

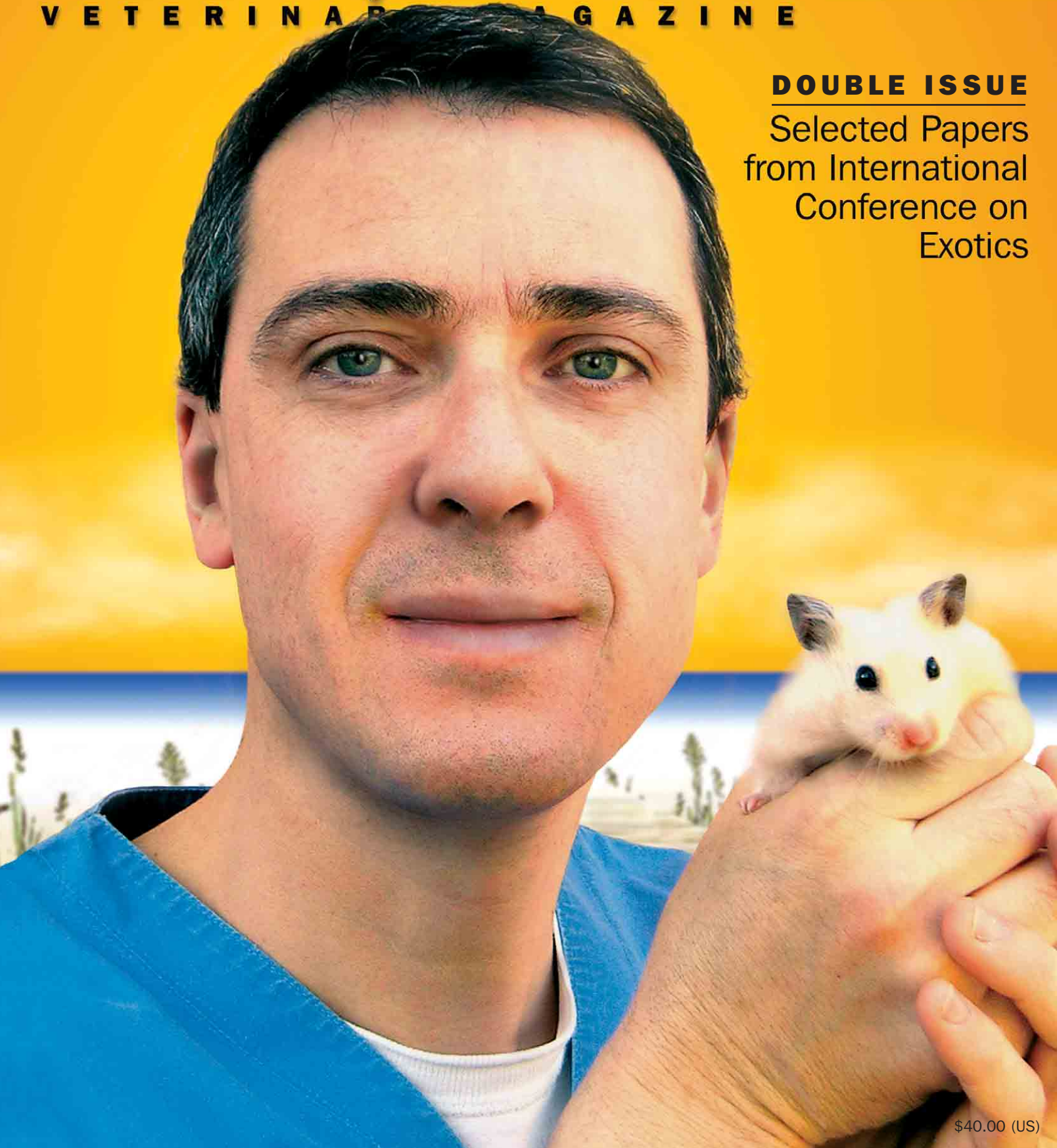
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Conference on
Exotics



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Cover image of Dr. Vittorio Capello with the golden hamster Filippo by Domenico Capello.

