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PATIENT FACT SHEET
Sperm Shape (Morphology): Does It Affect Fertility?

How do doctors decide if a man might have a fertility problem? For many years, experts have focused on semen analysis, but research studies show that the number of sperm (count) and the movement of sperm (motility) do not always predict fertility very well by themselves. It may also be useful to look at the shape of the sperm (morphology), which is also one of the important parts of the semen evaluation.

An updated way of determining sperm shape is called the Kruger's strict morphology method. Kruger morphology is a useful system that helps doctors determine if a sperm is normally shaped or not. It was originally used to predict the success of in vitro fertilization (IVF), a fertility treatment in which the sperm are mixed with the woman's egg in a laboratory. More recently, it has been used to tell if intracytoplasmic sperm injection (ICSI) is a necessary treatment. ICSI is a procedure that helps a sperm fertilize an egg by injecting a single sperm directly into the center of the egg.

Even though it is used for these purposes, not all physicians and scientists are sure that strict morphology method alone predicts success with IVF or whether it indicates the need for ICSI.

Characteristics of normal sperm
A normal sperm has:
- a smooth, oval shaped head that is 5-6 micrometers long and 2.5-3.5 micrometers around (less than the size of a needle point)
- a well defined cap (acrosome) that covers 40% to 70% of the sperm head
- no visible defect of neck, midpiece, or tail
- no fluid droplets in the sperm head that are bigger than one-half of the sperm head size

Intercourse versus artificial insemination
For patients with fertility problems, sperm morphology may have an effect on your ability to achieve a pregnancy. If the strict sperm morphology is more than 4%, there may be little difference in success whether timed intercourse or artificial insemination is utilized.

In vitro fertilization
A successful pregnancy using IVF depends on many of factors: how many eggs are fertilized, whether the fertilized eggs grow into embryos, and whether the embryo implants in the woman's uterus. When strict morphology is 4% or less, eggs may have a better chance of fertilization with the use of ICSI.

Frequently asked questions

If an abnormally shaped sperm fertilizes the egg, does that mean that my child will have genetic abnormalities?
There's no scientific link between the shape of a sperm and its chromosomal content. Once the sperm penetrates the egg, fertilization has a good chance of taking place. However, there may be some male offspring who will inherit the same type of morphology abnormalities. Whether routine investigation of Y-chromosome abnormalities should be initiated when low morphology is noted is controversial.

Are there any substances that I can reduce or eliminate exposure to (e.g., alcohol, tobacco, caffeine) in order to improve the shape of my sperm?
Studies haven't shown a clear link between abnormal sperm shape and these factors, but it's a good idea to try to eliminate use of tobacco and recreational drugs and limit your consumption of alcohol. These substances reduce sperm production and function in several ways. They may hurt sperm DNA (material that carries your genes) quality. Studies have not shown a clear link between caffeine consumption and changes in sperm shape.

Are there any dietary supplements or vitamins that I can take to improve morphology?
Dietary supplements or vitamins have not been clearly shown to improve sperm morphology. Some specialists do recommend that you take a daily multivitamin to improve a number of body functions, including reproductive health.

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