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Walk-in Emergencies in Dentistry

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Abstract

Introduction: Most dentistry is practiced in small private practices, but also in large Institutional clinics. Treatment is usually by appointment, yet often patients present unexpectedly, frequently distressed, complaining and claiming problems arising from their teeth**.** Suffering derived from oro-dental diseases manifests in many different ways.

Aim: This appraisal groups common dentally related emergencies into six fundamental categories: Pain, Infection, Trauma, Hemorrhage, Allergy, Oncology, and assists with urgent decision-taking for therapy. Most dental treatment is elective and any reaction to dental procedures are usually constrained, controlled or prevented. Each category reviews approaches and in principle determines what policies of practice need to be implemented. A precis of serious emergencies that may precipitate with patients while in a dental operatory is indicated.

Conclusion: This grouping of walk-in- emergencies guides clinicians to quickly decide on treatment, and which presentation demands immediate attention. The need for follow-up management and prophylaxis is stressed.

Keywords: bleeding; emergency; pain; infection; trauma; allergy; hemorrhage; neoplasia

Introduction

The most common disease affecting Mankind is tooth decay. One perplexing but major challenge derives from the fact that incipient caries and gum disease are painless. Frequently dental care is overlooked for years, if not decades, until a tooth ache or Oro-dental infection precipitates a crisis. Whether caries arise from ignorance, poor diet or neglect of oral hygiene, is irrelevant when pain or spreading infection finally afflicts a person. The suffering patient will seek out urgent specialist dental care. Most dentistry is practiced in small private practices by pre-arranged appointments, but also in large Institutional clinics. Treatment by appointment allows for maximizing effectiveness of resources, labor, skill and facility. Yet often patients present unexpectedly, frequently distressed, complaining and claiming agony from problems arising from their teeth**.** Most of these presentations warrant and demand immediate help to relieve the patient's suffering.

Pathology and/or aberrations of human metabolism may precipitate when patients are physically in a dental clinic. This includes coronary infarcts, strokes, loss of consciousness as syncope (vaso-vagal attacks), epileptic fits, serious side effects of hypo- and hyper-glycemia, and other pathological biomedical signs and symptoms. All these can and do occur very rarely in dental clinics, and demand specialized skills for recognition, and diagnosis with immediate referral and management of a serious medical nature. These important emergencies are specifically excluded from this appraisal. But serious suffering derived from oro-dental diseases persists, presenting as an emergency during practice and the dentist as a clinician has to make an urgent judgement call, as to what kind of treatment must be instituted when a patient unexpectedly arrives as an emergency.

Aim

This appraisal groups common dentally related emergencies into six fundamental categories: Pain, Infection, Trauma, Hemorrhage, Allergy and Oncology, to assist clinicians with urgent decision-taking for therapy for walk-in dental emergencies. The need for follow-up management and prophylaxis is stressed.

Presenting Dental Emergencies

Pain

Pulpitis Toothache: Pain from pulpitis, is among the most common presenting dental emergencies demanding immediate attention for relief. Pain is a

