

Dog Walking Can Be Hazardous to Cutaneous Health

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PRACTICE POINTS

- Dog walking is a good source of exercise but can lead to serious skin/soft tissue injury.
- When evaluating cutaneous trauma related to dog walking, remember to consider the possibility of an underlying bone fracture.
- Cutaneous trauma may overlay serious internal injury, such as epidural or subdural hematoma.

Dog walking has been widely promoted by the medical profession for its potential health benefits, especially among older individuals. However, this activity has a less well-recognized risk for notable cutaneous, osseous, and even neurologic trauma. We chronicle 5 cases of dog walking gone awry, leading to minor to massive cutaneous trauma, as a precaution for providers who heartily endorse this seemingly benign pastime.

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Studies have recommended dog walking as an activity designed to improve the overall health of older adults.^{1,2} Benefits purportedly associated with dog walking include lower body mass index, fewer chronic diseases, reduction in the number of physician visits, and decreased limitations of activities of daily living.² The Arthritis Foundation even recommends dog walking to relieve arthritis symptoms.³ Of course, dogs also provide comfort in companionship, and dog walking can be an enjoyable way for a pet and owner to spend time together.

However, this seemingly benign activity poses a notable and perhaps grossly underrecognized risk for injury in older adults. The annual number of patients 65 years and older who presented to US emergency departments (EDs) for fractures directly associated with walking leashed dogs

more than doubled from 2004 to 2017.⁴ Interestingly, this dramatic increase parallels a nationwide trend in dog ownership demographics. Between 2006 and 2016, the median age of dog owners in the United States rose from 46 to 49 years.⁵

These trends raise concern for more than just the health of older Americans' bones. Intuitively, a dog-walking accident that results in a bone fracture will likely also lead to some degree of skin trauma. Older adults have thin fragile skin due to flattening of the dermo-epidermal junction and disintegration or degeneration of dermal collagen and elastin.⁶ This loss of connective tissue as well as subcutaneous tissue in some body areas facilitates shearing injury; concurrently, weakened perivascular support increases the risk for vascular injury and bruising.⁷ Therefore, when an older person falls while walking a dog, trauma can easily damage delicate aged skin.

Older adults are particularly susceptible to falls, the leading cause of fatal and nonfatal injuries in this age group.⁸ There are multiple risk factors for falls, including polypharmacy, impaired balance and gait, visual impairments, and cognitive decline, among others.⁹

Also, many older adults with atrial fibrillation or venous thromboembolism take an anticoagulant drug to prevent stroke. The use of anticoagulants is associated with an increased risk for bleeding, ranging from minor cutaneous bleeding to fatal intracranial hemorrhage.¹⁰

A predisposition to falling and bleeding can be hazardous for a dog owner whose excited pet suddenly jumps, runs, or scratches. The use of a leash, mandatory in many urban jurisdictions, tethers the human to the dog, which expedites a fall associated with any sudden, forceful forward or lateral movement by the dog. The following case reports describe a variety of cutaneous injuries experienced by older adults while dog walking.

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Case Reports

Patient 1—A 79-year-old woman was quietly walking her dog when the dog spotted a squirrel climbing a tree. The dog became excited, turned to the owner, and jumped on her, which caused the dog's claws to dig into the owner's fragile forearm skin, creating several superficial but painful abrasions and lacerations (Figure 1). These injuries healed well with conservative therapy including application of an occlusive ointment.

Patient 2—A 68-year-old woman was walking her dog when the dog saw a cat running across the street. The dog suddenly leaped toward the cat, causing the owner to fall forward as the animal's momentum was transferred through the leash. The owner fell awkwardly on her side, leading to an extensive abrasion and contusion of the shoulder (Figure 2). The lesion healed well with conservative management, albeit with moderate postinflammatory hypochromia.

Patient 3—A 65-year-old woman was walking her dog and they heard a loud noise. The dog started to run forward—likely, startled. The owner did not fall, but the leash, which was wrapped around her hand, exerted

enough force to avulse a 5×3-cm piece of skin from the dorsum of the hand (Figure 3). The painful abrasion and concomitant bruise eventually healed with conservative management but left a noticeable hemosiderin stain.

Patient 4—A 66-year-old man was walking a large Rottweiler when the dog lurched toward another dog that was being walked across the street. The owner, taken by surprise by this sudden motion, fell on the concrete sidewalk and was dragged several feet by the dog. This unexpected and off-balance fall caused multiple injuries, including bruises on the upper arm, a large avulsion of epidermal forearm skin (Figure 4), a gouge in the dermis down to fat, and a large abrasion of the contralateral knee. The patient received a tetanus booster and conservative therapy. The affected area healed with an atrophic hypopigmented scar.



FIGURE 1. Abrasion and laceration from a dog's claws.



FIGURE 3. Skin avulsion of the hand from the dog's leash.



FIGURE 2. Abrasion and contusion of the shoulder from a fall while dog walking.



FIGURE 4. Epidermal avulsion and dermal ulceration from a fall while dog walking.

Patient 5—An 82-year-old woman with known atrial fibrillation who was taking chronic anticoagulation medication was walking her dog. For no apparent reason, the dog sped up the pace. The woman lost her balance and fell face first onto the sidewalk. She did not lose consciousness but did develop a large bruise on the forehead with a tender fluctuant nodule in the center (Figure 5).

