# Assessing the Need for Morphological Analysis of Semen Donor Specimens

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**Objective:** To determine the utility of sperm morphology for screening of sperm donors.

**Design:** Cross-sectional study in a private semen bank.

**Materials and Methods:** Semen samples were collected from 29 accepted sperm donors (motile sperm concentration >50 million/mL) and 29 potential donors with low motile sperm concentration (<50 million/mL). Duplicate smears from each ejaculate were stained using the Quick III™ Stain Set. All analyses were performed at 1000x by the same technician, who was blinded to the donor identities. Both strict (World Health Organization 2010) and non-strict (WHO 1992) morphology scores were obtained. The data is expressed as mean ± S.D. and was analyzed using Pearson's correlation coefficient and student's T-Test analyses, with significance set at $p = \leq 0.05$.

**Results:** The mean motile sperm concentration for accepted donors was significantly ($p = <0.05$) greater than rejected donors (201.7 M/mL ± 65.6 vs. 16.8 M/mL ± 10.9). The mean strict morphology score was 19.9% ± 6.7% normal for accepted donors and 10.4% ± 7.1% normal for rejected donors ($p = <0.05$). There was no significant difference in the non-strict morphology score for accepted donors (25.2% ± 8.0%) versus rejected donors (20.3% ± 30.9%) ($p = 0.209$). Abnormal strict morphology scores (≤4% normal forms) were found in 5/29 rejected donors (17.2%), but only 1/29 accepted donors (3.4%). There was a moderate positive correlation between motile sperm concentration and both strict ($r= 0.45$) and non-strict ($r = 0.51$) morphology scores for rejected donors, and a weak negative correlation between motile sperm concentration and both strict ($r = -0.09$) and non-strict ($r = -0.17$) morphology scores for accepted donors.

**Conclusions:** Abnormal morphology scores were uncommon, especially within the accepted donor group. For the single accepted donor with an abnormal morphology, the score was 3% normal forms, which is within the 3-4% reference interval (WHO 2010). As such, all accepted donors were considered to have normal morphology scores. The two borderline morphology scores of 3% in the rejected donor group reduces the classification to 3/29 or 10.3% of rejected donors with abnormal morphology. This study suggests that there is limited value in performing morphology analyses on sperm donors, especially those with high sperm concentrations. While assessment of morphology for sperm donor screening may be of limited utility, morphology assessment should remain a part of the clinical semen analysis.

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