

Vasectomy Reversal Outcomes Among Patients With Vasal Obstructive Intervals Greater Than 10 Years

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OBJECTIVE

To analyze the vasectomy reversal (VR) outcomes specifically among patients with vasal obstructive intervals (VOIs) of >10 years. The VOI has been shown to be a significant predictor of outcome after VR. Although no strict cutoff exists, couples have frequently been discouraged from considering a VR strictly according to the interval from vasectomy.

MATERIALS AND METHODS

From 2006 to 2011, all consecutive VRs performed by 2 fellowship-trained microsurgeons were analyzed. The patients were stratified into 4 categories according to the duration of the VOI: <10, 10-15, >15-20, and >20 years. The postoperative semen parameters, patency rates, and pregnancy outcomes were compared among the 4 groups.

RESULTS

Of 535 consecutive VRs, 177 patients (33%) had a VOI of >10 years. The couple characteristics, type of VR required, postoperative semen quality, and patency and pregnancy rates among the 4 groups were analyzed. The men with longer VOIs were older ($P < .001$) and had older female partners ($P = .006$). Although the VOI influenced the type of reversal performed, favorable semen concentrations (average >20 million/mL in all groups) and patency (average >90%) and pregnancy rates (range 24%-39%) were achieved in men with a VOI >10 years.

CONCLUSION

Although the interval since vasectomy has a significant effect on the type of VR required, provided a surgeon is proficient in both microsurgical vasovasostomy and vasoepididymostomy, favorable semen parameters and patency and pregnancy rates can be achieved in men with a VOI >10 years. Couples should not be discouraged from considering VR simply according to the VOI. UROLOGY 83: 320–323, 2014. © 2014 Elsevier Inc.

Vasectomy reversal (VR) offers men with previous vasectomy the potential for natural conception. With contemporary microsurgical techniques, performed by experienced surgical specialists, approximately 95% of men will have motile sperm return to the ejaculate after VR, with pregnancy rates among couples without a significant female factor ranging from 50%-75%.¹⁻³ Of other variables, the interval that has passed since the vasectomy, or the vasal obstructive interval (VOI), has been shown to be a significant predictor of the outcome after VR.⁴⁻⁷ Longer VOIs have generally been associated with less favorable vasal fluid and sperm quality intraoperatively, an increased need for vasoepididymostomy, poorer semen parameters postoperatively, and decreased patency and pregnancy rates.^{1,5-7} Although no strict cutoff exists, couples have frequently been discouraged from considering a VR, strictly because of interval

from the vasectomy. The discouragement of VR with a longer VOI has emanated from many sources, including family doctors, urologists, reproductive endocrinologists, online websites, and patient blogs and support groups.⁸⁻¹⁰

As an alternative, many couples have been encouraged to undergo surgical sperm retrieval with in vitro fertilization or intracytoplasmic sperm injection (IVF/ICSI). The outcome data after VR in a large contemporary series of men with a significant VOI (>10 years) remain limited.^{1,5} Consequently, the ability of specialists to accurately predict the success rates and, thus, counsel couples effectively remains a challenge.

Recognizing that the VOI can influence the type of VR required, we speculated that provided a surgeon is proficient in microsurgical reconstruction of the reproductive tract, favorable clinical outcomes can be achieved among patients with a prolonged VOI. To that end, the primary objective of the present study was to analyze VR outcomes, specifically among men with a VOI >10 years.

MATERIAL AND METHODS

From 2006 to 2011, all consecutive VRs performed by 2 fellowship-trained microsurgeons (E.D.G. and E.K.) with available postoperative follow-up data were analyzed as part of

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Table 1. Summary of preoperative demographics and postoperative outcomes stratified by vasal obstructive interval

	Obstructive Interval (y)			
	<10 (n = 358)	10-15 (n = 104)	>15-20 (n = 53)	>20 (n = 20)
Male age at VR (y)	38	43	48	55
Female age at VR (y)	33	32	36	36
Type of VR (%)				
VV/VV	83	64	62	50
VV/VE	11	21	21	30
VE/VE	6	15	17	20
Patent (%)	95	87	94	92
Pregnant (>1 y of follow-up) (%)	43	26	39	24
Semen quality				
Sperm concentration (millions/mL)	36	22	34	34
Motile (%)	38	27	23%	21%
Normal morphology (%)	43	39	33%	23%

