



Sperm Detection in Congenital Ejaculatory Duct Cyst Repair: A Case Report

Ahmad Ricardo Silalahi^{1*}, Tjahjo Djojo Tanojo¹, Judie Hartono¹, Agustinus², Silvia W Lestari^{1,3}

¹. Andrology Specialist Program, Medical Faculty of Universitas Airlangga/Dr. Soetomo Hospital Surabaya, Indonesia.

². Medical Biology Department, Medical Faculty of Universitas Airlangga, Surabaya, Indonesia.

³. Medical Biology Department, Medical Faculty of Universitas Indonesia, Jakarta, Indonesia.

***Corresponding Author:** Email: ahmad.ricardo.syukur-2016@fk.unair.ac.id

Abstract

Ejaculatory duct cyst is a very rare case. We report a 26-year-old man with primary infertility complaining of aspermia since before marriage, precisely since the first wet dream. General physical examination and hormonal levels were in normal values. The cyst was visualized through abdominal TRUS, MRI and abdominal ultrasound (USG). The sperm detection test was performed before and after repaired by TURED. Before repair, the sperm was absent at Cowper's gland secretion, post orgasmic urine and post massage prostate. After repair, sperm was detected in cyst aspiration fluid and useful to distinguish ED cyst between the Mullerian duct and utriculus cyst. In addition, after one month post repaired, the sperm concentration, motility and morphology increased. The improvement of sperm quality is useful to determine the infertility program whether IVF, IUI or natural pregnancy.

Keywords: Ejaculatory duct cyst, Male infertility, Sperm detection.

Introduction

Ejaculatory duct cyst (ED) is a very rare case. Lund and Cummings, in 1946, firstly reported a case of ejaculatory duct cyst connected with seminal vesicles and vas deferens [1]. Ejaculatory duct cyst is one of intraprostatic cyst which is located on lateral, close to the midline, and posterior of the prostatic urethra. Ejaculatory duct cysts can be caused by either congenital or acquired obstruction [2]. Clinical signs and symptoms vary among patients.

Some patients present low ejaculate volume, hematospermia, oligospermia, azoospermia, perineal pain spontaneously or during ejaculation, urinary tract disorders (dysuria or frequency), recurrent epididymitis, prostatitis or infertility [2,3,4,5,6,7,8,9]. Transrectal ultrasound (TRUS) is usually performed as an initial screening because it is a safe and non-invasive technique that can detect prostate lesions. TRUS may visualize cystic lesions, location, size, shape and orientation [5, 7, 8, 9, 10, 11, 12, 13]. In

addition, Magnetic Resonance Imaging (MRI) using endorectal coil is relatively expensive and rarely used, but may be considered if the TRUS results were inconclusive.

Furthermore, MRI is better than computed tomography (CT) because it can provide a better image of the prostate anatomy zone and produce images in several fields [2, 5, 8, 10, 13, 14]. GH Sun et al reported the successful treatment of ejaculatory duct cysts through transurethral resection of ejaculatory ducts (TURED) [7]. TURED is minimally invasive, simple and effective technique. The sperm detection before and after ED repair is necessary to predict spontaneous pregnancy rates and infertility program [8, 15, 16, 17, 18]. We report a case of ED with the sperm detection test before and after repair.

Case Report

A 26-year-old male came to Andrology clinic complaining absence of semen during

ejaculation and never been conceived before. Physical examination showed enlargement with uneven surface of both epididymis and bilateral hydrocele. Before repair, sperm

detection test was performed on three parts: 1) Cowper's gland secretion, 2) Post orgasmic urine and 3) Post prostate massage, which all showed no sperm (Fig 1).

