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Retained Intracavernosal Needle Fragment Following Self-Administered Alprostadil Injection in a Post-Prostatectomy Patient

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Abstract

We report a 69-year-old post-prostatectomy patient who fractured a 30-gauge needle during an intracavernosal injection (ICI) after attempting to straighten it. Migration followed self-extraction attempts. Localized via radiography and ultrasound, the fragment was retrieved through targeted corporotomy under penile block. A literature review of 17 cases identified needle deformation and reuse as primary risk factors. These rare complications are preventable through patient education emphasizing the immediate disposal of compromised needles. Early urological intervention and imaging-guided retrieval ensure successful outcomes, allowing safe resumption of therapy.

Categories: Urology
Keywords: alprostadil, erectile dysfunction, intracavernosal injection, needle fracture, penile foreign body, post-prostatectomy, retained needle

Introduction

Post-prostatectomy erectile dysfunction (ED) affects the majority of men following radical prostatectomy, even with nerve-sparing techniques, and current guidelines endorse intracavernosal injection (ICI) therapy as an effective second-line option for those who do not respond adequately to first-line treatment [1]. Where phosphodiesterase type 5 inhibitors fail, treatment strategies typically escalate to vacuum devices and intracavernosal injections [2].

ICI therapy may also be incorporated into penile rehabilitation protocols aimed at maintaining cavernosal tissue oxygenation during neuropraxia, although adherence is limited by injection pain, anxiety, and inconvenience [3,4]. Discontinuation rates approaching 50% have been reported in post-prostatectomy cohorts [3].

Common adverse effects of ICI include local pain, bruising, and hematoma, with penile fibrosis a recognized longer-term risk; alprostadil labeling cites an incidence rising to 7.8% in an 18-month self-injection study [4]. Acute ischemic priapism is the principal acute emergency, managed with intracavernosal phenylephrine and corporal aspiration or irrigation, escalating to surgical shunting when required [2].

Needle fracture during self-injection is an uncommon but well-documented complication, with early reports describing the mechanism as usually related to needle bending or reuse [5]. Subsequent case reports have described delayed retrieval of fragments after breakage [6], further instances of intracorporeal needle breakage as an unusual complication of self-injection [7], and even multiple retained needles in a single patient [8]. Localization and retrieval strategies described in the literature include ultrasound-guided removal [9], portable ultrasound at the point of care [10], and intra-operative fluoroscopic localization for more deeply embedded fragments [11]. Comparable retained fragments have also been described outside native anatomy, including in a reconstructed phallus [12], and further cases of intracorporeal needle breakage during ICI therapy continue to be reported [13]. A literature review of 17 cases identified needle deformation and reuse as primary risk factors [14]. A recent systematic review consolidated these risk factors and outcomes across the published literature [14]. We report a case of retained intracavernosal needle fragment following alprostadil self-injection in a post-prostatectomy patient and use it to contextualize risk factors, imaging pathways, and operative management.

Case Presentation

A 69-year-old man presented with ED following nerve-sparing radical prostatectomy for Gleason 4+3 (grade group 3) prostate adenocarcinoma. He had been using intracavernosal alprostadil (Caverject; 30-gauge needle) under previous specialist supervision. Prior to one injection, he noted the needle was bent, attempted to straighten it, and proceeded with the injection into the right corpus cavernosum. The needle fractured, leaving a fragment retained within the penis. He attempted self-removal, which likely promoted further migration of the fragment. He then visited the hospital the next day.

On examination, a palpable linear foreign body was identified at the base of the right corpus cavernosum. There were no clinical signs of infection. Pelvic radiography demonstrated a radiopaque metallic fragment, and high-frequency penile ultrasound confirmed intracorporal location within the right corpus cavernosum (Figure *1*), consistent with previously described ultrasound-guided localization and retrieval strategies [11].

