

Testicular Vascular Flow Compromise Caused by Compressive Hematocele After Lichtenstein Hernioplasty

Daniel R. Nevarre, MD
David M. Raezer, MD, FACS

A hematocele is an accumulation of blood within the tunica vaginalis testis and can result from trauma or from rupture of the tunica or testis. If a case of hematocele is not recognized early and treated efficiently, complications can result, the most severe being orchiectomy. This article discusses a rare case of compressive hematocele that originates as a complication of a right-sided inguinal hernia repair and totally obstructs ipsilateral testicular blood flow. Diagnosis, differential diagnosis, and therapeutic interventions are discussed.

CASE PRESENTATION

Ten days after a routine Lichtenstein hernioplasty, a 65-year-old hospitalized man demonstrates a pale, moderately tender right testicle with a 1.5 x 5 cm non-reducible mass located inferior to the inguinal incision and extending along the inguinal canal to the right hemiscrotum. The mass shows no bowel sounds, erythema, or warmth.

Patient History

After referral by the patient's primary care physician to a general surgeon, the patient was diagnosed with an enlarging and recurrent right inguinal hernia. The hernia was 8 x 16 cm with a 4-cm base, and the hernia was reducible. During surgical exploration, the protrusion was identified as an indirect hernia with no direct component. The hernia contents protruded along the spermatic cord into the scrotal sac.

During exploration, a Lichtenstein tension-free hernioplasty using polypropylene mesh was performed. The incision was made along lines of relaxed skin tension starting approximately 1 cm superolateral to the pubic tubercle and extended laterally. The ilioinguinal nerve was identified and retracted away from

the hernial contents and operative field. This maneuver was difficult because of the presence of fibrosis secondary to chronic inflammation caused by stretch from the hernia. The attenuated veil of cremasteric fibers was incised and separated to its origin from the internal oblique muscle. The large adherent hernial sac was opened and dissected from the spermatic cord using blunt finger dissection and electrocautery. Hernial contents and the sac were reduced into the abdominal cavity. The repair was completed by approximating the transversus abdominis ligament to Poupart's ligament with an overlay of polypropylene mesh to reinforce the repair and the inguinal rings.

Current Presentation

Diagnosis. Considering the patient's current symptoms (ie, a non-reducible mass in the right testicle 10 days postsurgery), possible differential diagnoses include: hernia recurrence and incarceration; epididymitis; testicular torsion; and ischemic orchitis, commonly caused by dissection trauma to the spermatic cord or by inguinal ring reconstruction that is too tight.

Imaging studies. Ultrasonography reveals a multilocular and septate mass, the presence of which adds hematocele to the differential diagnosis. A technetium Tc 99m pertechnetate scan is ordered to evaluate testicular flow. The scan yields findings consistent with ischemia of the right testicle. Immediate surgical exploration is indicated.

Dr. Nevarre is a Plastic Surgery Resident, Harvard Medical School, Boston, MA. Dr. Raezer is Staff Urologist and Assistant Clinical Professor of Surgery, Mercy Health Systems, Darby, PA, and Urologist, Delaware County Memorial Hospital, Lansdowne, PA.

Treatment and Outcome

After spinal anesthesia, an incision is made approximately 2 cm below the inguinal incision on the right hemiscrotum and then continues superiorly to the medial end of the inguinal incision. Dissection proceeds through the edematous subcutaneous tissue along the anterior aspect of the testicle and demonstrates the tunica vaginalis testis. The tunica vaginalis testis is incised and copious sanguineous fluid is released and shoots up in excess of 3 ft, confirming the diagnosis of compressive hematocele. After the blood is drained, the testicle's normal pink color returns.

No permanently ischemic areas are found, thus the testicle is not excised and the spermatic cord structures are preserved. The specimen is excised and confirmed to be a hematocele by pathology. A 1/4 inch Penrose drain is placed through a separate small incision in the inferior aspect of the scrotum and sutured to the skin. The subcutaneous tissue is approximated with interrupted polyglactin sutures and the skin is closed with 3-0 nylon. The Penrose drain is removed on postoperative day two, and the patient continues through follow-up without incident.

DISCUSSION

A review of the past 30 years of the medical literature discovered no reports of a compressive hematocele as a complication of hernia repair. Testicular infarction has been associated with incarcerated inguinal hernias.¹ Tumors have also been linked to testicular hematocele and orchiectomy is often necessary, even in the absence of tumor.² Ultrasound studies of the testicles were found to be insufficient for hematocele detection and for the diagnosis of testicular ischemia.² Early surgical exploration for suspected hematocele is recommended.