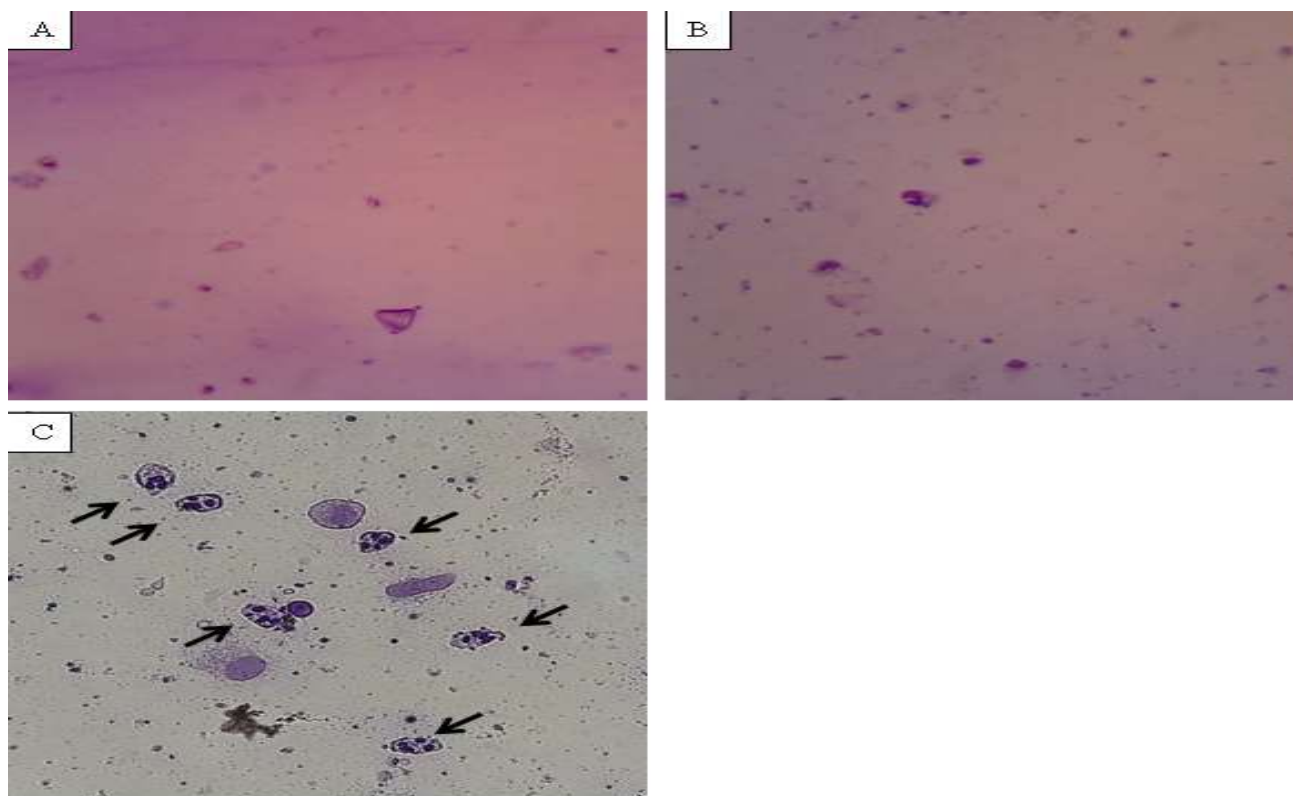


Fig.1: (Sperm detection test demonstrated that the sperm was absent in : A. Cowper's glands secretion, B. Post orgasmic urine after centrifugation and C. Post prostate massage secretion. Black arrow sign indicated leukocytes formation. The observation was performed on 1000x magnification and showed no sperm)

Furthermore, transrectal ultrasound (TRUS) was performed and showed left vas deferens and seminal vesicle dilation. Cystic lesion about 3.2 x 1.25 cm in size was visualized between left vas deferens and seminal vesicle. The connection between left vas deferens, left

seminal vesicle and cyst, cannot be ruled out. Ejaculatory ducts are difficult to evaluate on TRUS and obstruction cannot be ruled out. Patients were advised for Magnetic Resonance Imaging (MRI) of the pelvis with contrast (Fig.2).



Fig. 2: Transrectal ultrasound (TRUS) on sagittal view. Black arrow sign indicated cystic lesion

Besides TRUS, the abdominal ultrasound was performed too and showed simple cystic lesion, +/- 1.67 cm x 1.6 cm x 2.06 cm in size was visualized in particular probe position, located on superposition with right lateral superior prostate side, with normal prostate

size. While other organs such as liver, gall bladder, spleen, pancreas, right and left kidney, and bladder size and texture, were normal. In addition, calcification in cyst was not visible.(Fig.3).



