

Does oocyte image analysis using an AI algorithm predict blastocyst formation? A single centre validation study.

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Objectives & Background

To assess an AI oocyte quality score prediction of blastulation using post-ICSI-images of donated warmed oocytes.



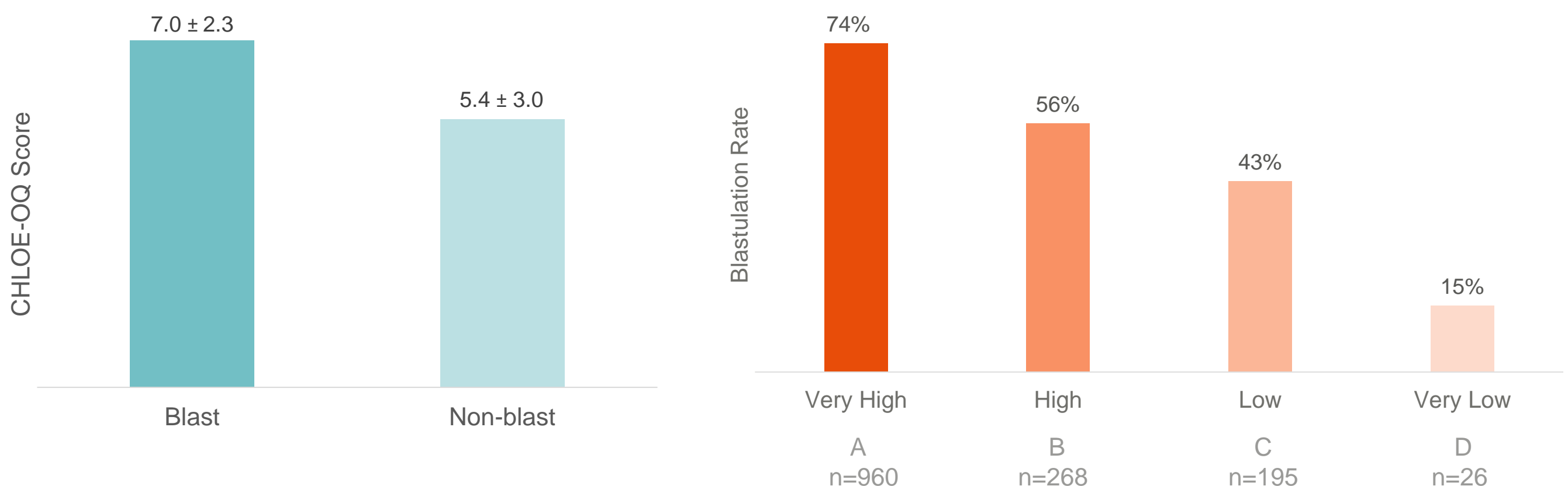
Methods

- Retrospective
- 1449 time-lapse videos of post-ICSI donated oocytes from 2021-2023, with known blastulation outcomes.
- Primary endpoint: blastulation rate.
- Blastulation rate and embryo quality in each group were compared using chi-square. Prediction of blastulation was calculated using binary logistic regression (AUC).

OQ score groups	OQ score
A	>0.6
B	0.3-0.59
C	0.001-0.29
D	0

Results

- CHLOE-OQ score (AUC= 0.66), Blastocyst Score at 68 hpi (AUC= 0.93) and CHLOE-EQ (AUC= 0.93) were predictive of blastulation ($p < 0.001$).
- Oocytes that blastulated had a higher mean CHLOE-OQ Score than oocytes that did not blastulate ($p < 0.001$)
- Oocyte quality score groups showed a direct association with blastulation ($p < 0.05$)
- Oocytes in the highest score Group had 5-fold increase in blastulation rate compared to the lowest score Group ($p < 0.001$).
- The highest score Group resulted in the highest proportion of good quality embryos compared to the lowest score Group [77% (484/625) vs 0.32% (2/625), $p < 0.001$].



Conclusion

- CHLOE-OQ Score is predictive of blastulation.
- Oocytes with high OQ score had a 5-fold increase of blastulation than those with 0 score.