Advances in Otoscopy

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KEYWORDS

• Otoscopy • Ear • Dog • Cat • Endoscopy • Otitis

KEY POINTS

- Video-otoscopy is a wonderful tool for the assessment, diagnosis, and treatment of otitis, which is common in small animal practice.
- The lighting, magnification, and ability to lavage and introduce instruments are greatly enhanced with video-otoscopy over hand-held otoscopes.
- Documentation for the medical record and client education are also beneficial, and owners may be more compliant with therapy if they can see the condition of the ear canal themselves.

EQUIPMENT

There are many video-otoscopes available to the practitioner including the wireless Firefly Digital Video Otoscope (Firefly Global, Belmont, MA), Digital MacroView Otoscope (Welch Allen, Skaneateles Falls, NY), and multiple types available by JEDMED (St. Louis, MO).[1] The video-otoscopes most commonly used in veterinary medicine include the Otoscope for the Small Animal Practice (Karl Storz, Goleta, CA) and Video Otoscope (Med Rx, Inc, Largo, FL). A typical video-otoscope for veterinary practice is 5-mm diameter and 8.5-cm long with a 5F catheter working channel (**Fig. 1**). There is a stopcock attachment that allows for irrigation and passage of many instruments, including a diode laser, through the operating channel (**Fig. 2**); it and the otoscope are autoclavable for sterilization between uses. A camera, xenon light source, and monitor are required, and an image capture unit is extremely helpful for recording still and video images. Many types of instruments are available and include biopsy forceps, grasping forceps, and ear curettes (**Fig. 3**). Specialized accessories include a polypectomy snare and myringotomy needle. An extremely helpful accessory is the OTEX Brush (Karl Storz Veterinary Endoscopy, Goleta, CA, USA) for removing secretions adhered to the wall of the external ear canal. An automated flushing and suction pump makes deep ear cleaning extremely efficient (**Fig. 4**).

The author has nothing to disclose.
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Vet Clin Small Anim 46 (2016) 171–179
http://dx.doi.org/10.1016/j.cvsm.2015.08.006 **vetsmall.theclinics.com**
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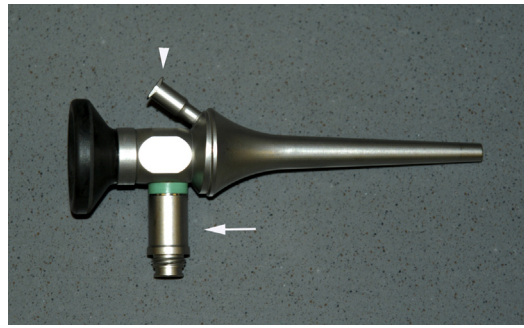

Fig. 1. Standard otoscope used for video-otoscopy. The black ring attaches to the camera adapter, the post (*arrow*) indicates the attachment of the light source, and the *arrowhead* indicates the port for instrument insertion or attachment site for irrigation.

Frequent use and use in the examination room with the client present are possible with most systems, and an all-in-one light source and image processor are available and can be used with the accessories and suction and irrigation pump (Tele Pack Vet X, Karl Storz).

The main benefits of video-otoscopy over traditional, hand-held otoscopes are the placement of the light at the tip of the endoscope, magnification, and projection of the image for viewing without the endoscopist's head being directly adjacent to the patient. An unimpeded view sans shadowing and entry of instruments immediately into the visual field improves the ability to use fine movements and manipulations within the tight space of the ear canal. Complete removal of cerumin, exudate, and foreign material is greatly enhanced by video-otoscopy. The risk of tympanic membrane rupture is minimized by the lighting and magnification provided with video-otoscopy; however, it cannot be eliminated, because the viewer is translating a three-dimensional experience onto a two-dimensional monitor, and the depth perception and ability to manipulate the instruments adjacent to the ear drum is not perfect and is a learned skill.

Care should be taken to avoid aggressive flushing of the ear canal during otoscopy and cleaning, and an egress of fluid is mandatory to avoid iatrogenic tympanic membrane rupture. Deeper examination of the ear is done through the tympanic membrane or its remnant in the case of a ruptured tympanum. A 2.7-mm endoscope is used to

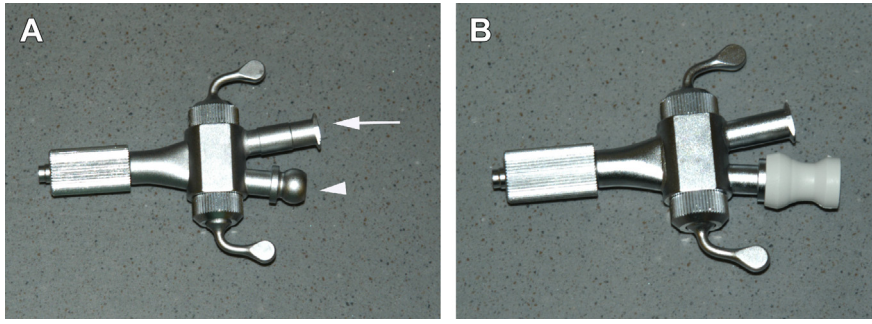

Fig. 2. (*A*) Attachment that allows concurrent use of irrigation (*arrow*) and instrumentation (*arrowhead*). (*B*) A grommet has been added to the instrument port to minimize fluid leakage during instrument use.