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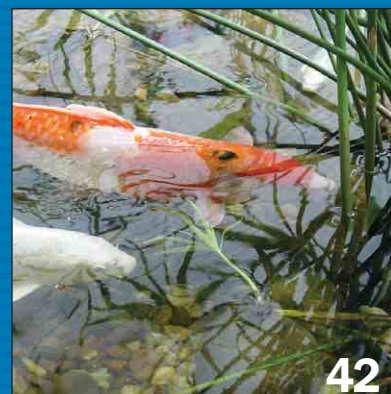
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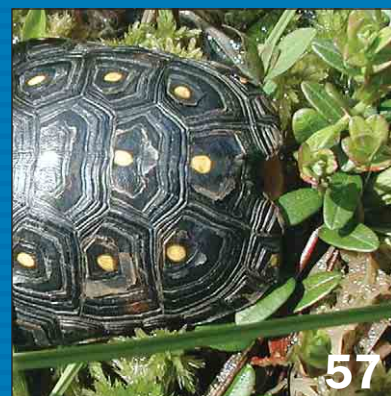
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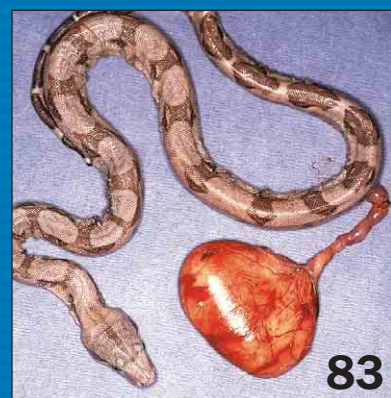
Dan H. Johnson



Michael M. Garner



Dan H. Johnson



Richard S. Funk

Surgical Treatment of Otitis Externa and Media in Pet Rabbits

Vittorio Capello, DVM

Resources at a Glance

- * Basic endoscopic equipment: 18-cm, 2.7-mm, 30° rigid endoscope with light source, light cable and video camera; monitor; recording device (VCR, CD-R, DVD-R) - Karl Storz Veterinary Endoscopy, www.karlstorzvet.com



Fig 1. Otitis externa in pet rabbits may be related to parasitic infestation (e.g., *Psoroptes cuniculi*), traumatic injury (e.g., hematoma of the ear pinna) or bacterial infection. The dwarf lop breed has the aesthetic peculiarity of long, hanging ear pinnae, which are the result of breeding selection. The position of the ear pinna is due to flexion of the cartilage at the base of the ear, which also causes flexion of the ear canal. This anatomic feature predisposes dwarf lops to bacterial otitis externa and media.



Fig 2. Normal endoscopic appearance of the ear canal in a 1.5-kg dwarf rabbit.

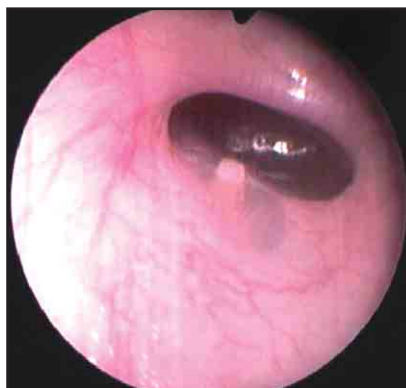


Fig 3. Normal endoscopic appearance of the tympanic membrane in a 1.5-kg dwarf rabbit.

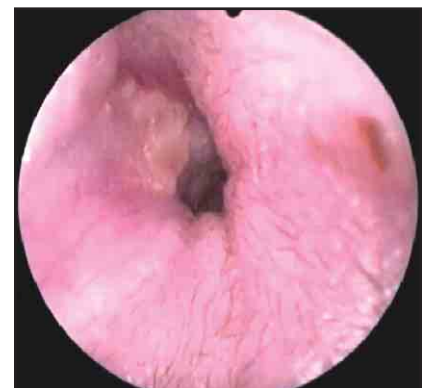


Fig 4. Normal endoscopic appearance of the ear canal in a 2.3-kg dwarf lop rabbit at the point of flexion of the auricular cartilage. The ear canal is relatively smaller in this breed than in those without pendulous ears.

