

Fractured Teeth

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Fractured teeth (**Figure 1**) are common in dogs and cats^{1,2} and may be a result of trauma or may be identified by a client who notices that a pet's tooth suddenly looks different. In some cases, the patient may have difficulty eating or acutely develop facial swelling (**Figure 2**). It is critical that treatment be recommended for all fractured teeth (vs a *watch-and-wait* approach); many patients still eat and drink despite a fractured tooth, and because an abscess may not be obvious, periapical pathology can only be evaluated via dental radiographs (**Figure 3**). Facial swelling and draining tracts signal an abscessed tooth's end stage, in which infection and discomfort have likely been present but were not clinically apparent.² Uncomplicated crown fractures with no pulp exposure should also be evaluated with radiographs; if there is no periapical pathology, dental sealants can protect exposed dentin tubules and prevent contamination and eventual pulp involvement.

TREATMENT OPTIONS

- Treatment choice depends on fracture type, tooth maturity, chronicity, and client desire to preserve the tooth.
- **Exodontic therapy** involves fractured tooth removal via surgical extraction. Exodontics may be more appropriate if the tooth is a poor candidate for preservation or if the client cannot adhere to home-dental-care guidelines.

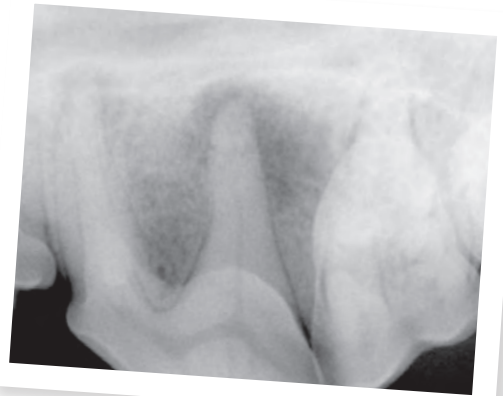


Figure 1. Typical appearance of a complicated crown fracture in the maxillary left 4th premolar

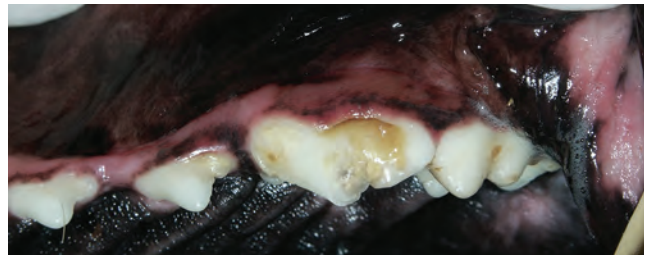


Figure 2. A dog presented with abscessed tooth-induced facial swelling, occurring during the latter stages of fractured tooth pathology.



Figure 3. Radiographic appearance of the tooth in Figure 1; note the periapical lucencies associated with the roots of the 4th premolar.

Although not required, crowns can be placed to further protect the tooth (a good option for working dogs or dogs with anxiety).

