

# Canine Viral Papillomas



*A human finger with several viral warts*

## DOES MY DOG HAVE WARTS?

Certain viruses are able to cause the growth of small round skin tumors commonly referred to as warts. Everyone who has ever seen a drawing of a fairy tale witch knows what warts look like so when the family dog develops small round skin growths, many people assume these, too, are harmless warts. It is important to realize that viral warts are a specific condition and that a growth on the dog's skin may or may not represent a viral wart. Very few skin growths have a visual appearance that is characteristic, though there are some that do. Before assuming a growth is "just a wart" it is a good idea to learn about warts (viral papillomas) in case what you are seeing doesn't really fit and needs further evaluation.

Human warts are round, somewhat flat, and relatively smooth. Viral warts in dogs tend to possess frond-like structures (called "fimbriae") creating more of a sea anemone or cauliflower-like appearance, though they can be smooth as well. The classical canine viral wart patient is a young dog with warts in or around the mouth or eyes. In such cases where warts have a typical appearance in a classic patient, diagnosis may be obvious but in older patients with warts in locations other than the face, other types of growths become more likely. Because many types of growths can appear harmless but behave malignantly, removal and biopsy are often recommended, especially if the appearance of the growth and/or patient does not fit into what is considered typical.

**It is usually not possible to identify a growth visually though there are some exceptions. Do not be surprised if what you are assuming is a "wart" is really something else.**

In dogs, we do not call these growths "warts;" we use the more formal term "viral papilloma." As in people, viral papillomas are caused by a papillomavirus though dogs and people have very different papillomaviruses and cannot transmit their viruses across species lines.

## WHAT DO THESE PAPILOMAS LOOK LIKE?

By far, the most common type of viral papilloma in the dog is the oral papilloma, caused by CPV1 (canine papilloma virus-1). Viral papillomas are classically "fimbriated," meaning they are round but often have a rough, almost jagged surface reminiscent of a sea anemone or a cauliflower. They occur usually on the lips and muzzle of a young dog (usually less than 2 years of age). Less commonly, papillomas can occur on the eyelids and even the surface of the eye or between the toes. Usually they occur in groups rather than as solitary growths so if one growth is noted, check inside the mouth and lips for more.



*Sometimes viral papillomas take on a more cauliflower-like shape.*



*A "fimbriated" oral papilloma in a dog.*



*The "fingers" of the sea anemone are its "fimbriae." It is easy to see why the papilloma is said to resemble this sea creature.*

When the viral papilloma has a classic appearance like the ones shown above, biopsy is usually not needed to identify the growth. In cases where there is ambiguity, however, biopsy will settle any questions. The good news, as we will review, is that most oral viral papilloma cases are mild and resolve on their own within 2 months.

## **HOW IS THIS VIRUS TRANSMITTED?**

The infection is transmitted via direct contact with the papillomas on an infected dog or with the virus in the pet's environment (on toys, bedding, food bowls etc.). The virus requires injured skin to establish infection; healthy skin will not be infected. The incubation period is 1-2 months. This virus can only be spread among dogs. It is not contagious to other pets or to humans and it appears not to be contagious after the lesion has regressed. Recovered dogs cannot be infected with the same strain of virus but there are several viral strains.

To become infected, the dog generally needs an immature immune system, thus this infection is primarily one of young dogs and puppies. Dogs taking cyclosporine orally to treat immune-mediated disease may also have an outbreak of papilloma lesions.

**The canine papillomavirus has been shown to be able to survive at least 2 months at temperatures of 40° F but only 6 hours at 98° F.**

## **ARE VIRAL PAPILOMAS DANGEROUS?**

Not really. They should go away on their own as the dog's immune system matures and generates a response against the papillomavirus. The process of regression usually takes 1-2 months. If lesions are still present after 3 months, treatment is recommended (see below) and a biopsy may be needed to confirm that the growth really is a viral papilloma. Severe cases can actually interfere with chewing and swallowing but such heavy involvement is unusual.

Sometimes oral papillomas can become infected with bacteria of the mouth. Antibiotics will be needed in such cases to control the pain, swelling, and bad breath.

## **TREATMENT**

In most cases, treatment is unnecessary; one simply allows the papillomas to go away on their own. Occasionally an unfortunate dog will have a huge number of papillomas, so many that consuming food becomes a problem. Papillomas can be surgically removed or frozen off cryogenically. Sometimes crushing several growths seems to stimulate the host's immune system to assist in the tumor regression process. In humans, anti-viral doses of interferon have been used to treat severe cases of warts and this treatment is also available for severely infected dogs though it is costly and yields inconsistent results.

More recently, a topical medication called imiquimod has been used in both canine and human infections to help boost immune-mediated inflammation and thus facilitate destruction of the virus by the body. Imiquimod is being prescribed increasingly for dogs with viral papillomas. Skin irritation is frequently noted adjacent to the growth when imiquimod is in use but this is generally regarded as a sign that the growth is regressing and the medication is working.

A research group in Turkey in 2008 reported excellent success using a 10 day course of azithromycin. Treatment was able to remove all lesions within 15 days with no recurrences reported in the subsequent 8 months of the study. Subsequent results have been mixed; however, this therapy is frequently utilized in more stubborn cases as the medication is reasonably priced and readily available.

Sometimes some of the warts can be removed and made into a "vaccine" which is felt to stimulate the immune system in removing the tumors. A recombinant vaccine has been developed at Georgetown University. This vaccine employs only the DNA of the virus needed to generate an immune response. It can be used as a preventive vaccine or as a treatment for an active infection, though it is still considered an experimental product and requires a sample from the affected patient to make the vaccine as it is individualized.

## OTHER TYPES OF PAPILOMAS

The oral papilloma is by far the most common canine viral papilloma but it is certainly not the only kind. There are other papilloma viruses besides CPV-1. Here are other types of viral papillomas:

**CUTANEOUS INVERTED PAPILOMAS (ALSO CALLED "ENDOPHYTIC WARTS")** -These are caused by the CPV-2 papilloma virus as well as other papilloma viruses. They can appear as single nodules on the belly (1/2- 1 inch across) with a small central pore or they can be disseminated like a lumpy rash. They can also form between the dog's toes.

**PAPILLOMAVIRUS PIGMENTED PLAQUES** - These are caused by several of the "Chi canine papilloma viruses" and usually affect pugs and miniature schnauzers. They dark, scaly and of variable size and are usually found on the belly. Unlike other papillomas, these do not regress on their own except in pugs. They are capable of transforming into malignancy.

**DIGITAL PAPILOMAS** - These are caused by the CPV-2 papilloma virus as well as other papilloma viruses and grow on the foot pads and between the toes. They tend to be painful and have potential to transform into malignancy.

These non-oral papillomas do not possess the classic fimbriated appearance of the oral papilloma and are likely to require biopsy for identification. As with oral papillomas, though, they can be expected to regress in most cases within a 2 month time frame. If they do not, the same treatments noted above can be applied.

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