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DELAYED BLASTULATION IS LINKED WITH CHANGES AT EARLY CLEAVAGE STAGE DETECTED BY CONTINUOUS EMBRYO MONITORING.

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Embryo development events Feature Total no. of events Detected by IVI Detected by bGA
 2.0 Detected by both IVI-no annotation bGA 2.0-no annotation PN appear 311 300 (96%) 290
 (93%) 279 (90%) 11 (4%) 21 (7%) PN disappear 311 288 (93%) 294 (95%) 272 (87%) 22
 (7%) 16 (5%) 2-cell 311 304 (98%) 309 (99%) 302 (97%) 7 (2%) 2 (1%) 3-cell 311 302 (97%)
 307 (99%) 298 (96%) 9 (3%) 4 (1%) 4-cell 311 299 (96%) 307 (99%) 297 (95%) 10 (3%) 2
 (1%) 5-cell 311 295 (95%) 306 (98%) 293 (94%) 13 (4%) 2 (1%) 6-cell 311 288 (93%) 300
 (96%) 281 (90%) 19 (6%) 7 (2%) Morula 311 218 (70%) 276 (89%) 214 (69%) 62 (20%) 4
 (1%) Early B 311 188 (60%) 252 (81%) 177 (57%) 75 (24%) 11 (4%) All events 2799 2482
 (89%) 2641 (94%) 2413 (86%) 228 (8%) 69 (2%) e218 ASRM Abstracts Vol. 110, No. 4,
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OBJECTIVE: To find out whether there is any relationship between blastulation on day 5 or day 6 and the embryo categorization provided by Eeva.

DESIGN: Retrospective cohort study in our oocyte donation program. The study includes embryos that were incubated in a conventional incubator with Eeva system in the past two years.

MATERIALS AND METHODS: Embryos were cultured in a standard incubator with time-lapse scopes. Using automatic cell-tracking software, we analyzed the exact timing of first cleavages, which provides an embryo classification on day 3 and blastulation rates in day 5 and day 6 in each Eeva category, separating between viable embryos (transferred or vitrified) and good morphology blastocysts (A/B ASEBIR categories) as well as the relationship between blastulation day and P2 and P3 values obtained by Eeva. **RESULTS:** From the total number of embryos that reached blastocyst stage (n¼1248), the majority did it on day 5 (89.85% n¼1121). Only a small percentage reached blastocyst stage on day 6 (10.2% n¼127). These blastocysts where categorized according to Eeva classification showing how many of them had reached blastocyst stage on day 5 (HIGH 96.5%; MEDIUM 89%; LOW 88.1% p<0.001). When we focus on viable blastocysts (transferred or vitrified), we still observed a direct correlation between Eeva categories and viable blastocysts on day 5 (HIGH 85.4%; MEDIUM 76.2%; LOW 65.2% p<0.0001). Similar observations with those with good morphology (A/B ASEBIR) (HIGH 90.4%; MEDIUM 84.9%; LOW 72.3% P<0.0001). As mentioned before, the Eeva classification of embryos in each category is based on the values of P2 and P3. A logistic regression analysis demonstrated that P2 values between 11.59-13.30h increases the probability of blastulation on D5 more than four times compared with

embryos with P2<9.45h (table). Blastulation day 5 OR 95(% CI) P value P2 (9.45-11.58h) vs.P2 (<9.45h) 2.24 (1.14-4.38) 0.001* P2 (11.59-13.30h) vs. P2 (<9.45h) 4.16 (2.29-7.57) 0.018* P2 (>13.30h) vs. P2 (<9.45h) 2.55 (1.44-4.48) 0.0001*

CONCLUSIONS: There is a direct correlation according to Eeva categories, morphokinetic variables and embryo blastulation pattern. The important differences at the early stages of embryo development observed between embryos that blastulated in D5 or D6 may help to understand the reduced implantation potential of those embryos with delayed blastulation and may allow us to improve embryo selection by using continuous embryo monitoring.