

Brian Baker

Emergency Dental Treatment for the Family Physician

SUMMARY

The family physician is often expected, and should be able, competently to provide emergency dental treatment. With the knowledge of relatively few techniques and materials, this care can often be simply provided. Treatment discussed includes: odontogenic infections, avulsions, fractured teeth, post-operative bleeding and pain, dentures, dental caries, periodontal problems, analgesics, and allergy to local anesthetic. (*Can Fam Physician* 1987; 33:1521-1524.)

Key words: emergency dental treatment, family physician

RÉSUMÉ

On s'attend souvent du médecin de famille qu'il soit compétent à fournir certains traitements dentaires d'urgence. La connaissance de quelques techniques et substances utilisées permet souvent d'offrir ce type de soins. Les traitements discutés ici comprennent les infections odontogéniques, les avulsions, les fractures dentaires, le saignement postopératoire, la douleur, les prothèses, les caries, les problèmes péri-odontaux, les analgésiques et l'allergie aux anesthésiques topiques.

Brian Baker, DMD, is a dentist in solo family practice in Indian Head, Sask. Reprint requests to: Dr. Brian Baker, P.O. Box 820, Indian Head, Sask. S0G 2K0

THE FAMILY PHYSICIAN is frequently called on to treat dental emergencies for which he/she is understandably inadequately trained. Whether a dentist is not readily available or the patient has chosen not to consult one, the physician is expected to alleviate pain and/or control infection. While it is not realistic to expect a physician to provide complete treatment for dental emergencies, since she/he lacks proper instruments and/or knowledge of the prescribed procedures, palliative and/or supportive care can often be provided with a minimal complement of materials. In common dental emergencies the physician can only benefit patients by being prepared to treat them. All the procedures described in this article, however, will provide only temporary relief, and the patient must be advised quickly to seek completion of treatment by a dentist.

Dental Abscesses

Odontogenic infections can vary from a localized periapical abscess of a single tooth to widespread infections of fascial spaces that can lead to severe sequelae such as airway obstruction, septicemia, Ludwig's angina,

and even death. The usual source of infection is a dead tooth, resulting either from deep caries involving the pulp or from trauma. The potential for serious consequences makes it important for the physician to diagnose an odontogenic infection quickly and to institute treatment immediately.

A patient with an abscessed tooth will usually present with a chief complaint of constant gnawing pain. The involved tooth is usually tender to percussion, and application of heat and/or cold will often increase the patient's pain. The patient can often, but not always, pinpoint the involved tooth. There may be no intraoral swelling or there may be swelling of the buccal and/or lingual aspects of the mucosa adjacent to, or the apical (root tip) of, the involved tooth. Infection will follow the path of least resistance and so may not necessarily be present in the immediate area surrounding the involved tooth, but can spread to the adjacent tissue of the head and neck. Draining fistulas may or may not be present. If the lesion is fluctuant, stab incision (to bone) and drainage are recommended; careful consideration must be given to local anatomic structures. If drainage cannot be achieved, warm saline or salt-water rinses may help to initiate it. In any case, antibiotics (penicillin V is the drug of choice) and analgesics (at the physician's discretion) should be pre-

scribed. The patient should be advised to avoid chewing on the involved side. Cotton rolls or rolled up 2" x 2" gauze may help the patient to prevent the teeth from making contact. Subsequently, the patient must be advised to see a dentist as soon as possible for extraction or root-canal therapy, as often patients will receive antibiotics which temporarily "solve" the problem, only to have the abscess return later. If the patient will not see a dentist soon, he/she must be followed closely.

Moderate to severe odontogenic infections or those that appear to be spreading to involve fascial spaces or compromising the airway require more definitive treatment. Unless the physician feels competent to treat the patient with parenteral antibiotics and surgical drainage of the involved spaces, the patient should be referred immediately to an oral and maxillofacial surgeon for treatment.¹

Avulsions

Avulsed or "knocked out" teeth are a fairly common occurrence, particularly in the young patient. The tooth may be intruded, extruded, displaced to the labial or lingual (partial avulsions), or completely avulsed. Intraoral examination should identify position of the tooth or teeth, soft tissue lacerations, and fracture of cortical bone. Lacerations should be sutured as necessary. A partially avulsed tooth

should first be radiographed to determine whether there are fractures of the supporting bone and of the tooth itself. In the absence of fractures, the tooth should be repositioned as well as possible and splinted in position (a procedure described later). Infiltration of local anesthetic to the adjacent soft tissue may be necessary. If the tooth and/or supporting bone is fractured, a dentist should be consulted to determine the necessary treatment.

