Factors and practice patterns that affect the decision for vasoepididymostomy

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Introduction: To determine the factors used to make the decision between vasovasostomy (VV) and vasoepididymostomy (VE) by leaders performing microsurgical vasectomy reversal using a questionnaire. Materials and methods: An online questionnaire was sent to all members of the Society for the Study of Male *Reproduction (SSMR), a male reproduction subspecialty* society of the AUA, using the SurveyMonkey platform. **Results:** Sixty-seven surgeons responded to the questionnaire (27% of SSMR members). Of which 72% of members performed less than 50 vasectomy reversals per year. Also, 71% of members stated that less than 20% of their vasectomy reversals are vasoepididymostomies. When evaluating epididymal fluid at the time of reversal, 87% would perform a VE for pasty fluid, 66% with creamy fluid without sperm heads and 55% with no or

Introduction

The operative decision to perform a vasoepididymostomy (VE) during a vasectomy reversal involves multiple factors including character of the vasal fluid, presence

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scant fluid. With respect to banking sperm, 36% take sperm or testicular tissue at the time of VE while 37% sometimes take sperm mostly depending on the couple's preference. The Berger end-to-side with intussusception *VE technique is used by the majority of members (78%).* The presence of intact sperm or sperm parts determined the location in the epididymis for anastomosis for 55% and 19% of members respectively. Postoperative semen testing after a VE is evaluated first between 6 weeks to *3 months for 64%. The procedure is considered a failure* between 6 to 12 months for 34% and 12 to 18 months for another 48% if no sperm is seen on semen analysis. Conclusions: Most members perform a VE with pasty fluid or creamy fluid without sperm heads. Three out of four members are using the Berger end-to-side intussusception technique to perform their VE. More studies are needed to determine the optimal circumstances to perform a VE as there is significant variation in responses even among members of the SSMR.

Key Words: practice patterns, male reproduction, vasectomy reversal, vasoepididymostomy, infertility

of sperm or parts of sperm, surgeon experience and obstructive interval. Models have been used to try and determine the likelihood of performing a VE from Parekattil et al¹ and Fenig et al² but these are not clinically applicable to all surgeons due to variation seen when the data was expanded from the Cleveland Clinic to seven other institutions.³ The decision to perform a VE has important clinical consequences due to lower patency and pregnancy rates.³

A previous survey was sent to 1,508 practicing urologists and identified clear surgical and clinical differences among general urologists verses fellowship trained infertility specialists with regard to vasectomy reversal. They found major differences in the decision to operate if it had been greater than 15 years since vasectomy reversal (12.5% fellowship trained would operate versus 57% community urologists). Also, the use of an operating microscope for 93% of fellowship trained versus 56% of community urologists) varied significantly.⁴ This study was designed to determine the factors involved in the decision to perform a VE and evaluate opinions regarding postoperative care among members of the SSMR.

Materials and methods

After obtaining approval from our institutional review board, an online SurveyMonkey questionnaire (Palo Alto, CA, USA) was created. This questionnaire consisted of 13 questions and was then sent to all members of the SSMR (248 members), a male reproduction subspecialty society of the AUA. This survey was not validated. We performed simple statistical analysis with the use of SurveyMonkey and Excel (Microsoft Corporation, Redmond, WA, USA).

Results

Of the 248 SSMR members, sixty-seven responded (27%) to the questionnaire.

Respondent surgical characteristics

About half of the respondents perform < 25 vasectomy reversals per year, Figure 1. About three-quarters of the respondents said that less than 20% of their reversals were a VE.

Factors for VE decision making

Sixty-four percent of respondents said pasty fluid was the most important factor to determine whether to perform a VE with 34% saying this was the second most important factor. Absence of fluid was the most important factor for 34% of respondents and second most important for 43%. Time from vasectomy was third most important and fullness of epididymis was least important, Figure 2. When asked about fluid quality prompting a VE, 87% would perform it for pasty fluid, 66% for creamy fluid with no sperm heads, and 55% would perform it for no fluid.

Surgical characteristics

Thirty-six percent always take testicular tissue or sperm at the time of VE. Twenty-eight percent never take tissue or sperm and 37% took for varied reasons (7.5% when going to the caput, 15% at either the corpus or





caput, and 13.4% when no sperm was seen with light microscopy), 77.6% performed used a Berger end to side with intussusception technique⁵ while 17.9% performed the end-to-side Thomas technique⁶ and the rest (4.5%) performing an end to end technique, Figure 3.

When determining which part of the epididymis to attach to during a VE, the presence of intact sperm was the most important factor (55.2%). Next was the appearance of the epididymis (22.4%) and lastly the presence of sperm parts (19.4%). Three percent used quality of the epididymal fluid (with absence of sperm parts).

Factors and practice patterns that affect the decision for vasoepididymostomy



Figure 2. Factors used to determine the need for vasoepididymostomy (VE).



Figure 3. Type of vasoepididymostomy (VE) performed.

Postop semen samples and surgical failures

Sixty-four percent of respondents check a semen sample between 6 weeks and 3 months. Eighteen percent check a semen analysis between 1-6 weeks and 3-6 months with no one checking after 6 months. Most surgeons considered a VV a failure if sperm had not returned before a year (27% at <6 months, and 46% between 6-12 months). But about half (47.8%) of respondents would continue checking sperm for up to 18 months before considering a VE a failure. Only 37% considered a VE a failure if it was less than a year and 48% considered it a failure if it was between 12-18 months. Fifteen percent waited longer than 18 months before declaring a VE a failure, Table 1.

