

THE IMPORTANCE OF SPERM MORPHOLOGY IN THE EVALUATION OF MALE INFERTILITY

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- **Estimation of man's fertility potential.**
- **Semen analysis - a keystone in clinical workup.**
- **The importance of sperm morphology.**
- **The standardization of normal spermatozoon.**



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- **The WHO criteria (1987, 1992).**
- **The strict criteria.**
- **Computer-assisted methods.**



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The WHO criteria (1987):

- Normal frequency: 50 %.
- Head shape: regular oval shaped.
- Head size: 3-5 μm long , 2-3 μm wide.
- Length/width ratio: 1,5-2,0.
- Acrosome: $> 1/3$.
- Vacuoles: no details.
- Cytoplasmic droplets: no details.
- Midpiece: 7-8 μm , $< 1/3$ width of head, slender, straight and regular, aligned with longitudinal axis of head.
- Tail: at least 45 μm , slender, uncoiled and regular.



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The WHO criteria (1992):

- Normal frequency: 30 %.
- Head shape: oval; borderline forms abnormal.
- Head size: 4,0-5,5 um long and 2,5-3,5 um wide.
- Length/width ratio: 1,5-1,75.
- Acrosome: 40-70 % of head area, well defined.
- Vacuoles: <20 % of head area.
- Cytoplasmic droplets: < 1/3 normal head.
- Midpiece: no dimensions, no description of normal (defects only given).
- Tail: no dimensions, no description of normal (def. only).



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The strict criteria:

- Normal frequency: 14%.
- Head shape: oval configuration with a smooth contour, borderlines forms abnormal.
- Head size: 5-6 μm long and 2,5-3,5 μm wide.
- Width/ length ratio : 1/2-3/5.
- Acrosome: 40-70 % of the distal part of the head, well defined.
- Cytoplasmic droplets: < 1/2 normal head.
- Midpiece: 1,5 of the head length, <1 μm wide, slender and axially attached.
- Tail: 45 μm long, uniform, uncoiled, slightly thinner than the midpiece.



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Computer assisted methods:

- **The method of Moruzzi (1988).**
 - sperm image optically sectioned and measured by computer (semi-automated).
 - 95 % accuracy and 86 % correct assignment to one of 10 classes.
- **The Perez- Sanchez system (1994).**
 - head image processed automatically; midpiece and tail excepted.
 - characterization of the majority of morphological types.
 - more standardization needed (technical problems).



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CONCLUSIONS:

- The strict sperm morphology clinical relevance, *in vivo* and *in vitro*, independent of other parameters.
- The definition of morphological "normality" is still a matter of debate.
- The advantage of strict criteria.
- The improvement of existing classification, in order to eliminate subjectivity.



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CONCLUSIONS:

- **Basic semen assessment training courses for a high standard achievement.**
- **Research projects:from objective base observations to scientific bases in evaluation of semen fertility (sperm head morphology).**
- **Infertility patients must be evaluated as a *couple*.**