

Early Diagnosis and Treatment of Azoospermia Condition

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ABOUT THE STUDY

Azoospermia is a disease that occurs when a man's sperm is insufficient. It can be caused by a blockage in the reproductive system, hormonal difficulties, ejaculation issues, or structural or functional issues with the testicles. Infertility can be treated for a variety of reasons, and fertility can be restored. It may be feasible to collect live sperm for use in assisted reproductive methods for other reasons. Azoospermia affects around 1% of all males and 10% to 15% of infertile men. A sperm count of 15 million per milli liter (mL) or above is considered normal. Low sperm counts (oligozoospermia or oligospermia) are defined as sperm concentrations of fewer than 15 million per milliliter of blood. There are two forms of azoospermia:

- Obstructive azoospermia
- Nonobstructive azoospermia

DIAGNOSIS

Azoospermia is generally discovered during an infertility examination. It is determined by two semen analysis assessments performed at different times (when the seminal specimen after centrifugation reveals no sperm under the microscope) and necessitates additional investigation. Azoospermia is identified when a high-powered microscope examination of your sperm sample after a spin in a centrifuge finds no sperm on two different occasions. A centrifuge is laboratory equipment that spins a test sample at high speeds in order to separate it into its constituent elements. If sperm cells are present in centrifuged seminal fluid, they separate from the surrounding fluid and are visible under a microscope.

Physical test can confirm the lack of the vas deferens, which can be verified with a transrectal ultrasonography (TRUS). Genetic testing for cystic fibrosis is required if the diagnosis is established. Transrectal ultrasound can also detect azoospermia caused by ejaculatory duct obstruction, as well as anomalies related to ejaculatory duct obstruction, such as abnormalities within the duct, a median cyst of the prostate (requiring cyst aspiration), or an impairment of the seminal vesicles' ability to become enlarged or emptied. After turning post-ejaculatory

urine alkaline and centrifuging it, retrograde ejaculation is detected by looking for sperm in it.

Pretesticular issues are indicated by low levels of LH and FSH along with low or normal testosterone levels, whereas testicular abnormalities are indicated by high levels of gonadotropins. However, this distinction is not always apparent, and a testicular biopsy may be required to distinguish between obstructive and non-obstructive azoospermia. FSH serum levels greater than two times the upper limit of the normal range in azoospermic men with normal ejaculate volume, On the other hand, are consistently diagnostic of defective spermatogenesis, and when observed, a diagnostic testicular biopsy is typically unnecessary, but there is no clarity on this matter. Serum inhibin-B exhibits a sensitivity of 0.65 (95 percent confidence interval [CI]: 0.56–0.74) and a specificity of 0.83 (CI: 0.64–0.93) for predicting cancer, the presence of sperm in the testes in non-obstructive azoospermia, raising the chances of successfully achieving pregnancy through testicular sperm extraction (TESE).

As a part of diagnosis the following medical conditions in past are as follows:

- Previous fertility success or failure (your ability to have children).
- Illnesses in children.
- Injuries to the pelvic area or operations to the pelvic area (these could cause duct blockage or poor blood supply to the testicles).
- Urinary tract or reproductive tract infections.
- Sexually transmitted illness history.
- Radiation or chemotherapeutic exposure.
- Medicines which are used previously.
- Any type of drug misuse, including alcohol, marijuana, and other substances.
- Recent fevers or heat exposure, such as frequent sauna or steam bath visits (heat kills sperm cells).
- Birth deformities, learning impairments, reproductive failure, or cystic fibrosis run in the family.

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Received: October 25, 2021; **Accepted:** November 08, 2021; **Published:** November 15, 2021

Citation: Lee L (2021) Early Diagnosis and Treatment of Azoospermia Condition. *Andrology* 10:239

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TREATMENT

Pre- and post-testicular azoospermia may often be reversed, but testicular azoospermia is typically irreversible. The reason of azoospermia must be evaluated in the first case, and it offers up options for dealing with the problem directly. Men with azoospermia caused by hyperprolactinemia may restart sperm production following therapy, while men whose sperm production is inhibited by exogenous androgens should restore sperm production after cessation of androgen use. Gonadotropin treatment can be expected to promote sperm production in testes that are normal but not stimulated.

IVF using ICSI, which permits successful fertilization even with immature sperm or sperm taken straight from testicular tissue, has been a huge development in recent years. If sperm material from the testes can be recovered, IVF-ICSI allows for conception in couples where the male has permanent testicular azoospermia. IVF-ICSI has therefore been used to father children by men with non-mosaic Klinefelter's syndrome. Pregnancies have been accomplished in cases where azoospermia

was linked to cryptorchism and sperm were extracted from the testicles (TESE). A variety of options are available for males with post-testicular azoospermia. Individual considerations must be addressed when choosing a treatment for obstructive azoospermia. IVF-ICSI or surgery can be used to treat obstructive azoospermia. Retrograde ejaculation may benefit from medication. Treatment approaches include:

- Surgery can unblock tubes or repair and link abnormal or never formed tubes if a blockage is the cause of your azoospermia.
- Hormone therapy may be prescribed if poor hormone production is the primary reason. Follicle-stimulating hormone (FSH), human chorionic gonadotropin (HCG), clomiphene, anastrozole, and letrozole are examples of hormones.
- If a varicocele is causing low sperm production, the affected veins can be cut up surgically while the surrounding tissues are maintained.
- In certain men, sperm may be extracted straight from the testicle after a thorough biopsy.