Do intraoperative seminal fluid parameters influence pregnancy-outcome after microsurgical Vaso-Vasostomy or Vaso-Epididymostomy?

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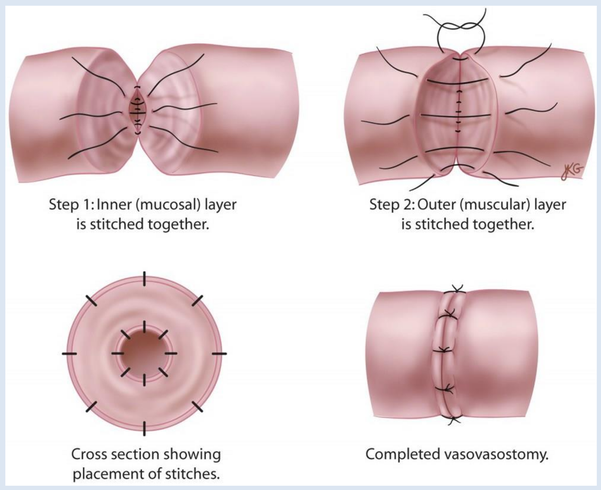
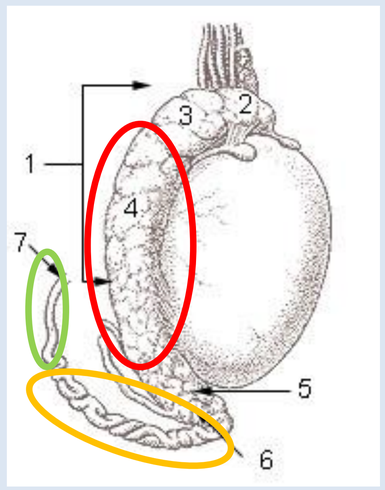
Introduction

Microsurgical anastomosis is the standard of care for upper seminal tract obstruction in azoospermic men suffering from primary or secondary infertility. Depending on the presence of sperm in the seminal fluid of the testicular stump, anastomosis can be performed either in the pars erecta or contorta of the vas deferens. In some cases, anastomosis has to be performed at the epididymis.





However, not in all cases a microsurgical vaso-vasostomy (VV) or vaso-epididymostomy (VE) results in subsequent pregnancy. Therefore, parameters that may predict the successful refertilisation are of clinical relevance. Published pregnancy rates differ between 22% - 68%, patency rates between 80% - 98%.

We evaluated quality parameters from intraoperatively harvested and examined seminal fluid from the testicular stump and their influence on pregnancy outcome and postoperative patency in a consecutive single surgeon series.

Materials and methods

We enrolled 335 consecutive men with azoospermia due to upper seminal tract obstruction (mostly post vasectomy) that underwent two layer VV or VE from a single surgeon between 1994 and July 2022. Intraoperatively, seminal fluid was harvested from the testicular stump. In case of absence of sperm, no anastomosis was performed. In the remaining 327 cases, intraoperative parameters (e.g. age of male and female partner, quality of testicular seminal fluid, anastomosis location, obstruction time and many more) were documented and related to pregnancy outcome (primary endpoint) Postoperative patency was the secondary endpoint. A multivariate logistic regression was performed to identify independent parameters that influence primary and secondary endpoint.

