# Electroejaculation combined with intracytoplasmic sperm injection in patients with psychogenic anejaculation yields comparable results to patients with spinal cord injuries

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**Objective:** To evaluate sperm quality and fertility potential of men with psychogenic anejaculation treated by electroejaculation (EEJ) and intracytoplasmic sperm injection (ICSI). Treatment results were compared to spinal cord injured (SCI) patients treated similarly.
**Design:** Retrospective clinical study.
**Setting:** Academic tertiary referral fertility center.
**Patient(s):** Couples with isolated psychogenic anejaculation or SCI.
**Intervention(s):** Electroejaculation and ICSI.
**Main Outcome Measure(s):** Semen analysis, fertilization rate, implantation rate, pregnancy rate, delivery rate and safety of the procedure.
**Result(s):** Fifteen patients diagnosed with psychogenic anejaculation underwent 40 EEJ/ICSI cycles. The semen retrieved was characterized by low motility (mean 10.7% ± 12.3%), normal volume (2.2 ± 1.9 mL) and normal count (25.1 ± 29.9 × $10^6$/mL), according to World Health Organization criteria. Results of EEJ/ICSI were compared with 22 SCI patients treated by 66 EEJ/ICSI cycles during the same period. Mean female age and the number of oocytes retrieved per cycle were similar between the groups. Similar semen parameters after EEJ were found between psychogenic and SCI patients. Fertilization rate was significantly lower in the psychogenic patients compared to SCI (47.0% and 57.0%, respectively). No significant differences were found regarding pregnancy rates (20% and 22.7%, respectively), implantation rate (10.2% and 11.6%, respectively) or delivery rates (15% and 18.2%, respectively).
**Conclusion(s):** Sperm retrieved by EEJ is characterized by asthenospermia and normal count. In spite of the lower fertilization rate in psychogenic patients, combination of EEJ and ICSI gives adequate results to couples with psychogenic anejaculation similar to the results obtained for SCI patients. Current results give these couples a reasonable chance of pregnancy achievement. (Fertil Steril® 2012;97:1056–60. ©2012 by American Society for Reproductive Medicine.)
**Key Words:** Electroejaculation, psychogenic anejaculation, spinal cord injury, intracytoplasmic sperm injection

The process of ejaculation includes well-coordinated contractions of striated and nonstriated muscular contractions that ejaculate the sperm and seminal fluid through the urethra. The neurologic involvement relies mostly on the sympathetic system as well as efferent and afferent pathways—dorsal nerves of the penis, internal pudendal nerve, anterolateral columns of the spinal cord, sympathetic chain ganglia and hypogastric plexus anterior to the aorta (1). Neurologic impairment may be followed by ejaculatory dysfunction in different etiologies, such as spinal cord injury (SCI), retroperitoneal lymph node dissection, diabetes, multiple sclerosis, drugs and psychogenic anejaculation (2–5).

Anejaculation, as well as delayed ejaculation and inhibited ejaculation, are the least common, least studied and least understood male sexual dysfunctions. Their prevalence is unclear for various reasons such as lack of differentiation between delayed ejaculation and anejaculation in

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epidemiological studies (6). Although anejaculation accounts for only 2% of male factor infertility (7), in specific populations such as men with SCI it is the major cause for infertility (5).

A significant progression in the treatment of anejaculated men was achieved by the method of electroejaculation (EEJ). During EEJ, a rectal probe transmits electrical stimulation to the short postsynaptic sympathetic fibers in the wall of the ejaculatory organs (1), leading to ejaculation and sperm procurement in 70%–90% of attempts (2, 4, 8, 9). Therefore, in a relatively simple, safe, and inexpensive method the barrier of semen achievement can be overcome (1).

Semen collected by EEJ can be used in variety of fertilization methods (1, 3, 8–10). Ohl et al. (5) conducted 653 IUI cycles achieving an 8.7% pregnancy rate per IUI cycle. The relatively low pregnancy rate was attributed to the poor quality of the electroejaculates (2). The electroejaculates demonstrated polyspermia, asthenospermia and teratospermia with decreased ability of cervical mucus penetration and impaired fertilizing capacity (1, 4, 5, 8, 11). Because of the low sperm quality in these patients, combined EEJ, IVF, and intracytoplasmic sperm injection (ICSI) became optional procedures to improve pregnancy and delivery rates. Heruti et al. (8) demonstrated pregnancy rate of 26.4% and delivery rate of 20.5% after 68 EEJ/ICSI cycles in 20 couples suffering from SCI anejaculation.

