

Penile Traumatic Neuroma: A Late Complication of Penile Dorsal Neurotomy to Treat Premature Ejaculation



Hyun Jun Park,¹ Tae Nam Kim,¹ Seung Ryong Baek,¹ Kyung Min Lee,¹ Kyung-Un Choi,² and Nam Cheol Park, MD, PhD¹

ABSTRACT

Introduction: Traumatic neuroma is a reactive process caused by the regeneration of an injured nerve that usually forms a nodular proliferation of small nerve bundles. Penile traumatic neuroma is rare; only a few cases related to circumcision have been reported.

Aim: To report on a case of traumatic neuroma in the penis after selective dorsal neurotomy (SDN) to treat premature ejaculation.

Methods: The penile traumatic neuroma was successfully removed by excision and confirmed by histopathology.

Results: A 55-year-old man who had had several painless, slow-growing nodules on his penis for 2 years presented to our hospital. He had no history of genital trauma, urinary tract infection, or penile surgery, except SDN to treat premature ejaculation. The nodules were excised and the final diagnosis was traumatic neuroma. No recurrence has been detected during 1 year of follow-up.

Conclusion: The main complications of SDN are recurrence of premature ejaculation, pain or paresthesia on the glans penis, and erectile dysfunction. However, no traumatic neuroma has been reported as a complication. We report that a traumatic neuroma can occur after SDN.

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Key Words: Neuroma; Penis; Premature Ejaculation; Trauma

INTRODUCTION

Traumatic neuroma is a reactive and regenerative process caused by nerve injury. It forms a nodular proliferation arising from the hyperplasia of axons and nerve sheaths after nerve injury or resection.^{1–3} Traumatic neuroma is a disorganized growth of the proximal portion of an injured or resected nerve; it can occur in any lesion, but few have been reported in the penis.² Most reported cases of traumatic neuroma in the penis have been associated with unintended trauma to the nerve during circumcision.³ However, no reports have been published on traumatic neuroma from nerve resection in the penis to treat premature ejaculation

(PE). PE is a common male sexual dysfunction that can be treated with psychological counseling, selective serotonin reuptake inhibitors, topical anesthetic creams (TAs), tramadol, or phosphodiesterase type 5 inhibitors. Until recently, surgical management of PE (eg, selective dorsal neurotomy [SDN]) has not been recommended because it can cause permanent sexual dysfunction, and related data about SDN are sparse.⁴ SDN is the second most popular treatment performed by Korean urologists in private clinics for patients who show no effect from TAs or who exhibit hypersensitivity of the penile glans.⁵ The most common complications of SDN of the penis are recurrence of PE, pain or paresthesia of the glans, ejaculatory dysfunction, erectile dysfunction (ED), wound dehiscence, scarring, and penile curvature.⁵ However, there have been no reports of traumatic neuroma forming after SDN. We present the first case of traumatic neuroma of the penis, which occurred after SDN to treat PE.

CASE PRESENTATION

A 55-year-old man with a 2-year history of several painless, slow-growing nodules on his penis presented to our hospital. Several nodules (5 mm in diameter) were detected on the body of

