Retrospective evaluation of post-surgical orchialgia in men undergoing no-scalpel vasectomy

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ABSTRACT

INTRODUCTION: Vasectomy is a form of permanent contraception in men that is safe and effective. Complications are relatively uncommon, although patients may experience postoperative pain. Current literature quotes a broad range in the incidence of chronic orchialgia following no-scalpel vasectomy, from 0.6–26%, while pain negatively affecting quality of life is about 1–2%. We sought to evaluate our incidence of post-vasectomy pain and surgical management for this pain.

METHODS: A retrospective chart review was performed for all men who underwent a vasectomy at Men's Health Clinic Manitoba during a 22-month period. The presence of pain or complications was collected at a three-month followup appointment. Patients with pain were then followed every 6–8 weeks for continued assessment and management.

RESULTS: A total of 350 men underwent elective no-scalpel vasectomy during this period. Most patients had no previous history of orchialgia (98%) or history of previous scrotal surgery (93%). At three months post-vasectomy, 38/350 (11%) of patients had ongoing pain and one patient required surgery (epididymectomy) for management of post-vasectomy pain syndrome three months following vasectomy.

CONCLUSIONS: Our retrospective analysis of 350 men who underwent no-scalpel vasectomy shows a significant proportion of post-vasectomy pain at the three-month followup appointment, although most cases are resolving or minor and only one patient has required surgical management. This highlights the importance of counseling men undergoing vasectomy regarding the risks of post-procedure orchialgia and the small proportion of men who will require additional surgical intervention.

INTRODUCTION

Vasectomy is a form of permanent contraception in men that is safe, effective, and widely used. It is currently the most effective sterilization technique — over 500 000 procedures are performed every year in the U.S. alone — with a 98% success rate.[1] While complications are relatively uncommon, and refined techniques such as the no-scalpel vasectomy are becoming more commonplace, patients still may experience post-surgical pain.

Bothersome testicular pain lasting three or more months is known as chronic orchialgia,[2] and when other causes of pain are ruled out after a vasectomy procedure, it is termed post-vasectomy pain syndrome (PVPS). A systematic review regarding the incidence of PVPS comparing scalpel vs no-scalpel technique states an incidence of 24% and 7%, respectively;[3] however, only 5% of all men went on to develop PVPS, regardless of technique.

The current Canadian Urological Association (CUA) guideline update states that 1–14% of men will experience chronic orchialgia,[4] while the American Urological Association (AUA) guideline states that only 1–2% of patients will experience significant pain that affects their quality of life.[5]

The pathophysiology of PVPS itself has not yet been clearly delineated. Multiple theories exist to explain the phenomenon, but the answer is likely multifactorial, including direct spermatic cord damage, inflammation of spermatic cord nerves, epididymal congestion, perineural fibrosis, epididymal blowout, and the develop-

ment of anti-sperm antibodies, as well as psychological factors.[2] Initial management is conservative, including heat, ice, scrotal elevation, analgesics, antibiotics, and antidepressant medication.[6] In more severe cases, some patients may also require treatment in the form of surgical intervention. This is usually preceded by a trial of a local spermatic cord block,[7] which if successful in alleviating pain, can lead to treatment with micro denervation of the spermatic cord (MDSC).

Other surgical treatment options include epididymectomy, orchiectomy, varicocelectomy, and vasectomy reversal to name a few;[2] however, the rates of surgical intervention in any form for this condition are not well-documented. Due to the heterogeneous data in the rates of post-vasectomy pain, as well as the rate of surgical intervention, we sought to review the postoperative outcomes of patients undergoing no-scalpel vasectomy at our center, as well as the rates of surgical intervention for treatment of post-vasectomy pain.

METHODS

A chart review was performed for all men who underwent a vasectomy at Men's Health Clinic Manitoba during a 22-month period. All men who underwent a vasectomy procedure during this time were included in the study. Vasectomy procedures were performed by four different physicians, with the vast majority (93%) being performed by two of the four urologists. The no-scalpel surgical technique was used for all vasectomy procedures, and the vas deferens occlusion methods used in all cases were metal clips, mucosal cautery, and excision of a small segment of vas deferens. Patient baseline characteristics were collected, including age, previous scrotal surgery, and history of orchialgia. Chi-squared tests were used to determine if there was a statistical association with post-vasectomy pain and these baseline characteristics.

As part of normal postsurgical followup, patients had a three-month followup appointment to assess their postoperative course and the presence of pain or complications. The presence of any pain or complications as a primary outcome was collected from a chart review of the clinic notes from these appointments, and the patients with pain or complications were then followed and seen by their treating physician every 6–8 weeks for continued management. Medical or surgical treatments required for the management of this pain were also recorded.

