

Role of Nerve-Targeted Surgery in Chronic Scrotal Pain Treatment

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DESCRIPTION

Chronic scrotal pain syndrome is a complex and often frustrating condition encountered in urological practice, defined by persistent discomfort in the scrotal contents lasting for more than three months. The pain may be unilateral or bilateral and can vary in intensity from mild discomfort to severe, disabling pain that interferes with daily activities. Patients frequently report radiation to the groin, lower abdomen, or inner thigh, and the condition may significantly affect psychological well-being and sexual health.

The underlying causes of chronic scrotal pain are diverse and often multifactorial. Previous infections such as epididymitis, surgical procedures including vasectomy, trauma, varicocele, hydrocele, or nerve entrapment may all contribute. In many cases, no definitive cause is identified, leading to a diagnosis of idiopathic chronic orchialgia. Neuropathic mechanisms are believed to play a significant role in persistent cases, with sensitization of peripheral and central pain pathways contributing to ongoing symptoms.

Initial evaluation involves a detailed clinical history, physical examination, and exclusion of identifiable pathology. Scrotal ultrasound is commonly used to assess structural abnormalities such as tumors, cysts, or vascular conditions. Urinalysis and microbiological testing help exclude infectious causes. Psychological assessment may also be considered in patients with significant distress or associated mood disorders.

Conservative management is the first-line approach and includes analgesics, anti-inflammatory medications, scrotal support, and in some cases, neuropathic pain agents such as gabapentin or tricyclic antidepressants. Pelvic floor physiotherapy may provide benefit in selected patients. However, a subset of individuals fails to respond adequately to non-surgical therapy and may require surgical intervention.

One of the most established surgical options is microsurgical spermatic cord denervation. This procedure targets the nerve fibers within the spermatic cord responsible for transmitting pain signals. Under magnification, small nerve branches are carefully divided while preserving vascular and lymphatic structures. This technique has shown favorable outcomes in appropriately selected patients, particularly those who respond positively to temporary spermatic cord blocks.

Orchiectomy is considered a last-resort option for severe, refractory cases where all other interventions have failed. While removal of the testicle can eliminate pain originating from that side, it carries significant psychological and hormonal implications. Therefore, it is reserved for carefully selected patients after thorough counseling.

Nerve-related interventions have also been explored in chronic scrotal pain management. Peripheral nerve blocks can provide temporary relief and assist in identifying candidates for surgical denervation. In selected cases, more advanced neuromodulation techniques have been investigated, although their availability remains limited.

Postoperative outcomes vary depending on the underlying cause and type of intervention performed. Many patients experience significant pain reduction following microsurgical denervation or targeted procedures, while others may have partial improvement. Recurrence of symptoms or persistence of pain can occur, particularly in cases with central sensitization.

Complications of surgical treatment are generally uncommon but may include hematoma formation, infection, testicular atrophy, or persistent pain. Careful surgical technique and adherence to anatomical principles are important in minimizing these risks. Preservation of arterial supply during cord procedures

Advances in microsurgical techniques and improved understanding of pain pathways have contributed to better treatment strategies. Identification of patients most likely to benefit from surgical intervention remains an area of ongoing research. Predictive factors such as response to nerve blocks are increasingly used to guide decision-making.

CONCLUSION

Chronic scrotal pain syndrome requires a structured and individualized approach to management. While conservative therapies remain the foundation of treatment, surgical options provide meaningful relief for selected patients. Precision and familiarity with delicate cord structures are critical for achieving successful outcomes while minimizing complications. Careful evaluation, appropriate patient selection, and meticulous surgical technique are key factors in achieving favourable outcomes in this challenging condition.

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