

## CASE REPORT

# Case Report: A Healthy Live Birth Following ICSI with Retrograde Ejaculated Sperm

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### Abstract

Retrograde ejaculation, sometimes called dry orgasm, refers to the medical condition when semen enters the urinary bladder (retrograde) instead of emerging through the penis after orgasm (antegrade). In some instances, a very minute quantity of antegrade semen appears in the ejaculate and may or may not be devoid of spermatozoa. Complete retrograde ejaculation causes male infertility. Intracytoplasmic sperm injection (ICSI) has been employed to achieve fertilization in some cases of male subfertility e.g. severe oligoasthenoteratozoospermia. Assisted reproductive techniques to aid conception in cases of retrograde ejaculation have been described extensively elsewhere but there is paucity of knowledge on the occurrence and treatment in Africa. This case report describes the identification and successful treatment of a couple where the male partner suffered from retrograde ejaculation. (*Afr J Reprod Health* 2014; 18[4]: 123-125).

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**Keywords:** Retrograde ejaculation, ICSI, infertility, Africa

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### Résumé

L'éjaculation rétrograde, parfois appelée l'orgasme sec, se réfère à l'état de santé lorsque le sperme pénètre dans la vessie (rétrograde) au lieu d'émerger à travers le pénis après l'orgasme (antégrade). Dans certains cas, une très petite quantité de sperme semble antégrade apparaît dans l'éjaculat et peut ou peut ne pas être dépourvu de spermatozoïdes. L'éjaculation rétrograde complète provoque l'infertilité masculine. L'injection intra cytoplasmique de spermatozoïdes (IICS) a été utilisée pour la fécondation dans certains cas de l'hypofertilité chez les hommes, par exemple l'oligoasthénotéatospermie sévère. Les techniques de la reproduction assistée pour faciliter la conception en cas d'éjaculation rétrograde ont été décrites en détail ailleurs, mais il y a peu de connaissances sur sa prévalence et son traitement en Afrique. Ce rapport de cas décrit l'identification et le traitement réussis chez un couple où le partenaire masculin a souffert de l'éjaculation rétrograde. (*Afr J Reprod Health* 2014; 18[4]: 123-125).

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**Mots clés:** éjaculation rétrograde, IICS, infertilité, Afrique

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### Introduction

Retrograde ejaculation is a condition in which no or minimal antegrade ejaculate is produced although orgasm is present and all the sensations of ejaculation may have been experienced by the patient<sup>1</sup>. Diagnostic clues to retrograde ejaculation include absent or intermittent emission of ejaculate, orgasm without ejaculation, an ability to empty the bladder during erection and the presence of spermatozoa and fructose in post-coital specimens of urine<sup>2</sup>. Retrograde ejaculation is the most common cause for ejaculatory dysfunction and accounts for 0.3 – 2% of male infertility<sup>2</sup> but may be as high as 18% in men with azoospermia<sup>1</sup>.

The etiology of retrograde ejaculation is multifactorial and may be congenital, acquired or idiopathic in origin. The most common urological surgical procedure leading to retrograde ejaculation is prostatectomy. Another cause of retrograde ejaculation is diabetic neuropathy<sup>1,3</sup>. In a small group of patients, no clear cause of the condition can be found. These cases of idiopathic retrograde ejaculation are thought to be due to the progressive widening of the bladder neck which allows the passage of spermatozoa into the bladder, following the route of least resistance especially when the bladder is empty<sup>1</sup>.

For men who exhibit retrograde ejaculation, urine can be collected after orgasm. However,

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without pre-treatment any spermatozoa found in the pellet after urinary centrifugation will almost invariably be dead due to the combined effects of osmotic stress, low pH and urea toxicity<sup>1</sup> rendering such spermatozoa unsuitable to yield fertilization when used in assisted conception procedures.

### **Case Presentation**

A couple presented with the diagnosis of secondary infertility. The male was 35 years old and the female was 30 years old. The female had a normal hormone profile and patent fallopian tubes. The male had previously been diagnosed with diabetes, for which he was prescribed continuous medication. He had also suffered from mumps some 10 years previously.

A sterile labelled specimen container was provided to the male and was instructed to produce a semen sample for analysis. No antegrade ejaculate/fluid was produced into the container although he experienced orgasm, so retrograde ejaculation was suspected. The following week after four days of abstinence, the man was asked to produce a post ejaculatory urine sample to be examined for the presence of sperm. The suspicion of retrograde ejaculation was confirmed with the presence of about a 100 thousand/mL sperm count in urine sediment with about 2% of them being motile (twitching rather than progressively motile). Given the poor motility of spermatozoa retrieved from the urine, the option of surgical sperm retrieval (SSR) was considered as is also a proven method of treating infertility caused by retrograde ejaculation<sup>4</sup> in combination with intracytoplasmic sperm injection (ICSI). With previous experiences of surgically retrieved spermatozoa, we believed we could obtain more motile spermatozoa surgically. The detail of such a procedure was explained to the couple. The couple returned to the clinic two years later to continue with therapy.

