

Intralesional injection of calcium chloride dihydrate in alcohol for minimally-invasive bulk reduction of a mammary mass



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INTRODUCTION

- Among all mammals, the canine species has the highest incidence of mammary neoplasia.
- Average lifetime incidence is estimated at 3.4%¹ and can be as high as 40% in intact female dogs of some breeds.²
- Indeed, benign mammary tumors are the most common tumor in the intact female dog, as high as 53.3% of the total reported neoplasias.²⁻⁴
- Older bitches are primarily affected, with a mean age of 9-11 years.⁵
- Surgical resection of benign mammary tumors is recommended and involves removal of the mass(es) or affected mammary gland(s) under general anesthesia.⁶
- However, for many reasons, clients may decline this treatment.
- Percutaneous alcohol ablation is an established minimally invasive, potentially curative therapy for hepatocellular carcinoma in humans.⁷

OBJECTIVE & HYPOTHESES

- The objective of the present study was to determine the effects of serial percutaneous alcohol injections into a large mammary mass in a geriatric intact female dog.
- We hypothesized that percutaneous alcohol ablation would be effective for reducing benign mammary tumor size.

MATERIALS & METHODS

- A client presented with a recently rescued dog, estimated to be 12 years of age, with multiple mammary masses.
- The largest mass measured 4.2 cm x 3.7 cm (**Figure 1**), was firmly adhered to the underlying connective tissue, and had multifocal intralesional mineralization evident upon ultrasonographic examination.
- Because of the animal's age and condition, the client declined general anesthesia for surgical removal of these mammary tumors.
- At the client's request, a decision was made to attempt a percutaneous ethanol injection.
- A volume ranging from 0.3-0.5 ml of 75.5% food-grade ethanol alcohol (Everclear, USA) was injected into the primary tumor, twice 3 days apart and then repeated 2 months later.
- Two of the four injections were performed following administration of a topical lidocaine cream (LidoCream 5, Golden Touch LLC) applied 30 minutes prior to the procedure.
- The injections were well tolerated by this patient.
- At the last injection, pharmaceutical-grade (USP) calcium chloride dihydrate was added to the alcohol for a final concentration of 20% calcium chloride dihydrate (**Figure 2**).
- Nearby mammary masses were not injected and served as controls.

RESULTS

- After each injection, the mass appeared mildly inflamed for up to a week.
- More severe inflammation occurred after injection with calcium chloride solution, which resolved within 2 weeks (**Figure 3**).
- At 5-month follow-up, the mammary mass had decreased in size by about 75% (**Figure 4**) and was freely movable under the skin.
- Nearby non-injected masses continued to grow.

CONCLUSION

- Although this is a single case report, we propose alcohol ablation, with or without addition of 20% calcium chloride dihydrate, for bulk reduction of benign mammary masses when concern over dog's age and fitness for anesthesia, lack of surgical facilities, or client financial limitations prevent surgical removal.

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Figure 1. Large mammary mass prior to intralesional injection.



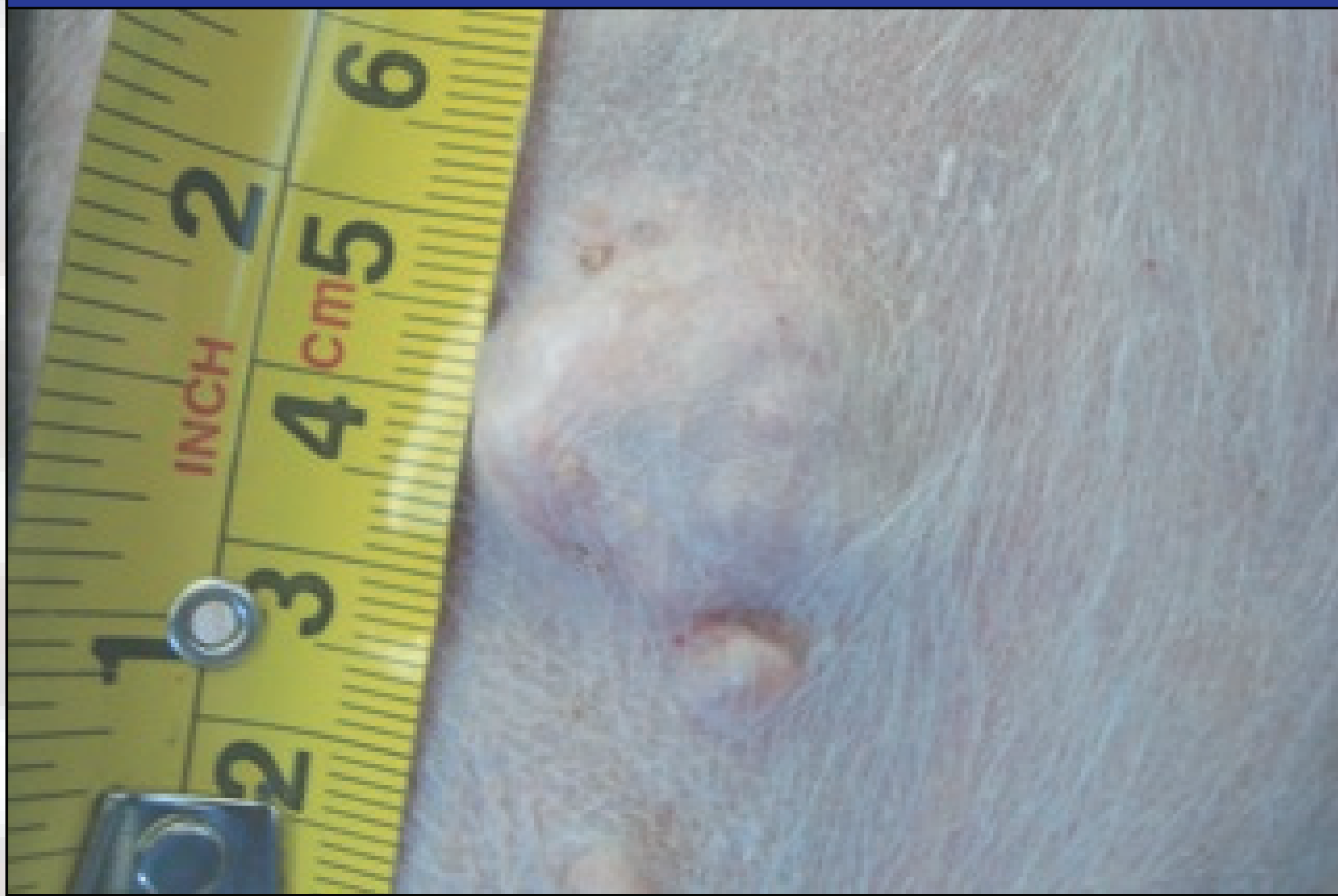
Figure 2. Injecting calcium chloride dihydrate in alcohol into the mammary mass.



Figure 3. Inflammation that occurred after injection with calcium chloride dihydrate in alcohol, which resolved within 2 weeks.



Figure 4. Large mammary mass 5 months following the last injection.



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