



Fathering of a child with the assistance of electroejaculation in conjunction with intracytoplasmic sperm injection: case report

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Ejaculatory failure and poor fertility are major problems for patients with spinal cord injury, who wish to father children. Artificial ejaculation in conjunction with assisted reproductive techniques has been proposed as a possible solution to this situation. In this paper, we presented the case of a tetraplegic man who fathered a child with the aid of electroejaculation with intracytoplasmic sperm injection (ICSI).

Keywords: spinal cord injury; electroejaculation; intracytoplasmic sperm injection; healthy live birth

Case report

A 38-year-old man was referred to our clinic to discuss the means whereby he could father a child. He had a C5 complete tetraplegia of 16 years' duration. His wife was 32 years old and was healthy. Using a Seager NRH Model 12 (G&C Instrument Co., National Rehabilitation Hospital, Washington, DC, USA), in December 1991, he underwent the first attempt of electroejaculation but this was antegrade. After repeated preliminary electroejaculations for the assessment of semen quality, artificial insemination of the husband (AIH) was performed 11 times but without success (Figure 1). Low motility of the semen was considered to be the cause for these failures and thus he was sent to the Advanced Fertility Center, Fuchu Hospital for ICSI. In February 1995, the first attempt of a combined therapy with electroejaculation and ICSI was conducted. Pregnancy was achieved and a healthy boy at fullterm was born in October 1995. Analysis of the immediate semen sample indicated $39 \times 10^6/\text{ml}$ with 5% motility.

Discussion

Most male patients with severe spinal cord injury have fertility problems by ejaculatory failure and poor quality of semen.^{1,2} Artificial ejaculation, such as electroejaculation,¹⁻⁴ vibratory stimulation^{5,6} and intrathecal chemical ejaculation⁷ have been used to obtain semen from such men. Electroejaculation is a safe and effective means of obtaining semen from them. Electroejaculation has been conducted in our Institutes on 53 patients with severe spinal cord injury. Ten had cervical, 37 thoracic and six lumbar paraplegia, with a mean patient age of 31 years (range 19 to 47) and a

mean duration after injury of 10 years (range 1 to 38). Antegrade ejaculation was achieved in 46 patients (86.8%). The volume of the ejaculate ranged from 0.05 to 5.2 ml (average 1.3 ml) and sperm concentration from 0 to $546 \times 10^6/\text{ml}$ (average $71.9 \times 10^6/\text{ml}$). Sperm motility was poor (0 to 68%, average 17.2%). It has been consistently recognized that semen obtained from spinal cord injury men by the present technique show poor sperm motility.^{1,8} Pregnancy rates are thus low despite high induction rates of ejaculation by electroejaculation. The first healthy live birth after electroejaculation was reported by Francois and associates in 1978.⁹ The authors have attempted AIH on 54 occasions for 11 couples and reported the first two

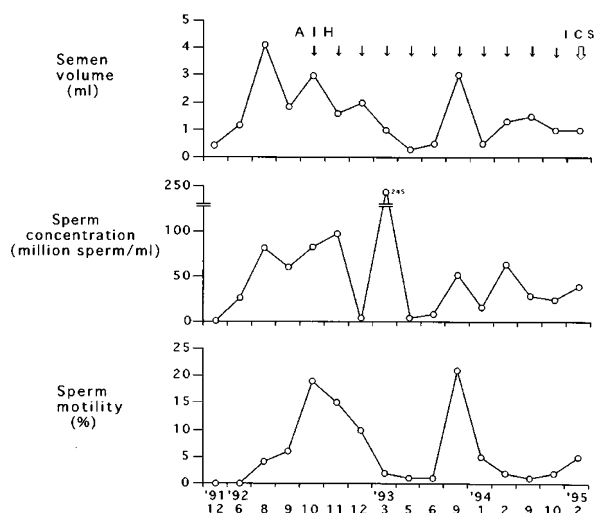


Figure 1 Changes in the results of sperm analyses of the patient. AIH (↓) was attempted 11 times. ICSI (⇓) in February 1995 resulted in pregnancy

cases of spinal cord injury men fathered children by electroejaculation in Japan.¹

Pregnancy can be effectively achieved by advanced reproductive technology (ART) such as *in vitro* fertilization – embryo transfer (IVF-ET), zygote intrafallopian transfer, gamete intrafallopian transfer, subzonal insemination and ICSI, even if few motile sperm are made available by electroejaculation. Since Ayers and associates¹⁰ achieved the first live birth by electroejaculation combined with IVF-ET in 1988, several pregnancies have resulted from a combination of electroejaculation and ART, resulting in healthy live births.^{11–14} However, there are few reports of a combination of electroejaculation and ICSI.¹⁵ The present case is considered to be the first successful example in Japan of a tetraplegic man fathering a child by means of electroejaculation in conjunction with ICSI.

Conclusions

Artificial ejaculation conducted with advanced reproductive technology is the optimal means for patients with a severe spinal cord injury who wish to have children.

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