

Water-Related Vaginal Injury: A Case Report and Review of the Literature



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Abstract

Background: Vaginal injury can result from entry of water into the vagina under high pressure. Previously reported cases describe water-jet vaginal injuries in women participating in water-related activities, including: water skiing, personal watercraft use, waterslides, water hose and fountains, with and without foreign body in situ.

Case: We describe the case of a severe vaginal laceration and hemorrhage in a 44-year-old female from a high-pressure water-jet generated during a water-ski fall requiring operative repair. Timely management resulted in excellent patient outcome.

Conclusion: A literature review demonstrated that, although uncommon, watersport-related gynaecologic injuries can be life-threatening, and women who regularly engage in watersports can be counselled regarding potential preventative measures. Physicians encountering patients with these injuries should rule out intraperitoneal injury and consider benefits of antibiotics.

Résumé

Contexte : La pénétration d'eau sous forte pression dans le vagin peut causer des lésions. Des cas ont été signalés à la suite de la pratique de diverses activités d'eau, comme le ski nautique, la motomarine, les glissades d'eau ou l'utilisation de tuyaux d'arrosage ou de fontaines, avec ou sans présence d'un corps étranger.

Cas : Nous présentons le cas d'une femme de 44 ans ayant fait une chute en ski nautique durant laquelle un jet d'eau à forte pression a provoqué de graves lacérations vaginales et des saignements abondants nécessitant une chirurgie. La patiente s'est très bien remise grâce à une prise en charge rapide.

Conclusion : Une revue de la littérature révèle que les lésions gynécologiques liées aux sports nautiques, bien qu'elles soient rares, peuvent être mortelles, et qu'il peut être judicieux d'aborder les mesures préventives avec les femmes qui pratiquent

Key Words: Vaginal injuries, athletic injuries, lacerations, water

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Competing interests: The authors declare that they have no competing interests.

Received on October 15, 2017

Accepted on December 12, 2017

régulièrement ces sports. Les médecins qui voient des patientes présentant ce type de lésion devraient écarter une lésion intrapéritonéale et envisager la prescription d'antibiotiques.

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J Obstet Gynaecol Can 2018;40(7):926–930

<https://doi.org/10.1016/j.jogc.2017.12.007>

INTRODUCTION

Vaginal and rectal trauma caused by high-pressure water “douche” have been reported from waterskiing accidents; personal watercraft use, such as Jet Ski and Sea-Doo; waterslides; and water-fountain jets. High-pressure water can lead to vaginal laceration with severe bleeding,^{1,2} intraperitoneal injury,^{3,4} and even death.^{1,2,5} We report a case of severe vaginal hemorrhage resulting from a waterskiing accident in a premenopausal woman where timely surgical repair led to an excellent patient outcome.

The Case

A 44-year-old G2T2 female was transferred to a tertiary academic center for significant vaginal hemorrhage after a waterskiing accident. She was previously healthy and had just completed a menstruation beginning eight days earlier. The patient reported waterskiing on a lake when she approached a turn and lost control, impacting the water with her legs splayed open. She was wearing a standard one-piece women's bathing suit. Upon impact, she felt severe vaginal and back pain, and then noticed significant bleeding from the vagina. She presented to a community hospital for assessment. The emergency physician could not identify the source of blood on speculum examination; therefore, the vagina was packed with gauze and the patient was urgently transferred to the nearest tertiary hospital following fluid resuscitation.

On arrival, the patient was alert but bothered by severe pain in the left lower quadrant. There was bleeding beyond the vaginal packing, and due to the rate of blood loss, she was kept in a monitored area, although vital signs remained normal. Abdominal examination revealed mild suprapubic tenderness, but no peritoneal signs. On speculum exam, there were large clots and active vaginal bleeding. The bleeding was identified to be the result of a large left vaginal wall laceration.

Bloodwork drawn at the time of admission found hemoglobin 115, platelets 194, and normal chemistry. A Foley catheter drained clear urine. An abdominal and pelvic ultrasound demonstrated normal anatomy and no evidence of uterine injury, haematoma, or fluid in the endometrial cavity.

She was urgently transferred to the operating room for repair of vaginal laceration. A 6-cm laceration along the left border of the cervix extending to the left vaginal wall was repaired using 2-0 Vicryl suture in a running locked fashion, and the vagina was packed for 24 hours postoperatively to provide additional compression. She had no ongoing bleeding and no need for blood transfusion, and hemoglobin was 99 on the first postoperative day. The patient was dis-

charged home on postoperative day one and was doing well at the time of her 6-week follow-up visit.

DISCUSSION

Epidemiology

High-pressure water-jet vaginal injuries have been reported as the result of jet skiing, watersliding, impact from water-fountain jets, and water hoses. A literature review was performed by querying PubMed, Embase, and Google Scholar using search terms: vagina, vaginal injuries, laceration, tear, or perforation, and sport, waterskiing, personal watercraft, water slide, chute, fountain, or hose.

Overall, waterskiing is the most commonly reported sport placing women at risk for vaginal injuries, and published cases are summarized in Table 1. The average age of patients with waterskiing vaginal injury is 28.8 (± 11.1) years with a range from 9 to 44 years. Personal watercraft use, particularly as a passenger, is particularly high risk for more severe injuries such as those involving the rectum^{2,5-8} or associated with severe retroperitoneal bleeding.⁷⁻⁹ Most case reports of water-related vaginal injury from other activities such as water slide or water hose use are among pediatric patients.¹⁰⁻¹⁵ Gynaecologic injuries sustained through personal

Table 1. Reported cases of vaginal injury from water skiing

Reference	Age	Injuries	Repair
Eddington ³¹	19	Two tears in left vaginal fornix	Deep interrupted sutures
	22	3-cm laceration of the posterior vaginal wall extending to the vaginal fornix	Deep interrupted sutures
Gauthier (this study)	44	6-cm laceration along the left border of the cervix extending to the left vaginal wall	Running locked 2-0 Vicryl
Gray ³²	36	13-cm laceration posterior to cervix extending to left vaginal vault	Two layers, chromic catgut
Kalaichandran ²⁴	34	Laceration extending into left vaginal fornix	"Sutures" and laparoscopy
Kuntz ³³	39	Two 3.5-cm lacerations lateral to cervix	Not specified
McCarthy ³⁴	32	5-cm laceration left vaginal fornix	Not specified
Morton ²⁰	42	6-cm laceration of cervix extending to left vaginal wall	Single layer, Chromic Gut
	30	Incomplete abortion	Evacuation of retained products of conception
	14	Salpingitis	None
Pearlman et al ¹⁸	29	Pelvic abscess 5 days after fall	Laparoscopic drainage
Perlman et al ²⁷	9	Two sulci lacerations at 3 and 9 o'clock	3-0 chromic sutures
Pfanner ³⁵	20	Salpingitis	Antibiotics
Rudoff ¹⁷	15	Complete second-degree episiotomy	3-0 and 4-0 Vicryl sutures
Smith ¹	43	5-cm laceration on right lateral aspect of cervix extending into the broad ligament, tampon in place at time of injury	"Repaired primarily"
Tweedale ¹⁶	32	6-cm vaginal laceration, perforation of the right vaginal wall, severed vaginal branch of uterine artery	Single layer, continuous sutures with 0 Chromic Gut

No significant complications have been reported in the literature among published cases of waterski-related gynaecologic injury.

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