomization ( $n = 5$ ), and three couples withdrew their consent before completing the three cycles of IUI. Ninety-five couples who completed the study had a total of 210 insemination cycles. There was no difference in the age, duration of infertility, frequency of primary infertility, number of dominant follicles at the time of hCG administration, total motile sperm at first and second inseminations, and endometrial thickness between the two groups of patients (Table 1).

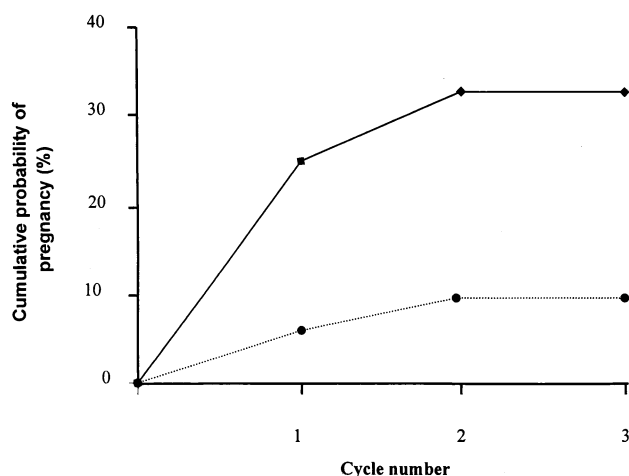
Group I consisted of 40 couples (90 cycles). There were four pregnancies in this group. Group II consisted of 55 couples (120 cycles), and there were 16 pregnancies in this group, including one set of twins and one tubal pregnancy. The pregnancy rate per cycle (95% CI, 1.1–1.9) and the pregnancy rate per couple (95% CI, 1.1–2.1) in group II were significantly higher than in group I (Table 1). With use of life-table analysis, the cumulative probability of pregnancy in group II was significantly higher than in group I (Fig. 1; Mantel-Haenszel test:  $P = .009$ ).

## DISCUSSION

One of the treatments of unexplained infertility is superovulation with clomiphene citrate and intrauterine insemination. Despite several studies on different aspects of insemination, the impact of bed rest after insemination has never been addressed. This is important because bed rest increases the treatment time. It may lead to prolonged absence from

**FIGURE 1**

Cumulative probability of pregnancy in patients mobilized immediately after IUI (group I) and those who remained in supine position for 10 minutes after the procedure (group II).



Saleh. 10 minutes of bed rest after IUI. *Fertil Steril* 2000.

work that may predispose to psychological distress and loss of income. Accordingly, some centers advocate the policy of immediate mobilization after IUI. Others instruct the patients to remain supine for a period of time after the procedure.

Our randomized study is the first to show that bed rest after IUI significantly increases the pregnancy rates. The reason is unclear. However, it is possible that the uterine cavity acts as a reservoir from which the spermatozoa are gradually released into the site of fertilization in the fallopian tube. On the other hand, standing and mobilization immediately after IUI might be associated with expulsion of most of the spermatozoa from the uterus and vagina. This may also lead to a lower number of spermatozoa stored in the cervical mucus.

It is generally believed that the cervix serves as a reservoir for spermatozoa for up to 72 hours. The spermatozoa harbor the cervical mucus in the cervical crypts and then with the help of uterine contractions and sperm movement, they are expelled upward into the fallopian tube (2). The optimal period of time required for a patient to remain supine after IUI is unknown. However, it seems that 10 minutes lying supine after IUI is sufficient. This is reflected in the high pregnancy rate in this group of patients. In fact, our fecundity rate of 13% is among the highest reported (4–11).

It is possible that even after sexual intercourse, a short period of bed rest could enhance the chance of conception.

The impact of immediate mobilization after IUI seems to be different from that after embryo transfer. Several investigators have failed to show any benefit attributable to bed rest after ET (12–14). However, data from ET might not be applicable to that of IUI. Embryos are usually transferred into the uterine cavity in a quantity of fluid that is much smaller than that used for IUI. Furthermore, an embryo is a larger entity that might have a lower chance to be dislodged by a change in the patient's position.

We conclude that a 10-minute interval of bed rest after IUI has a positive effect on the pregnancy rate. In view of these findings, we recommend that mandatory bed rest for 10 minutes after IUI should be adopted into the standard practice.

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