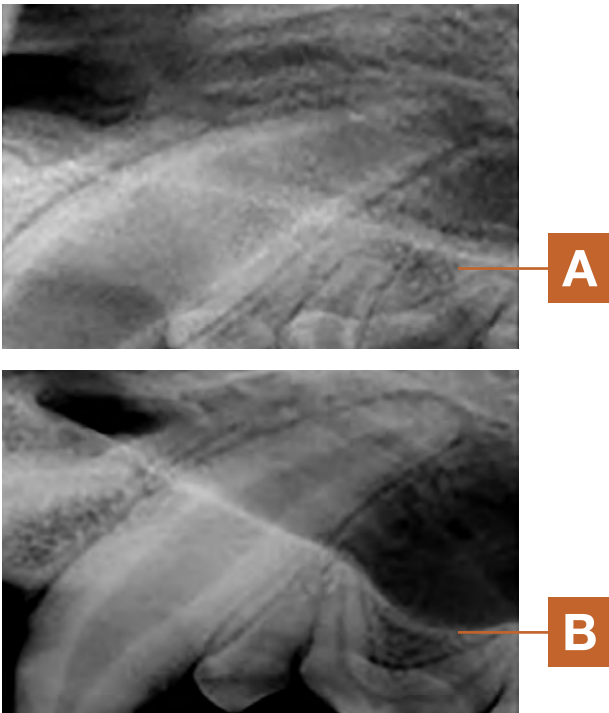


Figure 4. (A) Immature canine tooth (ie, thin dentin walls, open apex) compared with a (B) mature canine tooth (ie, thick dentin walls, closed apex)

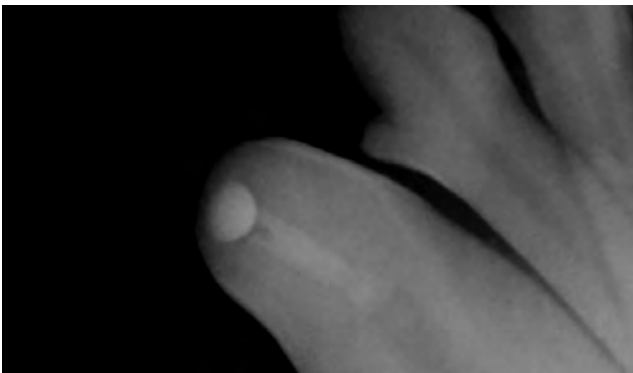


Figure 5. Vital pulp therapy can be performed (by a veterinary dental specialist) to preserve immature teeth fractured within 48 hours.

- **Endodontic therapy** pursues tooth preservation with vital pulp therapy or root canal therapy via referral to a dental specialist. Endodontic procedures require regular follow-up evaluation with dental radiographs and appropriate home dental care by the client. Although not required, crowns can be placed to further protect the tooth (a good option for working dogs or dogs with anxiety).

FRACTURES IN YOUNG PATIENTS

- When a young patient (<12 months of age) acutely fractures a tooth, time is of the essence. At this age, the permanent teeth are usually not fully formed; the walls of the tooth are very thin, and the apex of the root is not closed (**Figure 4**).
- If untreated, any fracture or trauma can cause an immature tooth to become nonvital; if nonvital, these teeth should be extracted because of lack of function or predisposition to further fractures.
- To preserve immature teeth, treatment by vital pulp therapy (**Figure 5**) should be pursued within 48 hours of the tooth fracture.^{3,4}

STEP 2

Team Education Primer ►

Fractured Tooth Treatment *at a Glance*

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Treatment options for fractured teeth vary with each patient. Any history of trauma should be investigated and treatment delayed pending patient stabilization. Appropriate diagnostics should include a combination of preanesthetic blood tests, chest radiographs, and cardiac evaluation to assess the patient's anesthetic risk. The tooth's function should be considered when selecting treatment: for example, a tooth that is nonstrategic (ie, not a canine or carnassial tooth) may be best treated with exodontic therapy, but a strategic tooth would be a better candidate for endodontic therapy because of its essential function in a patient's natural life.

ENDODONTIC THERAPY

- Standard endodontic therapy, the treatment of choice to preserve a mature tooth, involves complete removal of the pulp, debridement of the canal walls, and disinfection to reduce or eliminate bacterial contamination.
- The canal is then obturated with inert dental materials, and the tooth is restored.⁵
- The tooth may not be fully developed in a young patient.
 - If an immature permanent tooth has been fractured for <48 hours, vital pulp therapy can preserve tooth vitality and allow the tooth to continue to develop; the contaminated coronal pulp is removed and the tooth restored to prevent bacterial contamination in the oral cavity.⁶

- Follow-up is essential to document tooth development and procedure success.^{3,4,6}
- In some cases, the tooth may cease to develop a few years after this procedure; if the apex has closed, a standard endodontic procedure can be performed and the tooth can still be functional.