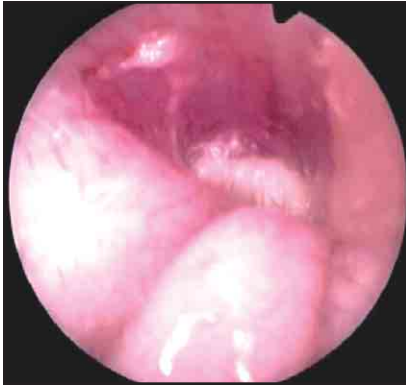


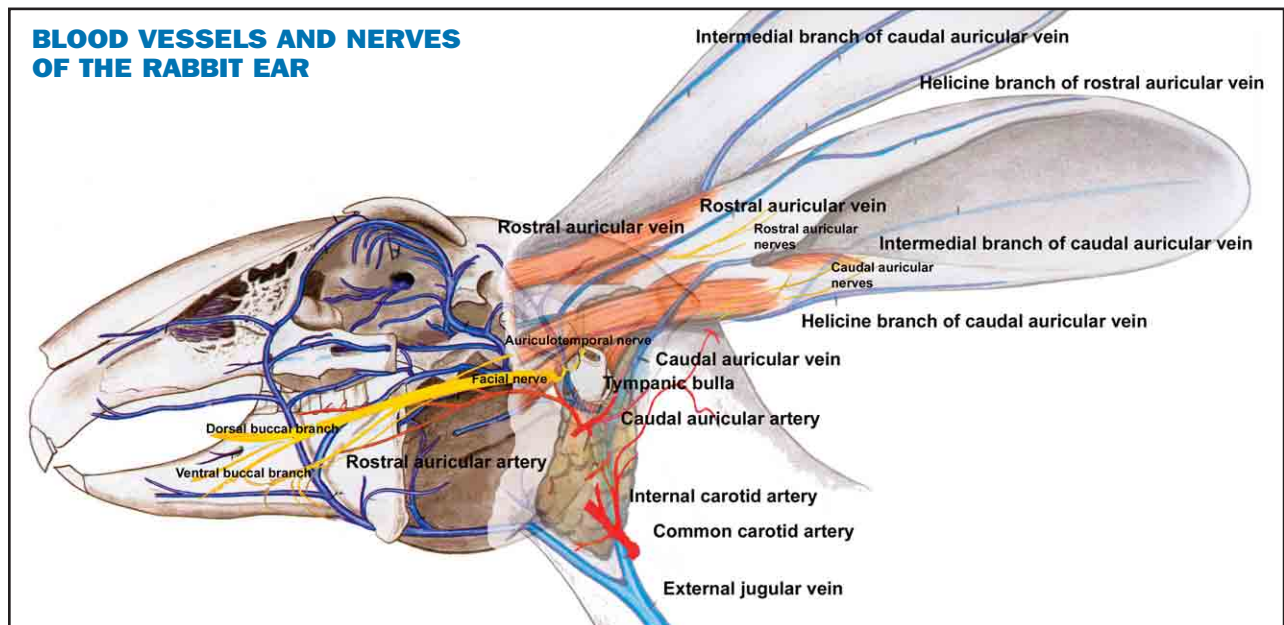
Fig 5. In cases of otitis externa, debris may be particularly abundant in the vertical ear canal and visible with a rigid endoscope. Hyperplastic skin folds and stenosis of the ear canal are also visible.



Fig 6. Radiograph of the tympanic bullae, dorsoventral projection. The bullae appear normal in this rabbit, and otitis media is ruled out. Lateral ear canal resection with permanent ostomy is the treatment of choice for severe otitis externa and to prevent the development of otitis media.



