

Recanalization of Vas Deferens and Pregnancy One Year After Negative Post Vasectomy Semen Analysis Followed by Positive and Then Negative Semen Analysis: A Case Report

Jeremy Z Goodman* | Daniel H Williams

*Correspondence: Jeremy Z Goodman

Address: University of Wisconsin – Hospitals & Clinics, Madison WI, 53705, USA

E-mail ✉: Goodman.jeremy00@gmail.com

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ABSTRACT

Vasectomy is one of the most common procedures performed by Urologists worldwide and considered a safe and permanent method of contraception. The risk of conception following vasectomy is postulated to be 1:2000. Early failure is defined as a post operative semen analysis showing persistent motile sperm while late failure is defined as a rejoining of the severed ends of the vas deferens. There are no reports in the literature of recanalization of the vas deferens resulting in motile sperm and pregnancy and then subsequent negative semen analysis without surgical intervention or re-do vasectomy. Our case shows that recanalization can occur late after vasectomy resulting in pregnancy but that the recanalization can be reversed without intervention.

Keywords: *Vasectomy, Recanalization, Paternity, Semen Analysis, Contraception*

Introduction

Vasectomy is one of the most common procedures performed by Urologists worldwide and considered a safe and permanent method of contraception for men (Hieu *et al.*, 2003). The risk of conception following vasectomy is postulated to be 1:2000 (Eisenberg and Lipshultz, 2010). Early failure is defined as a post operative semen analysis showing persistent motile sperm while late failure is defined as a rejoining of the severed ends of the vas deferens (Lowe, 2016). Failure following vasectomy can be due to technical error during the procedure, recanalization (early or late), or failing to use alternative contraceptive before a negative semen analysis is confirmed.

Based on most recent AUA guidelines – a man is sterile after vasectomy if <100,000 non-motile sperm per milliliter are present in the ejaculate taken for semen analysis about 3 months after the vasectomy (Sharlip *et al.*, 2012).

Following recanalization of the vas deferens men are typically offered a re-do vasectomy procedure if they desire sterility. There are several case reports documenting both early and late recanalization (Michaelides and Ghani M, 2020; Sherlock and Holl-Allen, 1984).

There are no reports in the literature of recanalization of the vas deferens resulting in motile sperm and successful pregnancy and then subsequent negative semen analysis without surgical intervention or re-do vasectomy. This report aims to describe the case of a man who became a father after a negative post vasectomy semen analysis and then went on to have produce a positive semen analysis that eventually became negative with time and no intervention.

Case Presentation

A healthy 30-year-old man presented to our clinic to undergo a vasectomy. He was married and conceived two children with his wife and desired no more children. His vasectomy procedure was done in office under local anesthetic and was performed without complication using titanium hemoclips, mucosal cautery and excision of 1 cm segment. Two months after his vasectomy he had a negative semen analysis: no sperm seen in 2.3ml of semen sample.

13 months after his vasectomy he called our office noting that his wife was found to be pregnant, and he proceeded to provide a semen analysis that showed 32 sperm (15 which were motile) in 5.0ml of semen sample. The patient and wife decided to continue the pregnancy but desired a form of permanent contraception and discussion of re-do vasectomy vs repeat semen analysis was had. Decision was made to proceed with a re-do vasectomy but prior to the procedure and 6 months after the positive semen analysis – repeat semen analysis showed 2 non motile sperm in 3.7ml of semen sample. Instead of proceeding with a re-do vasectomy at this point the patient opted for repeat testing of his semen. Two additional semen analysis were taken; one at 25 months post vasectomy and another at 32 months post vasectomy that were both without any sperm seen. Mutual decision was made at this point to not proceed with any re-do vasectomy.

This case shows that late recanalization can occur and result in successful pregnancy despite severe oligospermia. Additionally, re-do vasectomy may not be necessary if a patient desires sterility as azoospermia may occur with enough time after recanalization although the mechanism is unknown.

Discussion

Vasectomy is one of the safest methods of male contraception with low complication rate (Yang *et al.*, 2020). Prior to vasectomy, it is recommended that a preoperative discussion between the physician and patient include the risk that even after vas occlusion is confirmed vasectomy is not 100% reliable in preventing pregnancy and that repeat vasectomy is necessary in <1% of vasectomies (Manka *et al.*, 2020).

The procedure is generally carried out in an outpatient setting under local anesthetic but at times can be done under general anesthesia per patient preference or if their anatomy would make it challenging to perform the procedure under local. American Urological Association (AUA) guidelines recommend that the ends should be occluded by one of three divisional methods: Mucosal cautery (MC) with fascial interposition (FI) and without ligature or clips applied on the vas, MC without FI and without ligatures or clips applied on the vas, or open-ended vasectomy leaving the testicular end of the vas unoccluded using MC on the abdominal end and FI (Yang *et al.*, 2020). The non-divisional method of extended electrocautery is also generally accepted (Yang *et al.*, 2020).

Following vasectomy there are common complications to be aware of including scrotal swelling, bruising, bleeding, hematoma, and infection. These more common complications are generally reported to be 1-2% based on surgeon's experience (Sokal *et al.*, 1999). Less common complications are early and late failure which are reported to occur in 0.4% and 0.05% patients, respectively (Sokal *et al.*, 1999).

Early recanalization is generally thought to occur within the first few weeks after vasectomy and is thought to be slightly associated with method of vasectomy; greater in those with ligation and excision without FI and lower for those with thermal cautery (Labrecque *et al.*, 2006). Our case report describes a failure due to late recanalization over 1-year post-vasectomy. The mechanism of recanalization is thought to occur when epithelial microtubules can proliferate through granulomatous tissue between severed ends of the vas deferens and create a fistula allowing sperm to return to the ejaculate (Labrecque *et al.*, 2006). What happens overtime to this fistula or how long this fistula may persist is unknown. There is also the possibility of a duplicated (complete or partial) vas deferens although this would not explain the initial negative post ejaculatory semen analysis. Our case report is the only known report showing timeline of eventual failure of this fistula and subsequent negative post semen analysis after recanalization.

Conclusion

Although vasectomy is a safe and generally successful procedure, patients should be made aware of the possibility of late recanalization. General accepted practice is to proceed with a re-do vasectomy after recanalization, but this may not always be the case. The management of post vasectomy paternity can be challenging and should include detailed counseling of both the patient and their partner and possible next steps including both re-do vasectomy if they still desire sterility but also observation with repeat semen analysis.

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Conflict of Interest: None

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