Completely avulsed teeth that have been reimplanted have a poor to moderate prognosis, but they should still be reimplanted. If a tooth that has been knocked out can be found, it should be transported in the cheek of the patient (unless the possibility of swallowing it is a concern), in milk, or in a saline solution. It should not be wiped clean in any event. Success of reimplantation correlates to the interval of time between the avulsion and reimplantation, and to maintenance of periodontal ligament fibres on the avulsed tooth. It is because of these fibres that the tooth should not be wiped clean but, instead, gently washed with saline solution. The socket should be irrigated to remove blood, and the tooth should be reimplanted in its former position as soon as possible. Once implanted—again, a local anesthetic may be required—and properly positioned, the tooth should be splinted. Antibiotics (penicillin V) and analgesics should be prescribed.² Whether a tooth has been partially or completely avulsed, the patient should be advised not to chew on it or subject it to any other trauma, such as wiggling it to see if it is still loose. Cotton rolls between adjacent teeth may be beneficial.

Splinting of a tooth may be accomplished fairly readily with a short length of monofilament nylon fishing line and cyanoacrylate (histoacryl blue or "Krazee Glue"). The involved area should be carefully isolated with cotton rolls and the teeth gently dried. The fishing line should be cut long enough to stretch across one or two teeth on both sides of the involved tooth. First, position the fishing line to lie across the middle of the crowns of the teeth, and then carefully bond it to one adjacent tooth. Remember that cyanoacrylate bonds quickly to anything, and so take thought for the patient's lip and your own fingers. Be careful when expressing the liquid, as

only a minimal amount is required. Next, bond the involved tooth, making sure that it is in the desired position, and then bond the other adjacent teeth. When you have finished the bonding, be sure all of the liquid has completely dried and that the free ends of the line are trimmed so that they will not cut the patient's lip. Since adverse soft tissue reactions to cyanoacrylate have been noted, be sure to inform the patient that this is only a short-term procedure.

The above instruction relates to whole (not fractured) permanent teeth. A physician who is not familiar with tooth morphology might be well advised to consult a textbook of dental anatomy in order to be able to determine the differences between primary and permanent teeth and their normal positions in the dental arch.

Primary (baby) teeth should not be reimplanted because implantation could damage the underlying, developing, permanent tooth. The patient with an avulsed primary tooth should be advised to consult a dentist, as measures may have to be taken to ensure that proper space is maintained for the permanent tooth. If the avulsed tooth has not been located, radiologic examination should be undertaken to determine if it has been aspirated; if aspiration has occurred, appropriate action should be initiated.

Fractured Teeth

As with avulsed teeth, intraoral examination for soft tissue lacerations and bone fractures must be undertaken when a patient presents with a fractured tooth. Radiologic examination for fractured alveolar bone is necessary, as well as chest radiographs if the possibility of aspiration of the fractured piece of tooth exists.

If the fracture involves only the enamel of the tooth, the tooth may be sensitive to hot, cold, and touch. Treatment simply involves isolating (cotton rolls) and gently drying the tooth, and covering the exposed surface with calcium hydroxide. The form of calcium hydroxide simplest to use is a two-paste system (e.g., Life or Dycal) in which equal portions are dispensed onto the mixing pad and mixed until a uniform consistency (denoted by even colour) is reached; the mixture is then gently applied to the exposed surface. The paste dries quickly and adheres fairly well, but is not ex-

tremely resistant to wear, and so the patient should be advised to avoid the tooth and to seek final treatment. Analgesics are probably not required.

Fractures involving the dentin, which is yellower than the tooth enamel, are often more painful than are simple enamel fractures, as the dentin has tubules which communicate with the pulp. Treatment, however, is the same as for simple enamel fractures: that is, cover the exposed surface with calcium hydroxide. Should the fracture be close to involving the pulp, which will show through as a pinkish area, be gentle, as the involved area may be extremely sensitive. Mild analgesics may be necessary.

