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Percutaneous Revision of a Testicular Prosthesis is Safe, Cost-effective, and Provides Good Patient Satisfaction

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ABSTRACT

Office-based percutaneous revision of a testicular prosthesis has never been reported. A patient received a testicular prosthesis but was dissatisfied with the firmness of the implant. In an office setting, the prosthesis was inflated with additional fluid via a percutaneous approach. Evaluated outcomes included patient satisfaction, prosthesis size, recovery time, and cost savings. The patient was satisfied, with no infection, leak, or complication after more than 1 year of follow-up, at significantly less cost than revision surgery. Percutaneous adjustment of testicular prosthesis fill-volume can be safe, inexpensive, and result in good patient satisfaction.

Introduction

Testicular prostheses have been used since 1941 and have been shown to alleviate the cosmetic and psychologic sequelae associated with losing a testicle.[1] The implant is placed via inguinal or scrotal incision, and prosthesis revision usually requires additional surgery through a second incision. Although manufacturers recommend against adjustment of fill-volume post-operatively,[2] their package insert does indicate that the injection port can be accessed up to 5 times with a 21-gauge needle. Additionally, percutaneous inflation has successfully been used in other devices to augment filled volume, including the ProACT balloon system for male incontinence,[3] gastric bands,[4] and inflatable tissue expanders.[5]

Case presentation

A 68 year-old male with a history of testicular atrophy due to chronic testosterone replacement therapy underwent left radical inguinal orchiectomy for a spermatic cord liposarcoma. He required adjuvant radiation therapy, which ultimately led to radiation dermatitis and delayed wound healing. He desired a testicular prosthesis and underwent placement of a saline-filled Torosa testicular prosthesis (Coloplast™). To match the firmness of the atrophic, contralateral testicle, the prosthesis was under-inflated with 14cc of saline.

Post-operatively the patient was unhappy and wanted a more firm-feeling prosthesis. The patient wished to avoid the operating room due to concerns over radiation-related wound healing issues, as well as wanting not to take additional days off from work. Percutaneous inflation of the device was discussed as an alternative. The patient understood that this technique was neither standard of care nor recommended by the product manufacturer. After discussing all potential risks the patient chose to proceed, understanding that if the technique were unsuccessful he would require an additional surgery to replace the prosthesis.

Prior to the procedure a careful physical exam was performed to clearly identify the inflation port on the prosthesis. A Torosa implant used for patient education was available to use for comparison. After ensuring that the inflation port could be differentiated from the suture tab, 1g of IM ceftriaxone was given, the skin was clipped and prepped, the area was draped in the usual sterile fashion, and the prosthesis was palpated and isolated in the scrotum. A 21-gauge butterfly needle was used to access the inflation port on the top of the prosthesis, and 2cc's of preservative-free, injectable saline were injected. The needle was removed.

The patient reported immediate satisfaction with the enhanced prosthesis volume. After more than 1 year of follow-up, the patient maintains high satisfaction with the 16cc size and firmer feel of his prosthetic testicle. There are no signs of infection or prosthesis leak, and size has remained constant. Whereas we typically limit patients to light activity for 3–5 days after prosthesis placement or revision, this patient returned to activity immediately after the percutaneous procedure, missing no days of work.

Regarding cost, the initial surgery resulted in total hospital charges of $22,521.95. The percutaneous, in-office procedure was

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performed within the global period of the implant, resulting in no charges to the patient or his insurer. Office supplies needed to perform the procedure totaled $18.77.

Discussion

As testicular prostheses are primarily placed for cosmetic and psychological reasons, patient satisfaction is the most important outcome. By this measure the technique was successful, as well as safe and significantly less costly than operative revision.

Manipulating a testicular prosthesis after insertion, in theory, increases the risk for damage and infection, and the manufacturer currently recommends against post-operative device inflation.[2] However, complication rates for percutaneous adjustment in similar devices reassure that the risk was acceptably low.

The ProACT adjustable continence system consists of two balloons placed at the bladder neck, with subcutaneous scrotal ports allowing percutaneous volume adjustment in a similar manner to the one described here. In a longitudinal study with 12 month follow-up, 0 of 50 patients had an infection related to percutaneous adjustment, with 2 ruptures due to overfilling.[3] Similarly, rates of infection or port damage from percutaneous adjustment have been reported as low as 1% for gastric bands,[4] and tissue expanders.[5] Given such low complication rates for percutaneous adjustment of similar devices, we and the patient felt that the risk profile of percutaneous fill adjustment of his testicular prosthesis was acceptable.

The initial surgical procedure resulted in substantial medical costs to both the patient and his insurance company. Surgical revision would have likely resulted in a similarly large cost. By contrast, the percutaneous approach required no additional payments by the insurer or the patient.

When performing this procedure, the authors found it very helpful to have a sample prosthesis available. It can be difficult to differentiate the suture tab from the inflation port in patients with thick scrotal rugae. The sample prosthesis assists the surgeon in confirming the true location of the inflation port, and differentiating it from the suture tab (Fig. 1a and b).