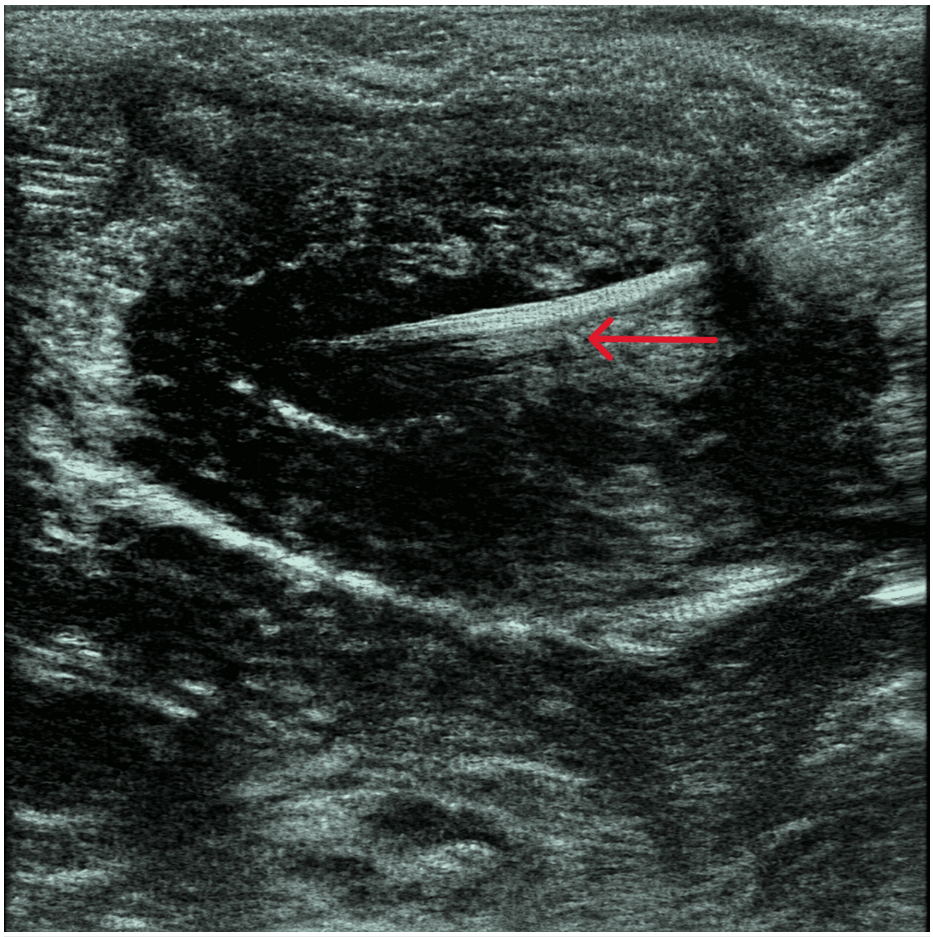


FIGURE 1: Ultrasound image of the retained needle (red arrow)

The patient underwent surgical exploration under penile block. A targeted corporotomy over the localized fragment enabled intact retrieval of the needle, which was 12.7 mm (Figure *2* and Figure *3*). Immediate post-operative radiography confirmed complete removal with no residual foreign body.

