

EMBRYO DEVELOPMENT TO THE BLASTOCYST STAGE AFTER SINGLE BLASTOMERE BIOPSY FOR PREIMPLANTATION GENETIC DIAGNOSIS

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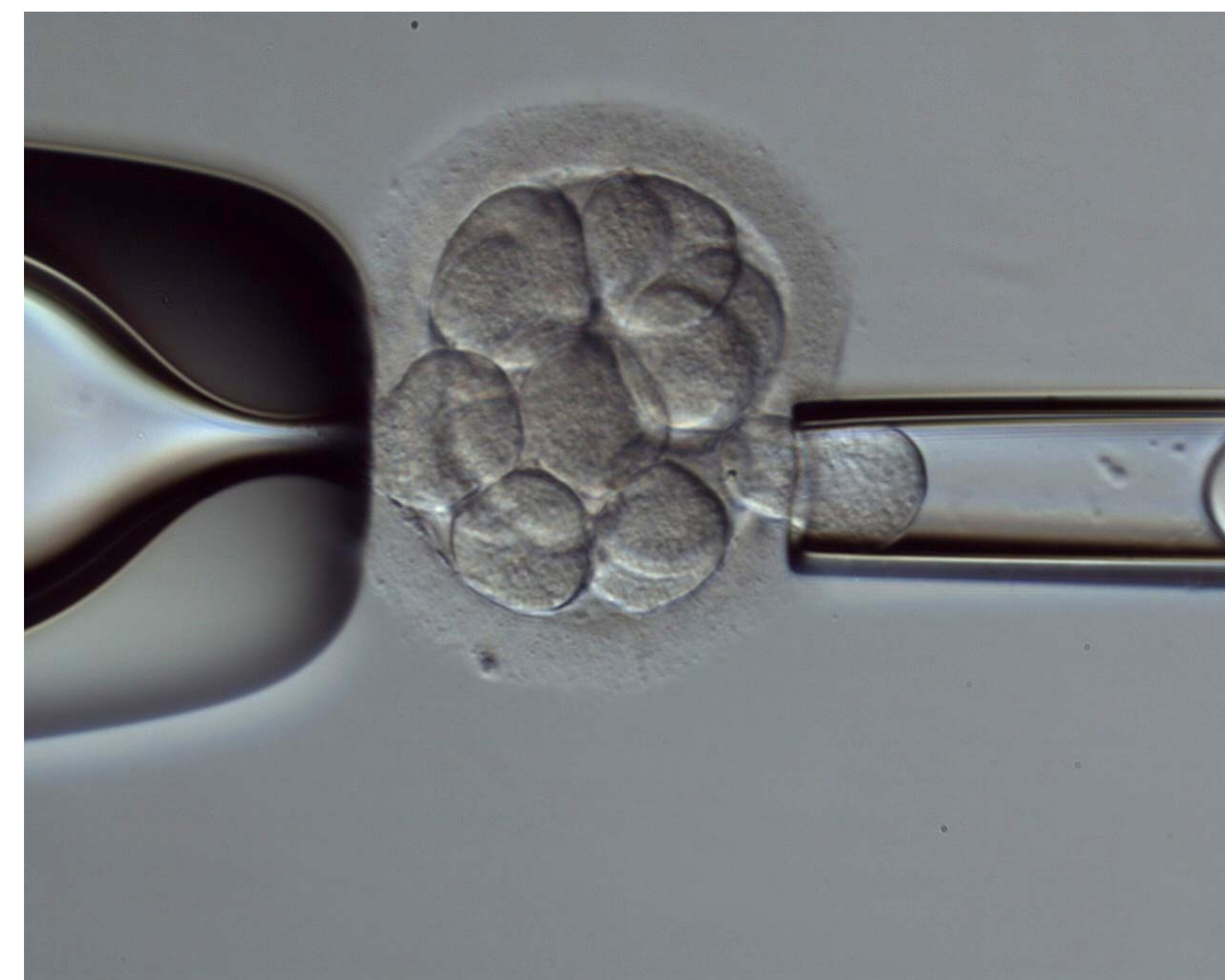