subjective feeling of discomfort with great distress and suffering. Pain arises from stimulation of pain fibers that produces stimulating agony. It may be easily located (localized homotopic pain) to a specific offending tooth or locus, or it may be referred (generalized heterotopic pain) as encountered with many toothaches or neuralgia. Odontoblastic processes and small pain fibers embedded in extracellular fluid in dentine, act as noci-receptors. The "Hydrodynamic principle" explains how and why stimulation of dentine and not enamel produces pain. The tissues surrounding the tooth, like the periodontal membrane, alveolar-bone and mucosae, all have proprioceptor, pressure, temperature and pain receptors. But the tooth pulp has only pain receptors in its matrix and consequently any form of stimulus that is applied results in pain. Pain serves as a protective mechanism insofar as it induces the sufferer to remove or withdraw from the causative source. Pulpitic toothache is described as a persistent sharp deeply intense sustained pain, often throbbing and aggravated with postural change. It may be homo- or heterotopic. Tooth-decay, before it physically invades the tooth-pulp, will induce pulpitis on the affected tooth. Pathophysiological reactions produce extra-cellular exudates and a concomitant invasion of leukocytes into the pulp, followed by a biochemical cascade of events to produce inflammation and increased pressure on the pulpal-pain receptors. This occurs within the limited confines of a calcified chamber (encased by rigid calcified dentine), and because the pulp has numerous pain receptors, with the local change in osmotic pressure and fluid volume, tooth ache obtains, and the person suffers. The pain from pulpitis can be so severe, it is not unknown that people will attempt suicide to gain relief. Opening the pulp chamber releases the pressure and provides immediate relief. The pulpitis may be reversible with successful removal of offending decay and restorative procedures. If the pain persists and the pulp becomes necrosed and the pain fibers die-off, the tooth is termed as "non-vital" as opposed to healthy "vital." Non-vital teeth do not produce pulpitic pain. The pulp infection usually tracks towards the root apex and may or may not be localized there. Pulp-extirpation followed by successful root treatments will provide immediate relief. Unfortunately, most offending teeth with pulpitis are extracted in an emergency [1].

Cervical sensitivity (CS)

Pulpitic pain is different from another cause of dental pain, cervical sensitivity. (CS) CS-pain is induced from various chemical and physical stimuli influencing exposed dentine at cervical margins. CS-pain is usually intense, lancinating and sharp, often not localized and is short lived. CS-pain manifests only on vital teeth, often with gingival-marginal recession. Patients who eat an acidic diet, like those with large amounts of fruit and sugars, will experience acute bouts of pain, and rush off to their dentists in fear and claiming an emergency. Contrary to common belief, this CS-pain is not an emergency, and is easily managed. CS-pain may require repeat desensitizing with obtunding solutions like Sodium-fluoride, Potassium nitrate, Strontium salts among others. Rarely CS-pain may demand periodontal gingival coronal repositioning of marginal gingiva to cover exposed cervical dentine.

Infection

The mouth becomes infected with microbes at birth and a resident evolving oral ecosystem persists in it until death. With or without teeth, the mouth maintains oral microflora in health as commensals. With age and pathological changes, disruption of the oral ecosystem occurs manifesting as oral infections like candidiasis, ulcero-membranous gingivitis, or cellulitis. Dentate mouths develop various oral biofilms: without oral hygiene, initial biofilms change in character from mainly aerobic, gram positive, non-motile, exotoxin producing ecosystems to anaerobic, gram-negative, motile, endotoxin producing climax ecosystems. Both dental caries and gum diseases (gingivitis and periodontitis) are caused by resident oral microbes. Experimental gnotobiotic animals never develop tooth-decay or gum disease. Stagnant oral biofilm is the cause of tooth-decay and progressive or persistent gum diseases. Biofilm acts as a fertile dynamic, ionic, acidic exchange gradient for trace elements, ions and anions, and organic molecules like enzymes and toxins Consequently, foci of decalcification develop on teeth with subsequent initiation of cavitation and progressive caries. Localized marginal gingivitis develops adjacent to stagnant biofilm, and if immunity is lowered, the development of periodontitis from gingivitis takes place. Both caries and gum disease are infections. Low grade infection will be localized by fibrotic reaction and abscess formation, which is essentially a purulent accumulation within a containing fibrous membrane. The acute manifestation of caries as pulpitis is described above, but for the purpose of this article,

