OBJECTIVE  
To describe the surgical technique of botulinum-A toxin injection into the cremasteric muscles of a 26-year-old male with bilateral cremasteric muscle spasms causing significant pain and limitation of activity. This pain has been refractory to multiple previous therapies, including inguinal nerve blocks and bilateral orchidopexies with cremasteric muscle lysis. Multiple imaging modalities revealed no obvious pathology for this significant bilateral pain. Genitourinary examination revealed hyper-retractile testes with changes consistent with bilateral orchidopexies and was otherwise normal.

MATERIAL AND METHODS  
The patient has undergone 3 outpatient staged injections of botulinum-A toxin into the bilateral cremasteric muscles after spermatic cord block with 1% lidocaine. One hundred units of botulinum-A toxin mixed into 10 mL of sterile normal saline were used for each injection staged 6 weeks apart.

RESULTS  
The patient tolerated all injections without apparent side effects. After the first injection into his left side, his baseline pain scores were reduced from 8 out of 10 to 3 out of 10 on a standard 10-point pain scale. He reported maximal efficacy 2 weeks after each injection, with dissipation over 4-6 weeks. After 2 left-sided and 1 right-sided injections, his baseline pain was 2 to 4 of 10, equal bilaterally, and he was back to rigorous activity with some limitations.

CONCLUSION  
Direct injection of botulinum-A toxin into the cremasteric muscle is a viable treatment option for the rare patient with debilitating and painful cremasteric spasms refractory to other therapies. UROLOGY 78: 214–216, 2011. © 2011 Elsevier Inc.

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Although a physiological phenomenon, the cremasteric reflex (CR) is implicated in pathologic processes, including undescended testicle (UT) and retractile testicle (RT), both thought to result from hyperactivity of the CR. Tanyel et al studied the cremasteric reflexes in young boys with UT and RT, noting decreased latency and increased contraction duration in CR with UT, suggesting a hyperactivity of this reflex compared with normal controls. Further, in 1956, Baty described his experience with 6 cases of adult cremasteric spasm causing testicular retraction and debilitating pain in adult men. Although orchidopexy has its role in the UT or RT, it does not consistently relieve painful cremasteric spasm or hyper-reflexia. In this report, we describe a case of successful treatment of cremasteric synkinesia using botulinum toxin a (BTX-A) injection into hyperactive cremasteric muscles.

CASE REPORT  
A 26-year-old active male of untested fertility presented with a 2-year history of intermittently retractile testes with worsening synchronous debilitating orchalgia that significantly interfered with his occupation and activities of daily living. The patient described bilateral cremasteric spasms causing testicular elevation into his groin which was associated with an aching discomfort requiring cessation of activity. This progressed to occur with all physical activity, limiting his ability to exercise and walk comfortably, and causing him to change occupations.

Previous radiological assessment, including scrotal sonogram, magnetic resonance imaging and computed tomography of the abdomen and pelvis revealed no pathology. He had no history of lower urinary tract symptoms or urinary tract infections. Before presentation, the patient had failed multiple interventions, including pain control with nonsteroidal antiinflammatory agents, gabapentin, multiple courses of antibiotics, inguinal nerve blocks, and acupuncture therapy. The patient had also previously undergone staged bilateral orchidopexy with cremasteric muscle lysis by another surgeon. He underwent left orchidopexy with lysis of the cremasteric muscle 1 year before presenting and followed up with a similar
procedure on the right muscle 6 months before this presentation. Although he initially reported some improvement in the frequency of painful spasms, his pain score progressed bilaterally to a constant 8 on the 0-10 numerical pain intensity scale with exacerbations to a level of 10.

His past medical history and general physical examination were unremarkable. His testes were of normal volume and were bilaterally pexed with demonstrable brisk cremasteric reflexes pulling the scrotum cephalad and inciting his characteristic pain pattern. He had unremarkable epididymes, palpable vasa bilaterally, and no palpable inguinal hernias.