Otostomy (Lateral Ear Canal Resection)



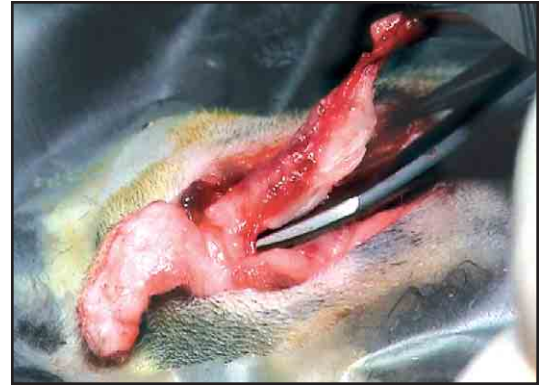
1 The rabbit is anesthetized and placed in lateral recumbency. The base of the ear is shaved and sterilely prepared.



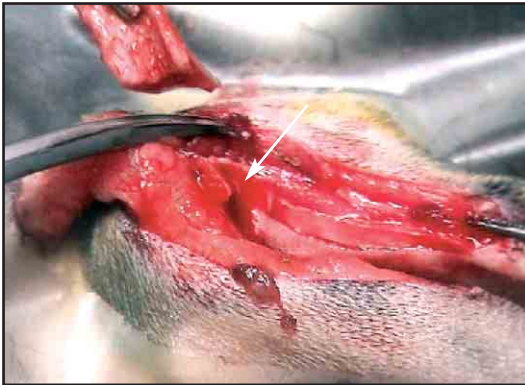
2 A transparent adhesive surgical drape is applied and cut to access the surgical field. Two parallel skin incisions are made at the base of the ear following the direction of the pinna.



3 The skin strip and associated subcutaneous tissue are dissected free from the adjacent cartilage and reflected rostrally.



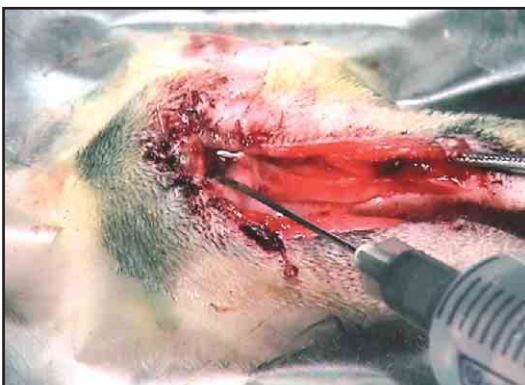
4 Scissors are used to create two parallel incisions in the lateral wall of the vertical canal. The cartilage is dissected ventrally to the level of the horizontal tract of the ear canal. Accurate dissection of soft tissues prevents injury to the rostral and caudal auricular veins (see Fig 7).



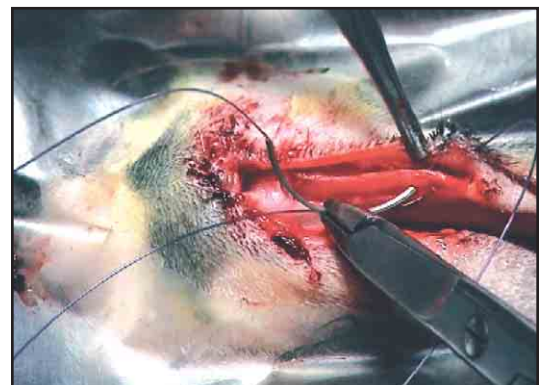
5 The rectangular cartilaginous strip of the vertical wall of the ear canal is reflected rostrally, transected at the base and removed. The opening of the horizontal tract of the ear canal is now visible (arrow). Significant hemorrhage does not usually occur, and bleeding can generally be controlled with electrosurgery, radiosurgery or cotton swabs.



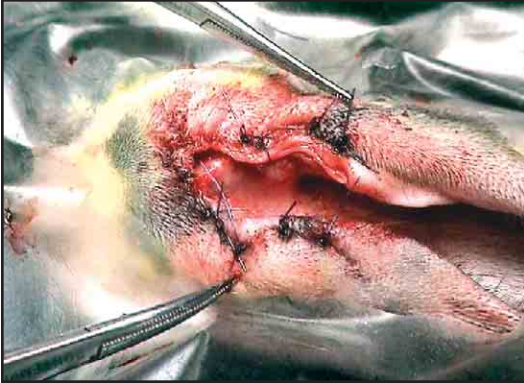
6 The round cartilaginous edge of the opening of the horizontal tract is carefully sutured to the surrounding subcutaneous and cutaneous tissues using 5-0 absorbable suture (such as poliglecaprone 25 [Monocryl] or polydioxanone [PDS]) in a simple interrupted pattern. The horizontal tract and its opening appear stenotic.