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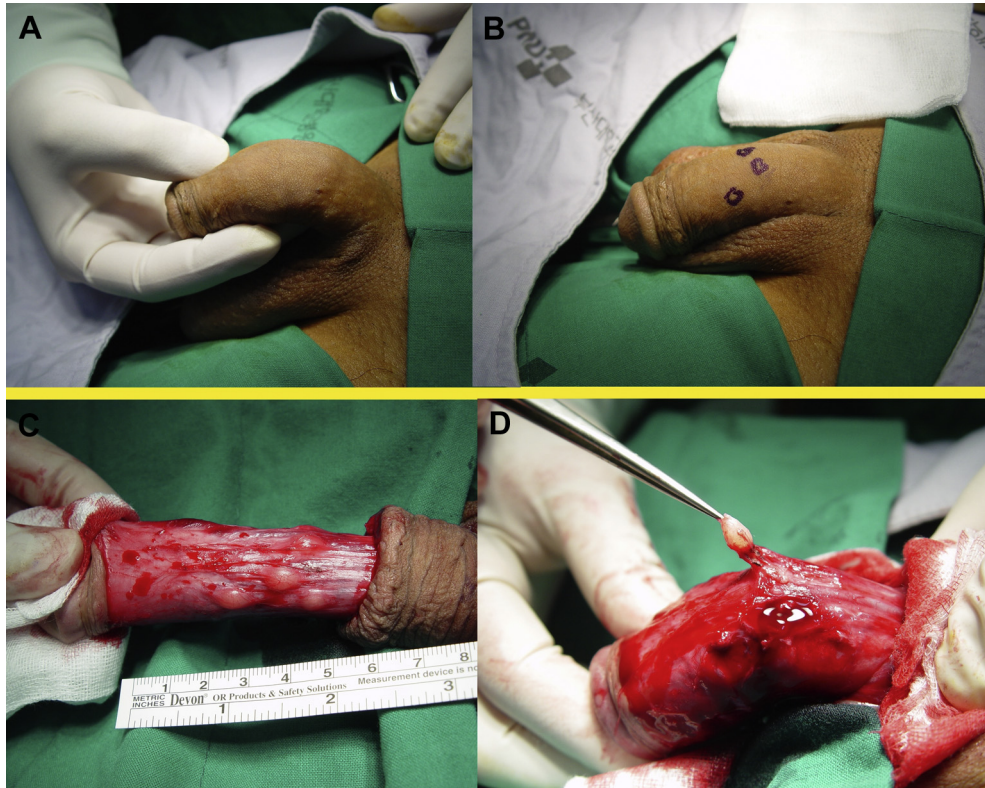


Figure 1. Panels A and B depict small nodules on the dorsal side of the penile shaft. Panels C and D show intraoperative photographs of the nodules after retraction of the penile skin overlying the lesions.

the penis during a physical examination. The patient had no history of genital trauma, urinary tract infection, or invasive procedures or surgery except for SDN to treat PE. Several branches of the 2 sides of the dorsal nerve were cut during the SDN performed at a private clinic 3 years previously. The nodules were recognized 1 year after SDN, but they were small and no pain or symptoms had occurred; thus, the patient did not visit the hospital. The nodules on the dorsal surface of the penile shaft had increased slowly in size and number during the past 2 years, so the patient presented to the hospital because of fear of malignancy and esthetic concerns.

Before visiting our hospital, penile condyloma acuminatum was suspected in a general practice clinic, but the nodules differed from typically appearing condyloma acuminatum, and the patient was transferred to our hospital for further evaluation. A physical examination at our hospital showed several solid, mobile nodules on the dorsal side of the penile shaft with no inflammation. The lesions were completely asymptomatic. The results of blood tests, urinalysis, and a urine culture were within normal ranges. The nodules were located beneath the deep fascia of the penis (Buck fascia), and all were excised under regional anesthesia (Figure 1).

Histologic examination of a section stained with hematoxylin and eosin showed an epidermis with no sign of acanthosis or papillomatosis and a well-circumscribed lesion composed of small nerve fascicles enveloped in a myxoid stroma (Figure 2).

The final diagnosis was traumatic neuroma. No recurrence was detected during 1 year of follow-up.

DISCUSSION

The neuroma is a proliferation of Schwann cells and axonal components of nerve tissue. Neuromas can be categorized as traumatic, amputation, or palisade-encapsulated neuromas. Traumatic neuroma involves the regenerative proliferation of injured or traumatized nerve fibers. A palisade-encapsulated neuroma is a hamartomatous proliferation of nerve tissue with no apparent preceding injury.² Traumatic neuromas are characterized clinically as solid papules or nodules, and the surgical scars or amputated lesions are skin colored or erythematous-purplish in appearance.² The initial lesions usually begin with no specific symptoms, but pain or paresthesia can develop during the course of months to years after onset. The patient in this case did not present any symptoms related to the lesions.

The first report of penile traumatic neuroma was in 1990 by Montgomery et al⁶ Since then, three cases, by Brehmer-Anderson⁷ in 1999 and one case by Rossi and Franchella¹ in 2005, have been reported. A case series study in 2009 by Salcedo et al³ reported that traumatic neuromas are caused by circumcision or biopsies. The case of a 23-year-old man reported in 2009 by Marinho and Bouscarat⁸ also was a traumatic neuroma secondary to circumcision.

