

RECANALIZATION RATE FOLLOWING METHODS OF VASECTOMY USING INTERPOSITION OF FASCIAL SHEATH OF VAS DEFERENS

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ABSTRACT

A small but definite recanalization rate has followed the vas ligation method of partial vasectomy for sterilization. Interposition of the fascial sheath between the divided ends of the vas reduced the recanalization rate to 0. Fulguration of the lumen of the cut vas ends was used but was not the significant factor in this zero recanalization rate.

The major criterion for a successful method of partial vasectomy for sterility is the absence of recanalization. Many studies have revealed recanalization rates varying from 0 to 3.3 per cent with the ligation method (table 1).¹⁻¹⁰ Since Schmidt described the fulguration with fascial sheath interposition method¹¹ few studies have been reported with regard to recanalization.¹⁻¹⁰ We herein compare the recanalization rate with the ligation and the fulguration with fascial sheath interposition methods.

MATERIALS AND METHOD

Bilateral partial vasectomy to achieve sterility was done on 1,527 patients between June 1970 and December 1976.

However, 1 patient underwent fulguration with fascial sheath interposition and had persistence of sperm 8½ months after the procedure. This patient was a 34-year-old white man who had undergone bilateral partial vasectomy by the fulguration with fascial sheath interposition method on October 8, 1976. The first semen examination at 8 weeks after the vasectomy was free of sperm. However, further semen examination showed dead sperm in the semen for 8½ months after the partial vasectomy (table 3). He insisted on having a repeat vasectomy, which was performed on June 24, 1977. Histologic examination showed a sperm granuloma on the right side. An attempt was made on each side to demonstrate a channel of recanalization through the vasectomy site by injection of contrast material from one end of the excised vas length. This

TABLE 1. Comparison of recanalization rate with method of vasectomy

Reference	No. Pts.	Method	Recanalization No. (%)
Kase and Goldfarb ¹	500	Ligation and fulguration	2 (0.4)
Bennett ²	500	Double clip ligation	0
Kaplan and Huether ³	2,197	Ligation	26 (1.2)
Livingstone ⁴	3,200	Ligation	4 (0.1)
Leader and associates ⁵	2,227	Ligation	6 (0.3)*
Rees ⁶	484	Double clip ligation	0*
Barnes and associates ⁷	754	Ligation	3 (0.4)
Moss ⁸	929	Ligation	6 (0.6)
	565	Double clip ligation	3 (0.5)
Klapproth and Young ⁹	1,300	Fulguration and fascial sheath interposition	0
	800	Ligation	8 (1.0)
Schmidt ¹⁰	200	Fulguration and fascial sheath interposition	0
	150	Ligation	5 (3.3)
	135	Ligation and fascial sheath interposition	0
Current study	1,000	Fulguration and fascial sheath interposition	0
	497	Ligation	6 (1.2)
	820	Fulguration and fascial sheath interposition	0

* Plus 1 with method unknown.

Details of the methods used and the preoperative counseling have been described earlier.^{12, 13} In 564 patients the ligation method was used, while in 963 patients the fulguration with fascial sheath interposition method was used. All patients were advised to submit semen specimens for analysis 8 weeks after vasectomy. If motile or immotile sperm were present further semen examination was performed at 4-week intervals until 2 consecutive specimens showed aspermia.

RESULTS

Semen examination. The clearance rate of sperm after partial vasectomy was approximately the same in each group (table 2). There was a 1.2 per cent incidence of recanalization with the ligation method and no proved case of recanalization with the fulguration with fascial sheath interposition method.

procedure did not demonstrate any channel on either side (see figure). After the repeat vasectomy 2 semen examinations were negative.

Sperm granuloma. A tender mass was found at the region of the partial vasectomy site in 2.1 per cent of the cases after ligation and in 0.5 per cent of the cases after fulguration with fascial sheath interposition.

DISCUSSION

Vas ligation has been the time-honored method of partial vasectomy for sterilization. However, it has been followed by a small but definite recanalization rate. In an effort to eradicate recanalization interposition of a fascial sheath between the cut ends,¹⁴ excision of long segments of each vas,^{15, 16} tying cut ends of the vas back on themselves,¹⁷⁻¹⁹ and side-by-side ligation²⁰ were introduced.