When the fracture involves the pulp, which is the blood and nerve supply of the tooth, there is usually associated bleeding. The prognosis for the tooth is now questionable. Again, isolate the tooth, try to control the hemorrhage by gently wiping or dabbing with cotton pellets, and apply a protective coating of calcium hydroxide. This application may not be possible in the presence of hemorrhage. In this case, a zinc oxide eugenol product such as IRM (Intermediate Restorative Material) may be applied to the involved tooth when it has been dried. The product should be worked in around the adjacent teeth to enhance retention. Be conservative, as too much material may dislodge more readily. This mixture will not only protect the tooth, but will also exert an anodyne effect. IRM may also be used for greater protection of a fracture involving dentin. The use of cotton rolls to separate the teeth is advisable, and analgesics should be prescribed. Referral to a dentist should be immediate.

Fractures below the gingival margin, or gumline, are more complicated. Isolate the involved area, and refer to a dentist immediately, if possible. Transport the fractured portion in saline solution or milk. If no dentist is available, irrigate the socket, gently wash the fractured portion, reimplant, position and stabilize with a splint. As with avulsions, time is of the essence. Antibiotics and analgesics should be prescribed.

Incomplete fractures above the gumline should be isolated, irrigated and dried, and then stabilized with IRM. Incomplete fractures below the gumline are best stabilized with a splint. Prescribe antibiotics and anal-

gesics, and refer to a dentist immediately.

Fractures of primary teeth that do not involve the pulp are treated in the same fashion. Fractured primary teeth will likely be extracted if the pulp is involved. In this instance, therefore, patients should be treated by isolation of the fractured teeth and analgesics as deemed fit, and they should be referred to a dentist.

Post-Operative Bleeding

In most cases, bleeding after an extraction can be controlled by pressure, either by a folded 2" × 2" gauze or, as an alternative, a teabag dampened with cold water. If the patient has tried this without success, the surgical site should be irrigated and packed with a hemostatic agent such as absorbable oxidized regenerated cellulose (Johnson & Johnson's Surgicel), or an absorbable gelatin sponge (Upjohn's Gelfoam). If the edges of the wound can be closely apposed, the area should be anesthetized (with 2% lidocaine with 1:100,000 epinephrine) and sutured. If bleeding is not arrested, the patient should be investigated for systemic causes and treated as necessary. Once bleeding is controlled, the patient should be advised to take several precautions: no smoking, no alcohol, no strenuous exercise, no liquid by a straw, and no rinsing for a day. Any of these might dislodge the clot. In addition, the patient should be advised not to brush within one tooth adjacent to the site for a few days. Oozing may persist for a day or two and is normal. Proper diet and food intake must be maintained, but care must be taken to avoid the site.

Post-Operative Pain

Pain resulting from dental extractions may range from mild to severe, depending on the difficulty of the extraction. Most post-operative pain should be resolved within two days. Prior to this, analgesics should be prescribed at the physician's discretion. In the case of pain in the extraction site of longer than two days' duration, the physician should suspect fibrinolytic alveolitis (dry socket). Usually, there is no infection, and so antibiotics are unnecessary. Treatment consists of gently irrigating the site to remove any food particles or loose blood clots, and packing with a topi-

cal analgesic. A one-quarter-inch gauze soaked in eugenol, replaced daily² and removed after cessation of symptoms, or an absorbable agent such as Alvogyl (Septodont) would be appropriate. Relief is often immediate, and so systemic analgesics are usually not required.

Dentures

Ill-fitting dentures are a constant source of irritation to the edentulous patient. There is little a physician will be able to do to the denture itself. The dentures should be removed and an intraoral examination undertaken for ulcerations, swellings, or other signs of pathology. If the physician finds evidence suggestive of a neoplasm, investigation and biopsy, if necessary, or referral to an oral surgeon or other specialist is indicated. If the problem appears to be isolated to the fit of the denture, the patient should be advised to remove the denture and to seek dental treatment. In the interim, warm salt-water rinses and/or a soft liner, available at most drugstores, may help to alleviate the symptoms if the patient insists on wearing the denture(s).

Dental Caries

Patients with cariously involved or decayed teeth will usually present with sensitivity to hot, cold, sweets or other foods. If the tooth does not appear to be abscessed—in which case the pain is more severe and constant, and there may be associated swelling—remove by irrigation any food particles that may be in the carious area and dry the tooth. Fill the decayed area with a firm mixture of zinc-oxide eugenol (IRM) or a similar pre-mixed product such as Cimpat (Septodont). Analgesia by nerve block or infiltration may be required before treatment. As stated earlier, the IRM has an anodyne effect. Analgesics may be prescribed at the physician's discretion.