stress is laid on the development of **spreading infection as a cellulitis**, that may develop from a periapical granuloma, or a periodontal abscess. Besides the local signs of infection, the general reaction and the clinical signs of infection will be swelling with edema. pain, pyrexia, sweating, increased heart rate, (tachycardia) and a malaise. This demands immediate urgent attention as an emergency. "Never let the sun go down on undrained pus," applies, but also, when possible, also it is essential to remove the cause of the infection. Extraction of the offending infected tooth and/or draining with scaling and root plaining of periodontally involved teeth is indicated. A covering course of antibiotics is indicated, and it is often prescribed with concomitant antiseptic oral lavages of disinfecting liquids such as saline, 1-percent hydrogen peroxide, 0.02 percent Chlorhexidine-gluconate, cetyl-pyramidine, in liquid forms. A pre-op specimen for culture and drug sensitivity (C&S) is strongly advised, as antibiotic resistant organisms are becoming more prevalent, and a change to effective antibiotics may be needed [2,3,8,9].

Trauma

Maxillofacial trauma from traffic accidents usually go to a hospital ER, and decisions on extraction or retention is made by the surgeon treating these cases. Fractured jaws from accidents, injurious assaults or brutal fighting, should always be referred to specialist maxilla-facial surgeons. Only in situations where such help is not available, and typically, there are fractures of one condyle and the contra-lateral body of the mandible, the condition can be stabilized if the fractures are positively aligned, by extraction of the teeth in line with the mandibular fracture, fixing the remaining mandible with orthodontic suture wire on the remaining mandibular teeth to the maxillary teeth, and covering the patient with antibiotics for four consecutive days. Follow-up is essential. With advice to survive on liquids and not to imbibe any alcohol, healing will be complete after one month and the wire fixations can be removed.

Luxation, subluxation or fracture

Among the commonest forms of trauma presenting to practicing dentists, is luxation, subluxation or fracture of anterior teeth. This results from boisterous pre-teen behavior, and situations when the subject falls and lands with their teeth first. The lip may be lacerated too. It is essential to stitch the lip back exactly in line with the vermilion border. A subluxated tooth should be repositioned immediately back into the socket, and once stable, it can be root-treated. A fully luxated tooth can be retro-root-treated from the apex and repositioned into the socket. The first contact may be by telephone from a caregiver seeking advice. Replacing the tooth immediately is advised, then transporting the child to the clinic-operatory as quickly as possible. Manipulation should be done with local analgesia. Keeping the luxated tooth in a bath of milk will help sustain the vitality of the residual radicular cells. Temporarily holding the tooth in situ by placing interproximal composite resin splinting, helps stabilize the tooth. If the tooth is rejected but the crown remains intact, using the cut-crown after sealing its pulp, may be placed as a space-maintainer. Placing a bonded autogenous tooth fixed pontic, using acid-etch and composite-resins will hold it in place. (4) A delay of more than one hour time lapse to replace the tooth, places the success of reimplanting the tooth in jeopardy. The replacement can be tried, but the prognosis is always guarded.

Post-operative High-Spot

Another common cause for pain demanding immediate urgent attention is the Post-operative "High-Spot." This happens with conservative treatment after placing a conformative/restorative filling that does not conform to natural occlusion. Most restorative dentistry is done under local analgesia, with the patient in a reclining position. This changes the terminal occlusal position with biting closure, and a high spot can easily be missed when finishing or placing a restoration. The margin of error should be a maximum of 0.1mm or less. Occlusal accommodation to any restoration more than this will not happen and will produce traumatic periodontitis on the affected tooth as a 'High-Spot.' With amalgam restorations, it may show as a shiny facet. Testing with an occlusal indicator of colored paper or soft wax, will show the exact location of the high spot. This is to be regarded as an emergency and reduction and removal of the offending area will provide immediate relief. This should be done without any local analgesia and the patient sitting upright in the operator-chair.

The cracked tooth

On occasion a patient may crack a tooth when eating by biting on an unyielding morsel like a small stone, hard pip or bone. A **localized coronal fracture** will be

felt by the sufferer, detected and recognized immediately. But a **root-fracture** may become obscure with confounding symptoms. Most patients will present within a day with a localized painful periodontitis complaining of sensitivity during mastication. Vitality tests may be confusing, but careful examination and gentle pressure on the offending tooth will induce the pain. Root fractures occur often on multirooted teeth like upper first premolars, and molars. Exodontics often follows, but sometimes only the fractured root can be removed and the remaining part root treated and restored.

