Use of surgical clips prevents suture slippage when ligating folded vas deferens during vasectomy

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Objective: *We describe a technique of surgical clip placement, which prevents slippage when ligating the folded vas deferens during vasectomy.*
Methods: *We utilized this technique in 25 consecutive vasectomy procedures. After isolating the vas, two mosquito clamps are placed approximately 2 cm-3 cm apart and a small 5 mm-10 mm section of full thickness vas is removed. The lumen of each cut end is cauterized. Surgical clips (Ethicon Ligaclip Extra LS-200, Medium) are placed at approximately 2 mm, 3 mm and 15 mm (on the opposite side of the hemostat) from each cut end. By rotating the hemostat, the vas is folded on itself and a 3-0 or 4-0 chromic suture is placed between the two proximal clips and distal to the third clip. The hemostat is carefully removed and the vas gently ligated.*
Results: *A single surgeon noted no instances of suture slippage in 25 consecutive vasectomies. All patients underwent postoperative semen analysis that showed azoospermia.*
Conclusion: *Placement of the ligating suture between two proximal clips and past a third distal clip prevents suture slippage when ligating the folded end of the vas deferens during vasectomy.*

Key Words: vasectomy, ligation, urological surgical procedures male, suture techniques

Introduction

Numerous methods of vasal occlusion during vasectomy have been described including electrocautery fulguration of vas mucosa, simple ligation of the vas deferens with or without excision of a vasal segment, occlusion with metal clips, and excision of a segment with fascial interposition.[1] Inherent to each method are unique advantages and limitations. Thus, urologists and family practitioners use a wide variety and combination of described surgical methods in an effort to maximize success and minimize complications associated with vasectomy.[2]

Vasectomy using ligation of a folded vas deferens offers the potential advantage of lumen occlusion with a hemi-circumferential pressure instead of the full circumferential pressure associated with strangulation. This could potentially lead to decreased rates of sloughing of the vas and/or sperm granuloma formation. However, using this method, a single surgeon noted a high rate of slippage of the cut end of the vas and/or elbowed segment of the vas through the suture ligature when removing the vas deferens grasping hemostat. We describe a novel surgical technique which utilizes strategic surgical clip and suture placement to prevent slippage of the vas tip or elbowed segment when ligating the folded, kinked vas during vasectomy.

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Materials and methods

Using standard vasectomy technique, the isolated vas is grasped with two mosquito clamps (hemostat) placed 2 cm-3 cm apart. A short 5 mm-10 mm segment of circumferential vas deferens is excised, leaving approximately 1 cm of cut vas deferens protruding beyond the hemostat. Each lumen is then gently cauterized with point electrocautery.

Surgical clips (Ligaclip Extra LS-200, medium, Ethicon, Somerville, NJ) are placed approximately 2 mm and 3 mm from the cut ends of the vas deferens. A third clip is applied approximately 5 mm from the opposite side of the hemostat, approximately 15 mm from the cut end, Figure 1. The hemostat is rotated, bringing the clips on either side of the clamp into juxtaposition. A 3-0 or 4-0 chromic suture ligature is secured between the two clips near the cut end of the vas and distal to the third clip, Figure 2. Next, the hemostat is gently removed and the kinked, folded vas deferens is gently ligated, Figure 3. Finally, the testicular end of the vas deferens is buried under a separate layer of fascia and the wound closed.

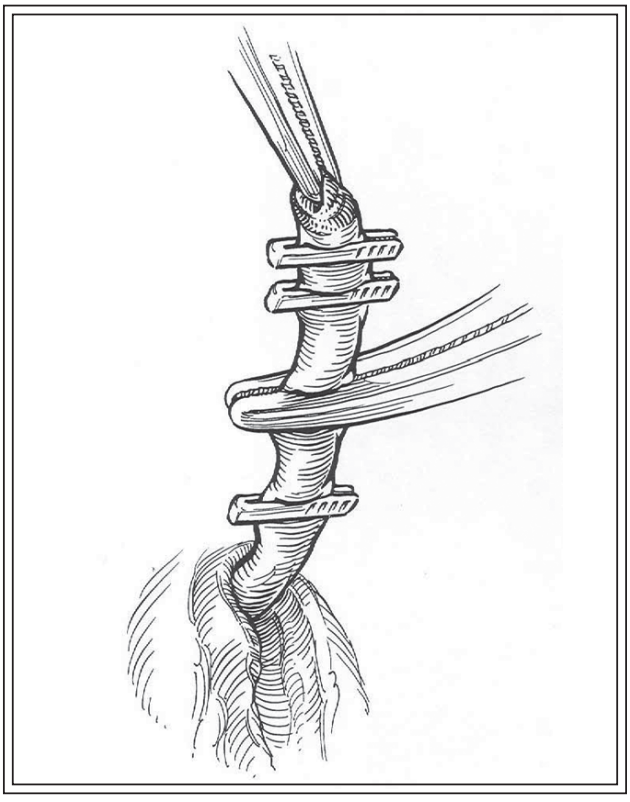

Figure 1. Metal clips placed approximately 2 mm, 3 mm and 15 mm from the cut end of the non-testicular vas deferens.

