Nonobstetric Lacerations of the Vagina

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Although obstetrically related trauma remains the most common cause of injury to the female genital tract, trauma of nonobstetric origin is not uncommon. Reports of traumatic injuries to the vagina, especially lacerations, have been infrequent in the literature and offer only a generalized approach to this problem. Severe vaginal lacerations may result in life-threatening blood loss. The authors report their recent experience with treating patients who have this type of trauma, review mechanisms of injury, and provide an organized treatment protocol for the nonobstetric patient with suspected vaginal laceration. Preparation for these emergencies circumvents dangerous delays and inadequate examination and treatment.

J Am Osteopath Assoc. 2006;106:271–273
http://www.jaoa.org/content/vol106/issue5/

Nonobstetric vaginal lacerations differ greatly from lacerations sustained during childbirth and are generally classified into two types. The first type is relatively minor and is associated with normal sexual intercourse or the first experience of sexual intercourse.1 These lacerations usually resolve with minimal treatment. The second type of laceration is deeper and more extensive, often resulting in copious vaginal bleeding. This condition can be life-threatening and requires immediate intervention.

Case Series

While severe vaginal lacerations are commonly encountered by physicians, they are infrequently reported in the literature. In addition, there is a lack of an organized treatment protocol for such patients. During the past few years, we have treated four patients with severe vaginal injury with pro-fuse bleeding, and two of these patients had severe hypovolemic shock on initial examination. After obtaining institutional review board approval, we reviewed the cases and developed an organized treatment protocol for the nonobstetric patient with suspected vaginal laceration.

Case 1

A 28-year-old, gravida (G) 2, para (P) 2 woman had a deep right sulcus laceration that extended from the right lateral fornix all the way to the hymenal ring. The laceration was about 6 cm long and extended deep into the ischiorectal fossa. The patient also had a deep left sulcus laceration about 4 cm long, extending from the hymenal ring to three quarters of the way toward the left fornix. She had a few minor lacerations and abrasions as well. It was later discovered that her husband had physically and sexually abused her.

Case 2

A 20-year-old woman (G0) had a spiral-shaped laceration that extended from the cervix at the 3-o’clock position to the posterior fornix on the right and spiraled distally to terminate at the 10-o’clock position, about 1 cm proximal to the hymenal ring. It was later determined that her boyfriend had abused her by repeatedly inserting a metal pipe into her vagina. She revealed a history of sexual and physical abuse by the same boyfriend.

Case 3

The third patient was a 20-year-old woman (G3, P3) who had sustained a right posterolateral laceration approximately 3 cm long. She stated that she and her partner had regular sexual intercourse earlier that night and that she “woke up with the bed full of blood.”

Case 4

Our fourth patient, a 20-year-old woman (G2, P2), had a posterior fornix laceration that was approximately 4 cm long and toward the right, with an underlying hematoma. Her injury had reportedly occurred immediately after intercourse.

Treatment

Two of the patients required aggressive fluid resuscitation to reverse their shock status, and one patient required a blood transfusion. All patients were taken to the operating room.
promptly and examined under general anesthesia. The lacerations were repaired primarily with continuous interlocking 2-0 or 3-0 chromic sutures. A diagnostic laparoscopic examination was performed on one patient to rule out intra-abdominal injuries, and the results were negative. All patients underwent a digital rectal examination to make sure that the rectal mucosa was intact and free of suture material, and a cystoscopic examination of the bladder and urethra to rule out urinary tract injury. The average hospital stay was 2 days. There were no perioperative complications.

