

# Difference Between ICSI and IMSI

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## Key Difference - ICSI vs IMSI

Married couples face [infertility](#) problems. An [egg cell](#) should be fertilized by a sperm cell in order to complete the [sexual reproduction](#) and birth of a new baby. Infertility is due to many factors related to men and women. From the man's side, low [sperm](#) count, low sperm motility and abnormal sperms are the major infertility problems. From the woman's side, age, smoking, [obesity](#), [alcohol](#), diet, mental [stress](#) etc., can be the reasons. There are different methods to solve these problems among the couples. *In vitro* fertilization ([IVF](#)) is a one such assisted reproductive technology. IVF involves the fertilization of an egg cell by a sperm cell outside the body most commonly under the laboratory conditions. Abnormal sperm [morphology](#) is a common reason in most of the infertility cases. There are standard methods to treat this problem. Intracytoplasmic sperm injection (ICSI) is a standard treatment for men with abnormal sperm morphologies. It is a type of IVF that involves direct injection of a sperm cell into the cytoplasm of an egg cell. IMSI is another way of performing ICSI via a simple modification. IMSI uses ultra-high magnification to select the best sperm cells for ICSI. The **key difference** between ICSI and IMSI is that **ICSI does not use ultra-high magnification to select the best sperm while IMSI does.**

## What is ICSI?

Intracytoplasmic sperm injection is an *in vitro* fertilization method that involves direct injection of a sperm cell into the [cytoplasm](#) of an egg cell. This is a method which uses to overcome infertility problems arose in the male partner. Though it is a kind of *in vitro* fertilization (IVF) method, there are differences between classical IVF and ICSI.

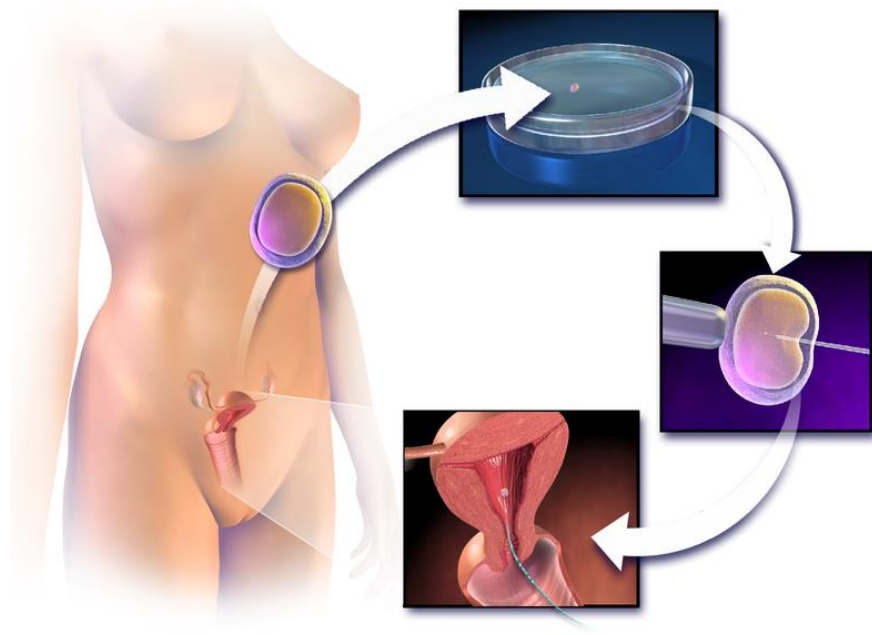


**Figure 01: ICSI**

ICSI needs only one sperm per an egg. But IVF needs thousands of sperms at a time. This is due to the acrosome reaction that is necessary for IVF method. Acrosome reaction is an important step in sexual reproduction. A sperm cell should be able to fuse with the [plasma membrane](#) of the egg cell and penetrate inside the cell. Sperms, which are unable to undergo acrosome reaction will not be able to fertilize the egg cell. In ICSI method, direct injection of sperm cell into the cytoplasm eliminates the need for acrosome reaction.

## What is IMSI?

Intracytoplasmic Morphology Selected Sperm Injection (IMSI) is a type of ICSI. During the IMSI, sperms are magnified further to select the best sperm for the ICSI. During the IMSI, specially equipped high-power microscope is used. Hence, IMSI contains a simple modification than the standard ICSI method since it uses higher power magnification during the selection of sperm for *in vitro* fertilization.



**Figure 02: Assisted Reproductive Technology**

When it is possible to select the best sperm, it would result a higher rate of [pregnancy](#). Therefore, IMSI can be considered as an advanced, successful method than standard ICSI. However, IMSI method consumes more time for the selection process than ICSI. Since egg cells are fragile, this creates a disadvantage. There is a high chance of losing the egg cell during this method.

## What are the Similarities Between ICSI and IMSI?

- Both methods are the type of IVF methods.

- Both methods involve the injection of a sperm cell into the cytoplasm of an egg cell.
- Both methods help married couples to overcome infertility problems.

## What is the Difference Between ICSI and IMSI?

ICSI vs IMSI	
Intracytoplasmic sperm injection (ICSI) is a process of injecting a sperm into an egg cell.	IMSI is a type of ICSI in which sperms are magnified further to select the best sperm for the ICSI.
Use of Ultra-High Magnification	
ICSI does not normally use ultra-high magnification.	IMSI uses ultra-high magnification.
Selection of the Best Sperm	
ICSI does not select the best sperm.	IMSI selects the best sperm.
Pregnancy Rate	
Pregnancy rate is low in ICSI compared to IMSI.	Pregnancy rate is higher in IMSI compared to standard ICSI.
Time Taken to Perform the Technique	
ICSI takes a shorter time to perform.	IMSI takes a longer time to perform.

## Summary - ICSI vs IMSI

Gamete micromanipulation is a technique that helps a married couple who face fertility problems due to compromised sperm parameters. ICSI is a method which solves this problem. Sperms are selected, and one sperm is injected directly into the cytoplasm of an egg cell during the ICSI. Further advancements have been done to standard ICSI and developed a method called IMSI. IMSI has a simple modification than ICSI. IMSI selects the best sperm cell for injection using ultra-high magnification. However, it is a time-consuming method than standard ICSI. But it has higher pregnancy rate. This is the difference between ICSI and IMSI.

### Reference:

1. "Cochrane." Regular (ICSI) versus ultra-High magnification (IMSI) sperm selection for assisted reproduction | Cochrane. [Available here](#)
2. "Sperm microinjections ICSI and IMSI." Barcelona IVF. [Available here](#)

### Image Courtesy:

- 1.'ICSI intracytoplasmic sperm injection'By Dr [Elena Kontogianni](#), (Public Domain) via [Commons Wikimedia](#)
- 2.'Blausen 0060 AssistedReproductiveTechnology'By :Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. - Own work, (CC BY 3.0) via [Commons Wikimedia](#)

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