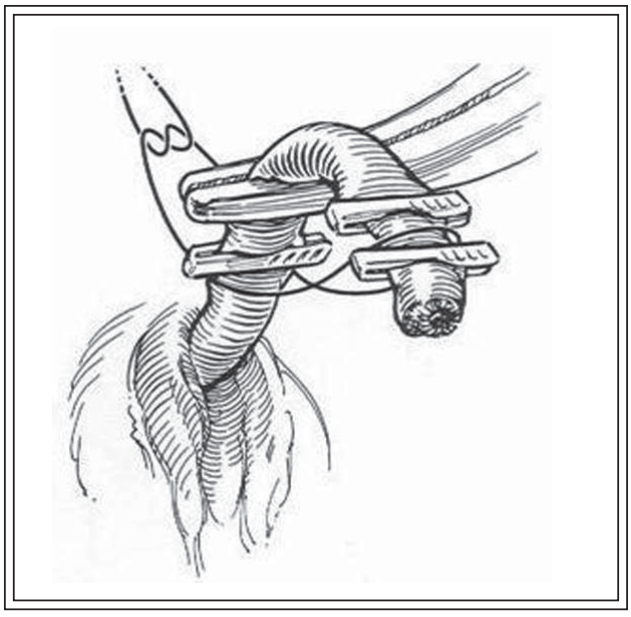

Figure 2. Suture ligature being secured between the two proximal clips and distal to the third clip.

Results

This technique prevented vas suture slippage in 25 consecutive vasectomies performed by a single

Figure 3. Ligation of the folded vas deferens with suture placed between the two proximal clips and distal to the third clip.

surgeon. In approximately 25 previous vasectomies, the surgeon noted slippage of the folded vas deferens through the suture after ligating while removing the grasping hemostat. Patients underwent two semen analyses at 6 and 8 weeks postoperatively, with all specimens demonstrating azoospermia. No patient has needed repeat vasectomy, additional surgery, or reported additional problems.

Discussion

For the urologist or surgeon who believes that ligating a folded end of the vas deferens is the preferred technique during vasectomy, this technique reduces the occurrence of suture slippage when removing the grasping hemostat. For a single surgeon, this technique decreased rate of slippage of the vas tip (cut end) or elbowed segment through the ligating suture from approximately 50% to 0% in 25 consecutive vasectomies. A secondary potential advantage noted by the surgeon is the decreased amount of pressure required to ligate the folded vas as the suture is held in position by the surgical clips. While not studied specifically, the combination of vas ligation using less pressure and gentle clip placement, with hemi-circumferential pressure on the outside of the vas may be less disruptive to the vas blood supply and integrity and may decrease the occurrence of vas sloughing and/or sperm granuloma formation. □

References

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EDITORIAL COMMENT

The vasectomy is cost effective, allows for rapid recovery, and has low morbidity and better success rates when compared to the tubal ligation. For these reasons, it should be considered the optimal method for permanent birth control. The vasectomy is one of the most technically varied procedures performed by both primary care providers and urologists. Technical advancements, such as the one reported in this manuscript, should be applauded since it offers a way to reduce frustration surrounding slipping sutures. Specifically, this manuscript reports on an improvement in the vas-folding technique whereby a 3-clip technique reduced suture slippage rates from 50 to 0 percent. Moreover, the authors should be commended for their use of fascial interposition, which has been shown to minimize failure. For those providers preferring the vas-folding technique, this method should offer both technical ease and improved success.

Vasectomy techniques vary widely with no "best practice" or method. Variations in technique are not limited to the use of cautery, thermal energy, open-ended or vas occlusion using suture, clips, intravasal devices, or bending the vas. In addition, fascial interposition is suggested as a way to further minimize failure rates. Interestingly, a 2007 Cochran review of vasectomy techniques found only six qualified studies.[1] The only conclusion from this review was that use of fascial interposition optimized vasectomy success. The review noted no change in success when the vas was clipped or tied. No other vasectomy technique, such as vas folding, qualified for this Cochran review. Of note, the use of clips was not widespread, with enhanced potential for reversal being the main rational for their use.[2,3]

Speaking of vas reversal, it seems best to find ways to optimize the success of both a vasectomy and the potential for its reversal. In this particular study, there is concern that either the clips or the hemostat could crush the vas resulting in scarring or even tissue slough. This would prompt a longer segment of vas to be discarded at the time of vasovasostomy. Future studies should attempt to discern which technique offers the best balance between vasectomy success and [potential] vasovasostomy outcomes.

Notably, the American Urological Association (AUA) has recently completed an advisory panel looking at vasectomy techniques. Their findings will be published in the near future and will likely emphasize the benefits of fascial interposition while de-emphasizing the need for pathological analysis of vas tissue.

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