

# Jiggers (Tungiasis)

Tungiasis, commonly referred to as "jiggers," is a dermatological condition caused by the parasitic infestation of *Tunga penetrans*, a flea species. The name "jiggers" is derived from one of the common colloquial names for the causative flea, the "jigger flea," although the term "tungiasis" is now preferred in medical practice. This condition has a long history, with documented cases dating back to the time of Christopher Columbus in 1492, reflecting its long-standing presence in human populations.

## Epidemiology and Transmission

Tungiasis is not specific to any particular age, gender, or race, affecting individuals across various demographics. It is most commonly observed in tropical and subtropical regions, particularly in sandy environments. Historically, the condition has been frequently reported in the Caribbean, though it is also endemic in parts of sub-Saharan Africa, Central and South America, and Asia. People living in rural areas with limited access to healthcare are at greater risk, particularly those with frequent exposure to sandy environments where the fleas are prevalent.

## Pathophysiology and Life Cycle of *Tunga penetrans*

The life cycle of the jigger flea is closely tied to sandy environments, where both the larvae and adult fleas thrive. After maturing into adults, the male and female fleas seek blood meals from warm-blooded hosts, including humans. Although both sexes feed on blood, it is only the female flea that burrows into the skin to lay eggs, causing the primary symptoms associated with tungiasis.

Once the female flea penetrates the skin, typically through the toes or the soles of the feet, a small black spot appears at the site of entry. The flea then begins to swell as it engorges with blood, leading to the formation of a white bump at the infestation site. Over time, this bump increases in size and becomes surrounded by redness and inflammation, accompanied by pain and itching. The female flea continues to lay eggs for approximately two weeks before dying. The death of the flea is marked by the formation of a black scab over the entry site, signaling the end of the infestation.

## Clinical Manifestations and Complications

In the early stages of tungiasis, the infestation may be asymptomatic, with individuals unaware of the presence of the flea. As the infestation progresses, however, symptoms such as localized pain, itching, and inflammation become evident. The skin's reaction to the parasite's

presence—manifested as a raised white bump and surrounding erythema—can lead to discomfort, but most cases are self-limiting and resolve without the need for extensive medical intervention.

However, complications can arise, especially when bacterial infections occur at the site of the flea's burrowing. Superinfection, often caused by *Staphylococcus aureus* or *Streptococcus pyogenes*, can lead to cellulitis, abscess formation, or even systemic infection. In severe cases, particularly when multiple fleas infest the same site, tissue damage may become extensive, and amputation may be required to prevent further complications such as gangrene or septicemia.

## Diagnosis

The diagnosis of tungiasis is primarily clinical and is based on the identification of the characteristic lesion—typically a white, raised bump with a central black dot at the site of flea entry. Dermoscopy can aid in diagnosis, particularly in differentiating tungiasis from other conditions such as plantar warts or foreign body reactions. The history of recent exposure to sandy environments, along with the presence of typical lesions, is crucial for confirming the diagnosis.

## Treatment and Management

The treatment of tungiasis can be divided into early and late stages. In the early stages of infestation, when only a few fleas are present, the use of a sterile needle to extract the flea from the skin can be an effective treatment. Careful removal of the flea helps to alleviate symptoms and prevent further complications. Topical antiseptics should be applied to reduce the risk of secondary bacterial infections.

For more advanced infestations, where multiple fleas are embedded or complications such as infection have occurred, surgical intervention may be required. This may involve excising the affected tissue or draining abscesses. Infected individuals should be up to date on their tetanus vaccination, as the risk of bacterial infection can be significant.

In addition to local treatments, oral or topical antibiotics may be prescribed to manage infections, particularly in cases where cellulitis or other bacterial complications have developed. Anti-inflammatory medications, such as corticosteroids, may help to manage symptoms like pain and inflammation.

## Prevention

Prevention of tungiasis largely depends on minimizing contact with contaminated environments. In regions where *Tunga penetrans* is endemic, individuals are advised to wear shoes, especially when walking in sandy or unpaved areas, to reduce the risk of flea exposure. In addition, ensuring that areas where people are exposed to sandy soil are kept clean and free of flea infestations is essential in controlling the spread of tungiasis. Education and awareness campaigns aimed at high-risk populations can further reduce the incidence of the disease.

## Conclusion

Tungiasis (jiggers) is a parasitic infestation that can lead to significant morbidity if not managed appropriately. Early diagnosis and intervention are crucial to prevent complications such as secondary infections and tissue damage. While most cases resolve without extensive treatment, individuals living in endemic areas should take preventive measures to minimize the risk of infestation. Continued research into treatment and prevention strategies is essential to mitigate the burden of tungiasis in affected populations.

## References

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