7 The horizontal ear canal is flushed to remove purulent debris.



8 The free edge of the ventral portion of the vertical ear canal is sutured to the skin with absorbable 4-0 suture material in a simple interrupted pattern.



9 The cartilage from both the vertical and horizontal ear canals has been sutured to the skin. Routine antibiotic and analgesic therapy is administered postoperatively.



10 Appearance of the ear canal after lateral otostomy. The ventral portion of the vertical canal remains open, and the horizontal tract opens laterally, reducing collection of debris and allowing cleaning and flushing.



11 Otostomy site 1 week post surgery. Small crusts present over the sutures were gently removed after flushing with saline.



12 Otostomy site 12 days after surgery. Sutures were removed together with the crusts.



13 Otostomy site 16 days post surgery. The surgical wounds have healed completely, and the opening of the horizontal tract of the ear canal is visible. To date, this author has found this surgery to be effective in resolving otitis externa and preventing otitis media in rabbits.

Otitis Media



Fig 7. Otitis externa can progress to involve the middle ear. In this rabbit, a large amount of thick purulent material is visible up to the level of the ventral ear canal. Cleaning and flushing the ear canal are ineffective treatments at this stage.



Fig 8. Otitis media is very painful. An affected rabbit may demonstrate anorexia, depression and pain on palpation at the base of the ear cartilage. Medical therapy with antibiotics and analgesics is often unrewarding.



Fig 9. Otitis media can result in peripheral vestibular abnormalities, including head tilt and nystagmus. Other pathologies causing vestibulitis must be ruled out. The central nervous system can also be affected secondarily, because the vestibular nerve terminates in the cerebellum.

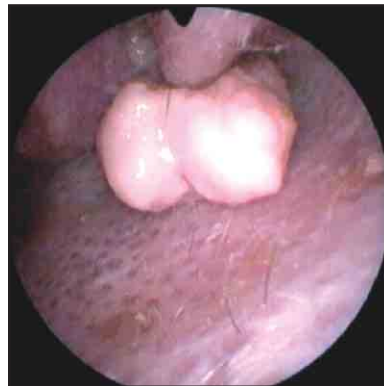


Fig 10. Endoscopic appearance of a severe purulent otitis externa and media. The ear canal is filled with thick white pus, and the tympanic membrane cannot be visualized.

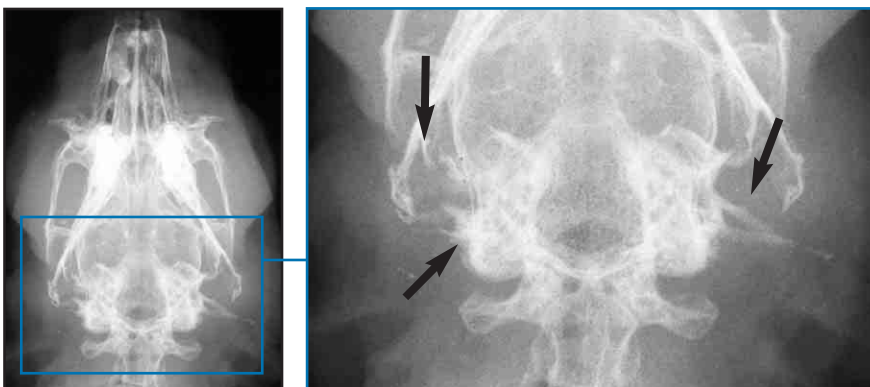


Fig 11. Skull radiograph of a rabbit, dorsoventral projection. This radiograph should be compared to that in Fig 6. Lesions involving the tympanic bullae are visible as irregular radiodensities (arrows). Total ear canal ablation and ostectomy of the tympanic bulla is the treatment of choice for this deep-seated infection.

