

Intrauterine Insemination ^[1]

By: Zhu, Tian Keywords: [Reproductive assistance](#) ^[2] [Fertilization](#) ^[3]

[Intrauterine insemination](#) ^[4] (IUI), also known as [artificial insemination](#) ^[5], is one of the earliest and simplest assisted reproductive technologies (ART). With this technique, [sperm](#) ^[6] from either a partner or donor (such as from [asperm bank](#) ^[7]) is inserted with a syringe into the woman's [vagina](#) ^[8] during [ovulation](#) ^[9] to increase the probability that [fertilization](#) ^[10] will occur and lead to [pregnancy](#) ^[11]. This procedure is most effective for couples with male fertility problems, such as impotence, though it is also used to treat idiopathic (of unknown cause) [infertility](#) ^[12], [vaginismus](#) ^[13] (wherein the female involuntarily constricts her [vagina](#) ^[8]), and hostile female cervical mucus that rejects [sperm](#) ^[6]. In the 1940s and 1950s [cryopreservation](#) ^[14] facilitated the preservation of [sperm](#) ^[6] through freezing methods for later use, such as in IUI.

IUI has a long history, first in animals and later in [humans](#) ^[15]. The use of this procedure in animals dates back to the fourteenth century when Arabs used it to breed stallions. Lazzaro Spallanzani is known as the first to use the technique to breed dogs in late 1784. In London in 1793, [John Hunter](#) ^[16] was the first person reported to achieve a successful human [pregnancy](#) ^[11] using IUI. Although Hunter received credit for the first human [pregnancy](#) ^[11] using the procedure, it is likely there were earlier successful attempts.

Hunter began by collecting [semen](#) ^[17] from a husband who had [hypospadias](#) ^[18], an inability to ejaculate [sperm](#) ^[6], by making an incision into the man's testis. He then inseminated the wife by placing the husband's [semen](#) ^[17] in her [cervix](#) ^[19] with a tool similar to a turkey baster, resulting in a successful [pregnancy](#) ^[11]. [James Marion Sims](#) ^[20] later attempted IUI in the United States with six women in 1866, but had a low success rate because he did not fully understand a woman's menstrual cycle—he mistook [menstruation](#) ^[21] for the [ovulation](#) ^[9] period.

For IUI, the physician collects [semen](#) ^[17] from the partner or a donor either through masturbation or a collection condom, and the [semen](#) ^[17] is then manually placed in the woman's cervical canal during [ovulation](#) ^[9]. If the male has trouble ejaculating, physicians can surgically remove [sperm](#) ^[6] from the testis.

IUI is a good option to combat male [infertility](#) ^[12] when the cause is [oligozoospermia](#) ^[22] (too few [sperm](#) ^[6]) or if a portion of the [sperm](#) ^[6] is abnormal. For [oligozoospermia](#) ^[22], the [sperm](#) ^[6] is concentrated before insemination by removing some of the seminal plasma, which is the liquid portion of the [semen](#) ^[17]. For men whose [sperm](#) ^[6] have low motility or some that are abnormally shaped, physicians can treat the [sperm](#) ^[6] with drugs to aid motility or select out the healthy [sperm](#) ^[6] for insemination.

If a male's [infertility](#) ^[12] problems cannot be resolved, donor [sperm](#) ^[6] from another male is a possibility. Donor [sperm](#) ^[6], often from a [sperm bank](#) ^[7], is also a common option for single women who desire children without a husband or a partner. Sperm donations at [sperm](#) ^[6] banks are treated as anonymous, and donors are stringently checked for [sperm](#) ^[6] [viability](#) ^[23], sexually transmitted diseases, and genetic disorders, with 38% or more of potential donors rejected for any of those reasons.

The physician collects [sperm](#) ^[6] from the male or defrosts preserved [sperm](#) ^[6] just prior to the woman's [ovulation](#) ^[9] period. The time of [ovulation](#) ^[9] can be determined through a blood test to detect a surge of [luteinizing hormone](#) ^[24] in the blood. If necessary, the [semen](#) ^[17] is treated with drugs to increase motility or the [sperm](#) ^[6] concentration if either of these is a fertility problem. The [semen](#) ^[17] is then placed into the [cervix](#) ^[19] with a large pipette, the location depending on whether she has cervical problems that could cause rejection of the [sperm](#) ^[6].

Recently, the popularity of IUI has decreased dramatically with the introduction of newer and better techniques such as [in vitro](#) ^[25] [fertilization](#) ^[10], that offer a greater chance of achieving [pregnancy](#) ^[11]. However, IUI remains a [viable](#) ^[26] and lower-cost option for many women seeking [pregnancy](#) ^[11].

Sources

1. Brody, Steven A., and Robert G. Edwards. *Principles and Practice of Assisted Human Reproduction*. Philadelphia: W.B. Saunders Company, 1995.
2. Burfoot, Annette, ed. *Encyclopedia of Reproductive Technologies*. Boulder: Westview Press, 1999.

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syringe into the woman's vagina during ovulation to increase the probability that fertilization will occur and lead to pregnancy. This procedure is most effective for couples with male fertility problems, such as impotence, though it is also used to treat idiopathic (of unknown cause) infertility, vaginismus (wherein the female involuntarily constricts her vagina), and hostile female cervical mucus that rejects the male's sperm. In the 1940s and 1950s cryopreservation facilitated the preservation of sperm through freezing methods for later use, such as in IUI.

Subject

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