Dislodged Crown

One perceived 'emergency' by patients is when a crown becomes dislodged, and because they can't present quickly to the dentist's operator, they don't know what to do. The 'emergency' is usually reported by telephone. A simple temporary solution, which will provide at least a few days, if not a week's respite, for the patient to make an appointment to recement the crown. is to chew some sugarless chewing gum, scrape out the residual cement from the crown, and use a small amount of the softened chewing gum to replace the crown [7].

Hemorrhage

Bleeding after trauma demands immediate attention to be stopped. This most frequently happens after treatment, and/or in patients who may be taking daily anticoagulants. Many geriatrics regularly take small doses of aspirin to inhibit blood clotting. It is most advisable to communicate with the patient's physician and procure a safe reduction or cessation of anticoagulants for one week before undertaking any oral surgery. Most cases present with bleeding after extractions, dento-alveolar, or periodontal surgery. Total arrest of bleeding must be accomplished immediately after surgical therapy. A slight ooze should be arrested totally before placing packs over wounds. Assumption that an ooze will coagulate after suturing or under a periodontal pack is fallacious. Routine post-operative telephone contact with patients within 24 hours after the procedure is essential. This post-op communication alleviates anxiety and stress, checks on compliance, reassures the patient, acts a psychological salve and ensures that if there are any mishaps, they can be attended to expeditiously. This will ensure no mishaps are unattended to, and should the patients report a restart of bleeding, the dentist can immediately recall them to the clinic, and stop the bleeding. Closely placed sutures and firm pressure usually ensures arrest of bleeds [5].

Allergy

Before embarking on any dental treatment, a full medical history from patients is mandatory. Contact allergies are common to substances like rubber or iodine, both of which may be in use in a dental operatory. Gloves, rubber suction-tubing and rubber-dam all may be made of rubber and induce contact allergies. Iodine may be used as a disinfectant. An allergic reaction will immediately become red, show swelling in the affected area and may form a vesicle. Removal of the offending article (usually rubber) and using some antihistamine lotion or corticosteroid cream on the affected area, will limit or stop the reaction. Avoidance of the allergenic material is essential. Some practitioners use pre-op medication, and it is advisable to check for allergies before the pro-op drug is prescribed. If an antibiotic is to be used, allergic patients often know if they are allergic. Allergy to penicillin must be checked and alternatives, like macrolides, can be used when necessary. Having a few Epi-pen kits on hand is well advised as a safety precaution.

Oncology

Cancers do not always cause pain when they start. On the contrary, once a patient feels pain, or has some form of altered function (like speech changes, or a protruded tongue deviation), a neoplastic lesion may be well established. Should a patient present with an abnormal lump or swelling anywhere on the head, face or neck, the dental health care worker should examine it carefully, visually and with palpation. Any hard, firm or attached lumps, tumors or swellings demand immediate attention and must be referred for biopsy, diagnosis and treatment [6].

Concluding remarks

Most dental treatment is elective and any reaction to dental procedures is usually constrained, controlled or prevented. Real emergencies demand rapid, accurate and appropriate treatment advice and/or referral. Each category summarizes approaches and in principle determines what policies of practice need to be implemented. Removing or treating the cause for an emergency is essential, and the whole panoply of established dentistry treatment must be made available

for the patient's benefit. Follow up for all patients is essential and due diligence, care and advice subsequent to the emergency ensures successful professional dental treatment.

Conclusion

This grouping of emergencies as Pain, Infection, Trauma, Hemorrhage, Allergy and Oncology, guides clinicians to quickly decide on treatment, and which presentation demands immediate attention. The need for follow-up management is stressed.

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