Total Ear Canal Ablation and Osteotomy of the Tympanic Bulla



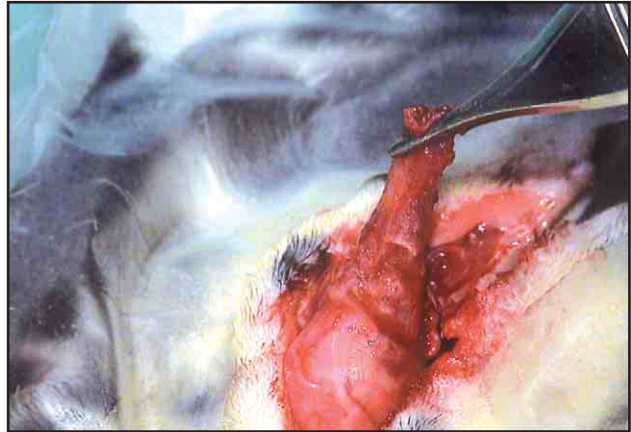
1 The anesthetized rabbit is placed in lateral recumbency, and the area around the base of the ear is shaved and sterilely prepped.



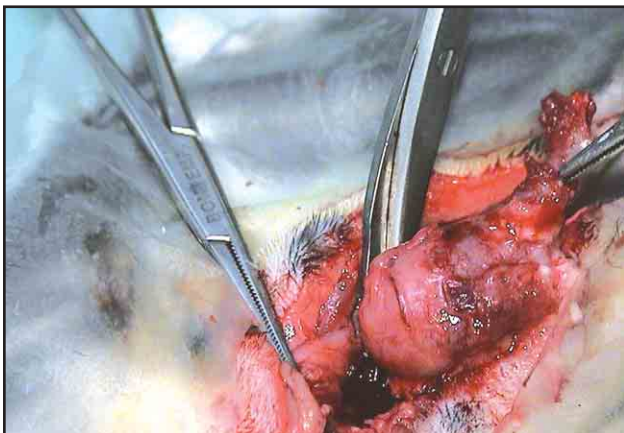
2 The skin is incised at the base of the ear, and the lateral wall of the ear canal is dissected from the subcutaneous tissue. The dilated ear canal is then visible.



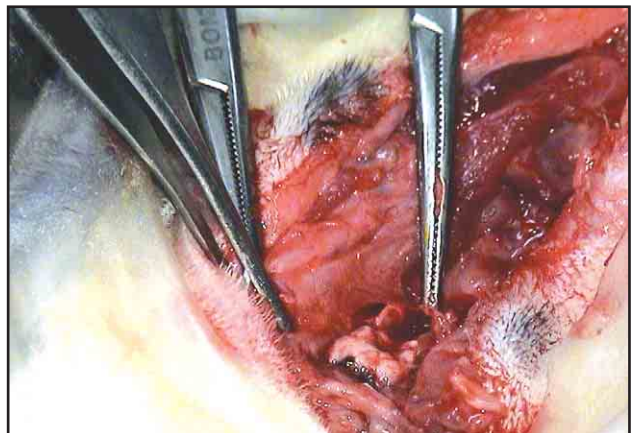
3 The ear canal is dissected from surrounding tissues without being entered. Care must be taken to avoid accidental rupture of the canal.



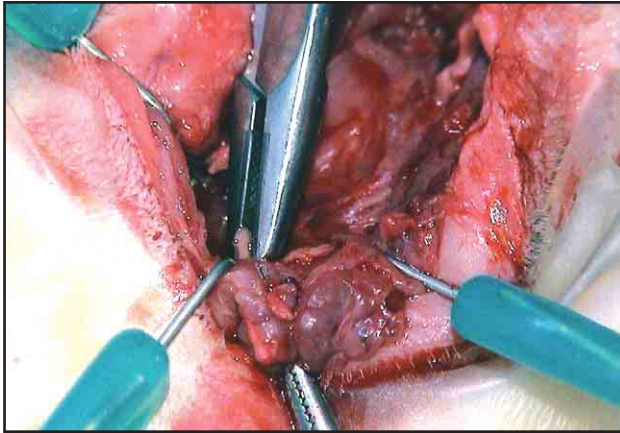
4 The vertical tract of the ear canal has been completely dissected from the pinna. Dissection close to the cartilage prevents injury to the rostral and caudal auricular veins (see Fig 7).



