Ear Anatomy & Hearing Development in Dogs

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The ear's most noted function is, of course, hearing. It is also extremely important as an organ of balance, however.

Ear anatomy

Pinna: Some dogs have ear flaps, or pinnas that stand erect, while others have long, floppy types. The ear flap serves as a partial covering of the ear canal, while at the same time directing sound towards the eardrum. The flap has an inner core of cartilage to give it strength. Both outer and inner surfaces of the skin are covered by hair, although hair follicles are much less prevalent on the inner areas.

Ear Canal: The ear canal is a long, tube-like structure that travels diagonally down the side of the head, then moves horizontally into the head. The total length of the ear canal is at least two inches, even in small breeds. It is about as wide as a pencil. The length and size of the canal vary in relation to the animal's overall body size. As the ear canal passes into the head, it ends at a thin tissue called the tympanic membrane or eardrum.

Outer Ear: This outer ear in the dog is considered to include all structures, such as the canal and ear flap, from the eardrum outward.

Middle Ear: Internally, from the eardrum comes the middle ear, which connects to the throat area by the eustachian tube. This tube allows air to enter the middle ear to balance the pressure against the eardrum.

Inner Ear: Farther in from the middle ear is the inner ear. One responsibility of the inner ear is the maintenance of the dog's equilibrium or balance. This structure contains fluid-filled canals, which, as the fluid shifts, tells the brain the body's exact position. If a dog's head is tilted the fluid shifts, and the brain detects the tilting.

Eardrum: The eardrum picks up sound waves through air vibration. The eardrum vibrates and stimulates the bones within the middle ear. The vibrating bones pass the sound vibrations to an area with tiny hairs. As the hair moves, sound waves are transformed to electrical impulses and then passed to the inner ear where they are transmitted by the auditory nerve to the brain where they are detected as sound. This is how hearing is created.

The parts of the ear, namely the ear flap, canal, eardrum, and middle and inner ear, all play important roles. These structures are complex and can become diseased, thus impairing their function. Disorders of the ear are frequently very painful and can affect both hearing and equilibrium.

Hearing development

Puppies are born unable to hear. They are unresponsive to even loud noises. The ear canals described above remain closed, unable to carry sound to the eardrum until the puppy is about ten days of age. In some individuals, the ear canals may open slightly sooner or later but it averages about ten days. The canals become fully open by three weeks of age. As a result of the ear canals 'opening up,' most puppies will begin to hear sounds at about fourteen days of age, with functional hearing by twenty-one days of age. It is very difficult to assess possible hearing impairment until the puppy is at least four weeks of age, at which time deafness, if present, may be noticed and evaluated.

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