CHAPTER 20

DENTAL CONDITIONS

TOOTH AVULSION

One of the commonest sequelae of facial trauma is tooth avulsion, exfoliation or exarticulation. It has a prevalence rate of 0-16% in permanent dentition.

SALIENT FEATURES

- History of fall, sports injury, assault or accident. Central incisors and developing teeth are more frequently avulsed.
- Patient presents with bleeding socket, clot in the socket and a raw wound. It is psychologically very upsetting for the patient.

Treatment

Prehospital care

Do not touch the root. Handle the tooth by the crown only. Attempt re-implantation in the field. If unable to reimplant, use one of the following carrier media (in order of preference):

- Propolis: Potent antimicrobial, antioxidant anti-inflammatory agent. It is a better transport medium than HBSS and milk.
- Hanks solution: This pH-preserving fluid is best used with a trauma-reducing suspension apparatus.
- Milk: Shown to maintain vitality of periodontal ligament cells for 3 hours, milk is relatively bacteria-free with pH and osmolarity compatible with vital cells.
- Saline: Saline is isotonic and sterile.
- Coconut water: It is rich in amino acids, vitamins, minerals which help in nourishing cells and maintaining viability.
- Saliva: Saliva keeps the tooth moist; however, it is not ideal because of incompatible osmolarity, pH, and presence of bacteria.
- Contact lens solution
- Water: This is the least desirable transport medium because it results in hypotonic rapid cell lysis.

Emergency department care

Tooth preparation: Handle tooth by the crown and rinse with normal saline.

- If extraoral time is less than 20 minutes, gently rinse off the root and reimplant as soon as possible. If the pulp is open, use a bathing solution (doxycycline 1 mg in 20 cc isotonic sodium chloride solution) for 5 minutes to inhibit the amount of pathogens reaching the pulp lumen and enhance vascularization. Consult a dentist prior to use.
- If extraoral time is longer, 60 minutes, soak the tooth in citric acid and fluoride to make the root as resistant to resorption as possible. Consult a dentist.

Socket preparation

- Leave the socket alone as much as possible.
- If extraoral time is 20-80 minutes, soak in Hanks solution for 30 minutes before attempting reimplantation.
- Perform light aspiration, if a blood clot remains.
- Gently irrigate for foreign bodies

Tooth stabilization: Splint the tooth with adjacent teeth with soft wire for 2-3 weeks.

Provide adequate pain management and tetanus vaccination; ensure follow-up care.

Consult a dental or oral maxillofacial surgeon for splinting and further evaluation.

Pharmacological

1. Cap. Amoxycillin 250-500 mg three times a day for 5 days.
   Or
   Tab. Ciprofloxacin 250-500 mg twice a day for 5 days.
2. Tab. Ibuprofen 400 mg three times a day for 3-5 days.
   Or
   Tab. Nimesulide 100 mg two times a day for relief of pain.
3. Inj. Tetanus toxoid (see section on Tetanus).

References

1. Andreasen JO, Andreasen FM, Balkland LK, Flores MT. In: Traumatic Dental Injuries—A Manual. 1st Edition, Munksgaard 1999; pp. 40.
2. Cohen S, Burns RC. In: Pathways of the Pulp. 5th Edition, Mosby 1991; pp. 479.

TOOTHACHE

The causes of pain associated with tooth and gums are:

1. Pulpul causes: Caries, abrasion, attrition. Erosion: exposed dentine trauma to the tooth: cracked/fractured tooth (Table 20.1).
2. Periodontal causes
3. Non-dental causes: Maxillary sinusitis, trigeminal neuralgia, and psychologic disorders

History and examination

When investigating acute dental pain, the history should focus on the pain's location, type, frequency and duration, onset, exacerbation and remission (e.g. the response to heat or cold), severity and area of radiation.

For specific management, refer to a dentist.

Treatment

Treatment of pain mainly comprises of recognition of an aetiology and removal of the same.

Pharmacological

Antibiotics should only be given to those who show symptoms of dental infection like malaise, fever, lymph node involvement, suppressed immune system, cellulitis, rapid onset of severe infection. It should not be given for cases of inflammation.