EXODONTIC THERAPY

- Exodontic therapy may be indicated in certain clinical situations.
- Endodontic therapy may not be efficacious when dental radiographs demonstrate root resorption or in the presence of facial swelling or severe infection.



- If the majority of the crown is missing or the tooth will not be functional for the patient, exodontics are warranted.
- Other factors (eg, patient health status, client ability to follow up) may warrant extraction.
- The client should not be made to feel guilty or stressed about the best treatment plan; instead, an open team–client discussion allows everyone to feel comfortable with the outcome.

STEP 3
Communication Keys ►

Conversation Opportunity: Addressing the Cost

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It is common for clients to be unaware of the importance of treatment for a fractured tooth. Once the veterinarian has explained the need for treatment, clients may be unsure about the best treatment option for their pet based on cost and/or the pet's age and overall health status.

Although only the veterinarian should give medical advice, it is important for the whole team to understand the available treatment options for client clarification and assistance in the decision-making process. This is a critical time to employ an empathic communication style, as clients are faced with a tough decision that can impact the health of their pet. They may initially have been unaware of the need for treatment, be overwhelmed by the associated costs, and/or be struggling with guilt (eg, because of financial constraints, extraction is selected for a tooth that could be preserved). This is where a show of support and understanding by team members is essential.

CLIENT:

I had no idea that Luna's broken tooth was such a big deal, and I can't believe how much it will cost to remove it—let alone have a root canal to save the tooth! I don't know what to do or how I am going to pay for it. What would you do?

TECHNICIAN OR RECEPTIONIST:

I know what a surprise this must be, but you take such great care of Luna and I am so glad you thought to call us and have her seen. I know that Dr. Smith has explained your options, and I am sure she told you that the decision is up to you. She really means that, because regardless of whether the tooth is taken out or saved, Luna will feel better. That is absolutely the most important thing to all of us.

I don't know what I would do in your shoes, but I would review the pros and cons—just as you are—including my financial obligations. It is completely normal to be overwhelmed, so take some time to decide. I know that Dr. Smith would be happy to talk to you further, so let me know if you'd like to do so and I will have her give you a call.



Financing the Fracture

Make sure clients are aware of the practice's alternative financing options (if available), and assist them with any application.

STEP 4
Team Workflow ►

Team in Action

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Each team member can gather vital information from the client that will shape the treatment plan for a particular patient.

RECEPTIONIST

- ✓ Schedule appointment
- ✓ Confirm all information when client brings patient for examination
- ✓ Document conversations and information provided in medical record
- ✓ Relay information to technician/assistant

TECHNICIAN/ASSISTANT

- ✓ Escort client and patient to examination room
- ✓ Review information already obtained and gather additional information, including general history
- ✓ Document information in medical record
- ✓ Perform an initial oral examination—and remember to *flip the lip!*
- ✓ Update veterinarian on presenting complaints and general history
- ✓ Assist veterinarian in examination room

VETERINARIAN

- ✓ Review history obtained by technician and obtain additional information as needed
- ✓ Conduct oral assessment in front of client
- ✓ Present and explain treatment options to client based on findings
- ✓ Create treatment plan or refer to dental specialist based on client's preference and services provided in practice

TECHNICIAN/ASSISTANT

- ✓ Review veterinarian's treatment plan with client
- ✓ Escort client to front desk to schedule procedure and/or assist veterinarian with referral forms