VE, vasoepididymostomy; VR, vasectomy reversal; VV, vasovasostomy.

an interinstitutional database. Surgical cases were stratified into 4 categories according to the duration of VOI: <10, 10-15, >15-20, and >20 years. The surgical technique used by both surgeons was similar, specifically a microsurgical, 2-layer (10-0 nylon inner mucosal layer, 9-0 nylon outer muscular layer) anastomosis for vasovasostomy or a 2-suture (10-0 nylon) end-to-side longitudinal intussusception technique for vasoepididymostomy, as previously reported.¹¹⁻¹³ Vasovasostomy was performed if evidence was seen of sperm (sperm parts or intact sperm) in the vasal fluid and if clear copious vasal fluid was found in the absence of sperm. In the absence of these findings, vasoepididymostomy was performed.

The patient operative characteristics, including patient and female partner age and type of VR performed (vasovasostomy or vasoepididymostomy), were documented. The postoperative semen quality, patency rates, and pregnancy outcomes were compared among the 4 groups. Semen analyses, evaluated according to the World Health Organization criteria (1999),¹⁴ were initially obtained at 2 months postoperatively, with repeated collections requested at 3-month intervals until pregnancy had been achieved. The semen parameters were averaged for the patients with multiple analyses during the follow-up period. Patency was defined as the presence of motile sperm in the ejaculate after VR. Cases of delayed stenosis after initial patency were categorized as not patent. With respect to pregnancy outcomes, beginning 6 months after surgery, patients were telephoned and/or e-mailed at regular intervals (3-6 months) in an attempt to update their pregnancy status. To the best of our knowledge, only couples who had achieved pregnancy naturally were included in the present analysis.

Statistical analysis was performed using the Statistical Package for Social Sciences, 2010 version (SPSS, Chicago, IL). Comparisons of the type of VR required and the patency and pregnancy rates were analyzed using chi-square statistics. Analysis of variance was used to compare the mean semen parameters among the 4 groups.

The institutional review board approved the present study for male infertility research.

RESULTS

During the study period (2006-2011), 535 consecutive VRs (E.D.G. performed 329, E.K. performed 206) with available postoperative follow-up data (semen analysis and/or documented pregnancy) were analyzed. Of these

535 patients, 177 (33%) had a VOI of >10 years at their VR. The couple age demographics, type of VR required (vasovasostomy, vasoepididymostomy, or mixed anastomosis), postoperative semen quality, and patency and pregnancy rates among the 4 groups are summarized in Table 1.

Compared with patients with a VOI of <10 years, men with a longer VOI were older ($P < .001$) and had significantly older female partners ($P = .006$). Although the proportion of patients requiring vasoepididymostomy (unilateral or bilateral) was influenced by the VOI, the patency rates postoperatively remained high in all 4 groups and appeared to be less influenced by the VOI (Table 1).

With respect to the semen parameters, the mean sperm concentrations were not significantly different among the 4 groups when stratified by the VOI ($P = .1$). Mean postoperative sperm concentrations of >20 million/mL were achieved in all groups after VR, irrespective of the VOI. The percentage of motile sperm decreased ($P = .002$) and the percentage of normal morphology showed a trend toward a decrease ($P = .06$) as the VOI increased (Table 1).

Among patients with a minimum of 12 months of follow-up after VR with available pregnancy data ($n = 422$), the pregnancy rates were greatest among the couples with a VOI of <10 years (43%). However, a significant proportion (range 24%-39%) of couples were successful in achieving pregnancy with a VOI of >10 years (Table 1).

COMMENT

After vasectomy, the options for a biologically matched child include VR or surgical sperm retrieval with ICSI. Of the several factors, the interval since the vasectomy has been shown to influence the pregnancy outcomes after VR.^{1,4-7} As such, the VOI should be considered in the context of other significant medical and social influences such as the age and reproductive health of the female partner, ethical or religious preferences with respect to conception, and the financial resources of each couple.

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