



Trauma and reconstruction

Intra-scrotal epidermoid cyst rupture misdiagnosed as a testicular prosthesis rupture: A case report

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ABSTRACT

Testicular cancers represent about 5 % of all urological tumors. Most patients who undergo radical orchiectomy (RO) decide to place a testicular prosthesis, for a cosmetic result and to accept the testicular loss. Among all late complications, a spontaneous prosthesis rupture is a rare event contrary to penile prosthesis. The present study reported the case of a 53-year-old Italian man has presented to our department principally for a suspicious rupture of testicular implant, placed twenty years before after a RO. Despite the findings at scrotal ultrasonography, at final histology, the mass was identified as spontaneously broken intra-scrotal epidermoid cyst.

1. Introduction

Testicular cancers (TC) represent about 5 % of all urological tumors, and their incidence is increasing mainly in industrialized countries.¹ To date, radical inguinal orchidectomy (RO) is the gold standard of treatment.¹ Most patients who undergo RO decide to place a testicular prosthesis.¹ This silicone gel-filled implant permits the patient mostly to receive a better cosmetic result after surgery and to accept the testicular loss.^{2–4} Moreover, the insertion of a testicular prosthesis does not increase the complication rate of RO.⁵ Indeed, Robinson et al. assessed the testicular prosthesis implant as a safe approach, offering to TC patients concurrently with primary surgery.⁵ Among all late complications, a spontaneous prosthesis rupture is a rare event contrary to breast or penile prosthesis.^{3,5–10} Moreover, the sonographic evaluation is complex due to both the rareness of the event and the absence of pathognomonic signs.¹¹ To the best of our knowledge, no previous authors highlighted the rare occurrence, enlightening possible differential diagnosis.

2. Case-presentation

A 53-year-old Italian man presented to our department for left scrotal swelling. In May 2000, he underwent a left orchifuniclectomy for two testicular masses and opted for a silicone testicular prosthesis implant. Histopathological analysis revealed a seminoma and mature cystic teratoma. The pathological stage, as per TNM classification, was pT1, N0, and M0. Immunohistochemistry indicated CD30 negativity and

PLAP positivity in tumor cells. The patient forewent adjuvant therapy, and subsequent follow-ups showed no disease recurrence, conducted regularly. In early October 2022, the patient complained of fever, dysuria, and discomfort while sitting. He had no history of testicular trauma, smoking, or drinking, and there were no significant findings in his family history. Upon physical examination, an evident enlargement of the left emi-scrotum was observed, maintaining the consistency of the testicular prosthesis upon palpation. Additionally, signs of redness (rubor), warmth (calor), and pain (dolor) were present. No palpable regional adenopathy was detected. Blood biochemistry and urinalysis yielded results of no clinical relevance. The patient went from the outpatient clinic with empiric antibiotic therapy, Nonsteroidal anti-inflammatory drugs (NSAIDs), and anti-edema. After about seven days, the fever and testicular pain disappeared, and the swelling drastically diminished. Moreover, the patient performed a testicular ultrasound with color-doppler that revealed the presence of a periprosthetic inflammatory reaction associated with granulomatous reactions formations, as from possible rupture (Figure A, B and C). Particularly noteworthy was the discovery of a polylobate, non-vascularized periprosthetic posterior inferior liquid sac measuring 40 mm. (Figure A, B and C).

On November 3, the patient underwent prosthesis removal through a scrotal approach with an incision in the surrounding tissue. Macroscopically, the tissue removed appeared congested and fibrotic with lumpy calcifications of no unique interpretation. To the touch, the tissue was soft and retractable. After removal, the scrotal implant appeared

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Figure A. Scrotal Doppler ultrasound. A) Axial sections of the left side of the scrotum show a periprostatic inflammatory reaction from possible rupture associated with granulomatous reactions formations. The suspicious tissue resulted polylobate and non-vascularized.