Periodontal Problems

Diseases of the periodontium, the gingiva or gums, and other supporting structures, range from gingivitis to periodontitis and periodontal abscesses. For the most part, the source of the problem is poor oral hygiene and subsequent accumulation of plaque and calculus or tartar. Patients with "sore gums" will present with anything from inflamed erythematous

gingiva to ulcerations, exudate or abscesses. Depending on the severity of the condition, the patient should be advised, if possible, to brush gently in order to help remove the irritants. Warm saline or salt-water rinses or rinses with a commercial product such as sodium peroxyborate monohydrate (Amosan) may prove beneficial. If there are obvious signs of infection, antibiotics should be prescribed, and analgesics should also be given as necessary.

Pain in the region of an unerupted or partially erupted wisdom tooth is similar to periodontal pain in its causative agent. The patient may present with simple inflammation in the area, or infection and swelling to the point of limiting jaw opening. The noxious agent(s) in this situation is/are usually plaque and/or food particles lodged under the free tissue surrounding the tooth. Treatment consists of irrigation, with antibiotics and analgesics as deemed necessary.

Analgesics

For mild to moderate dental pain, acetylsalicylic acid (ASA) should be considered the drug of first choice, or acetaminophen when ASA is contraindicated. NSAIDs (ibuprofen) may also be considered for mild to moderate dental and post-surgical pain. It has been demonstrated that ibuprofen has a more potent analgesic effect than ASA, as well as greater efficacy without notable increases in adverse effects. NSAIDs are contraindicated, however, in ASA-sensitive patients. For moderately severe pain, the usual dental analgesic is a combination of codeine phosphate and ASA or acetaminophen (AC & C 30 mg). For severe pain, stronger narcotics such as meperidine (Demerol) may be required. This information is intended only as a guideline, and the physician's judgement and preferences should be employed. Normal dosages and precautions are to be followed.³

Allergy to Local Anesthetic

Should the physician choose to use a local anesthetic on a patient with a history of allergic reaction, he/she must first try to determine, through the patient's history, the specific agent used, and whether the reaction was toxic or allergic. Often patients are unclear about the type of reaction they had and

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PRESCRIBING INFORMATION
THERAPEUTIC CLASSIFICATION:
Pituitary gonadotropin inhibitor.

CLINICAL PHARMACOLOGY:

CYCLOMEN suppresses the pituitary-ovarian axis by inhibiting the output of gonadotropins from the pituitary gland. It has mild androgenic activity. Studies have established that the drug is neither estrogenic nor progestational.

Recent evidence suggests a direct inhibitory effect at gonadal sites and a binding of CYCLOMEN to receptors of gonadal steroids at target organs.

Generally the pituitary-suppressive action of CYCLOMEN is reversible. Ovulation and cyclic bleeding usually return within 60 to 90 days after CYCLOMEN therapy is discontinued.

INDICATIONS AND CLINICAL USE

ENDOMETRIOSIS: Cyclomen is indicated for the treatment of endometriosis characterized by dysmenorrhea, pelvic pain, infertility, induration of the cul-de-sac, or dyspareunia.

Cyclomen is not indicated in those patients where surgery alone is considered the treatment of choice.

FIBROCYSTIC BREAST DISEASE:

Cyclomen is indicated for the symptomatic relief of pain and tenderness associated with fibrocystic disease of the breast. Only those patients should be selected for treatment, who are unresponsive to, or intolerant of, other therapeutic measures, or in whom such measures are otherwise inadvisable.

CONTRAINDICATIONS: CYCLOMEN should not be administered in these conditions:

1. Undiagnosed abnormal genital bleeding.
2. Markedly impaired hepatic, renal or cardiac function.
3. Pregnancy. 4. Breast feeding. 5. Breast cancer or suspicion thereof.

PRECAUTIONS: Because CYCLOMEN may cause some degree of fluid retention, conditions that might be influenced by this factor, such as epilepsy, migraine, or cardiac or renal dysfunction, require careful observation.

