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Short Communication

Fibrin sealant as a treatment for canine aural haematoma: A case history

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Abstract

Aural haematomas occur commonly in dogs in which predisposing factors include trauma to the pinna, a history of violent head shaking, and acute or chronic otitis externa. Treatment usually involves invasive surgery performed under general anaesthesia but these techniques can create wounds requiring intensive aftercare. Furthermore, certain breeds of dog and/or older animals are often at greater risk due to complications arising from the use of anaesthetics. Therefore, a need exists for a less invasive procedure which can be performed easily in general practice and with minimal reliance on anaesthetics. Fibrin sealants fulfil these criteria and have been used successfully to treat aural haematomas in humans. This is the first known report on the use of fibrin sealant to treat a canine aural haematoma. In the present case, the haematoma recurred shortly after removal of the protective collar, and was subsequently treated by conventional surgery. Possible reasons for initial success of the fibrin sealant and then later recurrence of the haematoma (e.g. premature removal of the collar) are discussed.
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Keywords: Canine; Aural haematoma; Fibrin sealant; Fibrin glue

A 14 year old Golden Retriever, in good general condition developed a haematoma in the left ear. Swelling developed overnight and almost the entire pinna was affected. The haematoma (measuring approximately 9×3 cm) contained serosanguineous fluid. Initially, the haematoma was drained by needle aspiration, and the ears were bandaged in a high position over the head for one week. However, the haematoma recurred within 24 h of removing the bandage. Thereafter, the ear was punctured (needle aspiration) daily for 10 days, since the haematoma recurred within 24 h on each occasion.

An intervention treatment with fibrin sealant was chosen. Fibrin sealants have been used successfully to treat aural haematomas in humans (Yamasoba et al., 1990) but we are not aware of any previous use in dogs. Surgery was performed after tranquilisation with intramuscular injections of buprenorphine (0.007 mg/kg) and acepromazine (0.03 mg/kg), and local anaesthetic blocks of the auriculopalpebral and cervical II nerves with 2% lidocaine/epinephrine solution (8 mL).

The ear was incised at the extreme proximal and distal ends of the haematoma (Fig. 1), and debridement of the cavity was performed. Human fibrin sealant (HFS; 3.0 mL) (Beriplast P Combi Set; Nycomed AG) was injected from a spray tip with the aim of covering the entire surface of the cavity (Fig. 2). The spray tip did not perform adequately and was replaced with the conventional injection needle. The ear was then left without suturing or high bandaging, and the dog was confined with an Elizabethan head collar.

Daily examination of the ear revealed signs of inflammation in the form of heat and rash, and several minor bumps could be palpated along the ear although there was no indication of swelling or recurrence of the haematoma (Fig. 3). The collar was removed at day 8 post-sur-

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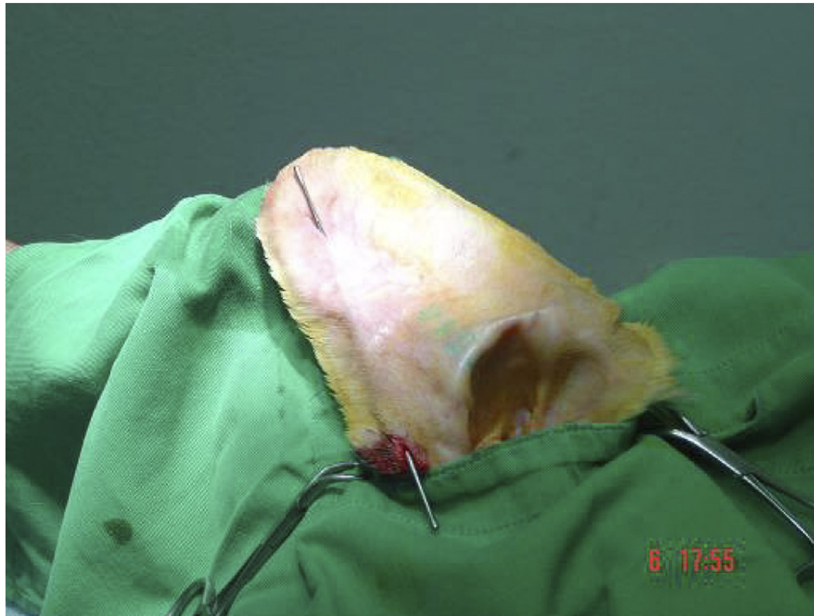

Fig. 1. Proximal and distal incision of the ear.

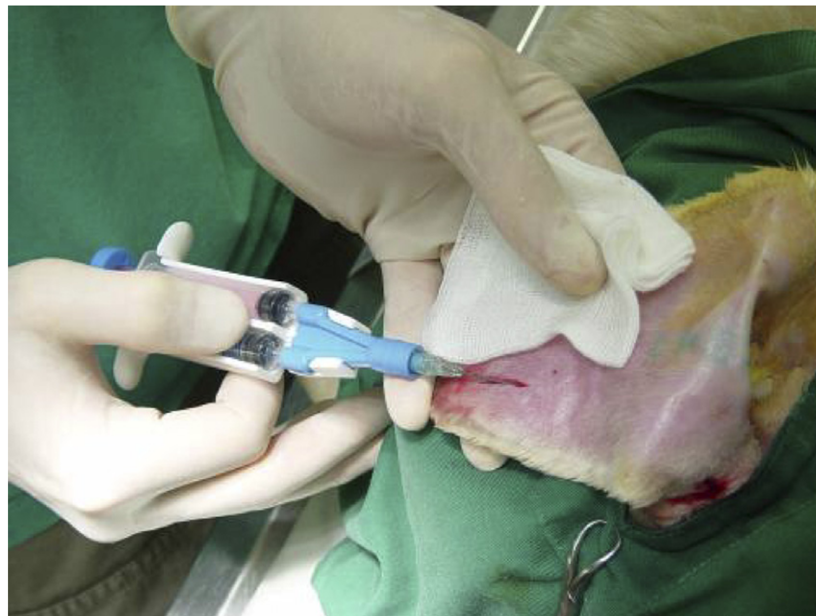

Fig. 2. Injection of the fibrin glue.