The patient presented the next day, requesting drainage of the forehead hematoma. However, a brief review of systems revealed a persistent severe headache and nausea with vomiting since the prior day. She was immediately transported to the nearest ED where complete neurologic workup revealed a moderate-sized subdural hematoma that was treated by trephination. Recovery was uneventful.

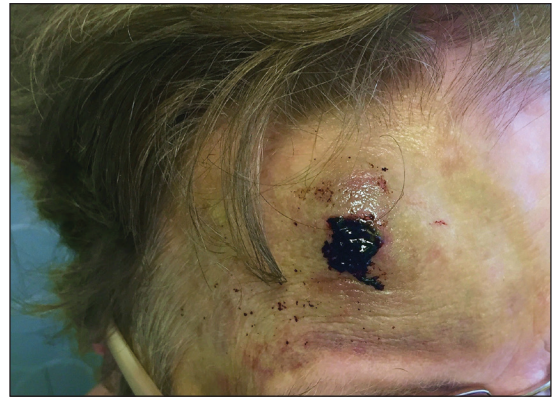


FIGURE 5. Ecchymosis and hematoma suggesting neurologic trauma from a fall while dog walking.

Potential Trauma Due to Dog-Walking Accidents¹¹⁻¹⁵

Type of Trauma	Description	Treatment
Dermatologic ^{11,12}	Disruption of the structure and function of at least the epidermis; deeper wounds might involve the dermis and subcutaneous tissues	Might require tetanus prophylaxis; if injury was caused by a dog bite, provide rabies or antibiotic prophylaxis, or both, in selected cases
Abrasion	Frictional forces, such as contact with the ground during a fall, scrape away superficial skin layers; wound might contain debris	Clean and debride wound; apply antibiotic ointment and nonadhesive dressing
Laceration	A dog's teeth or claws or an environmental object causes a traumatic deep wound by splitting or tearing tissue; a deeper wound than typical abrasion; often linear	Clean, irrigate, and debride the wound as necessary; close primarily with sutures, if indicated; apply antibiotic ointment and nonadhesive dressing
Puncture	A narrow pointed object, such as a dog's tooth, penetrates the skin; dermal or deeper skin is affected	Clean, irrigate, and debride the wound; apply nonadhesive dressing; puncture wounds often are not closed with sutures
Avulsion	Portion of the skin is partially or completely torn away; typically an irregularly shaped wound; a dog pulling on the leash can avulse skin of the hand; can be caused by a fall	Minor wounds can be treated similar to the treatment of a laceration; serious wounds might require skin grafting and reconstructive surgery
Cranial ¹³⁻¹⁵	A blow to the head might lead to traumatic brain injury (eg, skull fracture, bleeding in and around the brain, or concussion); can be caused by a fall	Provide nonoperative management for select mild cases of epidural and subdural hematoma; make treatment decisions case by case
Epidural hematoma	Bleeding between the dura mater and the skull; often arterial and associated with a skull fracture	Perform emergent craniotomy and evacuation of the hematoma
Subdural hematoma	Bleeding between the dura mater and arachnoid membranes; mortality is higher than for epidural hematoma	Perform emergent surgical evacuation of the hematoma
Bone ¹⁵		
Fracture	Partial or complete break in bone; severity is variable; usually involves the extremities	Reduce the fracture and immobilize the limb or bone; some fractures require surgical fixation

Comment

These 5 cases illustrate the notable skin (and neurologic) trauma that can occur due to a dog-walking accident (Table).¹¹⁻¹⁵

Regrettably, obtaining an accurate national estimate of the annual incidence of cutaneous dog-walking injuries is difficult. Researchers who have described the rise in dog walking–associated bone fractures queried the US Consumer Product Safety Commission’s National Electronic Injury Surveillance System database for its numbers.⁴ This public database generates incidence estimates of activity- or product-related injuries based on data from a nationally representative sample of approximately 100 hospital EDs.¹⁶

We queried the same database for the diagnoses *avulsion*, *abrasion* or *contusion*, and *laceration*.¹⁷ These terms were searched in association with pet supplies, including leashes, and patients 65 years and older. This search yielded fewer than 800 total cases from 2008 to 2017, resulting in unreliable estimates for each year.

The National Electronic Injury Surveillance System database no doubt underestimates the true incidence of dog walking–related skin trauma; the great majority of patients with cutaneous injury, as illustrated here, likely never present to the ED, unlike patients with bone fracture. Moreover, data do not capture cases handled by providers outside the ED and self-treated injuries.

In the absence of accurate estimates of cutaneous morbidity related to dog-walking injury, the case reports here are clearly a cautionary tale. Physicians and older adults need to be cognizant of the hazards of this activity. Providers should discuss with older patients the potential risks of dog walking before recommending or condoning this exercise.

The presence of other comorbidities that could hamper a person’s ability to control a leashed dog warrants special consideration. Older prospective dog owners might consider adopting a small, easily manageable breed. These measures can help protect older adults’ fragile skin (and bones) from avoidable minor to potentially life-threatening trauma.

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