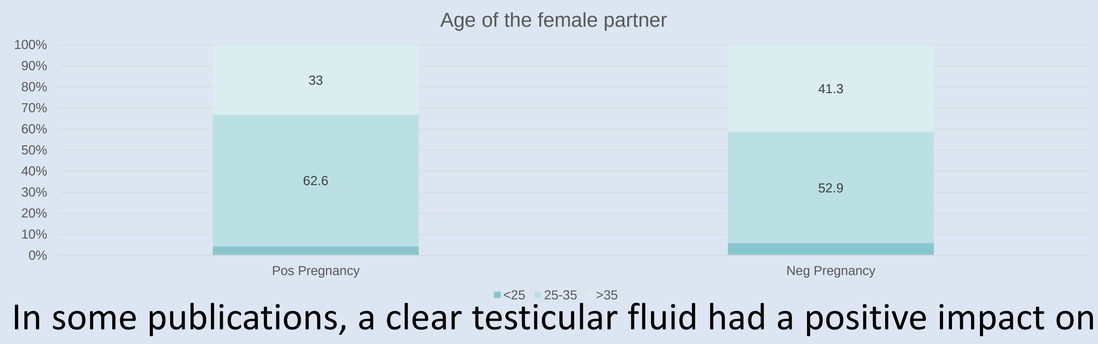
Results

Median age of men and their female partners at surgery were 42 (range 27 – 70) and 33 (range 19 – 46) years, respectively. The median seminal tract obstruction time was 96 months (range 10 – 360). The overall patency rate after surgery for both uni- or bilateral VV or VE was 92.4%. In 5.6% of men, secondary obstruction occurred, within 6 months after surgery. In 1.2% of men with primary postoperative azoospermia, a secondary patency with positive spermiogram could be observed. A total of 49% of the couples, had a pregnancy. Pregnancy occurred in a median of 16 months after surgery (range 1 -109).

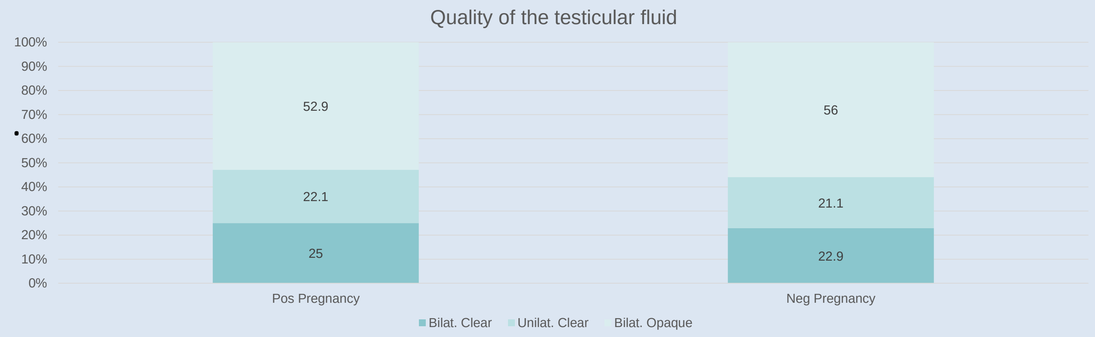
In our cohort two independent predictors of pregnancy could be identified:

The first beeing the **males age** (p=0.037): Men at the age of 42.5y were much more likely to father a child than men at the age of 44.4y or older. The second was **obstruction time** (p<0.001): In the pregnancy positive group, median obstruction time was 7.3 years. In couples without pregnancy, it was longer at 10.3 years.

No other parameters did meet statistical significance. However and as expected, women's age in the pregnancy positive group, was slightly lower (see table below, p=0.318):



In some publications, a clear testicular fluid had a positive impact on pregnancy and patency rate, compared to opaque specimen. However, our data does not support these results. We performed an analysis on the following three subgroups: bilateral clear fluid, unilateral clear fluid and bilateral opaque fluid. None of these quality parameters showed a significant impact on primary and secondary endpoint (p=0.899):



Furthermore, anastomosis location did not seem to have a significant impact on pregnancy and patency outcome.

Conclusion

Our data show comparable results in regard of postoperative pregnancy and patency rates. We identified two independent predictive factors for postoperative success: the age of the male as well as obstruction time. However, age of the female partner as well as quality parameters of the testicular fluid and anastomosis location did not meet criteria of statistical significance.

We are currently analyzing other parameters such as preoperative proven fertility of both the male and the female partner for significant impact on the outcome.

Literatur:

[1] Namekawa T, Imamoto T, Kato M, Komiya A, Ichikawa T. Vasovasostomy and vasoepididymostomy: Review of the procedures, outcomes, and predictors of patency and pregnancy over the last decade. Reprod Med Biol. 2018 May 22;17(4):343-355. doi: 10.1002/rmb2.12207. PMID: 30377390; PMCID: PMC6194271.

[2] Elzanaty S, Dohle GR. Vasovasostomy and predictors of vasal patency: a systematic review. Scand J Urol Nephrol. 2012 Aug;46(4):241-6. doi: 10.3109/00365599.2012.669790. Epub 2012 Mar 27. PMID: 22452615