LASER-ASSISTED IMMOTILE SPERM SELECTION

Laiss

Method, which uses a laser to identify viable sperm cell, recommended in MESA/TESE IVF cycles or in patients diagnosed with sperm immotility.

About Laser-assisted immotile sperm selection

Method, which uses a laser to identify viable sperm cell for subsequent ICSI, recommended in MESA/TESE IVF cycles (surgical sperm retrieval) and any other cases of immotile spermatozoa (severe asthenospermia or necrospermia).

Sperm viability is a prerequisite for a successful ICSI treatment, because the injection of a nonviable spermatozoon into an oocyte generally results in fertilization failure. Normally, the spermatozoa are selected according to motility, which is a clear indication for viability. However, in cases with complete asthenozoospermia, it is impossible to select viable sperm by morphological means.

To identify viable sperm in patients presenting with complete sperm immotility is a challenging but very important step. Using LAISS a single laser shot is applied close to the tip of the sperm tail using a non-contact 1.48 µm diode laser system. In a few seconds, two possible reactions can be observed:
1. either the tail of the spermatozoa starts curling after the laser shot, or
2. the spermatozoa show no reaction at all.

Spermatozoa showing a curling reaction are considered to be viable and can be used for ICSI treatment immediately. In contrast to another methods e.g. hypo-osmotic swelling test, the laser selection can be performed directly in IVF medium with no additional micromanipulation.
Success or failure factors

ICSI with laser selected sperm increases the probability of oocyte fertilization in patients undergoing surgical sperm retrieval (MESA, TESE), or in patients diagnosed with sperm immotility (asthenozoospermia, oligoasthenoteratozoospermia, necrozoospermia). Laser sperm interaction allows for the identification of viable but immotile spermatozoa.

Complications

LAISS is regarded as a safe procedure since a shot applied to the far end of the flagellum does not affect the sperm head containing the genetic material. Moreover, this novel technique used in a specific group of patients increase the chance to select viable spermatozoa capable of fertilization.

Prognosis

The fertilization rate with immotile, but vital spermatozoa clearly benefits from laser selection and is a non-hazardous and safe method for the selection of viable but immotile sperm.

Find more about related issues

Diagnoses

Anejaculation
The pathological inability to ejaculate in males, with (orgasmic) or without (anorgasmic) orgasm.
Learn more at: www.fertilitypedia.org/therapy/diag/anejaculation

Cryptozoospermia
Male infertility diagnosis characterized by extremely low concentration of sperm in semen.
Learn more at: www.fertilitypedia.org/therapy/diag/cryptozoospermia
Hypogonadism
A medical term which describes a diminished functional activity of the gonads – the testes and ovaries.
Learn more at: www.fertilitypedia.org/therapy/diag/hypogonadism

Necrospermia
Necrospermia is a condition in which spermatozoa in semen are either immobile or dead.
Learn more at: www.fertilitypedia.org/therapy/diag/necrospermia

Non-obstructive azoospermia
Complete absence of sperm in the ejaculate due to testicular failure.
Learn more at: www.fertilitypedia.org/therapy/diag/non-obstructive-azoospermia

Obstructive azoospermia
Absence of sperm in the ejaculate despite normal spermatogenesis, caused by an obstruction of the genital tract.
Learn more at: www.fertilitypedia.org/therapy/diag/obstructive-azoospermia

Retrograde ejaculation
The semen, which would normally be ejaculated via the urethra, is redirected to the urinary bladder.
Learn more at: www.fertilitypedia.org/therapy/diag/retrograde-ejaculation