Patients were divided into categories of no pain, minor or resolving pain, significant pain affecting quality of life, and severe pain requiring surgical management. The mean number of clinic visits was also collected from the patient charts for patients who had postsurgical pain and required followup after the initial three-month post-surgery visit. Secondary outcome measures included the rate of patients who underwent post-vasectomy semen analysis (PVSA) as instructed to confirm azoospermia.

RESULTS

A total of 350 men underwent an elective no-scalpel vasectomy during this period, with a median age of 38 years (interquartile range [IQR] 34–42). Most patients had no previous history of orchialgia (98%) or a history of previous scrotal surgery (93%). Semen analysis was completed by 227/350 (65%) of patients, with 96% of those patients being azoospermic (Table 1).

At three months post-vasectomy, 38/350 (11%) of patients had ongoing pain, while 89% did not report postoperative issues or pain as patient-reported history. These 38 patients were divided into subgroups, and on further followup past the three-month appointment, 22 of these patients had complete resolution of their pain. Twelve of the 38 patients had ongoing pain but it was described as minor or intermittent, although they were managing well with conservative treatment. All 12 of these patients received a prescription for naproxen, with two also receiving antibiotic treatment. Two of the 12 patients presented to the emergency department for analgesia, one with a scrotal hematoma. The additional four patients had ongoing significant pain despite conservative treatments, representing 1.1% of the total study population.

The median number of post-procedural clinic appointments was three visits for the resolved pain group, three visits for the ongoing significant pain group, and two for the minor pain group. There was no statistical difference in age between both groups. One patient (0.3%) required surgery (epididymectomy) for management of PVPS four months following vasectomy and now has complete resolution of his pain. There was no association between previous history of orchialgia or a history of previous scrotal surgery on post-vasectomy pain based on Chi-squared tests (Figure 1).

DISCUSSION

Current literature quotes a wide range of the incidence of PVPS and chronic orchialgia. Our results show that of 350 men, 38 (11%) continued to have significant ongoing pain at the three-month followup appointment. This falls within the large range seen in the multiple studies included in a systematic review by Auyeung et al, which quotes a 0.6–26% rate of post-vasectomy pain in no-scalpel vasectomy.[3] The differential diagnosis for chronic testicular pain may include, but is not limited

Table 1. Preoperative participant characteristics and post-vasectomy outcomes

	n (%)
Total number of patients included	350
Median patient age	38 (IQR 34–42)
Patients with previous history of scrotal surgery	24 (7%)
Patients with previous history of orchialgia	7 (2%)
Patients who underwent semen analysis	227 (65%)
Patients with postoperative pain at 3 months	38 (11%)
Patients with minor/resolving postoperative pain at >3 months	12 (3%)
Number of patients with significant pain at >3 months	4 (1%)
Number of patients requiring surgery	1 (0.3%)

IQR: interquartile range.

to varicocele, hydrocele, infection, tumor, intermittent testicular torsion, inguinal hernia, trauma, chronic pelvic pain syndrome, referred pain, and psychogenic causes. As PVPS is a diagnosis of exclusion by history, physical and otherwise negative laboratory values, and imaging findings, patients with more severe pain had further workup to investigate their pain.

Most patients did not have significant pain after their vasectomy, and of the 38 patients who did, 22 had resolution of their pain, most commonly by their next appointment 6–8 weeks later, or approximately 4.5–5 months following their vasectomy. This leaves 16 patients (approximately 5%) with ongoing pain after the three-month followup, and hence suffering from chronic orchialgia. The majority of these patients (10 of 16) were managed successfully with nonsteroidal anti-inflammatory drugs (NSAIDs), while two of 16 improved with the addition of antibiotics. There were no identifiable causes of pain or complications in the significant pain cohort, and in the minor or intermittent pain group, two patients presented to the emergency department for analgesia, one of whom had a scrotal hematoma identified, but this did not result in significant ongoing pain for this patient.

The rate of surgical management post-vasectomy is not well known, and the AUA guideline currently states that of men with chronic pain after vasectomy "few of these men will require additional surgery,"[5] while the CUA best practice report states that <0.1% of patients will require surgical intervention,[4] highlighting the scarcity of data on this topic. Of the 350 men included in this study, only one patient required surgery for treatment of significant pain, representing 0.3% of patients. This is based on an average of about three clinic visits, or a mean followup of about six months post-vasectomy. The one patient who ultimately underwent an epididymectomy to resolve his post-vasectomy pain underwent a followup ultrasound exam that was unremarkable and was initially managed with NSAIDs. This was followed by a left-sided cord block, which was unsuccessful in resolving his pain, and as his pain was localized to his epididymis, he underwent a left-sided epididymectomy.