### **Management and Outcome**

The female was worked up for oocyte collection using a standard long protocol with buserelin (Sanofi-Aventis, Paris, France) which she started on Day 2 of her menses for three weeks. A trans-vaginal scan was performed to detect a thin

endometrium after which 375 IU of Gonalf (Merck-Serono, Germany) was administered alongside buserelin for seven days. A trans-vaginal scan on the 7<sup>th</sup> day of stimulation showed development of nine antral follicles. The dose of FSH was increased to 450 IU for a further three days alongside buserelin. The final trans-vaginal scan performed the day after her tenth FSH injection showed fifteen follicles and at 7.00pm, 10000 IU of HCG (IBSA, Switzerland) was administered for oocyte retrieval some 36hours after the HCG injection.

The male patient was booked to undergo SSR on the day of oocyte retrieval. However after consultation with the visiting embryologist, the male was encouraged to produce a sample via retrograde ejaculation with the hope of retrieving more motile spermatozoa this time around. The difference with this retrograde sample was in the male's preparation. He was first asked to empty his bladder by passing urine. A 300mL drink of an alkaline solution (two tablets of Alka-Seltzer dissolved in 300mL of water) was administered orally. After 30 minutes the male was instructed to drink an additional 300mL of water. He was then provided with a sterile 60mL labelled specimen container to collect any antegrade ejaculate and a further three 250mL labelled containers to collect urine immediately after ejaculation. Upon analysis, an antegrade sample of 0.2mL was produced but it was devoid of spermatozoa. The whole urine sample was therefore prepared by pipetting into sterile 15mL conical tubes and centrifuged at 320g for 5 minutes. Following the initial centrifugation, the supernatant in each tube was removed and the sediment in all tubes aspirated into a single 15mL conical tube using sterile technique and centrifuged at 320g for 5 minutes. Following supernatant removal, the pellet of urine sediment was sampled and examined microscopically. 14% active motile spermatozoa were observed. The urine sediment was gently layered onto a 0.3 mL each of 80% and 40% density gradient (Suprasperm, Origio, Denmark) and centrifuged at 320g for 10 minutes. The supernatant was removed and the sediment aspirated into a 3mL sperm washing medium (Sperm washing medium, Origio, Denmark) and centrifuged at 320g for 5 minutes. The supernatant was discarded and 1.0

uL of the sediment was added to a pre-warmed 5uL polyvinylpyrrolidone (PVP) droplet and ICSI performed as described elsewhere<sup>5</sup>.

Thirteen retrieved oocytes from the wife were prepared for ICSI as has been described elsewhere<sup>5</sup>. ICSI was performed on 6 metaphase II oocytes using the Nikon Eclipse TE 2000-S. Fertilization was checked some 17 hours after ICSI and 5 fertilized oocytes were placed in culture (ISM 1, Origio, Denmark) in 6% CO<sub>2</sub> incubator. Three grade 1 top quality embryos were transferred into the woman's uterus on Day 3. Two additional grade 2 embryos were frozen for future embryo transfers for this patient.

Ultrasonography showed two gestational sacs four weeks after embryo transfer. Healthy twins were delivered after an uneventful pregnancy.

## Discussion

The usage of centrifuged urine in cases of retrograde ejaculation for ICSI has been described elsewhere but the paucity of knowledge on such methods in Africa was the aim of writing this case study.

Alkalinizing the urine to achieve a pH 7.5 (pH strips by DIRUI, Changchun, China) offered us the chance to retrieve some motile spermatozoa for a successful ICSI and most importantly the delivery of healthy twins. This case study agrees with other studies<sup>6,7</sup> that mumps orchitis rarely leads to sterility but it may contribute to subfertility. This is evident as our patient was able to father his first child some years after mumps orchitis infection. Improvements to the alkaline drink used for this condition have made treatment more accessible with improved patient compliance. Use of Alka-Seltzer offers a palatable technique for patients suffering from retrograde ejaculation.

Treatment options for retrograde ejaculation includes urinary sperm retrieval as described in this case report, medical management with

anticholinergics and sympathomimetics, surgical techniques and electroejaculation<sup>4</sup>. This case presentation depicts urinary sperm retrieval as a simple and inexpensive means of assisting retrograde ejaculation patients achieve a successful pregnancy and delivery without adding any extra cost to the standard ICSI treatment.

## Contribution of Authors

Michael B Yakass conceived, designed and prepared the laboratory aspects of the manuscript. Bryan Woodward proof read and corrected manuscript. Mary A Otoo collected data and Edem K Hiadzi prepared the clinical aspect of the manuscript. All authors approved the manuscript.

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