Objective: Previous studies from our group demonstrated that blastocyst collapse or contraction significantly reduces the implantation potential of the blastocyst presenting this phenomenon in vitro. Following this line of research we have measured the time the blastocysts remained contracted by time-lapse technology with the intention of finding a new marker for embryo quality and implantation potential.

Design: Retrospective study

Materials and Methods: The study included 502 embryos from which 63 presented a blastocyst collapse. From this contracted embryos we study the length of the contraction which was recorded using time-lapse technology (Embryoscope, Fertilitech). The data analysis was performed by Anova or Chi-square test when necessary and the parameters studied included the percentage of day 3 (D3) good morphology embryos, clinical pregnancy, and the implantation when the number of gestational sacs matched the number of transferred embryos or Known Implantation Data (KID).

Results: The average period of the blastocyst contraction was of 1.67 hours (SD ± 1.36). Good morphology D3 embryos are considered as predictors for blastocyst formation. The duration of the blastocyst contraction of good morphology D3 embryos vs non quality D3 embryos was of 1.53 h vs 2.32 h, (p=0.15). There was a trend were patients with a positive clinical pregnancy had shorter lengths of the time the blastocyst remained contracted (1.88 h vs 1.50 h, p= 0.29), although this difference did not reach statistical significance. Out of the 63 blastocysts analyzed, 39 were KID. Similarly, there were differences in the time of contraction between the implanted and not implanted blastocysts, although didn't reach statistical significance (1.88 h vs 1.51 h, p=0.37).

Conclusions: The length of time the blastocyst remains contracted is inversely related to its potential to implant. This is a preliminary study, and larger studies are needed to ratify if this new blastocyst development parameter can be used as a valuable tool for blastocyst selection in conjunction with current available morphokinetic markers.