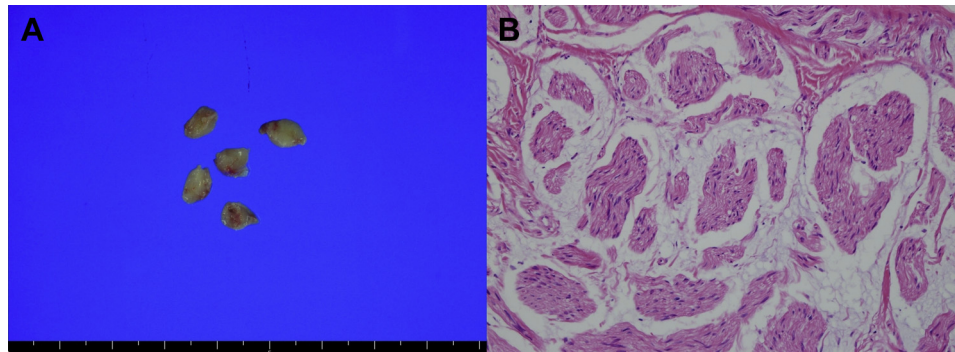


Figure 2. Panel A displays excised nodules. Panel B shows a well-circumscribed lesion composed of small nerve fascicles enveloped in a myxoid stroma (hematoxylin and eosin, $\times 200$).

The differential diagnoses of penile traumatic neuroma are condyloma acuminata, Bowenoid papulosis, pearly penile papules, genital lichen nitidus, and sebaceous gland hyperplasia of the penis. Although a traumatic neuroma is rare, it must be included in the differential diagnosis of penile papular or nodular lesions, particularly in patients who have a history of circumcision, penile trauma, or biopsy. Surveillance after biopsy of one lesion could be regarded as a possible treatment option. However, owing to present patient's fear and cosmetic concerns, surgical excision with clinical follow-up was recommended as the treatment of choice when the final diagnosis was confirmed to be traumatic neuroma. The present patient's penis was circumcised approximately 45 years previously, and the neuroma was located in the mid-shaft of the penile body at the SDN site. We regarded this case as traumatic neuroma related to SDN because the nodules appeared long after circumcision.

During the past two decades, great changes have been made in the management of PE. Selective serotonin reuptake inhibitors and TAs are the most frequently used and best-studied treatments. An evidence-based definition of PE and International Society of Sexual Medicine (ISSM) guidelines for diagnosing and treating PE have been established.⁹ ISSM guidelines recommend medical treatment for PE with a centrally acting selective serotonin reuptake inhibitor or peripherally acting TA.⁵ Although the ISSM guidelines do not recommend SDN because of a possible permanent loss of sexual function and insufficient reliable data,⁴ the frequency of surgical treatment, including SDN, is increasing in Asian countries for non-responders to medical treatment.¹⁰ Despite the possible side effects, including numbness, paresthesia, pain, and ED, SDN is commonly performed in Korea.⁵ The Korean Society for Sexual Medicine and Andrology conducted a nationwide survey of 527 urologists in 2012 and reported the efficacy and complications of SDN in 4,400 cases.⁵ The results showed that SDN is one of the most popular surgical procedures for select patients with adverse effects to local anesthetics or penile hypersensitivity and is performed by Korean urologists practicing at private clinics. The main complications of

SDN are recurrence of PE (10.2%), pain or paresthesia on the glans (3.8%), and ED (0.4%). However, no traumatic neuroma has been reported as a complication of SDN until the present report.

CONCLUSIONS

The main complications of SDN are recurrence of PE, pain or paresthesia on the glans penis, and ED. However, no traumatic neuroma has been reported as a complication. ISSM guidelines do not recommend SDN as the primary treatment modality for traumatic neuroma because its efficacy and safety remain controversial. We report, for the first time, a rare complication of penile traumatic neuroma after SDN that was treated successfully by surgical excision. This case shows that penile traumatic neuroma can occur after SDN.

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