Post-vasectomy pain is a common issue, seen in 11% of our population initially after surgery. Despite similar surgical techniques and occlusion methods, some patients had persistent pain and one required surgical intervention. Previous scrotal surgery, patient age, and history of orchialgia did not have an association with postoperative pain and, therefore, do not aid in predicting which patients will have persistent pain. In concordance with the CUA best practice report on chronic scrotal pain recommendations, we had success in managing our patients with postoperative pain (in the absence of an identifiable cause) in a stepwise manner.[8] For example, recommending scrotal support or heat therapy initially, followed by trialing NSAIDs, then antibiotics, and finally nerve blockade and surgery. Our data shows that although postoperative pain is prevalent, most patients can be adequately managed with conservative measures and NSAIDs.

Notably, of 350 patients, 227 (65%) underwent PVSA. The goal of this analysis is to confirm the success of the surgery, as defined by the AUA and European Association of Urology as azoospermia or rare non-motile sperm (RNMS, <100 000 non-motile sperm/

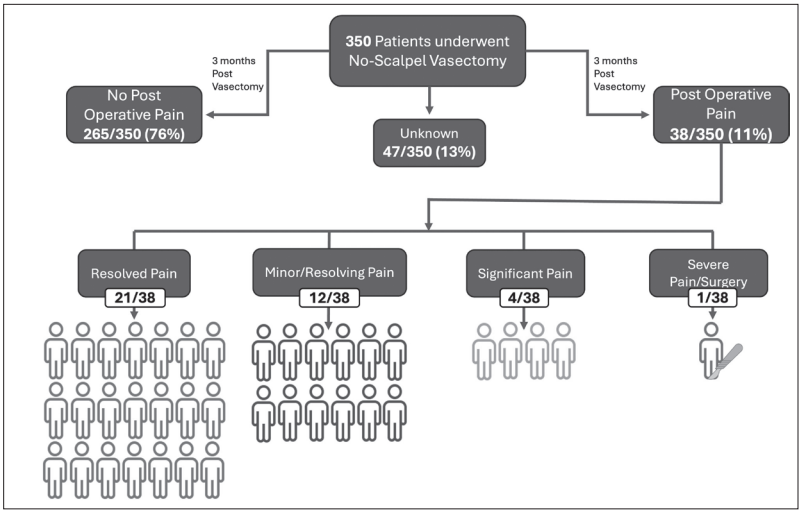

Figure 1. Post-vasectomy pain outcomes and pain category distribution.

mL) in the ejaculate three months postoperatively.[9] Although the importance of this followup appointment is not to be underestimated, low compliance rates have been shown in this study and the pre-existing literature. Previous research focused on this aspect of the vasectomy treatment course found that having a followup appointment booked at the time of surgery increases compliance rates and thus PVSA rates.[10] Researchers found an 84% compliance rate if an appointment was scheduled for two months postoperatively, dropping to 65% if they were instructed to perform semen analysis at two months but no appointment was scheduled.

In our study, patients were provided with followup appointments at the time of their vasectomy but rates of compliance remained in the lower range of 65%. More work is necessary to understand the current patient culture surrounding PVSA and how to improve compliance rates.

Limitations

Limitations to this study include its retrospective nature, lack of a comparator arm, patient-reported history, and variability in conservative treatments. Data was collected retrospectively and based on patient histories. Although we likely captured most of the severe pain cases, it is possible that even when asked directly about pain, some patients may have answered no based on their differences of pain tolerance and bother.

Although followup was scheduled for all patients, some patients canceled their appointments, often stating that they had no issues, but it is possible that some patients may have sought medical care through their family physicians, emergency rooms, or other medical providers; therefore, some cases of orchialgia may have gone uncaptured by our methods.

Among the patients who did have pain, we categorized them based on their subjective answers on medical history. Using the Chronic Orchialgia Symptom Index questionnaire may have helped further delineate appropriate stratification of the 38 patients that did experience pain in followup and potentially could have influenced their management plans.

Followup for patients with significant pain was, on average, about six months; therefore, more patients in this cohort may have their pain treated with surgery in the future. Future studies would include further followup at one year to evaluate the persistence of pain, need for surgery, and/or the success rate of conservative management.

It is important to note that the onset of post-vasectomy pain has also been variable in the literature, and therefore, some patients who are no longer followed may develop pain in the future and/or re-present to their urologist with new-onset pain. A prospective audit of 593 men by Leslie et al in 2007 showed that 14% of men had new-onset pain seven months following vasectomy, with 0.9% classified as severely affecting their quality of life.[11] Further, a retrospective study of 13 men undergoing vasectomy reversal for treatment of chronic post-vasectomy pain had a mean time to pain onset of two years.[12]

CONCLUSIONS

Our retrospective analysis of 350 men who underwent no-scalpel vasectomy shows a significant proportion of post-vasectomy pain of some degree at the three-month followup appointment, although most cases are resolving or minor, and only one patient required surgical management. This data highlights the importance of counseling men undergoing vasectomy regarding the risks of post-procedure orchialgia and the small proportion of men who may require surgical intervention.

COMPETING INTERESTS: The authors do not report any competing personal or financial interests related to this work.

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