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Preconception, Preimplantation and  
Prenatal Genetic Diagnosis (CoGEN)

# TROPHECTODERM BIOPSY PROTOCOLS: IS THERE ANY EFFECT ON PGT-A RESULTS?

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## INTRODUCTION

Blastocyst biopsy is an invasive procedure. The number of biopsied cells is one of the most critical factors affecting TE biopsy. This study aimed to analyze the impact of different biopsy protocols on the rate of mosaic and aneuploid blastocysts.

**Study question:** Does the biopsy technique impact quality of the biopsied cells and may influence results of pre-implantation genetic testing for aneuploidy (PGT-A)?

## MATERIALS AND METHODS

This is a retrospective cohort study which included 223 cycles with PGT-A. Two groups were allocated based on the biopsy protocols: standard approach (gentle suction – method 1) and “Flick” technique (several laser pulses and simultaneous stretching to biopsy trophoblast cells – method 2). Totally 684 blastocysts were biopsied on 5-6th days of culture.

Standard technique of biopsy was used for 273 blastocysts; “Flick” method was applied for 411 blastocysts. 4-8 cells were taken from all blastocysts and subjected to PGT-A testing using an NGS platform. Data were analyzed using Chi Square analysis. The euploid, aneuploid, and mosaic blastocyst rates and clinical outcomes were compared. Only the blastocyst with the high quality of morphology were biopsied. The system for blastocyst biopsy is shown in Figure 1.

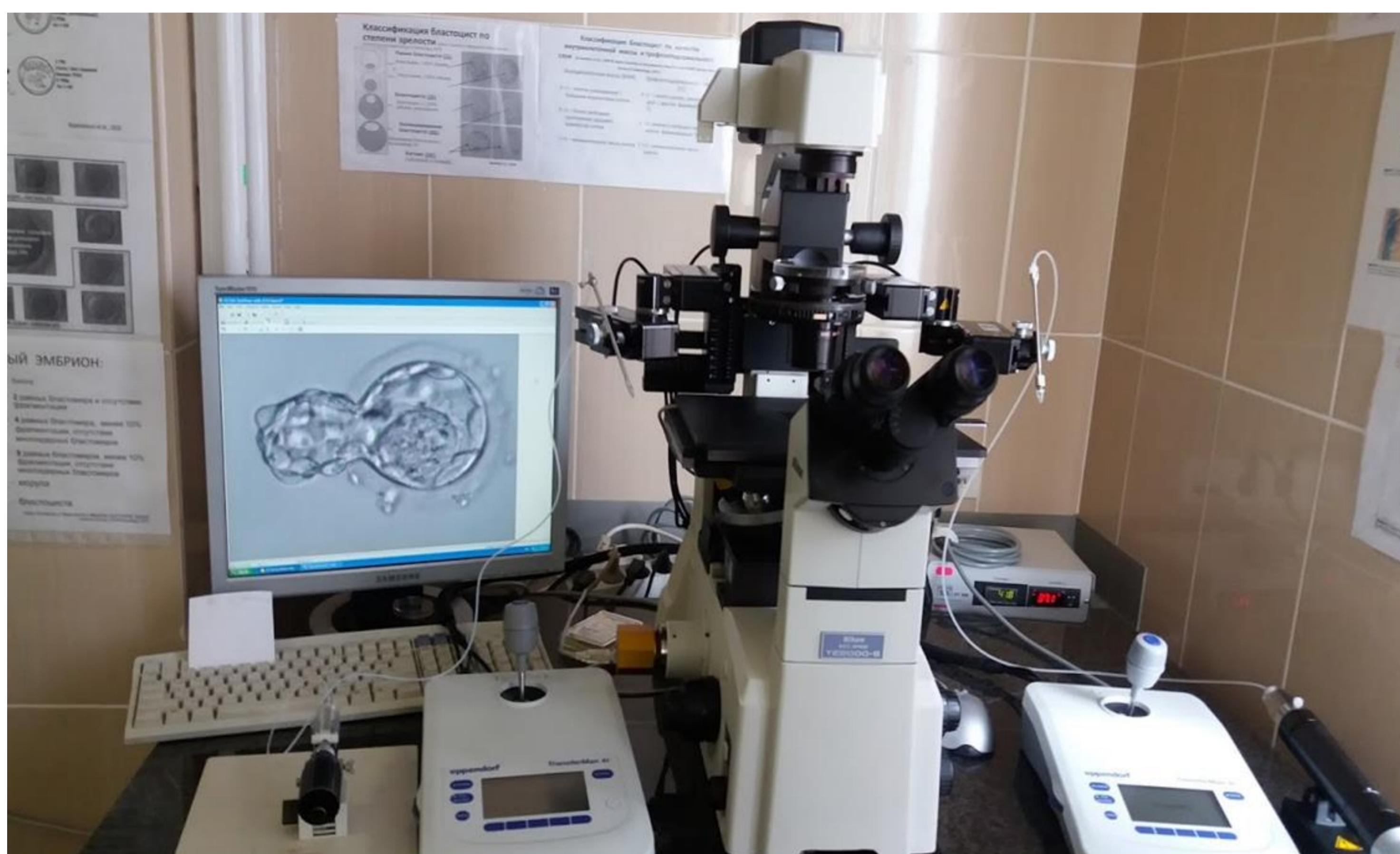


Fig. 1. IVF laboratory: inverted microscope with laser system used for TE biopsy

## RESULTS

No significant difference was observed in euploid (39.9 % vs. 40.1 %), aneuploid (31.9% vs. 35.8%) blastocyst rates, and clinical pregnancy rates (45.6% vs. 48.8%) between the two groups. There was a tendency that the mosaicism rate in the method 1-group was lower than the method 2-group (6.6% vs. 12.6%,  $df = 1$ ;  $\chi^2 = 2.074$ ;  $P = 0.150$ ).

