

Effectiveness of intraluminal thermal cautery alone without cutting the vas: preliminary results.

Michel Labrecque^{1,2}, Louise Caron ²

¹ *Department of Family Medicine, Laval University, Quebec City (Qc), Canada.G1L 3L5*

² *Family Planning clinic, Centre hospitalier universitaire de Québec, Quebec City (Qc), Canada.*

Published in the Proceedings of the International Conference on Men as Partners in Sexual and Reproductive Health; November 28 - December 1 2004; National Institute for Research in Reproductive Health; Mumbai, India 2005: p.111-155.

ABSTRACT

Objective: To report on the effectiveness of a vasectomy occlusion technique involving only intraluminal cautery using a hand-held battery-driven thermal cautery device without cutting the vas.

Methods: From March to June 2004, 227 men had a vasectomy performed in four clinics from Quebec City, Canada. After the vas was exposed with the no-scalpel (NSV) technique, intraluminal cautery of one cm of the vas lumen was performed on both sides of the NSV ring clamp. In addition, 0.5 cm of the anterior wall and the endothelium of the lumen on the summit of the vas loop were completely burned. The vas was returned uncut into the scrotum. The first semen analysis (SA) was requested 2 to 3 months post-vasectomy. SA was repeated every six weeks if any sperm were found.

Results: Preliminary results showed that among the 135 men (59%) who provided at least one semen sample, 20 (14.8%; 95% Confidence Interval [CI] 8.8% - 22.8%) had a probable or confirmed failure.

Conclusion: Intraluminal thermal cautery alone without cutting the vas, as performed in this case series, appears to be associated with a very high failure risk.

INTRODUCTION

Intraluminal cautery of the vas deferens combined with fascial interposition is considered to be the most effective vasectomy occlusion technique.¹ However, performing fascial interposition is technically challenging and time consuming. In 2002, Marie Stopes International (MSI) published a case series of 45,123 vasectomized men using an electrocautery technique without cutting the vas.² The failure risk reported was 0.7%. Based on these results, we developed a "cautery no-cut" technique, similar to the MSI vasectomy occlusion technique, using a hand-held thermal cautery device. The potential advantages of this technique were that it could be: simple, fast to perform (about 3 minutes skin to skin), easy to learn and to master, with no need for instruments other than No Scalpel Vasectomy (NSV) tools³ and a handheld battery-driven cautery device. This paper reports on preliminary results of the effectiveness of this technique.

METHODOLOGY

The "cautery no-cut" vasectomy occlusion technique was introduced at the end of March 2004 in two private clinics and two hospital-based family planning clinics of Quebec City, Canada. We stopped performing this technique in early June 2004 after observing motile sperm in the semen analysis (SA) of the first few vasectomized men in whom this technique was used.

The NSV approach³ was used to expose the vas in all cases. For occluding the vas, intraluminal cautery of one cm of the vas lumen was performed on both sides of the NSV ring clamp. In addition, 0.5 cm of the anterior wall and the endothelium of the lumen on the summit of the vas loop were completely burned. In total about 2.5 cm of the vas endothelium was destroyed (Figure). The vas was returned uncut into the scrotum. The same occlusion procedure was performed on both vasa.

The first SA was requested to be performed 2 to 3 months after vasectomy. If any sperm were found, SA was repeated every 6 weeks. Data were extracted in October 2004 (four months after the last procedure performed) from a computerized database maintained in each of the four clinics. Effectiveness criteria were based on the following criteria used in a

prior study conducted in the same vasectomy centers⁴: 1) Confirmed success: Last test showing azoospermia or the last three consecutive tests with $<1 \times 10^6$ /mL non-motile sperm; 2) Probable success: Last one or two tests with $<1 \times 10^6$ /mL non-motile sperm and not classified as confirmed success; 3) Possible failure: Last test showing any motile sperm or last two tests with $>1 \times 10^6$ /mL non-motile sperm, and last test done >91 days post-vasectomy; and not classified as confirmed failure; 4) Confirmed failure: Three tests showing any motile sperm, or two tests with $>1 \times 10^6$ /mL sperm with any motility, and last test done >91 days post-vasectomy; or last test done >182 days post-vasectomy showing $>1 \times 10^6$ /mL sperm with any motility; 5) Indeterminate: Not classified elsewhere.

RESULTS

A total of 227 procedures were performed with the “cautery no-cut” occlusion technique. Preliminary results showed that among the 135 men (59%) who provided at least one SA, the incidence of possible or confirmed failure was 14.8% (95% Confidence Interval [CI] 8.8% - 22.8%) (Table 1). Forty-one men (30.4%, 95% CI 22.7% - 38.1%) had motile sperm at the time of the first SA (Table 2).