OBJECTIVES

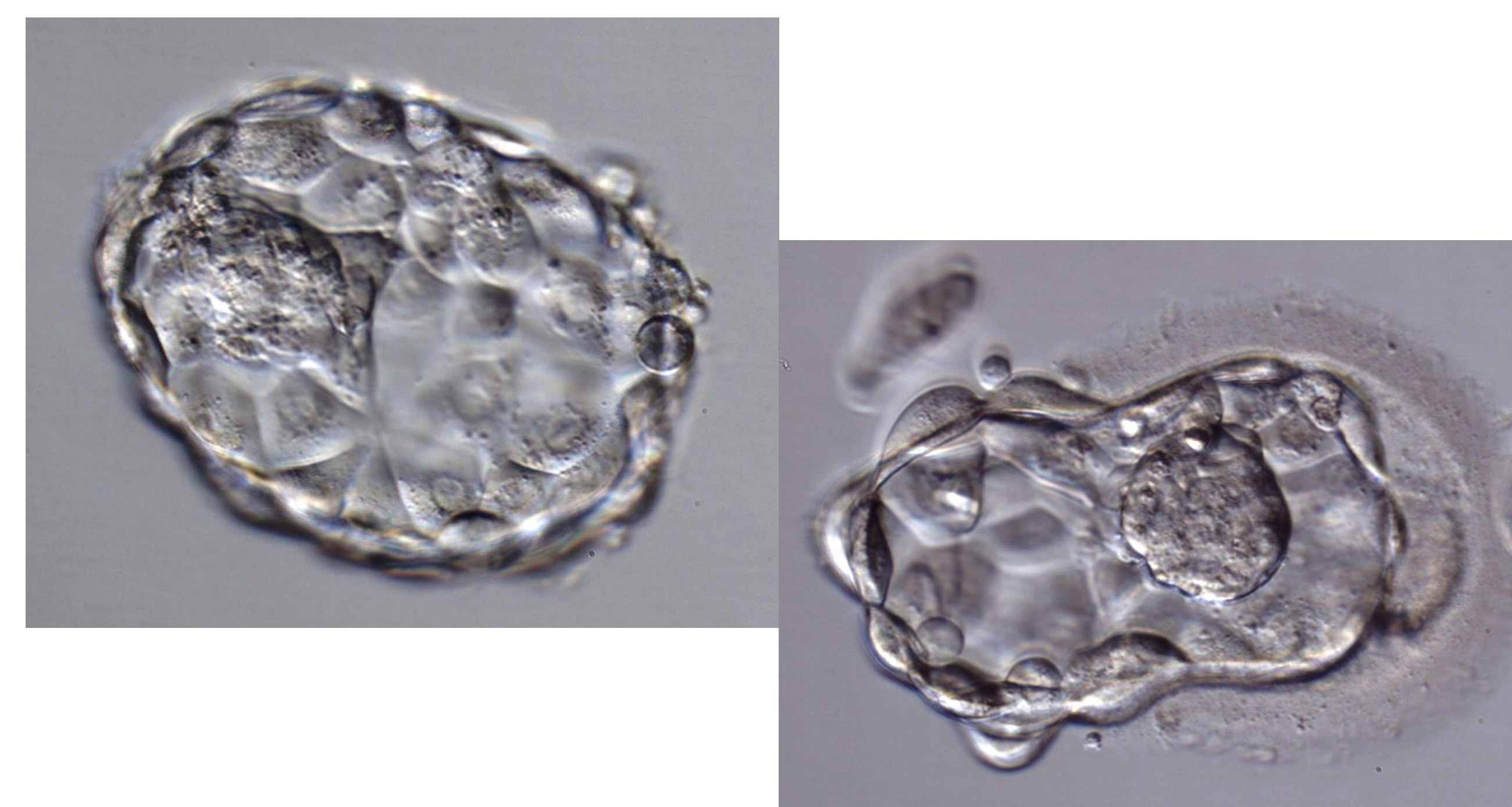
Preimplantation genetic diagnosis (PGD) of human embryos for single-gene disorders, chromosomal structural abnormalities and aneuploidy is becoming an increasingly common practice worldwide. There is much debate regarding the embryo's developmental potential after blastomere biopsy¹. The objective of our study was to investigate the developmental impact of embryo biopsy on the embryo's progression to the blastocyst stage.

MATERIALS AND METHODS

A 28 year old female patient presented to our facility with three repeated first trimester pregnancy loss. All recurrent miscarriage investigations including parental karyotypes were either normal or negative. On Day 3, eighteen 6- to 10-cell ICSI-derived embryos were subjected to single blastomere biopsy following partial zona dissection with microneedle. Blastomeres fixation was performed with modified Tarkowski technique under the stereomicroscope. *Aneuploidy screening for 12 chromosomes* (8, 13, 14, 15, 16, 17, 18, 20, 21, 22, X and Y) by FISH-analysis was done by Reprogenetics (New Jersey, USA).



10-cell embryo blastomere biopsy



Two Day 5 blastocysts transferred to patient

RESULTS

FISH-results for all 12 chromosomes were obtained for all biopsied and fixed blastomeres. Out of 18 biopsied embryos, 11 embryos (61.1%) were found to be normal. Development of biopsied embryos to blastocyst stage is shown in the table. Total 88.9% (16/18) embryos developed to the blastocyst stage on Day 5 (14 embryos) and Day 6 (2 embryos). No difference was noted for normal versus abnormal embryos in their development to blastocyst (9/11 (81.8%) versus 7/7 (100%). Two blastocysts graded as 5AA and 3BB were transferred to patient on Day 5; other normal blastocysts were cryopreserved by vitrification on Days 5 and Day 6.

Day 3 embryo development	No. of blastocysts (%)	
	Day 5	Day 6
6-cell	2/5 (40.0)	2/5 (40.0)
7-cell	4/5 (80.0)	
8-cell	6/6 (100)	
9-cell	1/1 (100)	
10-cell	1/1 (100)	
Total	14/18 (77.8)	2/18 (11.1)

CONCLUSIONS

Single blastomere biopsy on Day 3 did not have any negative effects on the development of 6- to 10-cell embryos to blastocyst stage.

¹ Munné S, Wells D, Cohen J. (2009) Fertil Steril, in press, available on-line