



# IUI OR ARTIFICIAL INSEMINATION – A SAFE, EFFECTIVE AND SIMPLE FERTILITY PROCEDURE

**I**nfertility impacts 1 in 8 couples (or 12% of married women), as they have trouble getting pregnant or sustaining a pregnancy. Infertility can cause feelings of shame, guilt, and low self-esteem, leading to varying degrees of depression, anxiety, distress, and poor quality of life. It is important to recognize, acknowledge, and support patients through their infertility diagnosis and treatment.

Many couples are anxious about walking into a fertility centre, anticipating numerous tests, high end treatments, exorbitant costs. They sometimes just delay, hoping every month that "IT" will happen. But this delay may also end up jeopardising outcome, as when it comes to success of fertility treatments – sooner the better. Further, today simple, non-invasive, low-cost treatments like IUI (Intra Uterine Insemination or Artificial Insemination), give good results for young couples.



**Dr Vandana Hegde,**  
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### What is IUI?

This procedure places sperms past the cervix and in a woman's uterus around the time of ovulation. This makes the passage to the fallopian tubes much shorter, improving chances for more sperms to encounter the egg, thereby improving chances of pregnancy.

### Who can benefit from IUI?

Unexplained infertility: IUI is commonly advised when the cause for infertility is not found. Infertile women are given fertility drugs for developing more eggs and IUI is performed. Thus the chances of pregnancy are increased by putting more sperms in contact with more eggs.

Cervical problems: Thick cervical mucus can hinder the sperm in reaching the egg. By passing the cervical factor in IUI, couples can conceive faster.

Male factor infertility: Semen analysis, one of the first steps to evaluate male factor infertility, may show below average sperm concentration, weak movement (motility) of sperm, or abnormalities in sperm size and shape (morphology). IUI can overcome some of these problems because preparing sperm for the procedure helps separate highly mobile, normal sperm from those of lower quality.

IUI is also advised for couples in which the male partner has ejaculatory dysfunction and retrograde ejaculation where the sperms are released backward into the bladder; seen with history of prior surgeries or medical conditions, such as diabetes.



**Sexual dysfunction:** Men with Erectile dysfunction or decreased libido, premature ejaculation etc. and women with vaginismus, fear of intercourse, painful intercourse etc. can opt for artificial insemination when other techniques have failed. IUI can also be done under anaesthesia if required.

**Medical conditions:** Endometriosis/ Fibroids can block sperm entry and cause subfertility in the couple. IUI may help bypass this barrier.

**Failed ovulation induction cycles:** In patients with PCOS who have failed ovulation induction, IUI can help them get pregnant.

**IUI with donor sperm:** When there are no sperms in the ejaculate, testicular sperms can be used for IVF/ ICSI. However, if it is unsuccessful, then couples can opt for donor insemination. It can also be used if the man has certain genetic diseases or infections like HIV that he does not want to pass on to his children. Single women who want to have a baby may also consider this option.

### THE PROCESS

The woman undergoes ovulation induction for follicular growth from day 2 of her periods. Serial scans are performed to monitor follicular growth and ovulation is triggered with an injection when follicle size reaches optimal maturity. IUI is then performed near the time of ovulation.

On the day of IUI, semen sample is collected in the clinic and passed onto the andrology laboratory immediately. Once the semen liquefies, a media with various nutrients to improve sperm motility is added and then it is centrifuged. The semen is then washed to concentrate the sperms only and the seminal fluid is discarded. This process can take up to 2 hours to complete. Once the sample is ready, it is inserted directly into the woman's uterus with a thin soft catheter. After the insemination she is advised to lie down for 15 to 20 minutes.

### RISKS AND COMPLICATIONS

IUI is relatively a safe procedure and is not associated with serious complications.

**Multiple gestation:** Chances of twin pregnancy/ triplets, is greater because of drugs used for ovulation induction. This can be avoided by canceling IUI if there are more than 3 dominant follicles.

**Birth defects:** IUI does not increase risk of birth defects. The chance of birth defects in all children is 2-4% whether conceived naturally or from IUI.

**Infection:** The risk of developing an infection after an IUI is very rare and avoidable if sterile precautions are followed.

### SUCCESS OF IUI

The success rate of IUI varies from 10-20%. The factors influencing success rate are -> Age of female and male partner, duration of subfertility, type of subfertility, endometrial thickness, artificial insemination timing, IUI times/cycles, semen parameters mainly the post wash sperm count / motility and sample preparation techniques.