Schmidt introduced vas lumen fulguration in 1966, claiming that with this method a sperm granuloma was less likely to occur.¹¹ He also popularized fascial sheath interposition be-

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TABLE 2. Results of semen examination and rate of sperm disappearance after vasectomy

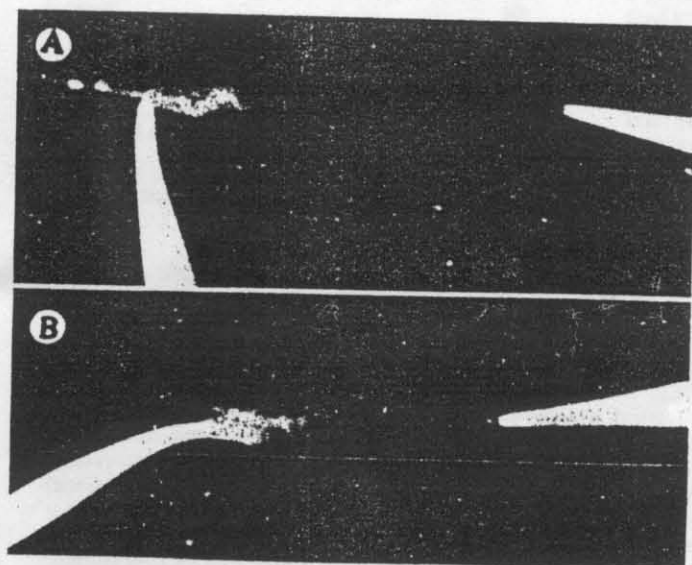
Interval After Vasectomy (mos.)	Negative Specimen			
	Vas Ligation		Vas Fulguration	
	No.	(%)	No.	(%)
2	417	(83.9)	675	(82.3)
3	459	(92.4)	788	(96.1)
4	474	(95.4)	806	(98.3)
4-6	485	(97.8)	816	(99.5)
6-12	491	(98.8)	820*	(100.0)
Sperm always present recanalization	6	(1.2)	0	(0.0)
Total	497		820	
Failed to attend	67		143	
Study total	564		963	

* One patient insisted on repeat vasectomy after 8 months.

TABLE 3. Results of semen examination in patient who had repeat vasectomy after fulguration method

Interval After Vasectomy (mos.)	Sperm Seen*	Viability
2	0 (no count)	-
2 1/2	Occasional (no count)	Dead
3	Occasional (no count)	Dead
3 1/2	Occasional (no count)	Dead
4	371,111/ml.	Dead
5	0 (no count)	-
6	Occasional (no count)	Dead
6 1/2	Occasional (no count)	Dead
7	1,700,000/ml.	Dead
8	150,000/ml.	Dead
8 1/4	58,000/ml.	Dead
8 1/2	55,000/ml.	Dead
8 1/2	Repeat vasectomy	
2	0 (no count)	
2 1/2	0 (no count)	

* High power field.



Diatrizoate meglumine and diatrizoate sodium injected through vas sections, including site of previous vasectomy. No recanalization demonstrated. A, right side. B, left side.

method but the interposition of the fascial sheath prevents the meeting of the epithelialization from the vas ends and, thus, accounts for the lack of recanalization with this method. Few studies have compared the fulguration with fascial sheath interposition and ligation methods of vasectomy^{9-10, 12} to confirm the claimed recanalization rate with each method.

It is difficult to explain why the vas ligation without fascial sheath interposition is still being used with its small but definite recanalization rate when vas fulguration with fascial sheath interposition has been shown to have no recanalization. Studies have shown no significant differences in morbidity between the 2 methods.^{9, 12}

The recanalization rates have referred to early recanalization when the initial post-vasectomy semen examinations never were consistently negative. Transient reappearance of sperm after vasectomy is temporary and is followed by negative specimens and not by a persistent rising sperm count.^{22, 23}

Late recanalization occurs when persistent rising sperm counts are present at a variable period after the initial post-vasectomy semen examinations were negative. Yearly semen examinations would be required to determine the late recanalization rate and this has not been done in the studies reported.

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tween the cut ends of the vas, previously described by Strode 1937.¹⁴ In 1924 Rolnick stressed the importance of the fascial sheath in reanastomosis and indicated that it acted as a splint, making a path for epithelialization from the cut ends of the vas.²¹ While sperm granuloma has been documented to precede some cases of reanastomosis the interposition of the fascial sheath between the vas ends seems to be of more significance. Sperm granulomas do occur with the fulguration