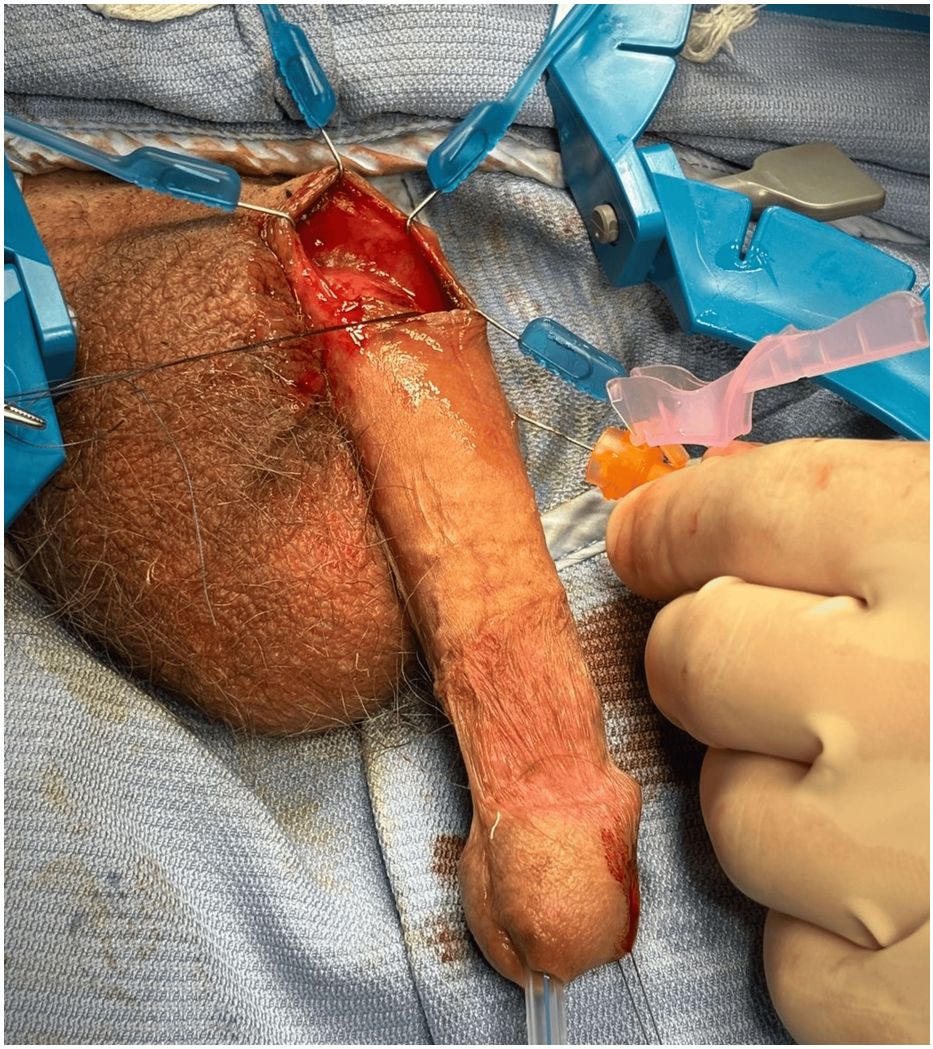


FIGURE 2: Approach to access the retained needle

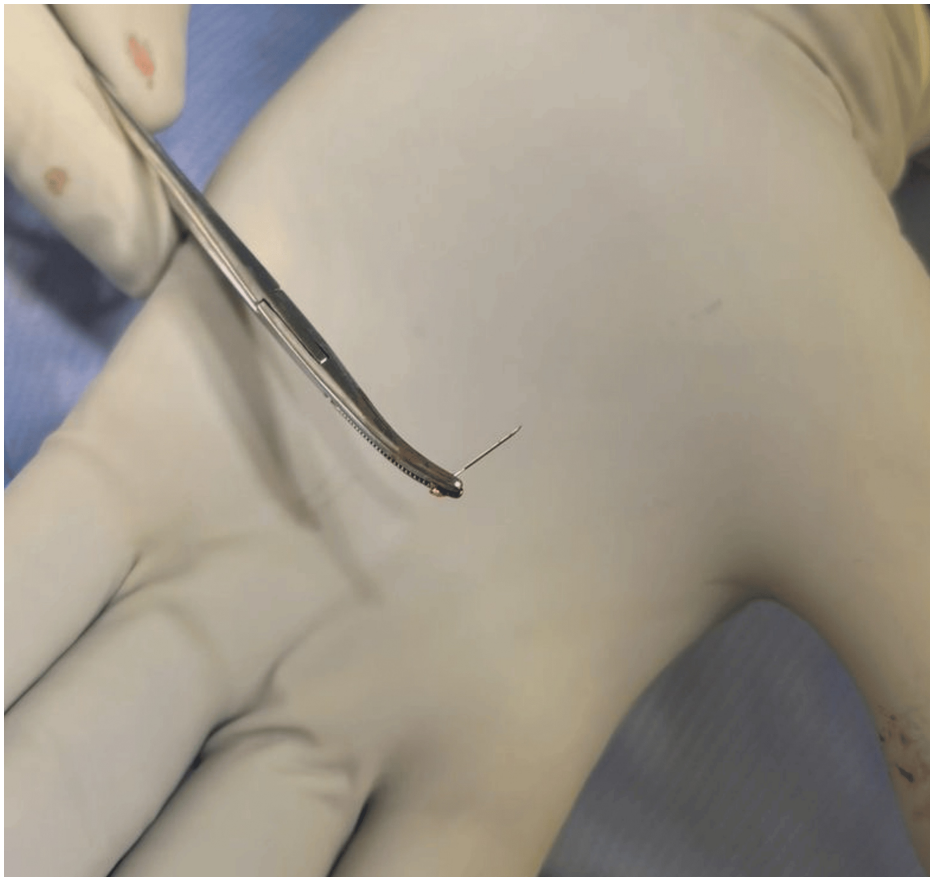


FIGURE 3: Retained ICI needle

ICI: intracavernosal injection

Recovery was uneventful. At 10-week follow-up, he reported a small, stable area of reduced penile sensation at the operative site without other morbidity. This localized sensory disturbance may have resulted from disruption of superficial cutaneous nerve branches during surgical exposure or traction-related irritation of a sensory branch supplying the penile shaft. The precise mechanism could not be established. After supervised retraining by a urology nurse specialist covering correct perpendicular technique, dominant-hand injection to the ipsilateral corpus, and strict single-use of uncompromised needles, he resumed ICI without further adverse events eight weeks later.

Discussion

ICI is particularly valuable in post-prostatectomy ED because it produces cavernosal smooth muscle relaxation independent of intact neural signaling, bypassing the neuropraxia that limits responses to oral agents. ICI also has an established role in penile rehabilitation protocols following radical prostatectomy [3,4].

The typical adverse event profile is dominated by local pain and bruising [1]. Longer-term adverse effects include fibrosis and deformity, with increasing incidence over prolonged self-injection [15]. Priapism is managed with phenylephrine and aspiration or irrigation, escalating to shunting when required [16]. Adherence is limited, with discontinuation rates near 50% across post-prostatectomy series [3].

Needle fracture, although uncommon, carries significant potential for harm. A retained metallic fragment within the tunica-enclosed corpora may migrate, cause hematoma or erectile tissue injury, or lie in proximity to the urethra and dorsal neurovascular bundle. The event frequently precipitates self-extraction attempts that worsen fragment depth and complicate subsequent retrieval.

The present case illustrates a particularly preventable pathway. A bent needle was not discarded; an attempt was made to straighten it, creating a structural fatigue point; and the injection then proceeded. This mechanism has been described in several earlier reports of needle fracture during self-injection and remains the most easily addressable precipitant [5,7,14]. The subsequent self-extraction attempt converted a straightforward retrieval into a procedure requiring targeted corporotomy, underscoring the importance of