STEP 5
Team Roles ►

TEAM MEMBER	ROLE	RESPONSIBILITIES
RECEPTIONIST	Information gatherer, client educator, and appointment scheduler	<ul style="list-style-type: none"> ✓ Obtain history over the phone (eg, patient age, which tooth is fractured, how and when the tooth was fractured, whether the patient is eating and drinking, time elapsed since injury) ✓ Schedule an appointment in a timely manner based on information obtained from the client
TECHNICIAN/ ASSISTANT	Information gatherer, client educator, and veterinarian liaison	<ul style="list-style-type: none"> ✓ Obtain basic information including but not limited to: <ul style="list-style-type: none"> • Which tooth/teeth are fractured • How the tooth was fractured (eg, whether the patient is crated, what toys are provided, potential behavioral concerns) • Whether the patient is eating normally, has changed eating habits, or shows pain • Any other health concerns
VETERINARIAN	Medical expert, protocol generator, and client educator	<ul style="list-style-type: none"> ✓ Discuss the benefits and disadvantages of treatments ✓ Determine whether the client is interested in saving the tooth (if possible) and whether he or she is aware of the required follow-up care ✓ Based on client responses, develop an appropriate treatment plan ✓ Refer to a board-certified dental specialist if the client chooses restorative treatment not provided by the practice
PRACTICE MANAGER	Supervisor of team education, materials made available to clients, and potential addition of treatment options to the practice	<ul style="list-style-type: none"> ✓ When organizing team education on dentistry, include a section on fractures or discolored teeth (consider inviting a specialist) ✓ If the practice is to perform restorative dentistry: <ul style="list-style-type: none"> • Ensure veterinarians and technicians receive proper training • Create a pricing structure for restorative dentistry • Oversee the purchase of additional equipment ✓ Oversee the creation and/or selection of handouts for clients ✓ If referrals are made, assist veterinarians in choosing specialists <ul style="list-style-type: none"> • Contact the referral veterinarian(s) to let them know your practice will be referring complex dentistry cases to them • Obtain practice information of referring veterinarians for clients • If possible, obtain a basic range of fees for various restorative procedures to help the client with the decision-making process

Although all fractured teeth warrant prompt treatment, some cases are more time-sensitive. Your team can relay information so that treatment can be scheduled accordingly and appropriate follow-up care is instituted.

See Aids & Resources, back page, for references & suggested reading.

STEP 6
Client Handout ►

Cracking the Myths of Fractured Teeth

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My dog has a fractured tooth, but it doesn't seem to bother him. He is still eating and drinking.

Most pets continue to eat and drink despite having a fractured tooth. They have an instinctual drive to continue eating and to hide pain. They may be chewing on the opposite side of the mouth to avoid using the fractured tooth. Often your veterinarian can investigate this by evaluating both sides of the mouth; one side of the mouth may have much more calculus than the other side, indicating your pet is avoiding use of the tooth that needs treatment.

My dog loves to chew bones and hard toys—he is an aggressive chewer. Besides, animals in the wild chew bones.

Bones and hard plastic chew toys are not recommended. Often, these treats (eg, cow hooves, deer antlers, marrow bones) are as hard or harder than your pet's teeth. Your dog may really enjoy chewing these toys but he or she risks fracturing a tooth (especially large chewing teeth). Although wild predators chew bones, they are just as prone to tooth fracture as your dog, and they likely suffer pain and infection from these injuries. We can provide more appropriate chews and avoid this pain (and treatment costs) associated with fractured teeth. Try to only give your pet something to chew that has some flexibility or becomes softer as he or she chews it. Rawhides are appropriate as long as the pet is supervised or the chew is removed if it becomes small enough to swallow. For a good resource on chews and treats, as well as overall dental health, see the Veterinary Oral Health Council website (vohc.org).

I want to save my pet's tooth. What is involved?

First, your pet's health status will be evaluated before anesthesia. Once your pet is anesthetized, dental radiographs (x-rays) are obtained, and the tooth is evaluated as a candidate for endodontic treatment. A procedure similar to a root canal in humans is completed to save the tooth. Afterward, it is critical to institute a good dental-care regimen at home to maintain your pet's oral health. Yearly professional cleanings and dental radiographs (under anesthesia) are also essential for evaluating the success of the procedure.