

## Micromanipulation techniques in IVF

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### Abstrak

after the world witnessed groundbreaking early advances in assisted reproduction that utilized conventional in vitro fertilization in the human, more complex invasive techniques of oocyte and embryo manipulation were introduced to treat human subfertility. amongst these were numerous micromanipulation techniques such as partial zona dissection (PZD; 1988), subzonal insemination (SUZI, 1988) and subsequently ICSI, which became the most powerful tool of assisted fertilization (1992). ICSI requires micromanipulation of both the male and the female gamete. another important approach is laser-assisted opening of the zona pellucida at different stages of preimplantation development either; to assist hatching (1990) or to remove cells for preimplantation genetic diagnosis (1989), or fragments to restore the integrity of an embryo (1999). sometimes even blastocysts considered for vitrification need further manipulation in order to artificially shrink the blastocoel which facilitates survival of expanded blastocyst (2002). other methods for reproductive purposes, however, failed to gain acceptance in population, such as cytoplasm transfer (1997), nuclear transfer (1998) and cloning (1996), to name but a few