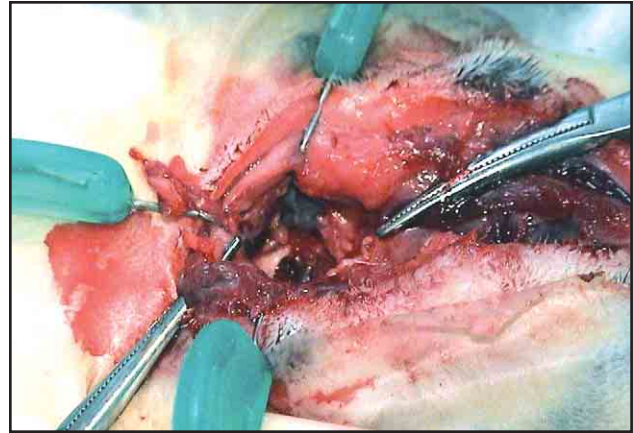
5 The horizontal tract of the ear canal is gently dissected from surrounding tissue to the level of its junction with the tympanic bulla.



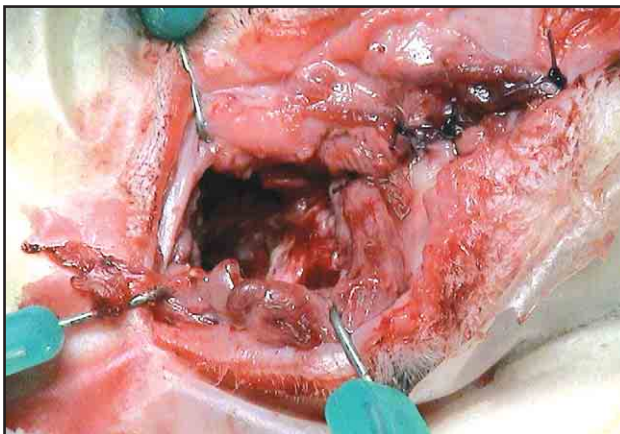
6 Total ablation of the ear canal has been performed. Purulent material can be seen exiting the tympanic bulla.



7 The ostium of the tympanic bulla is widened, using a needle holder as a rongeur, to allow the flushing and the debridement of the bulla. Ostectomy is important to prevent recurrence of abscessation.



8 The tympanic bulla has been opened, debrided of purulent material and flushed. Injury to the caudal auricular artery located caudoventral to the tympanic bulla must be avoided.



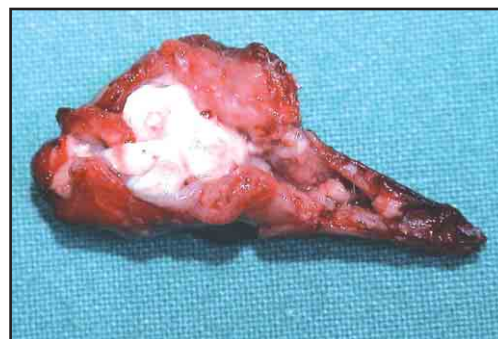
9 The subcutaneous tissue, which surrounded the vertical ear canal, is closed with absorbable 3-0 suture.



10 Soft tissues around the opened tympanic bulla are marsupialized, creating a new opening for postoperative flushing.



11 The marsupialized site after total ear canal ablation and tympanic bulla ostectomy.



12 The wall of the transected ear canal appears very thick, and the canal is significantly restricted and filled with dense purulent material.

Acknowledgements

The author appreciates the contributions of Cristiano Colombo, DVM, Sonia Giola, DVM and Giuseppe Ripamonti, DVM.

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