Microdenervation of the Spermatic Cord for Chronic Scrotal Content Pain: Single Institution Review Analyzing Success Rate After Prior Attempts at Surgical Correction

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Abbreviations and Acronyms

CT = computerized tomography

MDSC = microdenervation of the spermatic cord

MRI = magnetic resonance imaging

VAS = visual analog scale

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Editor's Note: This article is the fifth of 5 published in this issue for which category 1 CME credits can be earned. Instructions for obtaining credits are given with the questions on pages 780 and 781.

Purpose: Microdenervation of the spermatic cord is an effective treatment for men with intractable scrotal content pain. We evaluated a single center experience, analyzing patients in whom prior surgical attempts had failed to correct pain who subsequently underwent microdenervation of the spermatic cord.

Materials and Methods: A retrospective chart review of 68 patients who underwent microdenervation of the spermatic cord from 2006 to 2010 was performed. Prior ipsilateral surgical procedures with the intent to correct scrotal content pain were selected, identifying 31 testicular units.

Results: Chart review was performed on 68 men with mean age of 42 years at presentation and a mean followup of 10 months. Patients in whom prior surgical correction had failed and who subsequently had microdenervation of the spermatic cord had a mean postoperative pain score of 3 (range 0 to 10) with an average decrease in pain of 67%. Those who had not undergone a prior attempt at surgical correction had a mean post-microdenervation of the spermatic cord pain score of 2 (range 0 to 10) and an average pain decrease of 79% which did not differ statistically from those in whom prior surgery failed. In addition, 50% of men who had undergone surgery before microdenervation of the spermatic cord had complete relief of pain after microdenervation of the spermatic cord vs 64% of those who had not undergone previous surgery.

Conclusions: Men with chronic scrotal content pain in whom prior attempts to correct pain have failed have similar, albeit lower, success rates as those without prior surgical intervention. Therefore, men with chronic scrotal content pain in whom prior surgical management has failed and who have a positive spermatic cord block should be considered candidates for microdenervation of the spermatic cord.

Key Words: spermatic cord, testis, pain, denervation

Chronic orchialgia is a well described urological manifestation of a chronic pain syndrome defined as unilateral or bilateral testicular pain that is constant or intermittent and has lasted for more than 3 months.[1] Chronic scrotal content pain may be a more accurate description of this condition as it does not exclude pain in the scrotum that is not derived solely from the testicle, but also the epididymis and/or spermatic cord. Chronic scrotal content pain is a debilitating condition which can inhibit one's ability to perform activities of daily living including work, and physical and sexual activity. For the practicing urologist it can pose a significant challenge to manage and treat.

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Chronic pain is a complex process which is poorly understood, and thought to be secondary to an inciting noxious stimulus which leads to the process of sensitization and plasticity of the peripheral and central nervous systems, allowing for up-regulation of pain pathways.[2,3] This up-regulation ultimately can lead to a spontaneous firing of nerves such that no noxious stimuli are necessary to generate the pain impulse.[4] Chronic scrotal content pain is believed to develop from numerous direct sources, including previous trauma; pelvic, inguinal or scrotal surgery; after infection; after torsion; referred pain from the hip or spine; diabetic neuropathy; and after vasectomy, and it is most commonly idiopathic.[5,6] In fact, up to 43% of patients with chronic scrotal content pain have been reported to have no identifiable cause for their symptoms.[1,7] Conservative treatment is recommended before more invasive therapeutic modalities such as surgical correction.

Before presenting to a urologist, patients may have already sought out and experienced failure of multiple previous conservative treatments[8] including analgesics, anti-inflammatory agents, antidepressants, anticonvulsants, physical therapy, biofeedback and acupuncture. In addition, many patients are referred to a pain clinic where medical therapy and local and regional blocks are administered, and psychotherapy is offered to help cope with the pain. In some cases chronic scrotal content pain may be attributed to an easily identifiable abnormal physical finding such as varicocele, hydrocele, spermatocele, hernia or obstruction after previous vasectomy. In these circumstances surgical correction for chronic scrotal content pain typically aims at correcting these findings via varicocelectomy, hydrocelectomy, spermatocelectomy, herniorrhaphy, open ended vasectomy or vasovasostomy, respectively. In the absence of a reversible cause, microdenervation of the spermatic cord has been reported as an effective durable testis sparing surgery, emerging as a clear alternative to orchiectomy for the treatment of chronic orchialgia refractory to medical management.[7,9–11] It has not yet been reported whether MDSC is an effective treatment for patients in whom previous attempts at surgical correction of chronic scrotal content pain have failed. We reviewed our results from 2006 to 2010 for patients who underwent MDSC at our institution, and compared the efficacy of MDSC in patients who have had prior attempts at surgical correction for pain vs those who have not.

MATERIALS AND METHODS

A retrospective chart review identified 68 patients (70 surgical testicular units) treated with MDSC from 2006 to 2010. Patients who underwent prior ipsilateral surgical procedures with the intent to correct chronic scrotal content pain were selected and 31 testicular units were identified. Long-term followup was conducted by office visit or chart review and telephone interview.

Perceived etiology of pain was recorded, and included previous surgery (vasectomy, inguinal hernia repair, varicocelectomy) and acute trauma. Conservative therapy had failed in all men. Many patients in this study were referred to our institution after evaluation and treatment at a specialized pain clinic. A standard evaluation protocol was performed on all patients including a detailed medical history with a focus on previous genital infection, spinal surgery, local trauma, analgesic use, history of sexual abuse, psychiatric disorders and other chronic pain conditions (eg fibromyalgia, chronic pelvic pain, chronic prostatitis, interstitial cystitis) which may suggest a more global pain syndrome. A focused physical examination was performed to identify the precise location of the pain (ie testicle, spermatic cord structures and/or epididymis). Urinalysis and semen culture were performed when there were signs of infection. Duplex scrotal ultrasound was performed at least once in all patients to exclude structural abnormality including tumor, torsion, varicocele, hydrocele, spermatocele, inguinal hernia and epididymo-orchitis. CT or MRI of the spine or hip was performed when a history of back pain or trauma was reported. Figure 1 provides a detailed depiction of our algorithm for the evaluation of chronic scrotal content pain.

Conservative therapies had been tried and had failed in all patients by the time they were evaluated at our clinic, and in 31 men prior surgical treatment of their pain had failed. Figure 2 depicts the treatment algorithm used at our institution. When no reversible cause was identified, spermatic cord block was performed at the pubic tubercle area with 20 ml 0.25% bupivacaine. Pain scores were recorded before and after the administration of local anesthetic, and were quantified using the short form McGill pain score VAS.[12] Patients who demonstrated a positive response, defined as greater than 50% temporary reduction of pain following cord block, were considered candidates for MDSC.

The microdenervation procedure was performed in an outpatient setting with the patient under general anesthesia with the assistance of an operating microscope. The spermatic cord is exposed at the external inguinal ring through an inguinal incision and the ilioinguinal nerve is divided as it emerges from the ring. The cord is isolated and supported by a Penrose drain, and the operating microscope at 8× power is brought to the field. The anterior cremasteric fascia is then incised and the cord structures are identified during careful dissection. Arteries are isolated with the assistance of intraoperative micro-Doppler and carefully stripped of all fibroareolar tissue for 1 to 2 cm. All cord structures are divided with cautery or between 4-zero silk ties except several lymphatics and all identified arteries (testicular, cremasteric, deferential).[7,13] In the patients who have not undergone vasectomy, the vas deferens is spared but stripped of all perivasal fascia for approximately 2 cm as it is richly innervated.[14]

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