DISCUSSION

These preliminary results show that intraluminal thermal cautery alone without cutting the vas, as performed in this case series, is associated with a very high failure risk. Even if only confirmed failures in our study are considered (4.4%), failure risk reported by Black² using a similar technique done with electrocautery were much lower (0.7%). The extent of vas damage between the techniques may however explain the divergent results. In the MSI technique, the vas damage is much more extensive than with the technique we used. About 90% of the full thickness of the vas walls, including the vas endothelium, is destroyed over about 3 cm (Black T, personal communication). In our technique, vas burning was restricted to the endothelium of the vas lumen and the total length of burned vas segment was about 2.5 cm.

These results are, however, based on less than 60% of the total cohort of men who accepted this procedure. Sample size of this case series of men who provided at least one semen sample is small, but even considering the lower limit of the 95% CI (8.8%), there is still an unacceptable risk of probable or confirmed failure. We intend to contact all the men who did not provide a semen sample to increase the compliance to SA and to confirm the validity of these preliminary results when all men will have a follow-up of at least six months after vasectomy.

The “cautery no cut” occlusion procedure performed in this case series does not appear to be an adequate vasectomy occlusion technique and cannot, at the present time, be recommended despite its simplicity.

References

1. Labrecque M, Dufresne C, Barone MA, Saint-Hilaire K. Vasectomy surgical techniques: a systematic review. *BMC Med* 2004;2:21.
2. Black T. The evolution of the Marie Stopes electrocautery no-scalpel vasectomy procedure. *The Journal of Family Planning and Reproductive Health Care* 2002;28:137-8.
3. Li SQ, Goldstein M, Zhu J, Huber D. The no-scalpel vasectomy. *J Urol* 1991;145:341-4.

4. Labrecque M, Nazerali H, Mondor M, Fortin V, Nasution M. Effectiveness and complications associated with 2 vasectomy occlusion techniques. *J Urol* 2002;168:2495-8; discussion 2498.

Table 1. Vas occlusion effectiveness with intraluminal thermal cautery alone without cutting the vas.

Vas occlusion outcomes	N=227
No semen analysis (unknown)	92 (40.5%)
At least one semen analysis	135 (59.5 %)
Confirmed Success	79 (58.5%)
Probable Success	28 (20.7%)
Indeterminate	8 (5.9%)
Possible Failure	14 (10.4%)
Confirmed Failure	6 (4.4%)

Table 2. Results of the first post-vasectomy semen analysis with intraluminal thermal cautery alone without cutting the vas in men who provided at least one semen sample.

Semen analysis results	N=135
Azoospermia	52 (38.5%)
Only non-motile sperm	42 (31.1%)
Rare (<1x10 ⁶ /mL)	37
Numerous (>1x10 ⁶ /mL)	5
Motile and non-motile sperm	41 (30.4%)
Rare (<1x10 ⁶ /mL)	7
Numerous (1x10 ⁶ /mL - 19x10 ⁶ /mL)	26
Very numerous (20x10 ⁶ /mL or more)	38

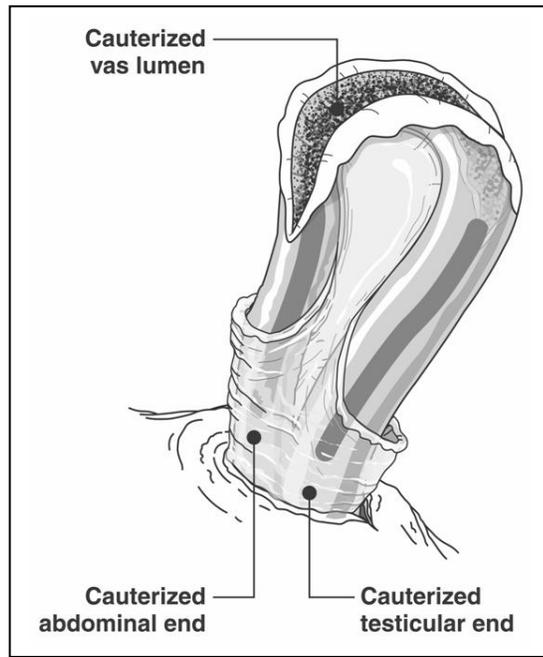


Figure : Vasectomy with intraluminal thermal cauterly alone without cutting the vas.