

Retrospective evaluation of post-surgical orchialgia in men undergoing no-scalpel vasectomyMichael Morra¹, Karim Sidhom¹, Harliv Dhillon², Jasmir G. Nayak^{1,3}, Premal Patel^{1,3}¹Section of Urology, Department of Surgery, University of Manitoba, Winnipeg, MB, Canada; ²Max Rady College of Medicine, University of Manitoba, Winnipeg, MB, Canada; ³Men's Health Clinic Manitoba, Winnipeg, MB, Canada**Cite as:** Morra M, Sidhom K, Dhillon H, et al. Retrospective evaluation of post-surgical orchialgia in men undergoing no-scalpel vasectomy. *Can Urol Assoc J* 2024 December 9; Epub ahead of print. <http://dx.doi.org/10.5489/cuaj.8937>

Published online December 9, 2024

Corresponding author: Dr. Michael Morra, Section of Urology, Department of Surgery, University of Manitoba, Winnipeg, MB, Canada; michaelmorra93@gmail.com

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.

KEY MESSAGES

- Literature quotes the incidence of chronic orchialgia following no-scalpel vasectomy as 0.6–26%; our research showed that about 5% of men had significant ongoing pain after their 3-month followup.
- In addition to post-vasectomy pain rates, existing literature is even more scarce for rates of surgical management of this pain. Our retrospective analysis of 350 men showed that 1 patient (0.3%) underwent surgical management for this pain in the early postoperative course.
- Rates of non-compliance from patients on semen analysis testing after vasectomy is high in the literature; in our study, 65% of patients underwent testing.

Results: A total of 350 men underwent elective no-scalpel vasectomy during this period. The majority of 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 utilized. It is currently the most effective sterilization technique with over 500,000 procedures performed every year in the United States alone, with a 98% success rate.¹ While complications are relatively uncommon, and refined techniques such as the no scalpel vasectomy (NSV) are becoming more commonplace, patients still may experience pain post surgically. Bothersome testicular pain lasting 3 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 CUA guideline update states that 1-14% of men will experience chronic orchialgia,⁴ while the American Urological Association guideline states that only 1-2% of patients will experience significant pain that effects 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 development 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 of their 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 heterogenous data in the rates of post vasectomy pain as well as the rate of surgical intervention, we sought to review the post operative 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 into the study. Vasectomy procedures were performed by 4 different physicians in total, with the vast majority (93%) being performed by 2 of the 4 urologists. The no-scalpel surgical technique was utilized 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 orchalgia. Chi squared tests were utilized to determine if there was a statistical association with post vasectomy pain and these baseline characteristics.

As part of normal post-surgical follow up, patients had a 3 month follow up appointment to assess their post operative course and the presence of pain or complications. The presence of any pain or complications as a primary outcome were 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 management of this pain was 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 post-surgical pain and required follow up after the initial 3-month post-surgery visit. Secondary outcome measures included rate of patients who underwent PVSA (post-vasectomy semen analysis) 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 (IQR = 34-42). Most patients had no previous history of orchialgia (98%), or a history of previous scrotal surgery (93%). Semen analysis was only completed by 227/350 (65%) of patients, with 96% of those patients azoospermic (Table 1).

At 3 months post vasectomy, 38/350 (11%) of patients had ongoing pain, while 89% did not report post-operative issues or pain as patient-reported history. These 38 patients were divided into subgroups, and on further follow-up past the 3-month appointment, 22 of these patients had complete resolution of their pain. 12 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 2 also receiving

antibiotic treatment. 2 patients of the 12 presented to the emergency department for analgesia, 1 with a scrotal hematoma. The additional 4 patients had ongoing significant pain despite conservative treatments, representing 1.1% of the total study population. The median number of post procedural clinic appointments were 3 visits for the resolved pain group, 3 visits for the ongoing significant pain group, and 2 for the minor pain group. There was no statistical difference in age between both groups. One patient (0.3%) has required surgery (epididymectomy) for management of PVPS 4 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.

