

## **The international debate on Intra-cytoplasmic morphologically selected sperm injection: A tool for selecting the best sperm in real time for the proper patient**

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### **Abstract**

Intra-Cytoplasmic Sperm Injection (ICSI) in humans was first introduced in 1992. ICSI enabled to achieve fertilization, embryo development and pregnancies. It seemed that the importance of routine parameters of sperm morphology decreased in the field of assisted reproduction. However, one of the main concerns in ICSI is the aspiration of good-quality spermatozoa for microinjection into an oocyte. Practically, the injected spermatozoa are randomly chosen and their selection is based on rough morphologic aspects and motility. Sperm morphology is the only criteria for sperm aspiration during ICSI. Routine sperm criteria are based on the raw ejaculate stained sperm cells. Thus, it is important to score and aspirate a good quality motile spermatozoon, which will contribute to the quality of the developing embryo after ICSI, in real time of the procedure. In ICSI, assessment of sperm morphology is limited due to the low magnification (200 X-400 X) and concomitant low resolution. It has been demonstrated that by using intra-cytoplasmic morphologically selected sperm injected, a spermatozoon with normal morphology, and more precisely normal nucleus, might affect the incidence of pregnancy. Although the usage of Intracytoplasmic Morphologically selected Sperm Injection (IMSI) is currently wider, it is necessary to standardize which sperm to aspirate, due to criteria based on accumulating data. Moreover, the benefits of IMSI could be noticeable in cases of patients with repeated implantation failures, severe male factor infertility and advanced paternal and maternal age. The magnified on screen image obtained in IMSI, is a combination of the magnification of the objective, the camera adapter, ratio between the diagonal screen size in mm, diagonal of the camera chip size in mm and internal magnification of the microscope. Final values obtained (up to X 6000 and more) is the amplification of the surface of the sperm cell image, not observed by the routine X 200400 in ICSI, due to objective limitations of the human eyes. IMSI is still considered as a controversy technical and laboratory procedure, however, it seems to become a promising procedure in terms of improving the outcome of ICSI treatments.

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