Most of the research on anejaculation was conducted mainly in SCI patients, a prominent etiology for anejaculation (5). One of the less investigated populations is the psychogenic anejaculatory patients. These patients are otherwise healthy and may have erections and nocturnal emission but cannot ejaculate even by masturbation (12, 13). The diagnosis of psychogenic anejaculation is made after iatrogenic and pathophysiological etiologies are excluded (6, 14).

Studies conducted on patients with psychogenic anejaculation revealed similar asthenospermia as SCI patients (12). Additional research using EEJ combined with ICSI for couples with male factor infertility due to psychogenic anejaculation demonstrated prominent lack of uniformity with diverse results regarding fertilization, pregnancy and delivery rates (13, 15). Sample sizes were relatively low and no comparison was made between psychogenic anejaculation and other anejaculatory populations. In addition, some of the published series on patients with anejaculation were conducted on diverse male impairments (2–5) or included comparisons to male patients who had the ability to ejaculate and suffered from other infertility impairment (15). Therefore, the aim of the current study was to investigate results of EEJ and ICSI for psychogenic anejaculation and to compare them with other homogeneous group of EEJ/ICSI treated population, the SCI patients.

## MATERIALS AND METHODS

### Patients

In this retrospective study we enrolled all couples treated by EEJ and ICSI for isolated male psychogenic anejaculation in our units between 2000 and 2010. All male patients underwent complete evaluation including patient history, physical examination, hormonal profile and ultrasound examination as needed. Diagnosis of psychogenic anejaculation was made after exclusion of organic causes for anejaculation in addition to sexual relationship without ejaculations and orgasm in the presence of nocturnal emissions. Female patients underwent detailed investigation including patient history, physical examination, hormonal profile, ultrasound, and, if needed, hysterosalpingogram. Couples with female factor in addition to male infertility were excluded. Indications for ICSI included recurrent failure in IUI treatments or low ejaculate quality such as total motility $<10 \times 10^6$/ml. The research was approved by the Institutional Review Board.

### Hormonal Stimulation and Electroejaculation

Ovarian stimulation for IVF included accepted IVF protocols. Long agonist, antagonist protocol and short agonist protocol of controlled ovarian hyperstimulation were performed as described elsewhere (16, 17). In both groups, hCG was administered when more than two follicles reached 18 mm, followed by oocyte collection 36 hours later. Oocyte retrieval, fertilization, embryo culture and transfer were carried out as previously described (18).

Most of the patients in the study group were Orthodox Jews and manual stimulation of a vibrator is absolutely forbidden for religious reasons. Therefore vibratory stimulation had not been performed in our cohort and EEJ is our first-line of treatment for anejaculation. The EEJ procedures were performed 36–38 hours after hCG injection followed by oocytes retrievals. Before EEJ all patients gave their informed consent with comprehensive understanding of the procedure and its possible complications. Under general anesthesia and blood pressure control with patient placed in a lateral decubitus position, a rectal probe was inserted with its electrodes facing anteriorly to the proximity of the prostate (Seager electrical stimulator model 14). The voltage used was 10–15 V for 4–5 seconds duration with maximal current of 25 mA. In cases of rectal temperature of 39.9°C the electrical current was discontinued automatically to avoid thermal injury. There were some differences regarding the performance of EEJ between psychogenic and SCI patients. First, in SCI patients, general anesthesia was performed only in cases of preserved rectal sensation. Second, due to lack of retrograde ejaculation in psychogenic patients, bladder preparation and electrical stimulation were performed differently. Psychogenic patients were instructed to empty their bladder before the procedure, whereas in SCI patients the bladder was washed by plastic catheter with saline bicarbonate solution and 80 mg of garamycin 10–15 mL were instilled. In psychogenic patients single electrical stimulation was sufficient to retrieve sperm by antegrade ejaculation. On the other hand, in some SCI patients the first stimulation did not result with antegrade ejaculation and a recurrent three short stimulation of 5 V for 1 second each were performed. Then a catheter was inserted to retrieve sperm that was retrograde ejaculated. In cases of recurrent failure three more stimulations were given of 5 V of 1-second duration and a final catheter insertion was performed to retrieve as much spermatozoa as possible. In order to avoid autonomic dysreflexia in SCI patients, vital