gery, and swelling recurred two days later. The ear was punctured daily for eight days and serosanguineous fluid removed. Thereafter, conventional surgery (with an S-shaped incision and suturing (Fossum et al., 2002)) was performed under general anaesthesia. Tranquilisation was as described above followed by general anaesthesia initiated with intravenous injection of propofol (4 mg/kg) and maintained with O_2/N_2O and isoflurane (2%). The cavity was emptied, and several small granulomas (0.6×0.6 cm) were removed. The ear wound was left open to drain, and the dog was confined with a collar for four weeks. Daily follow-up examinations were performed and the ear healed without complications. At three months post-surgery the ear appeared normal apart from minor cosmetic scars.

The use of fibrin sealant to treat canine aural haematoma has a number of advantages, namely, the intervention is less invasive and requires less time to perform than the conventional method. Aftercare is also less intensive and of shorter duration. Care could be provided by the dog owner, resulting in less frequent visits to the veterinarian. Although the prognosis after fibrin intervention is not necessarily superior to that following conventional treatment, it is certainly less invasive, requires easier after-care and,

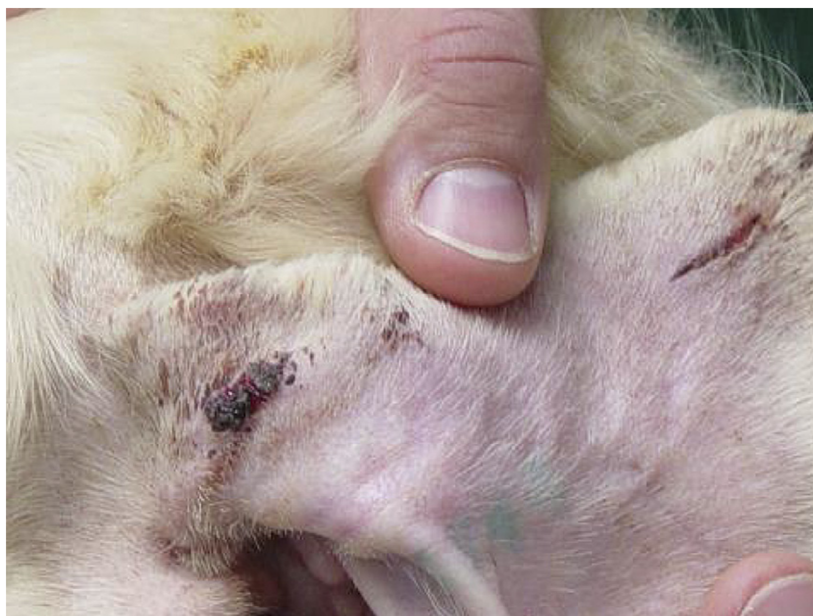

Fig. 3. Healing after intervention with fibrin sealant (three days post-operation).

despite the cost of fibrin sealant (€260), reduces the overall costs of treatment.

Use of HFS conferred several advantages over bovine fibrin sealant (BFS) during treatment of skin incisions in beagles (Scardino et al., 1999). The HFS-treated wounds of some beagles had a higher tensile strength, smaller scar area, and less inflammation than those treated with BFS (Scardino et al., 1999), suggesting a role for HFS in functional and cosmetic wound closure.

Although in the present case signs of heat and rash occurred, there was no indication of swelling or recurrence of the aural haematoma before the collar was removed. Indeed, few adverse tissue responses and immunological reactions have been attributed to the use of fibrin sealants (Bouvy et al., 1993; Ismail et al., 1995). Our findings suggest that HFS induced haemostasis, and supported the reports from previous studies showing that HFS (Park et al., 2002), BFS (Bouvy et al., 1993), and canine fibrin sealant (CFS) (Wheaton et al., 1994) limit bleeding from skin and internal wounds in dogs and reduce the risk of wound complications (Cain et al., 1990). Since fibrin sealants induce haemostasis, we were initially concerned that HFS might seal blood vessels leading to necrosis in the ear but this did not occur.

There are a number of possible explanations for recurrence of the haematoma. A failure to achieve uniform application of HFS to the wound cavity could have reduced overall tensile strength of the wound. Possible clumping of HFS (due to uneven application) may have led to the formation of granulomas in the wound cavity. Furthermore, the adhesive strength of the HFS could have weakened leading to treatment failure. However, this seems unlikely since other HFSs have been shown to increase the tensile strength of skin incisions beyond that of a control within only 10 min of application (Park et al., 2002).

The most plausible explanation is that the collar was removed too early, thus allowing the dog to manipulate the ear (by paw or head shaking) at a critical stage in the healing process. Treatment of aural haematomas in humans represents a surgical challenge requiring strong stitching (suturing) of the wound followed by subsequent heavy compression to avoid a 'cauliflower-like' appearance (Lee and Sperling, 1996). Indeed, the maintenance of a firm pressure dressing following surgery for lesions of the pinna can reduce morbidity associated with ear infections (Prasad et al., 2005).

The good initial prognosis for treating the present case with HFS suggests that fibrin sealants may be useful for treating aural haematomas in dogs. However, future studies to evaluate the usefulness of this method should consider the frequency and method of applying fibrin sealants to the wound, and maintenance of the collar (with or without pressure dressing) for a longer period of time.

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