DISCUSSION

Current literature quotes a wide range of the incidence of post-vasectomy pain syndrome and chronic orchialgia. The AUA vasectomy guideline quotes approximately 1-2% of patients will have post vasectomy pain that affects their quality of life.⁵ Our results show that of 350 men, 38 (11%) continued to have significant ongoing pain at the three-month follow up appointment. This falls within the large range seen in the multiple studies included in a systematic review by Auyeung et al., which quotes 0.6-26% rate of post vasectomy pain in NSV.³ The differential diagnosis for chronic testicular pain may include, but is not limited 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 patients 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 (~5%) with ongoing pain after the 3 month follow up, and hence suffering from chronic orchialgia. The majority of these patients (10 of 16) were managed successfully with NSAIDs, while 2 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, 2 patients presented to the emergency department for analgesia, 1 of which 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 1 patient required surgery due for treatment of significant pain, representing 0.3% or 3 per 1000 patients. This is based on an average of about 3 clinic visits, or a mean follow up of about 6 months post vasectomy. The one patient who ultimately underwent an epididymectomy to resolve his post vasectomy pain underwent a follow up ultrasound exam that

was unremarkable and he was initially managed with NSAID analgesia. 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 technique and occlusion methods, some patients had persistent pain, and 1 required surgical intervention. Previous scrotal surgery, patient age, and history of orchalgia did not have an association with post operative pain and therefore does 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 good success in managing our patients with post operative 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 post operative pain is prevalent, most patients can be adequately managed with conservative measures and NSAIDs.

Notably of 350 patients, 227 (65%) underwent PVSA. Firstly, the goal of this analysis is to confirm success of the surgery as defined by the AUA and EUA as azoospermia or RNMS (rare non motile sperm being <100,000 non-motile sperm/mL) in the ejaculate 3 months post-op⁹. The importance of this appointment is not to be underestimated, nonetheless it has demonstrated low compliance rates both in this study and the pre-existing literature. Previous research has focused on this aspect of the vasectomy treatment course,¹⁰ and found that having a follow-up appointment booked at the time of surgery increase compliance rates and thus PVSA rates. They found an 84% compliance rate if an appointment was scheduled for 2 months post operatively and dropped to 65% if they were instructed to perform semen analysis at 2 months but no appointment was scheduled. In our study patients were provided with follow up appointments at the time of their vasectomy but rates of compliance remained in the lower range seen in the above study at 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 it is likely that we 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 follow up was scheduled for all patients, some patients cancelled 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 orchalgia 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 COSI (Chronic Orchalgia Symptom

Index) questionnaire may have helped further delineate appropriate stratification of the 38 patients that did experience pain in follow up and potentially could have influenced their management plans. Follow up for patients with significant pain was on average about 6 months, therefore more patients in this cohort may have their pain treated with surgery in the future. Future studies would include further follow up 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 14% of men had new onset pain 7 months following vasectomy with 0.9% classified as severe 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 2 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 3-month follow-up appointment, although most cases are resolving or minor and only one patient has required surgical management. This data highlights the importance of counselling men undergoing vasectomy regarding the risks of post procedure orchialgia and the small proportion of men who may require surgical intervention.

REFERENCES

1. Sinha V, Ramasamy R. Post-vasectomy pain syndrome: Diagnosis, management and treatment options. *Transl Androl Urol* 2017;6:S44-7. <https://doi.org/10.21037/tau.2017.05.33>.
2. Leslie SW, Sajjad H, Siref LE. Chronic testicular pain and orchalgia. In: StatPearls. Treasure Island (FL): StatPearls Publishing; May 30, 2023.
3. Auyeung AB, Almejally A, Alsaggar F, et al. Incidence of post-vasectomy pain: Systematic review and meta-analysis. *Int J Environ Res Public Health* 2020;17:1788. <https://doi.org/10.3390/ijerph17051788>.
4. Zini A, Grantmyre J, Chow V, et al. UPDATE – 2022 Canadian Urological Association best practice report: Vasectomy. *Can Urol Assoc J* 2022;16:E231-6. <https://doi.org/10.5489/cuaj.7860>.
5. Sharlip ID, Belker AM, Honig S, et al. Vasectomy: AUA guideline. *J Urol* 2012;188:2482-91. <https://doi.org/10.1016/j.juro.2012.09.080>
6. Tojuola B, Layman J, Kartal I, et al. Chronic orchialgia: Review of treatments old and new. *Indian J Urol* 2016;32:21-6. <https://doi.org/10.4103/0970-1591.173110>.
7. Chaudhari R, Sharma S, Khant S, et al. Microsurgical denervation of spermatic cord for chronic idiopathic orchialgia: Long-term results from an institutional experience. *World J Mens Health* 2019;37:78-84. <https://doi.org/10.5534/wjmh.180035>.
8. Jarvi KA, Wu C, Nickel JC, et al. Canadian Urological Association best practice report on chronic scrotal pain. *Can Urol Assoc J* 2018;12:161-72. <http://dx.doi.org/10.5489/cuaj.5238>
9. Agarwal A, Gupta S, Sharma RK, et al. Post-vasectomy semen analysis: Optimizing laboratory procedures and test interpretation through a clinical audit and global survey of practices. *World J Mens Health* 2022;40:425-41. <https://doi.org/10.5534/wjmh.210191>.
10. Dhar NB, Jones JS, Bhatt A, et al. A prospective evaluation of the impact of scheduled follow-up appointments with compliance rates after vasectomy. *BJU Int* 2007;99:1094-7. <https://doi.org/10.1111/j.1464-410X.2006.06725.x>.
11. Leslie TA, Illing RO, Cranston DW, et al. The incidence of chronic scrotal pain after vasectomy: A prospective audit. *BJU Int* 2007;100:1330-3. <https://doi.org/10.1111/j.1464-410X.2007.07128.x>
12. Nangia AK, Myles JL, Thomas AJ. Vasectomy reversal for the post-vasectomy pain syndrome: A clinical and histological evaluation. *J Urol* 2000;164:1939-42. <https://doi.org/10.1016/S0022-534766923-6>