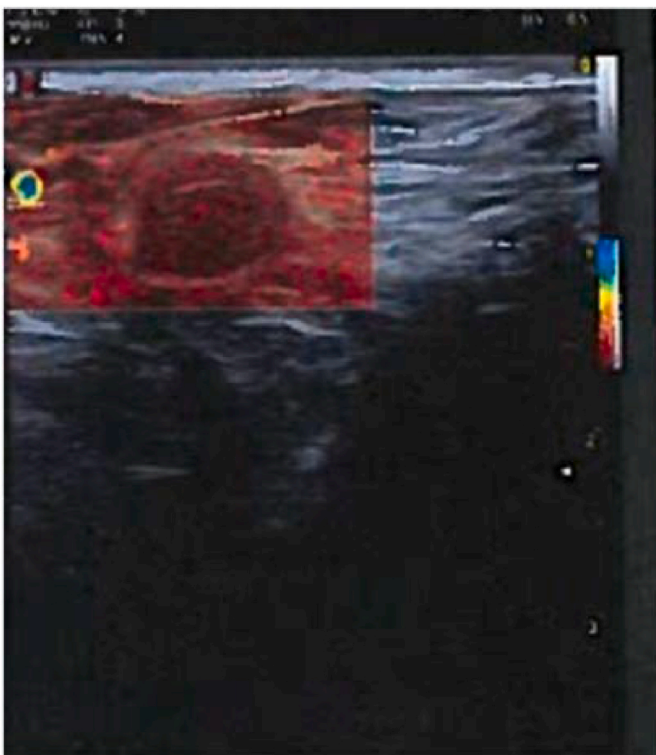


Figure B. Transversal sections of the left side of the scrotum show testicular prosthesis in apparent continuity with silicone-like isoechoic material in the absence of vascularization.

unexpectedly intact, despite the ultrasound suspicion (Figure D, E and F). Because of the complexity of the event and of the symptomatology following the epidermoid cyst rupture, the patient aware of the increased risk of infection as well as extrusion of a new prosthetic implant, opted not to place a second testicular prosthesis implant. Consequently, the histological examination revealed the presence of keratin cysts that underwent rupture covered by a granulomatous reaction with multinucleated giant cells around amorphous eosinophilic material with the presence of fibrosis, ischemic-hemorrhagic areas, and abundant hemosiderin pigment. Furthermore, both bacteriological and cytological analyses of the periprostatic fluid yielded negative results.

3. Discussion

The testicular prosthesis spontaneous rupture is a rare eventuality in clinical practice compared to other silicone implants, such as breast prostheses.³ Due to its rarity, this complication has been insufficiently explored in recent literature, leading to understudying. Consequently, we are the initial contributors to introduce intra-scrotal epidermoid cyst spontaneous rupture as a potential differential diagnosis for testicular prosthesis rupture. To enhance the management of similar cases, addressing several key issues is essential for providing valuable considerations. First, a history of testicular trauma or suspected intra-operative puncture could warrant a prosthesis rupture.¹² In this case, consistent with Floyd et al. findings, there was no scrotal trauma.¹³ Second, scrotal ultrasonography was negative to the “stepladder sign”, as described by previous authors.^{11,13} Indeed, the “stepladder sign” is derived from the detection of horizontal echogenic straight or curvilinear lines, somewhat parallel, traversing the interior prosthesis due to intracapsular rupture.¹¹ Instead, the scrotal US showed only formations of granulomatous reactions with no noteworthy ultrasound signs. Finally, the rare complications of prosthetic surgery were ignored, such as the epidermoid cysts growth.^{14,15} Indeed, epidermal cysts (EC) can follow various surgical procedures in which clusters of epidermal cells are implanted into deeper tissues under the dermis.¹⁶ Moreover, EC represents a benign epithelial tumor in humans.^{15,16} On physical examination, ECs are solid, round, mobile, and hard elastic to palpation; the condition is asymptomatic, except during infections. The incision of a cyst reveals the typical caseous content, often with a fetid odor, formed by epithelial debris and fatty material; within the cysts, a keratin material and sometimes calcium deposits predominate in many cases.¹⁶ At US evaluation, ECs may appear as anechoic mass, with multilobulated margins without rear wall reinforcement due to phlogistic clusters.¹¹

4. Conclusion

We reported a case wherein the spontaneous rupture of an intra-scrotal epidermoid cyst was initially misdiagnosed as a testicular prosthesis rupture. The occurrence of epidermoid cyst rupture is uncommon. In the diagnostic evaluation of a scrotal mass, the inclusion of genital MRI would have been crucial for a more precise definition of the differential diagnosis. However, in the context of this specific case, such imaging would not have altered the therapeutic approach.

Consent

The patient signed the informed consent for this case report publication and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

CRediT authorship contribution statement

Agostino Fraia: Data curation, Conceptualization. **Francesco Di Bello:** Writing – review & editing, Writing – original draft, Visualization, Validation, Conceptualization. **Gabriele Pezone:** Conceptualization. **Claudia Collà Ruvolo:** Supervision, Resources, Project administration.



Figure C. Axial sections of the left side of the scrotum show a periprosthetic inflammatory reaction from possible rupture associated with granulomatous reactions formations. In the periprosthetic posterior inferior plane, a polylobate liquid sac of 40 mm is present (red arrow).



Figure D. Macroscopically, the tissue (on the left and the center) removed appeared congested and fibrotic with lumpy calcifications of no unique interpretation.



Figure F. The scrotal implant was explanted intact.



Figure E. Macroscopically, the tissue (on the left and the center) removed appeared congested and fibrotic with lumpy calcifications of no unique interpretation.

Gianluigi Califano: Writing – review & editing, Project administration.
Nicola Longo: Writing – original draft, Visualization, Supervision, Conceptualization.

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