

ANDROLOGY BY ORIGIO®

HBA® Slide & PICSI® Dish

Sperm diagnostics and selection based on
Hyaluronic acid binding

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a CooperSurgical Fertility Company

The selection of sperm for ICSI is critical

and directly influences the male contribution to the embryo

During the **process of sperm selection** for the ICSI procedure, a chosen sperm sample is most commonly assessed under the microscope where the sperm for injection is chosen based on its motility and morphology. However, unfit sperm with **compromised development and DNA fragmentation** can still look normal and healthy, and if picked for fertilization, can lead to poor embryo quality and possible pregnancy loss.

Visual assessment alone should never be the only factor involved when selecting a sperm for ICSI

Hyaluronic acid binding – a novel technique for selecting mature DNA intact sperm for ICSI

Hyaluronan (Hyaluronic acid, HA) is a naturally occurring substance and is the major component of the cumulus oophorus matrix surrounding the human oocyte.

Only fully mature sperm that have completed the last crucial stages of spermatogenesis have developed receptors for HA.

Immature sperm have not developed HA receptors and do not bind. They express higher rates of DNA fragmentation, higher rates of aneuploidy, and lowered cytoplasmic maturity but can still show normal motility and morphology.

HBA® slide - Diagnostic tool for evaluation of a sperm sample in minutes

The Hyaluronic Binding Assay (HBA) is an important diagnostic tool used in the analysis of semen. In a matter of minutes it provides an answer to the proportion of mature sperm in the sample (HBA score). Samples with an HBA score below 65% are proven to benefit from HA-sperm selection for ICSI.

A sperm's ability to bind to HA correlates to:

- Cellular maturity
 - Less chromosomal aneuploidy
 - Less DNA fragmentation
 - Increased chromatin integrity
 - Normal head morphology, better fertilizing potential
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PICSI® Dish - Sperm selection for ICSI

Male patients with a HBA binding score $\leq 65\%$ are clinically proven to lead to lower rates of pregnancy loss when their sperm for ICSI are selected using HA-selection (PICSI dish). The PICSI dish can be used for standard ICSI procedures and is a sterile plastic dish containing 3 microdots of Hyaluronic acid, where only mature DNA intact spermatozoa will bind for easy picking.

Significantly reduces pregnancy loss rate (PLR)

A large multi-center ICSI trial (Worrilow et al., 2012) found that combining the diagnostic abilities of the Hyaluronic Binding Assay (HBA), and the HA-sperm selection in the PICSI dish, led to improved Clinical Pregnancy Rates (CPL) and a significantly reduced PLR in ICSI patients diagnosed to have low HA-binding ability (HBA score $\leq 65\%$).

- Multi-center trial (10 centers)
- Randomized, double-blinded, controlled
- 804 patients

Statistical significance (*) is indicated at $P < 0.05$

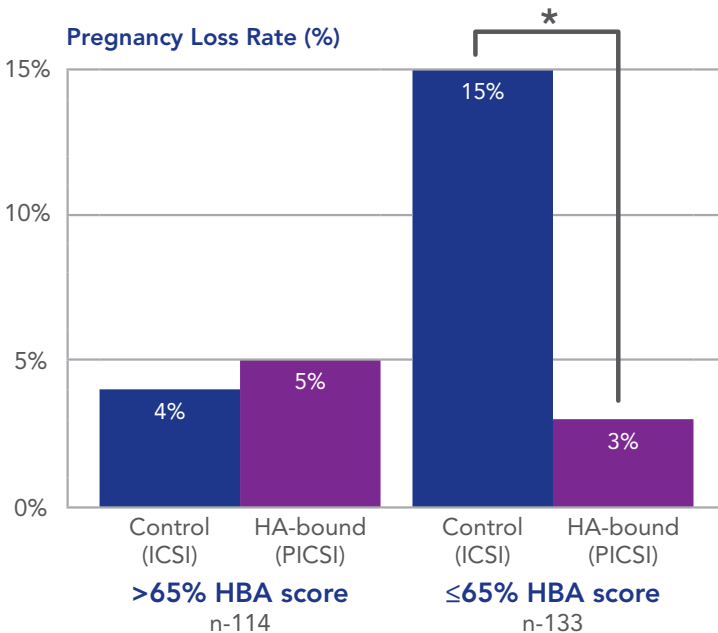


Figure 1. Control group: Only visual selection of sperm for ICSI. HA-bound (PICSI dish) group: sperm selected by HA-binding ability in the PICSI dish.

References

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ORIGIO a/s
Knardrupvej 2
2760 Måløv
Denmark
Tel: +45 46 79 02 00
www.origio.com



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