Fig.3: Abdominal ultrasound on sagittal view. Black arrow sign indicated cystic lesion

At MRI, high protein content cyst was visible with regular and sharp margin at orifice of ejaculatory duct connected with right and left seminal vesicles. The cyst size is about 2.3 x 3.2 x 2.9 cm without contrast enhancement. The signal intensity was high on T1-weighted

and T2FatSat images, but slightly high intensity on T2-weight images. Fluid intensity was seen in the right and left scrotum without enlarged lymph nodes (Fig. 4).

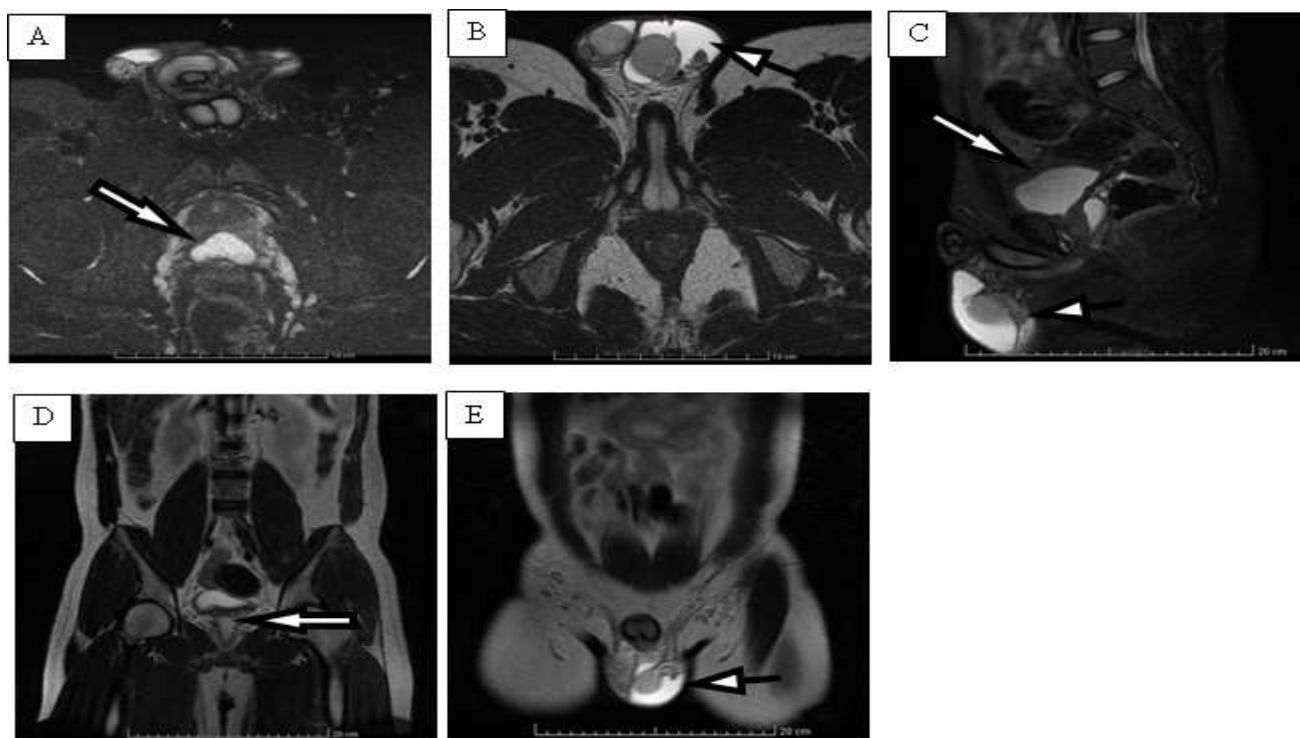


Fig. 4: (Magnetic resonance imaging shows on the A-B.T2 Axial view, C.T2 Sagittal view, D-E.T2 Coronal view.

➡ Arrow showed cystic lesions. ➡ Arrow showed hydrocele.)

In addition, we also performed the urinalysis test, hormonal test and testicular USG. (Supplement data) The abnormal results in urinalysis test indicated the presence of bacteriuria, hematuria and albuminuria, while testicular USG showed bilateral hydrocele. In contrast, the hormonal test demonstrated normal values of reproductive hormones. Patient was managed by the aspiration of the cyst together with transurethral resection of the ejaculatory ducts (TURED).