FIGURES AND TABLES

Figure 1.

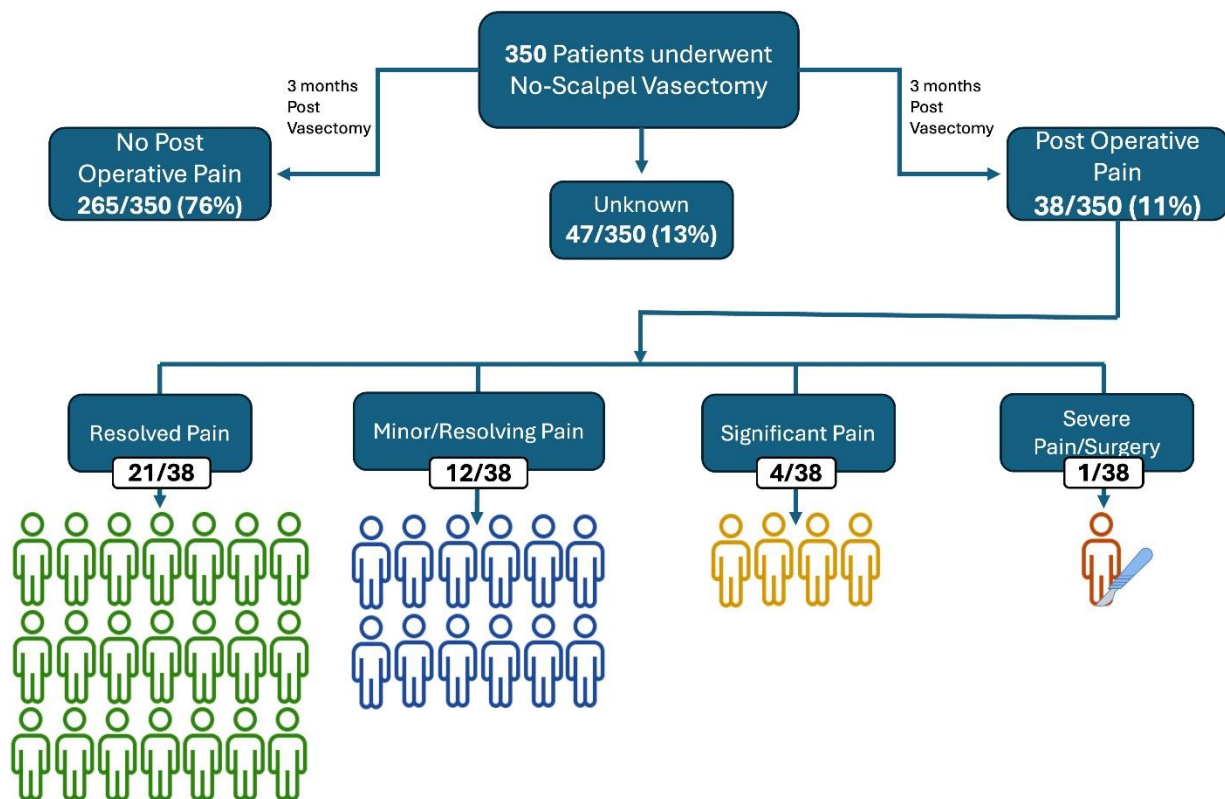


Table 1. Preoperative participant characteristics and post-vasectomy outcomes

	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 post-operative 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.