The success of this technique has led the senior author to alter his technique for testicular prostheses. The suture tab is no longer

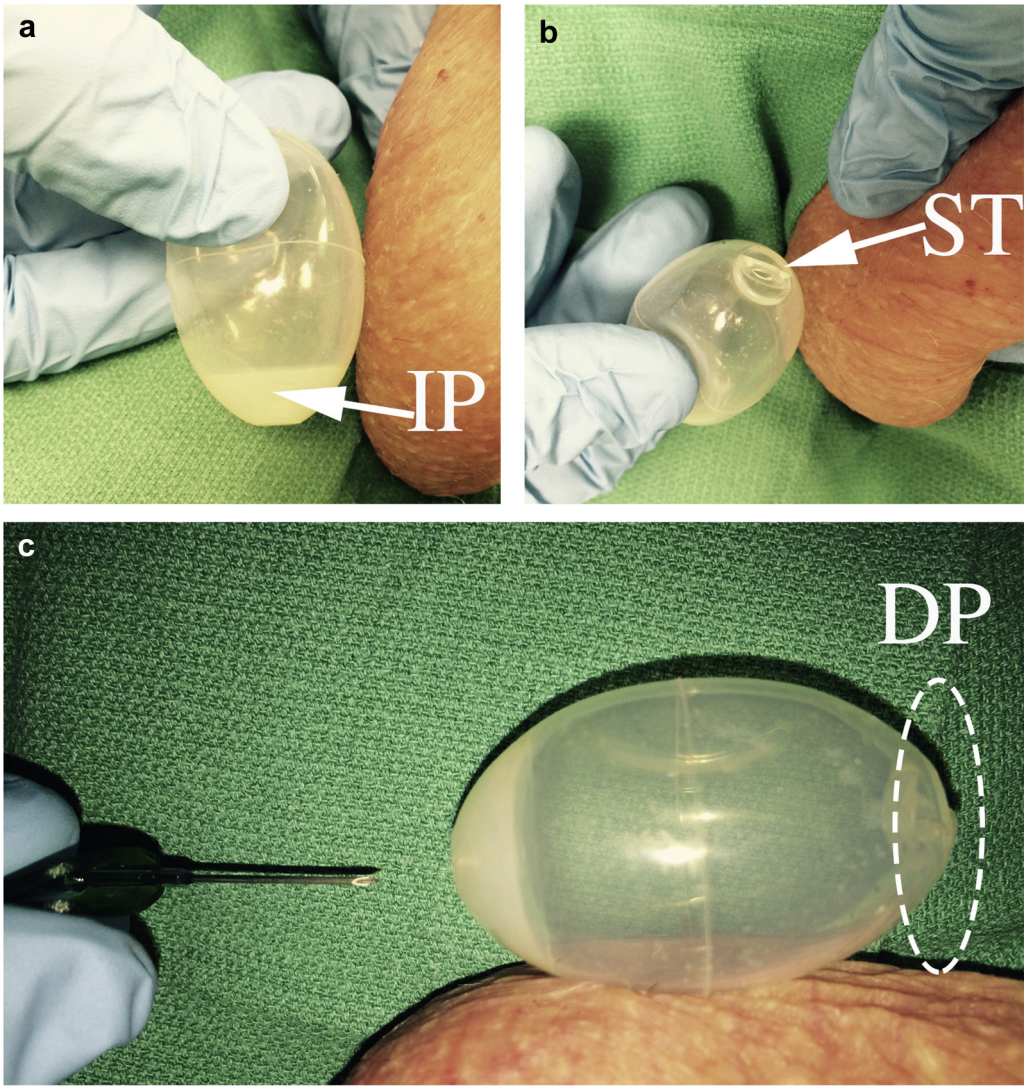

Figure 1. Practicing localizing landmarks on sample prosthesis before attempting on the implanted prosthesis. Care is taken to locate a) the inflation port (IP), b) the suture tab (ST), and c) to line up the needle so as to ensure that it is inserted in the center of the inflation port. This model assumes use of amended technique to keep the IP inferior and to secure the prosthesis with a purse-string at the superior aspect of the Dartos pouch (DP).

used to tether the prosthesis to the subdartos pouch. Instead, the inflation tab is pointed downward and the prosthesis is secured in placed with a purse string suture above the sub-dartos pouch (Fig. 1c). Should future inflation be required, the inflation port is easily accessible through the dependent portion of the scrotum. In addition, the prosthesis is slightly more mobile which better mimics a natural testicle.

We acknowledge several limitations to this case report. It remains to be seen how generalizable it is across patients of varying body habitus. Additionally, this is an off-label use and patients must be clearly informed of the risks involved.

Conclusion

This is the first published report of percutaneous revision of a testicular prosthesis. The minimally invasive technique allowed the patient to safely avoid a return to the operating room while augmenting his prosthesis to a satisfactory size and firmness. We therefore conclude that in appropriately informed patients, percutaneous inflation of testicular prosthesis is a safe and inexpensive option for adjusting volume. In the first reported case using this technique, no complications were noted. Patient satisfaction was enhanced by the decreased cost and recovery time associated with this office-based procedure.

Conflict of interest

Neither author has any conflicts of interest.

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