

Electroejaculation With a Foley Catheter in the Bladder

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ABSTRACT: Electroejaculation has been successfully used for sperm procurement in anejaculatory men desiring fertility. The electroejaculation procedure begins with complete catheterization of the bladder and instillation of an insemination medium into the bladder as a buffer. This step can minimize possible detrimental effects of urine on any retrograde ejaculate. The catheter is then removed. After the collection of the antegrade ejaculate, the bladder is catheterized again. Our objective was to evaluate the possibility of performing electroejaculation while the Foley catheter is instilled in the bladder. Eleven men with anejaculation underwent 22 procedures of rectal probe electroejaculation. Each patient underwent electroejaculation twice, once without the catheter instilled in the bladder (standard method) and once with it. The 2 methods,

with and without the catheter, showed no significant differences in volume, concentration, motility, count, and total motility of the antegrade ejaculate. In retrograde ejaculate, there were no significant differences in the count, motility, and total motility. In addition, there was no difference in the total count and the total motility of both fractions in the 2 methods. In this study, we show that ejaculation can be achieved while the Foley catheter is instilled in the urethra without any detrimental effect on the sperm. Therefore, we recommend not removing the Foley catheter while performing electroejaculation.

Key words: Electroejaculation, antegrade ejaculate, retrograde ejaculate.

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Anejaculation is caused mainly by spinal cord injury. Other relatively uncommon causes include retroperitoneal lymph node dissection, diabetes mellitus, transverse myelitis, and multiple sclerosis. Psychogenic anejaculation is a unique problem. Men with psychogenic anejaculation are otherwise healthy individuals who cannot consciously ejaculate even by masturbation, although they may have erections and nocturnal emissions. Electroejaculation has been successfully used for sperm procurement in anejaculatory men desiring fertility.

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After the collection of the antegrade ejaculate, the bladder is catheterized again. Retrograde ejaculate, if present, is collected and the bladder is flushed with medium until the fluid is clear (Buch and Zorn, 1993; Ohl, 1993). We present a variant of the above procedure in which the catheter is inserted in the bladder before beginning the electroejaculation and not removed throughout the procedure.

Materials and Methods

Patients

Eight men with psychogenic anejaculation underwent rectal probe electroejaculation. The mean age of the men was 35 years (range: 25–50 years). The diagnosis of psychogenic anejaculation was performed on the basis of lack of physical causes for the problem, presence of occasional nocturnal emissions, and sexual relations without conscious ejaculations. Retrograde ejaculation was ruled out after urine examination. The levels of thyroid-stimulating hormone, follicle-stimulating hormone, luteinizing hormone, and prolactin were within the normal range. All the men were ultraorthodox Jews and had primary infertility of a duration ranging from 2 to 7 years. Psychotherapy and vibrator stimulation were suggested to all patients. Some were refractory to the treatment and others refused it.

Two patients, aged 30 and 31 years, had anejaculation due to spinal cord injury at levels T8 and T12 (patients 3 and 5 in Table 1). One patient, aged 24 years, had anejaculation due to diabetes mellitus (patient 6 in Table 1).

Electroejaculation Procedure

Twenty procedures of electroejaculation, approved by the Institutional Review Board, were performed under general anesthesia while the patients were placed in lateral decubitus. Patient 3 underwent the procedure twice without anesthesia.

The electroejaculation sequence was initiated by catheterizing the patient's bladder with a Foley catheter size 12 Fr/CH (silicone-coated latex Foley catheter). Before insertion, the outer surface of the catheter was washed with Ham F-10 medium (Sigma Chemical Co, St Louis, Mo). After it was emptied, the bladder was flushed with the medium, and 20 mL of the medium was

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Table 1. *Sperm characteristics from patients who underwent electroejaculation using both methods*

Patient No.	Interval (mo)	Method*	Antegrade			Retrograde	
			Volume (mL)	Concentration ($\times 10^6$ /mL)	Motility	Count ($\times 10^6$)	Motility (%)
1	8	+	0.5	33	2	27	1
			3.5	20	5	30	0
2	3	+	1.5	1.5	60	8	1
			2.0	50	30	10	2
3	3	+	2.0	1	1	0	0
			1.0	10	5	1.5	0
4	13	+	1.0	250	25	150	7
			1.5	140	42	75	16
5	13	+	4.0	25	15	77	5
			1.5	51	8	10	0
6	11	+	2.0	36	8	0	0
			1.5	150	7	150	1
7	18	+	2.5	25	8	0	0
			0.5	40	10	10	20
8	3	+	0.5	2	1	4	0
			0.5	2	1	0.1	0
9	10	+	0	0	0	0.7	90
			1.0	2	50	0.5	50
10	4	+	1.5	20	10	3	26
			1.5	40	8	0.5	50
11	8	+	2.0	0.3	60	0.2	50
			0.7	0.3	60	0.1	50

* Plus sign indicates with catheter in bladder; minus sign, standard method (catheter is removed before the procedure).

instilled for collection of retrograde-emitted sperm. Usually, at this stage we would remove the catheter, perform electroejaculation, and then insert a new Foley catheter. In our modified method, instead of removing the first catheter, we inflate its balloon and close its other end with a syringe and perform electroejaculation. All patients underwent electroejaculation, once using the standard method and once using the modified method. The time interval between the 2 procedures for each patient is shown in Table 1.