### FEMALE FACTORS

**AGE:** Studies have proven that the woman's age is a critical factor impacting clinical pregnancy rate. Those aged <25 years had the highest clinical pregnancy rate with IUI. Starting from the early 30s the egg number starts to decline. With advanced maternal age (>35yrs) there are changes in the ovarian environment, resulting in decline in oocyte quantity and quality also. Even if fertilization and implantation happen, the chances of embryo being chromosomally abnormal are high. Hence, pregnancy has to be appropriately monitored.

**TUBAL FACTOR:** Tubal pathology is one of the causes of subfertility in female. Any previous history

of pelvic inflammatory disease, septic abortion, ruptured appendix, tubal surgery, or ectopic pregnancy strongly suggests the possibility of tubal damage at microscopic level which prevent the union of sperm and ovum. Even with a single open fallopian tube, pregnancy can still happen with IUI treatment.

**UTERINE FACTOR:** Anatomical defects of uterus like septate uterus where the womb is divided into two cavities or endometrial polyps can cause problem with embryo implantation and affect the IUI success. Also, thin endometrium, endometrial lining on the day of IUI procedure are independent factors affecting IUI success rates.

**OVARIAN STIMULATION AND IUI TIMING:** Ovulation induction with oral medications or injectables, causes multifollicular growth and has proven good success rates when compared with natural cycle IUI. Timing of IUI procedure after giving the trigger shot is important for optimizing IUI success, because, fertilization ability of sperm can be maintained for approximately 12 hours, and the oocytes can survive for 24-48 hours in vivo. Therefore, the closer the IUI timing to ovulation, the more spermatozoa enter the female body, thus increasing pregnancy rate.

**SINGLE IUI OR DOUBLE IUI:** Research data has revealed that clinical pregnancy rate is significantly higher in double IUI per cycle in male factor infertility, than single IUI per cycle. In double IUI cycles, the first IUI was implemented before ovulation and the second IUI after ovulation. The IUI treatment rationale is to increase the couple conception rate by increasing the chance of the maximum number of healthy sperm reaching the fertilization site.

**PERIOD OF SUBFERTILITY:** There is a significant decline in the success of IUI therapy as the duration of infertility increases. IUI is hence a less-effective option with increasing duration of infertility.



**Dr Akash Agarwal,**  
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### MALE FACTORS:

**Total Motile Count (TMC):** TMC after semen processing is an important prognostic factor for IUI success. The pregnancy rates were lower when the post wash TMC was in the range of 5-10 million/ml and disappointing rates when the TMC was <5 million/ml. Advancing paternal age also affects pregnancy outcomes through sperm quality influence. It has been found that, in men, sperm volume, concentration, and vitality decrease with age, and the malformation rate also increases.

**DFI - DNA fragmentation index:** Currently, evaluation and diagnosis of male infertility mainly relies on traditional semen analysis. However, approximately 15% of men with a

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normal semen analysis are diagnosed as infertile. Sperm DFI reflects the integrity of sperm and the damage to the DNA, thereby detecting potential sperm damage. High DFI affects fertilization, which in turn affects IUI success rates.

**MACS (Magnetic Activated Cell Sorting) and Microfluidics:** These methods are efficient in isolating low-quality sperms with damaged DNA from high-quality sperms with intact DNA, effectively improving sperm quality, functionality, motility and morphology. Use of IUI with MACS in couples with unexplained infertility has shown improved results with repeated assisted reproduction failure.

**Lab conditions:** The effectiveness of specific semen preparation techniques for increasing pregnancy largely depends on the quality of media used, protocols followed, infrastructure of andrology lab, qualification and experience of andrology technician, lab quality maintenance. This requires well equipped advanced centrifugation machines which maintain temperatures to avoid sperm damage. Sophisticated Methods like MACS and Microfluidics require expertise in handling which is available in very few good centres.

### DO'S AFTER IUI

- The female partner can continue daily activities
- Healthy diet with lot of liquids
- Regular physical activity like walking, climbing stairs
- Couples can have natural intercourse post IUI
- Prescribed medicines must be taken regularly

### DON'TS AFTER IUI

- Avoid strenuous exercises
- Avoid smoking and alcohol
- Avoid painkillers or NSAIDs

### IUI MYTHS WHICH ARE NOT TRUE

- IUI is a painful procedure
- Complete bed rest is required
- Travelling must be avoided
- IUI pregnancy increases birth defects in the baby

### WHAT NEXT AFTER IUI FAILURE?

A couple can try up to 3-4 IUI cycles with maximum success seen in initial 2 cycles. In case of IVF failure, couples can discuss possible causes of failure including poor oocyte or sperm quality, failed fertilization or implantation failure with the infertility specialist. Couples with severe endometriosis, tubal factor and male factor infertility with a TMC <5 million/ml should be counselled and offered IVF (In Vitro Fertilisation), especially if the female partner's age is advanced. IVF is a popular, safe and effective treatment with 40-60% success rates.

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