

A simple, less invasive stripper micropipetter-based technique for day 3 embryo biopsy

Luciano Cedillo¹, Azucena Ocampo-Barcenas¹, Israel Maldonado¹, Francisco J. Valdez-Morales², Felipe Camargo¹ and Esther Lopez-Bayghen^{1,3}

1. Laboratorio de Fertilización In Vitro and Laboratorio de Investigación y Diagnóstico Molecular, Instituto de Infertilidad y Genética, Ingenes México, Carretera México-Toluca No. 5420, Piso 6, Ofna 602 Col. El Yaqui, Del Cuajimalpa, 05320 México City, México
2. Facultad de Química, Universidad Nacional Autónoma de México, Ciudad Universitaria, México City, 04510 México
3. Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Departamento de Toxicología, Av. IPN 2508 San Pedro Zac., 07380 México City, México

Abstract:

Background: Preimplantation genetic screening (PGS) is an important procedure for in vitro fertilization (IVF). A key step of PGS, blastomere removal, is abundant with many technical issues. The aim of this study was to compare a more simple procedure based on the Stripper Micropipetter, named S-biopsy, to the conventional aspiration method.

Methods: On Day 3, 368 high-quality embryos (>7 cells on Day3 with <10% fragmentation) were collected from 38 women. For each patient, their embryos were equally separated between the conventional method (n=188) and S-biopsy method (n=180). The conventional method was performed using a standardized protocol. For the S-biopsy method, a laser was used to remove a significantly smaller portion of the zona pellucida. Afterwards, the complete embryo was aspirated with a Stripper Micropipetter, forcing the removal of the blastomere. Selected blastomeres went to PGS using CGH microarrays. Embryo integrity and blastocyst formation were assessed on Day 5. Differences between groups were assessed by either the Mann-Whitney test or Fisher Exact test.

Results: Both methods resulted in the removal of only one blastomere. The S-biopsy and the conventional method did not differ in terms of affecting embryo integrity (95.0% vs. 95.7%) or blastocyst formation (72.7% vs. 70.7%). PGS analysis indicated that aneuploidy rate were similar between the two methods (63.1% vs. 65.2%). However, the time required to perform the S-biopsy method (179.2± 17.5 s) was significantly shorter (5-fold) than the conventional method.

Conclusion: The S-biopsy method is comparable to the conventional method that is used to remove a blastomere for PGS, but requires less time. Furthermore, due to the simplicity of the S-biopsy technique, this method is more ideal for IVF laboratories.

Full text:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5424395/>