Lichtenstein Tension-Free Hernioplasty

The Lichtenstein repair was preferable in this case because of its extremely low (0.7%) recurrence rate validated in a series of 6321 consecutive cases.^{3,4} In the late 1960's, when Lichtenstein first performed this repair, this technique differed from other approaches in the following respects:⁴⁻⁶

- Lichtenstein advocated the use of polypropylene mesh to buttress all repairs
- The Lichtenstein technique abandoned the time-honored concept of high ligation and hernial sac excision for simply opening the hernial sac, dissecting the sac from the spermatic cord, and, after reduction of the hernial contents, merely replacing the hernial sac within the peritoneal cavity without excision

- The Lichtenstein repair was only a single layer approximation of the transversus abdominis ligament and Poupart's ligament

Potential complications of Lichtenstein tension-free hernioplasty include neuralgia, seroma, spermatic cord compression, and orchitis.³

Surgical recommendations. In this case study, the ilioinguinal nerve was difficult to retract from the operating field. The trunk of the ilioinguinal nerve may be transected without serious consequences, and some surgeons routinely divide the nerve in order to complete the hernia repair.⁷ Surgeons must be aware that the preservation of this nerve should not be at the expense of a well performed hernioplasty. Division of the cremaster muscle is often not a precise surgical maneuver because stretched fibers are often not visible until an incision allows for the return of the fiber's natural turgor. Care must be taken to ensure that the cremasteric vessels are not transected or injured and that adequate hemostasis is achieved.

These authors advise simple incision and spreading of the cremaster muscle without complete cremasteric excision to limit bleeding complications and hematoma formation. In addition, these authors no longer use blunt finger dissection to free the hernial sac from the spermatic cord; instead, sharp dissection (eg, with a scalpel or scissors) is advocated. This technique avoids trauma to the pampiniform plexus, which could weaken blood vessel walls and predispose the patient to hemorrhage and thrombosis. Further, when the hernial sac is strongly adherent to the spermatic cord, the authors of this case study suggest to free only the proximal end of the sac and incise the remainder of the protrusion. This exercise leaves the open distal end in situ with relation to the spermatic cord. Dissection of the spermatic cord beyond the pubic tubercle is avoided, which preserves collateral circulation.⁷

Early Detection of Hematocele and Patient Instruction

Early diagnosis of all types of hematoceles as well as other causes of testicular ischemia is critical to avoid orchiectomy. It is of paramount importance to remember that patient education and instructions concerning postoperative pain and swelling are the keys to early diagnosis of hernioplasty complications. Lichtenstein³ reports the relative absence of pain in 90% of his postoperative hernia repair patients with oral administration of one to two oxycodone and aspirin tablets. Patients with pain refractory to this standard oral regimen are instructed to return for prompt examination. In addition, patients are told that swelling should be nonenlarging, without color change, limited to the

vicinity of the incision, and noticeable only on close inspection. Patients with swelling outside of these parameters are asked to return for examination.

CONCLUSION

Hematocele as a result of inguinal hernia repair may compromise the testicular blood supply. However, preservation of the ilioinguinal nerve should not prevent a well performed hernioplasty. The proper management of a complex, multiseptate scrotal mass with a history suggestive of hematocele is close observation, technetium Tc 99m pertechnetate scans to evaluate testicular flow, early surgical exploration, and possible orchiectomy. Simple incision rather than complete transection of the cremasteric fibers with careful attention to hemostasis is recommended. Sharp surgical dissection is recommended and blunt dissection is to be avoided when separating the hernial sac from the spermatic cord so that injury to the pampiniform plexus is avoided. Hernial sacs tightly adherent to the spermatic cord may simply be incised and left in situ to minimize damage to the spermatic cord and pampiniform plexus. Simple yet specific patient education guidelines regarding postoperative swelling and pain are essential to ensure early detection of complications. An ultrasound of the testicles is not adequate

to rule out testicular ischemia—a technetium Tc 99m pertechnetate scan is the noninvasive test of choice to detect ischemia. Awareness of orchiectomy and timely intervention may obviate hematocele as a complication of hernioplasty, as in this case study. **HP**

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