The 24 mL of turbid fluid was obtained from this procedure. Sperm detection and many inflammatory cells were observed on microscopic examination of the fluid. (Fig. 5 A) Sperm finding is necessary to distinguish ejaculatory duct cyst with the Mullerian duct and utriculus cyst [4, 7]. After 1-month of post TURED, the sperm detection was performed by semen analysis which showed ejaculation with volume of 1.5 mL and sperm count with concentration less than 1×10^6 sperm/mL. (Fig. 5 B).

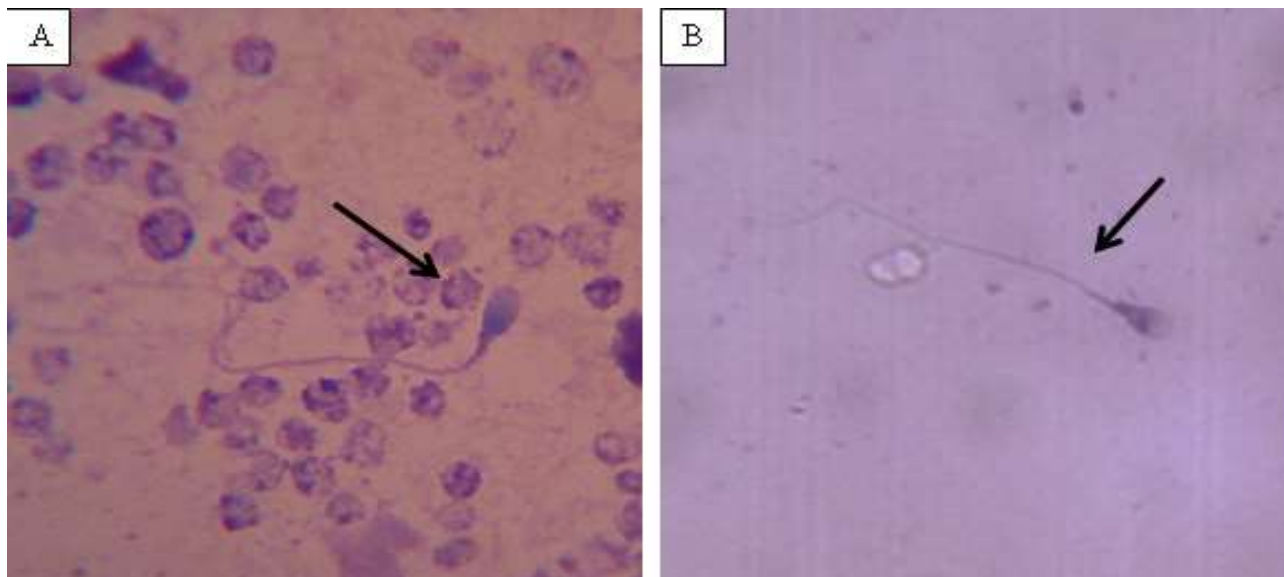


Fig 5: Sperm detection test in the A&B. A. Sample of TURED: sperm (→ arrow) and more leukocytes were appearing in the field of view; B. Sample of 1-month of posts TURED: sperm were appeared in the field of view. The observation was performed on 1000x magnification

On one month post TURED, the sperm analysis was performed and showed an

improvement in sperm quality as listed in sperm analysis result (Table. 1).

Table 1: Sperm Analysis Result

| SPERM PARAMETER | RESULTS | REFERENCE VALUE |
|-----------------------|------------------|-----------------|
| - Semen volume | 1.5 ml | 1.5 ml |
| - Sperm concentration | 0.276 million/ml | 15 million/ml |
| - Sperm motility | | |
| a. Progressive | 18 % | 32 % |
| b. Non-progressive | 15 % | 1 % |
| c. Immotile | 67 % | 22 % |
| - Sperm morphology | 2 % | 4 % |

Discussion

In this case report, almost all the modulation of imaging was performed. Cystic lesion was demonstrated by the TRUS, MRI and abdominal ultrasound (USG). TRUS is usually performed as an initial screening because it is a safe and non-invasive technique that can detect prostate lesions. TRUS may visualize cystic lesions, location, size, shape and orientation [5, 7, 8, 9, 10, 11, 12, 13]. Unfortunately, TRUS can't afford to visualize the ejaculatory duct obstruction, hence MRI was performed to confirm.