After a lengthy discussion regarding management options, the patient elected to undergo staged cremasteric BTX-A injections in the outpatient setting. We elected to address 1 side at a time and began on the left, where symptoms were subjectively worse. After placement of a spermatic cord nerve block with 10 mL of 1% lidocaine injected, we placed 100 U of BTX-A in 10 mL normal saline into the left cremasteric muscle along its scrotal length using the setup demonstrated in Figure 1. He underwent a similar injection into his right cremasteric muscle (Fig. 2). There were no complications and he tolerated this well. At 1-month follow up, he reported a marked improvement in his symptoms with a decrease in his pain score to 3 of 10 on both the left and right sides. Maximal efficacy occurred within 2 weeks after the injection. He was able to return to normal physical activities, including competitive swimming, and his baseline discomfort and overall quality of life were much improved subjectively per patient report. He has had no known adverse effects attributable to the intervention and is no longer requiring medication therapy. Follow-up physical examination demonstrated resolution of cremasteric hyperactivity and scrotal skin retraction. He is currently 9 months out from his initial injection and 3 months out from his most recent injection, and he reports durable improvement in his symptoms. It is planned that he will continue BTX-A injections on an as-needed basis, but he has not required any for the 3 months after his most recent treatment.

COMMENT

The cremasteric reflex allows control of testicular temperature for optimal spermatogenesis and occurs because of the contraction of the cremaster fibers, which shroud the spermatic cord. A spinal cremasteric reflex can be elicited by stimulation of the sensory fibers of the femoral branch of the genitofemoral and ilioinguinal nerves originating from L1/L2, which synapse with the genital branch of the genitofemoral nerve causing hemiscrotal elevation. Although imperfect, this can be exploited clinically as an absent reflex and may be suggestive of acute testicular torsion.

BTX-A has been used medicinally since the late 1970s to cause a functional local denervation via inhibition of acetylcholine release from nerve terminals. In the field of plastic and cosmetic surgery, BTX-A has gained Food and Drug Administration (FDA) approval for the treatment of glabellar lines, blepharospasm, cervical dystonia, severe axillary hyperhydrosis, and severe spasticity of upper extremity muscles. Although there are no FDA-approved clinical uses for BTX-A in urology, off-label use continues to grow and is supported by several phase II and III clinical trials. BTX-A has been gaining increasing use for refractory overactive bladder symptoms from neurogenic and idiopathic detrusor overactivity failing anticholinergic therapy.

The theoretical benefit of denervating the cremasteric muscle as a therapy for cremasteric spasm or hyperreflexia seems intuitive. However, given the scarcity of the clinical entity and the relative newness of an agent, such as BTX-A, the literature on the topic is sparse. There has been 1 previous report of cremasteric BTX-A injection for treatment of bilateral cremasteric synkinesia in a 62-year-old man after an extensive laparotomy for esophageal cancer. Intracremasteric

**Figure 1.** Preprocedural setup for botulinum-A toxin injection. (A) 1% plain lidocaine in a 10-mL syringe. (B) Onabotulinumtoxin A, 100 units drawn into a 10-mL of saline.

**Figure 2.** Injection of botulinum-A toxin into the right cremasteric muscle.
muscle injection under electromyographic guidance resulted in near complete attenuation of the synkinesia lasting approximately 8 weeks after each injection. Animal studies revealed significant reductions in action potentials 45 days after intramuscular cremasteric BTX-A injections.6

CONCLUSIONS
In this unique case of a young man debilitated by symptomatic cremasteric hyperactivity that persisted even after bilateral orchidopexy and extensive medical therapy, bilateral cremasteric BTX-A injections were successful in relieving his symptoms, allowing resumption of physical activity. Given the finite duration of the drug’s efficacy, it is anticipated that he will require multiple injections. On a case-by-case basis, off-label uses of BTX-A will likely remain a powerful weapon in the arsenal of multiple medical and surgical specialties.

We await larger prospective series to validate our observation of efficacy.

References