ADVERSE REACTIONS: The following androgenic effects have occurred in patients receiving CYCLOMEN: acne, edema, mild hirsutism, decrease in breast size, deepening of the voice, oiliness of the skin or hair, weight gain, and rarely, clitoral hypertrophy.

Also hypoestrogenic manifestations such as flushing, sweating, vaginitis including itching, dryness, burning and vaginal bleeding, nervousness, and emotional instability have been reported.

Hepatic dysfunction, as evidenced by elevated serum enzymes and/or jaundice, has been reported in patients receiving a daily dosage of CYCLOMEN of 400 mg or more. It is recommended that patients receiving CYCLOMEN be monitored for hepatic dysfunction by laboratory tests and clinical observation. Prolongation of prothrombin time in patients stabilized on warfarin has also been reported. Alterations in lipids have also been observed.

Although the following reactions have also been reported a causal relationship to the administration of CYCLOMEN has neither been confirmed nor refuted:
allergic: skin rashes, and rarely, nasal congestion.

CNS effects: dizziness, headache, sleep disorders, fatigue, tremor, and rarely, paresthesia in extremities, visual disturbances, anxiety, depression, changes in appetite and chills.

gastrointestinal: gastroenteritis, and rarely, nausea, vomiting, constipation.

musculoskeletal: muscle cramps or spasms, joint lock-up, joint swelling, and pain in back, neck or legs.

genitourinary: rarely, hematuria.

other: abnormal glucose tolerance test and increased insulin requirements in diabetic patients, loss of hair, changes in libido, elevation in blood pressure, and rarely, pelvic pain.

DOSAGE AND ADMINISTRATION:

Therapy should begin during menstruation. Otherwise, appropriate tests should be performed to ensure that the patient is not pregnant while on CYCLOMEN therapy. A non-hormonal method of contraception is recommended.

Endometriosis: In moderate to severe disease, or in patients infertile due to endometriosis, a starting dose of 800 mg given in two divided doses is recommended. For mild cases, an initial daily dose of 200 to 400 mg given in two divided doses is recommended and may be adjusted depending on patient response.

It is essential that therapy continue uninterrupted for 3 to 6 months but may be extended to 9 months if necessary. After termination of therapy, if symptoms recur, treatment can be reinstated.

Fibrocystic Breast Disease: The total daily dosage of CYCLOMEN for fibrocystic breast disease ranges from 100 mg to 400 mg given in two divided doses depending upon patient response.

In most cases, breast pain and tenderness are significantly relieved by the first month and eliminated in 2 to 3 months. Usually elimination of nodularity requires 4 to 6 months of uninterrupted therapy. Irregular menstrual patterns may occur.

Clinical studies have demonstrated that up to 50% of patients may show evidence of recurrence of symptoms within one year. In this event, treatment may be reinstated.

HOW SUPPLIED: Each capsule contains: danazol 50 mg (orange and white), 100 mg (yellow), or 200 mg (orange) in bottles of 100.

Product Monograph available on request.

References:

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the anesthetic used. When there is an unconfirmed allergy, either to an anesthetic or to a vasoconstrictor, but the allergenic agent has not been identified, an amide-type anesthetic without epinephrine should be used unless, of course, hemostasis is required. Three per cent mepivacaine or four per cent prilocaine is recommended for patients who are allergic to the vasoconstrictor or for those who are medically compromised. Should the patient have a definite positive history of anesthetic allergy, local anesthetic should be avoided until further consultation has been held with an anesthetist or allergist.¹

From the foregoing discussion it can be seen that most emergency dental treatment that a physician may provide is of a simple nature. The materials and techniques required are few in number. A simple dental emergency kit could consist of the following: calcium hydroxide, a zinc-oxide eugenol compound, monofilament nylon fishing line, and cyanoacrylate. These products should be readily available from any dental supply house, except, of course, for the fishing line. The physician should follow and be aware of all product and manufacturer's recommendations for use of these products. It would be advisable to practise with the products before having to use them and, if possible, to seek assistance and recommendations from a local dentist on their use. Finally, in all instances, it is important to advise the patient that the treatment is only of a temporary nature, and that dental treatment must be sought as soon as possible. ●

Acknowledgements

I extend my thanks to Dr. G. Jevon and Dr. M. Quinlan, family physicians, Indian Head, for their conversations about the content of this article.

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