From the MRI, high protein content cyst was visible with regular and sharp margin at orifice of ejaculatory duct connected with right and left seminal vesicles. In addition, besides supported the finding of ED cyst by TRUS and MRI, the USG abdomen demonstrated the normal appearance of other organs such as renal, liver and others. Ejaculatory duct cyst is a rare pathological condition. In addition, it is not easy to ensure whether an ejaculatory duct cyst was

congenital or acquired. In congenital, symptoms may appear in adulthood.

However, some authors reported recurrent epididymo-orchitis in prepubertal patients [3,4]. In acquired, cyst can occur due to obstruction of the distal orifice of the ejaculatory ducts. Obstruction can be caused by calculus formation, iatrogenic trauma history, and presence of chronic infection or inflammation [5, 6, 7, 8]. According to the authors, this cyst was congenital, because the non-existence of semen was occurred in the first wet dream at puberty. Even when patient masturbated before marriage, semen fluid never being ejaculated.

Furthermore, the history of urogenital infection never been documented. The enlargement of epididymis with uneven surface and bilateral hydrocele may indicate chronic and recurrent epididymitis or epididymo-orchitis. As known before, the epididymo-orchitis may occur in congenital ejaculatory cyst [3, 4]. Meanwhile, the presence of bacteriuria, hematuria and

albuminuria may not a primary source of infection, although it may occur due partial obstruction of the prostatic urethra by ejaculatory duct cyst.

This circumstance was supported by normal result in abdominal ultrasound and renal function test, as well as the absence of symptoms (asymptomatic). The normal size of testis and level of gonadotropin indicating normal production of spermatozoa in the testes, even though it may be obstructed on its passage to the urethra. Abdominal ultrasound is necessary to rule out other organ anomalies that might occur in congenital ejaculatory duct cyst [6]. Shebata et al also have proved that transabdominal ultrasound correlate with clinical and laboratory data are useful for ejaculatory duct obstruction [12].

As mentioned above, the patient complained about infertility problem. Fertility problems indeed remain important issue for patient with ejaculatory duct cysts. This infertility problem was supported by the sperm detection test on samples before repair of ED cyst, whether in ejaculate/Cowper's glands secretion, post orgasmic urine after centrifugation and post prostate massage secretion which showed no sperm. This complains was in line with the complication of ED cyst, due to the obstruction of ejaculatory ducts, which may cause ejaculatory disturbance until aspermia and lead to infertility. At ED cyst repair by TURED, cysts usually contain fructose or sperm, calculi, and

sometimes pus or blood. However, symptoms and signs are not specific, depending on the shape or size of cysts and malformations that may also occur in the seminal vesicles and vas deferens [2, 5, 6, 8, 9]. After ED cyst repair by TURED, the sperm analysis showed the improvement of sperm quality such as in sperm concentration, motility and morphology. TURED is still become an effective surgical treatment for male infertility caused by ED cyst [7]. According to the enhancement of sperm quality, the further management of the infertility problem could be categorized into in vitro fertilization (IVF), intra uterine insemination (IUI) or natural pregnancy.

Even though, it is possible too to perform sperm retrieval in assisted reproductive technology (ART) together with TURED [19, 20]. Semen parameters (ejaculate volume, sperm concentration, motility and morphology) and pregnancy success rate information should be evaluated after repair [17, 18].

Conclusion

Sperm detection in cyst aspiration fluid is necessary to distinguish ED cyst between the Mullerian duct cysts and utriculus cyst. In addition, the sperm detection test by sperm analysis after the repair of ED cyst by TURED showed the increase of sperm quality. This improvement is useful to determine the infertility program whether IVF, IUI or natural pregnancy.

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Supplement Data

Testicular ultrasound showed normal volume of right testis (3.11 x 2.18 x 3.80 cm) and left (2.84 x 1.89 x 3.25 cm), with homogeneous texture. Fluid intensity (black arrow) were seen in the right and left scrotum which indicated bilateral hydrocele. (Fig.1 Supp).

