

Successful Fertility Preservation Using Single-Sperm Vitrification After 18 Years of Estrogen Therapy in a Transgender Female

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Introduction

Sperm banking prior to starting gender affirming hormones for transwomen is the standard of care, but is often not implemented. Little information is available on the likelihood, timing, and quantity of return of spermatogenesis after pausing hormone administration for the purpose of reproduction. Often if any sperm are found, they will be very low in number.

Cryptozoospermia represents a challenge for conventional sperm freezing, with often no sperm able to be frozen in advance or found fresh on the day of egg retrieval. Extended Sperm Search and Microfreeze (ESSM) is a technique previously published for use in cis men with both presumed azoospermia and cryptozoospermia. The entire processed specimen is plated in droplets under oil, and individual sperm placed into wells with the use of a micromanipulator, allowing for vitrification of individual live sperm with high survival rates.

We present the results of an ESSM performed on a semen specimen from a transwoman prior to her undergoing vaginoplasty.

Background

The information available on the likelihood of return of spermatogenesis is limited by small sample sizes and case reports. One study that included 16 transwomen with a history of gender-affirming hormone therapy (GAHT), ranging from 0.5-5.5 years, and discontinuation ranging from 1-5 months, reported a median sperm concentration of 3.7M/mL, including an unspecified number of azoospermic participants¹.

Another included 2 transwomen, one with 6 months of GAHT. Sperm was identified at 3 months of cessation, and returned to normal parameters at 5 months. The other had 26 months of GAHT and testing at 2, 3 and 4 months after cessation did not identify sperm. This patient proceeded with orchiectomy². A case report of a transwoman with 16 months of GAHT and 6 weeks cessation reported return of normal sperm production³.

More information is still needed to better understand whether time taking hormones, time removed from hormone therapy, or even type of hormone treatment has an impact on the likelihood of recovered spermatogenesis.

Methods

A 40-year-old transwoman with a history of 18 years of estrogen therapy, spironolactone, and finasteride presented for fertility preservation. She was counseled to stop her gender affirming medications. After 10 months, standard semen analysis performed at an IVF center continued to demonstrate azoospermia. She was referred for ESSM on a fresh semen specimen the day before undergoing vaginoplasty and bilateral orchiectomy. If no sperm were found, the orchiectomy specimens from the next day's surgery would be brought to the lab for ESSM.

Results

In preparation for semen sample collection, the patient was advised to abstain from ejaculation for 7-10 days. After extended search of the sample, a total of 278 motile sperm were recovered from the sample, 195 of which were graded as "progressive", 83 of them graded "non-progressive". A total of 13 cryo-devices (SpermVD, MFC Global) were vitrified, containing 19-26 sperm per device. The patient elected to defer testicular sperm extraction.

Sperm VD



MFC Global, 2020

Future Applications

Since submission, an additional 2 patients have been evaluated. One did not result in sperm recovery, even after evaluation of the testicular tissue. The other, with 5 years of GAHT, was able to recover and cryopreserve 7 individual sperm prior to orchiectomy while continuing estrogen and progesterone.

Conclusion

ESSM was successful in recovering and freezing small numbers of sperm in the semen specimen of a transwoman 18 years after starting hormone therapy. No sperm had been detected previously in several standard semen analyses. The implementation of this protocol, with ESSM of orchiectomy specimens as backup, may allow for the recovery of sperm in many transwomen who began hormone treatment prior to fertility preservation.

References

1. Rodriguez-Wallberg KA, Häljestic J, Arver S, Johansson ALV, Lundberg FE. 2021 Mar 23. Sperm quality in transgender women before or after gender affirming hormone therapy— A prospective cohort study. *Andrology*. doi:<https://doi.org/10.1111/andr.12999>.
2. Barnard EP, Dhar CP, Rothenberg SS, Menke MN, Witchel SF, Montano GT, Orwig KE, Valli-Pulaski H. 2019. Fertility Preservation Outcomes in Adolescent and Young Adult Feminizing Transgender Patients. *Pediatrics*. 144(3). doi:<https://doi.org/10.1542/peds.2018-3943>. [accessed 2021 Feb 23]. <https://pediatrics.aappublications.org/content/144/3/e20183943>.
3. Alford AV, Theisen KM, Kim N, Bodie JA, Pariser JJ. 2020. Successful Ejaculatory Sperm Cryopreservation After Cessation of Long-term Estrogen Therapy in a Transgender Female. *Urology*. 136:e48–e50. doi:<https://doi.org/10.1016/j.urol.2019.08.021>.



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