Discussion
Nonobstetric vaginal trauma can span a continuum of severity from minor trauma resulting from normal sexual intercourse to major vaginal lacerations. The true incidences of such injuries are difficult to ascertain, especially because the nature of vaginal injury usually remains undisclosed. Many cases resolve without medical intervention, but severe lacerations sometimes require hospitalization and may be fatal.2 Geist3 reported that up to 75% of women in the emergency department with vaginal lacerations require repair. According to Geist’s review,3 these patients usually have marked vaginal bleeding (80%) and perineal and/or lower abdominal pain (10%–20%). Hemorrhagic shock may be present in up to 15% of the cases. The lacerations tend to be 3 to 5 cm long and are usually located in the distal vagina. They are more commonly located posteriorly and to the right. Lacerations extending into the peritoneal cavity occur in less than 1% of patients.3

The most common mechanism of nonobstetric injury to the vagina is coitus.4 Predisposing and etiologic factors that can account for such injuries include virginity, disproportion of male and female genitalia, atrophic vagina in postmenopausal women, friability of tissues, stenosis and scarring of the vagina because of congenital abnormalities, previous surgery, or pelvic radiation therapy. Other factors include rough and violent thrusting of the penis during intercourse, insertion of foreign bodies, and sexual assault. Coital positioning, especially in cases of dorsal decubitus, with hyperflexion of the thighs and sitting positions have also been suggested as predisposing factors.1,5-7 Women with significant coital injuries may present late and with significant blood loss. This delay may be due to embarrassment because of the nature and cause of injuries or fear of spousal or parental knowledge. Partner abuse should be considered as a cause of injury and appropriately evaluated.1

Noncoital reproductive tract injuries often occur in the setting of multiple severe injuries and usually require operative intervention.4,5 Vaginal lacerations may be a consequence of blunt or penetrating abdominal trauma, particularly as a result of pelvic fractures.5 Vaginal lacerations have also been reported in association with injuries sustained while in straddle and astride positions.4,5 Straddle injuries are more common in small children and are usually limited to the lower vagina.4 Genital tract injuries have been reported in association with water sports such as water-skiing and jet-skiing.8 These injuries can range from vulvar hematomas to minor vaginal lacerations to life-threatening vaginal bleeding. Such injuries are also usually limited to the lower vagina.5

The spatial orientation of the cervix to the long axis of the vagina predisposes the posterior fornix to injuries, especially during coitus.1,2,9,10 Dickinson9 pointed out the relative weakness in the structure of the posterior fornix, which is supported by only a few bundles of connective tissue. The right fornix is also prone to injury because of slight variations of the uterocervical axis.1,10 One report even suggests the possibility of tears in these structures resulting from levator muscle spasms in addition to direct injury.6

| Investigate for vaginal vault laceration in the patient with vaginal bleeding. |
| Use vaginal pack only until examination of the vagina and surgical repair. |
| Carry out serum pregnancy test and obtain complete blood cell count and basic metabolic panel. |
| Type and cross 2 units of packed red blood cells for possible transfusion. |
| Culture the vaginal vault and institute antibiotic treatment. |
| Administer tetanus prophylaxis. |
| Evaluate pelvic and abdominal plain radiograph films for possible foreign body and/or free intraperitoneal air. |
| Conduct a digital rectal examination. |
| Administer intravenous urogram and/or cystoscopy. |
| Laparoscopically evaluate the pelvis in individuals with possible intra-abdominal injuries. |
| Continue observation for signs and symptoms of hypovolemia and/or sepsis. |
| Obtain hemoglobin and hematocrit levels (preoperative, postoperative, and every 24 hours) to monitor anemia. |

Figure. Treatment protocol for the patient with marked vaginal bleeding.
References

Treatment Protocol
The diagnosis of vaginal laceration is not often straightforward. Because of the personal nature of some of these injuries, the physician should be cognizant of marked patient delay in obtaining professional help. A misleading history together with failure to perform an adequate vaginal examination with a speculum may lead to erroneous diagnosis, thus delaying prompt treatment. Another important factor to consider is the gross underestimation of blood loss sustained and the necessity for postoperative evaluation of serial hematocrit and hemoglobin levels.1 We have established a protocol that provides an organized and systemic approach to treating patients with non-obstetric-related vaginal bleeding (Figure).

Few cases can be managed conservatively. Preparedness for these emergencies eliminates dangerous delays and inadequate examination and treatment. Severe vaginal lacerations occur too frequently to be overlooked or mishandled.