early urological assessment rather than self-management.

The available evidence supports a clear prevention strategy. Any bent or dropped needle should be discarded immediately without attempting to straighten it, and disposable needles should never be reused. Patients should be taught strict perpendicular insertion with the dominant hand directed to the ipsilateral corpus, should rotate injection sites, and should avoid torque or side-to-side movement once the needle is inserted. Suitability for self-injection should be reassessed in patients with tremor, arthritis, impaired vision, or neurological disability, with autoinjector devices or partner assistance considered for those with dexterity limitations, and technique verified at each clinic visit [1,14].

The positive outcome in this case, intact retrieval via a small corporotomy under penile block, confirmed radiologically, with subsequent safe resumption of ICI after nurse-led retraining, reflects the benefit of early specialist involvement, pre-operative imaging localization, and structured post-event education. This management strategy represents a pragmatic approach that may be considered for similar presentations.

Conclusions

Retained intracavernosal needle fragments are rare but clinically important and largely preventable. Needle deformation and attempted straightening are avoidable precipitants that require explicit emphasis in patient education. Early urological involvement, imaging-guided localization, targeted corporotomy with immediate radiological confirmation of complete removal, and structured post-event retraining allow selected patients to safely continue ICI therapy with excellent outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Drafting of the manuscript: Gausal Manoharan, F Castiglione

Critical review of the manuscript for important intellectual content: Gausal Manoharan, O Ermis, Omer Onur Cakir

Supervision: F Castiglione, Omer Onur Cakir

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