Electroejaculation was performed essentially as described previously (Buch and Zorn, 1993; Ohl, 1993), using the Seager Model 14 Electroejaculator (Dalzell Medical System, The Plains, Va). To facilitate an antegrade ejaculate, the pendulous and bulbular urethra were continuously milked by an assistant as the patient was being stimulated. Following termination of the stimulation sequence, the retrograde specimen was recovered through the catheter and the catheter was removed. The outer surface of the Foley catheter was washed again with medium in case any sperm was left on it. In both antegrade and retrograde portions of the ejaculate, sperm concentration and motility were determined according to the World Health Organization guidelines for semen analysis (World Health Organization, 1999).

Before this study, we examined the possibility that the Foley catheter had any detrimental effect on sperm motility. Ten samples of sperm obtained from healthy men were incubated with the Foley catheter for 10 minutes. The sperm survival was followed up for 24 hours after exposure to the catheter.

Statistical Analysis

Statistical analysis was performed using the Wilcoxon rank test, appropriate for paired-matched observations. The statistical signif-

icances reported are exact and not asymptotic. $P < .05$ was considered statistically significant. The analysis was performed using Stat Xact 4.0 (Cytel Software Corporation, Cambridge, Mass).

Results

In the preliminary study, we did not find any detrimental effects on the sperm that was exposed to the catheter. All electroejaculation procedures were accomplished without complications. Antegrade and retrograde portions were obtained in all cases using the standard method. When we used the modified method, in one case there was no antegrade ejaculation, and in 3 cases there was no retrograde ejaculation. The sperm characteristics of each patient, obtained from both methods, are given in Table 1. The mean sperm characteristics are summarized in Table 2.

The 2 methods showed no significant differences in volume, concentration, motility, count, and total motility of the antegrade ejaculate. In the retrograde ejaculate, there were no significant differences in the count, motility, and total motility. In addition, there was no difference in the total count and the total motility of both fractions in the 2 methods.

Discussion

The main methods to obtain sperm are intercourse, masturbation, penile vibratory stimulation, and electroejacu-

Table 2. Mean sperm characteristics obtained using both methods

Characteristics	Mean \pm SD		P
	With Catheter	Without Catheter	
Antrograde			
Volume (mL)	1.59 \pm 1.11	1.38 \pm 0.85	.86
Concentration ($\times 10^6$ /mL)	35.8 \pm 72.4	45.9 \pm 52.6	.20
Motility (%)	17.2 \pm 22.3	20.5 \pm 21.0	.59
Count ($\times 10^6$)	48.8 \pm 75.2	70.4 \pm 80.6	.37
Total motility ($\times 10^3$)	848 \pm 1846	1381 \pm 2627	.16
Retrograde			
Count ($\times 10^6$)	24.5 \pm 47.5	26.1 \pm 46.6	.96
Motility (%)	16.3 \pm 28.9	17.1 \pm 22.1	.63
Total motility ($\times 10^3$)	147 \pm 319	147 \pm 355	.97
Antrograde and retrograde			
Count ($\times 10^6$)	73.3 \pm 120.1	96.5 \pm 123.9	.70
Total motility ($\times 10^3$)	995 \pm 2160	1529 \pm 2961	.16

lation. The first 3 methods use mechanical stimulation of the penis, whereas the mechanism of stimulating ejaculation using electroejaculation relies on direct stimulation of the accessory glands to release stored fluid and spermatozoa (Brackett and Lynne, 2000) and does not involve the penis.

In our preliminary study, we found, as previously was shown by Lim et al (1994), that the Foley catheter has no effects on sperm quality. These facts led us to assume that a Foley catheter in place has no detrimental effect on the volume of the ejaculate or on the sperm motility; therefore, we changed the standard procedure of electroejaculation. Instead of removing and reinserting a Foley catheter, we now perform the procedure with the Foley catheter inserted in the bladder.

The aim of our study was to compare the quality of the electroejaculate obtained with the 2 methods. No statistical differences in sperm parameters were found. Although in some individual patients the outcome with the Foley catheter in place was not as good as with the standard method, we believe that this is a reflection of the variability of ejaculations rather than the influence of the catheter.

Catheterization of the bladder may cause infection and trauma to the urinal tract. Frequency of and pain during voiding are the most frequent complaints of our patients on the first day following electroejaculation. Besides saving a catheter and shortening the procedure, inserting the catheter only once instead of twice may reduce these complaints.

Ejaculation may be entirely retrograde. Signs such as sweating, piloerection, "goose-bumps" on the thighs and buttocks, and erection cannot always prove that the pa-

tient is adequately stimulated and that ejaculation has occurred. In our method, the direct connection to the bladder enables us to identify ejaculation by emptying it; this way we can avoid unnecessary stimulation and shorten the procedure.

The retrograde ejaculation is due to the inadequate closure of the bladder neck during electroejaculation. In our study, the assistant who collects the ejaculate pulled the balloon of the Foley catheter gently toward the neck of the bladder. By doing so, we tried to achieve a mechanical barrier to avoid retrograde ejaculation. Lim et al (1994) prevented retrograde ejaculation using this method in patients with spinal cord injury. We, however, succeeded in only 3 of the 11 cases.

In our study, we have shown that the stimulation of the electroejaculation can expel the ejaculate through the potential space between the catheter and the urethra. Therefore, we recommend not removing the Foley catheter during the procedure.

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