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Surgeon's Corner: Cavernoscopy for Rear Tip Extender Removal

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Abstract

Background—Cavernoscopy (using a cystoscope in the corpora) is traditionally used to retrieve rear tip extenders (RTEs) that are embedded at the time of removal and/or replacement of inflatable penile prostheses (IPPs).

Aim—To describe indications and techniques of cavernoscopy.

Methods—We describe our preferred method of cavernoscopy to retrieve retained rear tips and present a thorough review of the literature regarding cavernoscopy.

Outcomes—Ability of cavernoscopy to retrieve embedded rear tips without causing complications.

Results—Cavernoscopy is feasible anecdotally in case reports, but other less invasive methods of retrieving RTEs seem to have similar efficacy.

Clinical Implications—Penile prosthetic surgeons should be familiar with cavernoscopy as an option to remove embedded rear tip extenders that cannot be removed by less invasive mechanisms.

Strengths and Limitations—Given the rarity of retained RTEs, cavernoscopy is infrequently required. As such, literature regarding the topic is extremely limited.

Conclusion—Cavernoscopy is a technically feasible procedure that can be attempted as part of a stepwise algorithm for removing retained RTEs.

Keywords

rear tip extender; cavernoscopy; inflatable penile prosthesis

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Introduction / Background

Cavernoscopy was initially described in 1991 as a diagnostic procedure to examine the corpora [1]. It was also used to differentiate between undersizing of a penile prosthesis cylinder and perforation [2]. Though it is not commonly performed for this indication, cavernoscopy has become a tool for prosthetic surgeons. RTEs are placed during insertion of inflatable penile prostheses. They can become dislodged during explantation of the cylinders, or during sexual activity. Though anecdotally rare, the exact incidence of this phenomenon is unknown. RTEs must be removed as leaving them in can lead to pain, perforation or infection [3,4].

Indications for Procedure

During revision/explanation/replacement of IPPs, the cylinders are usually removed and replaced. In some instances, the RTEs are adherent to the proximal corpora and do not come out. They could also be dislodged secondary to intercourse [5]. When the rear tips are adherent to the proximal corpora, removal may require additional retrieval or excision techniques.

Preoperative Preparation

The preoperative preparation for those patients needing cavernoscopy is not different than those undergoing traditional IPP surgery. The patient's original operative report is reviewed if available, as for all our revision cases. Most importantly, the measurement of the cylinders (including length of RTEs) and size/site of reservoir is recorded to later verify removal of all components. These measurements are reiterated at our preoperative time-out. Similarly, Kava et al. proposed an implant-specific checklist to ensure removal of all components, including RTEs [6].

We prefer the penoscrotal approach to penile prosthesis placement. Though no literature specifically addresses this, we imagine that cavernoscopy can be used with no additional complications in the infrapubic approach. Retained RTEs may be less common with the infrapubic approach as fewer rear tips are used when prostheses are placed infrapubically [7].

Intraoperative considerations

We advocate pulling up gently rather than pulling up aggressively when removing the cylinders. This may prevent separation of the RTEs from the cylinder in the first place. When both cylinders are removed, the sizes are compared to each other and measured using a ruler. We ensure that the same size rear tips are extracted from each side (particularly when the original operative report is unavailable), and that this matches the original operative report. A high suspicion of retained rear tips should be maintained as leaving the rear tips could lead to pain, perforation, and infection [3,4]. We maintain a low threshold to look proximally in the corpora with a long nasal speculum.

If an RTE is retained, the literature indicates that removal can initially be attempted by using a nasal speculum, graspers, a Silastic penile measuring rod, or an 11 mm Brooks dilator [8–10]. When these conservative methods fail, proceeding to cavernoscopy is a potential next step. Reports have only described cavernoscopy using rigid cystoscopy, but we have also performed it effectively with a flexible cystoscope [11,12]. A flexible endoscopic grasper can be passed via the working channel of the cystoscope to grasp the RTE and remove it (Figure 1). We traditionally use saline for irrigation, but other isotonic solutions should be safe. We prefer using a camera and monitor rather than the eye piece of the flexible cystoscope as both authors use magnifying loupes during prosthetic surgery (Figure 2). The monitor should be positioned opposite the surgeon performing the cavernoscopy.

All urologists are competent in cystoscopy, but it is important to remember that cavernoscopy should be performed as sterilely as possible given increased risk of infection with penile prosthesis revision surgery. For those who perform the no-touch technique, a similar setup can be performed prior to beginning cavernoscopy [13]. This would include a sterile loose surgical drape across the entire surgical field. A small hole can be made at the site of the corporotomy, to allow insertion of the cystoscope. The setup should prevent fluid leakage into the remainder of the field, and minimal flow should be used, particularly when removing infected prostheses. After removing the RTE, we recommend visualizing the proximal corpora again to ensure there is not another more proximal RTE present. After confirmation that all RTEs have been removed, we recommend antibiotic irrigation into the proximal corpora prior to placing a new implant cylinder.

Postoperative management and follow up

Postoperative management does not deviate from our standard penile prosthesis protocol, which has been described previously [14]. However, we maintain a higher index of suspicion for infection, particularly if the patient complains of perineal pain.

Outcomes and Complications

Given the rarity of cavernoscopy, no systematic evaluation of the procedure's success has been performed, and literature is sparse. Possible complications include inability to remove the RTE, proximal perforation, or proximal displacement of the RTE. If cavernoscopy and endoscopic retrieval fails, a perineal counter incision and corporotomy remains as a last resort to remove the RTE. In an isolated proximal perforation, one can consider using a RTE sling to place the prosthesis [15]. If the RTE has been dislocated proximally after the perforation, the patient will require a perineal incision to expose the proximal corpora and retrieve the rear tip, as this is imperative. Subsequently, the RTE sling can also be considered.

Conclusions

Safe removal of retained RTEs during IPP removal and/or replacement should proceed in a stepwise fashion from conservative to invasive measures. Surgical tools like nasal specula, long clamps, and dilators can be effective. If these tools are unsuccessful, the literature has

shown cavernoscopy to be a useful maneuver. Perineal counter incision can be implemented as a last resort.

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Abbreviations

RTE	rear tip extender
IPP	inflatable penile prosthesis.

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Figure 1.

Figure 2.