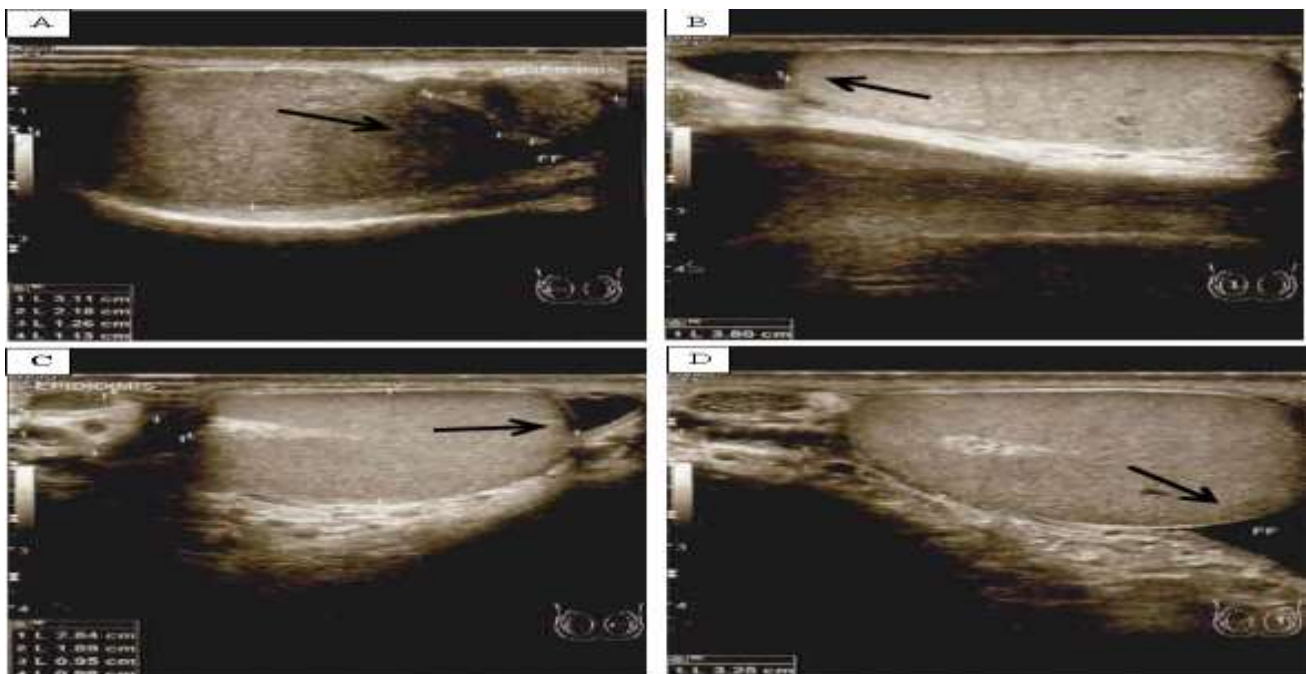


Fig.1: Testicular ultrasound showed right testis on A. Transverse view. B. Sagittal view and left testis on C. Transverse view. D. Sagittal view. Fluid intensity (black arrow) in the right and left scrotum indicated bilateral hydrocele

Table 1: (Urinalysis Result)

| EXAMINATION | RESULTS | REFERENCE VALUE |
|---------------------------------|----------------------------|-----------------|
| - Erythrocytes | *45-50 / HPF | <2 |
| - Leukocytes | 1-2 / HPF | <5 |
| - Hyaline Cylinder | Negative | <2 |
| - Squamous Epithelial cell | 2-3 / HPF | <10 |
| - Transitional epithelial cell | Negative | <10 |
| - Renal tubular epithelial cell | Negative | <10 |
| - Bacteria | *Positive | Negative |
| - Normal Crystals | Negative | Negative |
| - Abnormal Crystals | Negative | Negative |
| - Miscellaneous Elements | *Positive (mucous threads) | Negative |

Table 2: (Hormonal analysis result)

| HORMONE | RESULTS | REFERENCE VALUE |
|----------------|-------------|-----------------|
| - FSH | 5 mIU/ml | 4.6 to 12.4 |
| - LH | 4.52 mIU/ml | 1.7 to 8.6 |
| - Testosterone | 36.83 pg/ml | 249-836 |
| - Estradiol | 590.4 ng/dl | 7.63 to 42.6 |