Standard biopsy entailed gentle suction by a holding and biopsy pipet, with several laser pulses and simultaneous stretching to biopsy trophoblast cells showed no difference in the results on PGT-A. The step-by-step procedure for biopsy of a blastocyst is shown in the Figure 2.

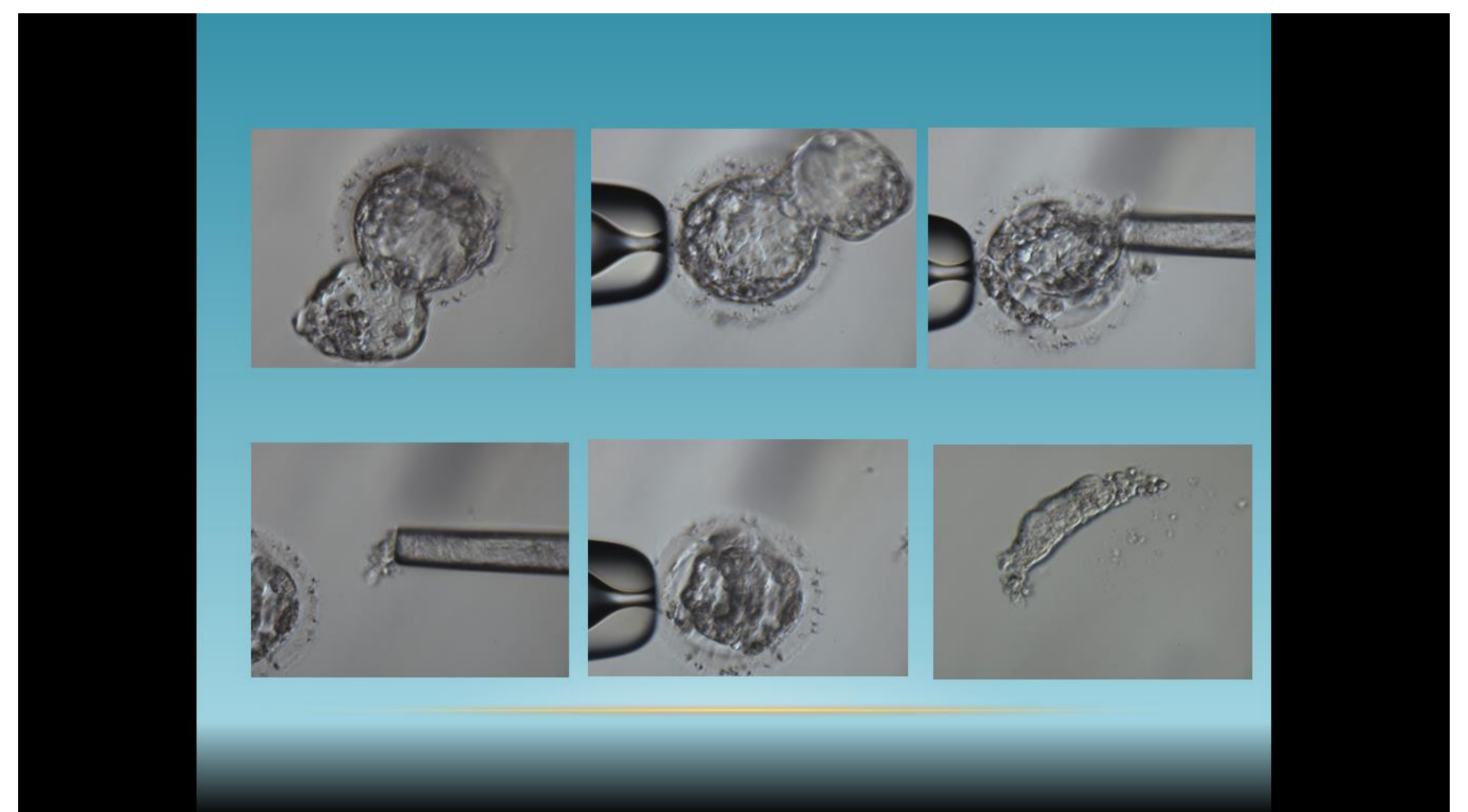


Fig. 2. The step-by-step procedure for biopsy of a blastocyst

## CONCLUSION

Both approach gentle suction and laser biopsy appeared equally effective. The tendency to higher mosaicism rate after “Flick” technique of biopsy was shown. Future studies with a larger data set will help further assess efficacy of these techniques.

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