Clinical scenario

How would you proceed: creamy/translucent fluid from the left vas without sperm on light microscopy. Twenty-eight percent would check the other side. Fifty-four percent would perform a VE and 28% would perform a VV. If they evaluated the right side and found sperm then most would do a VV on the side with sperm and a VE on the side without sperm (63%) with bilateral VV for 31% of respondents.

TABLE 1.	How	long	to	consider	checking	before
considerin	ig it a	surgio	al	failure		

Time from surgery	VV	VE			
< 6 months	27% (18)	3% (2)			
6-12 months	46% (31)	34% (23)			
> 12 months	27% (18)	63% (42)			
12-18 months		48% (32)			
> 18 months		15% (10)			
VV = vasovasostomy; VE = vasoepididymostomy					

Discussion

As expected, the SSMR members who responded to the questionnaire appear to be high volume vasectomy reversal microsurgeons with 52% of them performing more than 25 reversals per year. VE's consist of a minority of their vasectomy reversals with almost 3/4 of the respondents saying it was less than 20% of the vasectomy reversal volume. Despite this, they are still performing a significant number of these procedures if the volume of reversals being performed each year is taken into account. This further supports findings by Chawla et al⁷ and a previous survey of all urologists by Crain et al⁴ that showed fellowship trained urologists performed more than an average of 26.4 reversals per year (SD 33.5). In that study, there was also a significant difference in what findings would prompt a surgeon to perform a VE based on whether the surgeon was fellowship trained, practicing at an academic center, or a community urologist. VE is a complex procedure that should be performed by experienced microsurgeons. It is important that the surgeon have experience with both techniques as you often cannot tell with certainty beforehand whether a VV or a VE should be performed, even with the Parekattil¹ or Fenig² calculators.

Pasty fluid and fluid without sperm are the most important factors surgeons consider when determining type of reconstruction which is consistent with the finding of Silber⁸ and the Vasovasostomy Study Group.⁹ Despite this, there are some members not performing a VE for pasty fluid or when no sperm are seen. This could be due to the time interval or clear fluid at the time of reversal, but this is hard to deduce upon their responses.

About a third of surgeons always took testicular tissue while another third never took testicular tissue at the time of VE. Our survey did not directly assess why tissue was taken, but the fact that so many surgeons routinely take testicular tissue for cryopreservation may confirm the fact that this is a challenging surgery with worse patency and pregnancy rates than VV.⁹

Three out of four surgeons performed a version of the Berger end-to-side anastomosis with intussusception technique This is performed by placing three 10-0 nylon sutures into the epididymis so that each suture forms 1 side of a triangle. An opening in the tubule is made between the sutures and they are brought inside-out, invaginating the epididymal tubule into the vas deferens.⁵ This is likely due to the equivalent or improved fertility rates coupled with an easier way to attach the smaller epididymal tubule to the larger vas lumen.⁶ When determining which part of the epididymis to attach to during a VE, the presence of intact sperm was the most important factor (55.2%). If there is intact sperm one would think this would have the highest success rates after VE. A study by Niederberger and Ross showed a significant correlation between intraoperative presence of sperm and sperm being seen on postoperative semen analysis. If there was no sperm found intraoperatively the patients did not recover sperm on later semen analyses.¹⁰

Most surgeons check the first semen sample between 6 weeks and 3 months after VE with no surgeon waiting longer than 6 months. At our institution, we generally have patients wait 2 weeks after surgery before first ejaculation, regardless of reversal performed. When evaluating failures, the majority of surgeons in our study waited longer after a VE than a VV (12 months versus 12-18 months). This is expected based upon the delayed appearance of sperm after VE which can take as long as 15 months.¹¹ The optimal length of time to wait before declaring a VE a failure has not been determined but has been evaluated by Yang et al.¹²

Questions twelve and thirteen of our survey involve a complex clinical situation without a clear correct answer. The operative approach to this case varies with some surgeons evaluating the other side (28%) and some going forward with a VV (18%) or VE (54%). Clinical scenarios like this one highlight the need for further studies to help delineate the best possible surgical plan in each circumstance to provide the best possible outcomes for our patients.

Recall bias is one of the possible weakness of this study as respondents were asked to remember how many procedures they perform yearly, but since the survey was sent to only surgeons who have an interest/expertise in microsurgical vasectomy reversal, they likely have a better record of how many procedures they perform each year. This survey was not validated and as with any survey study, there is a possibility of misinterpretation of the questions and answers, for example what the difference between creamy and pasty fluid is. Our overall response rate was 27%. This is lower than other published surveys⁴, and may be due to the small size of the SSMR (248 members), but one would think that a smaller group such as the SSMR may have have better response rates. With 73% of the initial survey group not responding to the survey, selection bias could also play a role in our results.

There are no set guidelines for when to do a VV vs a VE and evaluation of practice patterns are important first step in starting the conversation so that guidelines can be developed for the future.

Conclusions

This questionnaire of high volume vasectomy reversal surgeons shows that most SSMR members perform a VE for pasty fluid or creamy fluid without sperm heads. 3 out of 4 members are using the Berger endto-side intussusception technique to perform their VE and 1 out of 4 members takes testicular tissue during a VE while a larger number (46%) think about possibly taking testicular tissue. Most surgeons will wait for return of sperm in a semen analysis for up to 6 months with a VV and up to 18 months with a VE before considering the reversal a failure. More studies are needed to determine the optimal circumstances to perform a VE since there is significant variation even amongst members of Society for the Study of Male Reproduction.

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