Penile Amputation: Cosmetic and Functional Results

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ABSTRACT

Introduction. Penile amputation is a rare type of external genital trauma. It may arise from accidental trauma, assault or self-inflicted mutilation. As with all trauma, initial management focuses on assessment and resuscitation of the patient. When available, hypothermic preservation of the detached penis should be undertaken.
Aim. This review serves to compile the current available information on etiology and management of penile amputation injuries, with focus on functional and cosmetic results.
Main Outcome Measures. Main outcome measures were penile cosmetics, viability, and sensation; urethral patency and graft survival, functionality.
Methods. A literature search using Medline, PubMed (U.S. National Library of Medicine and the National Institutes of Health), and abstracts from scientific meetings was performed from 1980–2013.
Results. Due to the rarity of penile amputation injuries, no randomized trials exist. Likewise, available published series on management of this condition are comprised of a small number of patients.
Conclusions. Penile amputation is rare but challenging. Current microreplantation procedures have a uniformly good result with a minimum number of post-operative complications. When microreplantation cannot be performed, older corporal reattachment techniques may be offered. When phallic reconstruction is required, a microsurgical free forearm flap phalloplasty may be performed to restore the patient with an acceptable cosmetic and functional phallus. **Virasoro R, Tonkin JB, McCammon KA, and Jordan GH. Penile amputation: Cosmetic and functional results. Sex Med Rev 2015;3:214–222.**

Key Words. Penile Trauma; Penile Amputation; Penile Replantation; Phalloplasty; Reconstructive Surgery

Introduction

The admission rate of patients with genitourinary trauma comprises 2–10% of hospitalizations with up to two thirds of these having external genital trauma [1]. Despite these numbers, penile amputations are very rare. In the review by Waterhouse and Gross, they found only three cases in a review of 10,660 trauma admissions [2]. Despite the small numbers, amputation of the penis presents a significant treatment challenge and can leave the patient with serious psychological and physical issues to overcome. While a majority of amputation injuries are accidental, assault or self-mutilation injuries also exist. The latter form of amputation may be associated with underlying psychological disease, unresolved gender issues, or substance abuse. These conditions must be recognized and treated along with the treatment rendered for the physical injury.

When the amputation is more distal, straightforward closure of the wound with wide urethral spatulation may leave the patient with an acceptable result. When this is not the case, the anatomy of the penis combined with modern microsurgical principles creates a unique opportunity for penile replantation. In many cases, this leaves the patient with a penis that is cosmetically and functionally normal or with abnormalities that are not easily detectable [3]. In cases where

microreplantation is not possible or the detached penis is not available, free flap phallic construction is the current mainstay of treatment for penile amputation injuries.

Etiology

The rarity of penile amputation injuries limits the available body of literature to small series and case reports. Accidental amputation injuries may occur as a result of motor vehicle accidents, heavy machinery accidents, or burns. In the pediatric population, amputation injuries may be a result of zipper trauma, circumcision [4,5], animal attack [6], or sexual abuse [7]. These injuries may be associated with a large amount of gross wound contamination, which must be considered during the initial treatment. They are also more likely to occur in the presence of multi-system trauma.

While not commonly the intended result of the assault, penile injuries sustained during wartime have been reported. In fact, up to 5% of genitourinary injuries in the Vietnam War involved the penis [8]. Also, in a more recent review, genitourinary injuries during both Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom accounted for 5% of the more than 50,000 injuries caused to military personnel during the duration of these conflicts [9]. The largest series of amputation by assault was reported from Thailand [10]. During the 1970s, there were over 100 amputations performed by wives after identifying marital infidelity. Often the severed penis was discarded in a fashion that precluded its replantation. While this appears to have been a self-limited trend, it remains the most well-documented single experience in the literature to date.

Finally, self-mutilation amputations also occur [11,12]. This is known as Klingsor syndrome, after the magician in Wagner's opera Parsifal who perpetuated genital self-mutilation in order to be purified and accepted as a Knight on the quest of finding the Holy Grail. Due to the psychological state of the patient when they performed the amputation, providers face a special challenge in management. These patients may be suffering their first psychotic break [13] of schizophrenia with command hallucinations [14,15] or depression [16]. Some patients may be performing a "self-purification" to cope with distress, anger, dissociation, and emotional pain from unresolved gender issues, anorexia, or other such disorders [17]. It is often difficult to ascertain the exact nature of the psychiatric illness in the acute setting so attempts at replantation should be made in all situations. In many of these situations, the psychosis is manageable and the patients will benefit from reconstruction [18]. The laws governing the administration of care or surgery with patient consent vary widely from state-to-state and must be considered.

Acute Management

As in all trauma situations, the first step in management is stabilization and resuscitation of the patient. Substantial blood loss may be present and may require transfusion [19,20]. Underlying substance use or psychosis may exacerbate blood loss in that it can lead to delayed presentation [21]. The patient who has mutilated himself also needs to be assessed for substance overdose [10] and have prompt psychological evaluation to aid in stabilization of their psychosis [22]. As noted, most will benefit from an attempt at replantation and in all cases replantation should be considered the primary treatment. In the case of repeat self-mutilators, the risk of recurrent reconstruction should be weighed against the consequences of leaving the patient without a penis [22].

Hypothermia has been shown to prolong tissue survival [23]. If recovered, the severed penis should be rinsed, wrapped in moist gauze, and placed in a sterile bag. This should then be placed on ice taking care to avoid direct contact between the ice and the skin. Successful replantation may be attempted up to 24 hours after amputation [24].

Some distal amputations may continue to be functional even in the absence of replantation. The patient should have sufficient residual length to allow for directing the urinary stream and sexual functions. Data from the partial penectomy penile cancer literature would suggest that a penile stump of 2–3 cm in length may be adequate [25]. In these cases, additional delayed procedures may increase the length of the penis and allow for increased ease and satisfaction of sexual functioning. Pubic lipectomy may be helpful in obese patients. Release of the penopubic ligament can be performed and has been associated with a gain of up to 2 cm in length [26]. Skin tethering may be relieved with local rotational and advancement flaps if necessary.

While the primary treatment option for penile amputation is replantation, this is not always possible. If the penis is not available, not viable, or the stump is not suitable for replantation, phallic con-