1. Cap. Amoxycillin 250-500 mg 3 times a day for 5 days.
   Or
   Tab. Ciprofloxacin 250-500 mg 2 times a day for 5 days.
2. Tab. Ibuprofen 400 mg 3 times a day for 3-5 days.
   Or
   Tab. Nimesulide 100 mg two times a day for 3-5 days.

Table 20.1. Pulpul pain, its causes and treatment

Condition	Type of pain	Causes	Treatment
Reversible pulpitis	Sharp momentary pain by hot, cold or sweet, dissipates with removal of stimulus	Caries, high point in filling, galvanic shock from dis-similar metal fillings	Remove aetiology, relieve high point, restoration done with sedative dressing or permanent restoration
Irreversible pulpitis	Continuous/spontaneous pain. Nocturnal pain on lying down. Abnormally responsive to heat or cold	Caries Fractured tooth	Root canal treatment (RCT)
Dentine hypersensitivity	Arises from exposed dentine on exposure to thermal or tactile stimulus	Attrition/Abrasion Fractured tooth	Removal of aetiology Treatment of exposed dentine with fluoride containing toothpaste, varnish
Apical periodontitis (inflammation of periodontium)	Pain and tenderness of the tooth. Affected tooth can be precisely localized.	Extension of pulpular infection Occlusal trauma Idiopathic	Vital tooth: RCT Non-vital tooth: RCT

Condition	Type of pain	Causes	Treatment
Cracked tooth syndrome	Sharp pain on biting or release of biting pressure	May show large restoration or high point	Vital tooth: symptomatic treatment Irreversible pulpitis RCT

(See also Antibiotic Prophylaxis in Dental Procedures)

Periodontal pain

- Assess gingival and bone health
- Thorough subgingival scaling
- Debridement of pocket

Patient education

- Maintenance of oral hygiene (see section on Good Oral Hygeine).
- Importance of tooth preservation should be explained.
- Pit and fissure sealing in paediatric patient.
- Not to bite anything hard from anterior teeth during fixation period.

References

1. Cohen S, Burns RC. In: Pathways of the Pulp. 5th Edition, Mosby 1991; pp. 27-28.
2. Grossman LI, Seymour O, Carlos DR. In: Endodontic Practice. 2nd Indian Reprint, Lea and Febiger 1991; pp. 26.

DENTAL ABSCESS

Patient presents with pain and swelling. The most common types of dental abscesses are:

I. Periapical abscess
II. Lateral periodontal abscess.

Difference between periapical and periodontal abscess:

Periapical abscess	Periodontal abscess
Non-vital	Vital
Origin-pulp	Periodontal
Bone loss at periapical region	Bone loss
Lesion is at the apex	Laterally placed
Tender on vertical percussion	Horizontal percussion
No pocket	Infrabony pocket

I. PERIAPICAL ABSCESS

It is a localized collection of pus in the alveolar bone at the root apex following pulp death with extension of infection through apical foramen into periapical tissues.

SALIENT FEATURES

- Severe throbbing pain, disturbed sleep, tooth is tender to touch, is extruded, mobile and may be associated with localized or diffuse swelling.
- The tooth is extruded, mobile and may be associated with localized or diffuse swelling. Radiographic changes may range from PDL widening to periapical radioluscency.

Pharmacological

Give following treatment and refer to a dentist.
To give antibiotics as given below.
Cap. Amoxycillin 250-500 mg three times a day for 5 days.
Or
Tab. Ciprofloxacin 250-500 mg two times a day for 5 days.

Surgical

- Drainage of pus by entering the pulp chamber.
- Relieve occlusion
- If fluctuant swelling of soft tissue is present, drain by incision.
- Root canal treatment should be completed when acute symptoms subside.
- Spread of infection should be closely observed to prevent complications like Ludwig's angina.

Patient education

- Maintenance of oral hygiene: warm saline gargles: 3-4 times a day (see also section on Good Oral Hygiene).
- No hot fomentation over the skin.
- Avoid hot/hard food
- Control of diabetes mellitus, if present

References

1. Kruger GO. In: Textbook of Oral and Maxillofacial Surgery. 6th Edition, C.V. Mosby 1984; pp. 196.
2. Grossman II, Seymore O, Carlos DR. In: Endodontic Practice, 2nd Indian Reprint 1991; pp. 20.

II. LATERAL PERIODONTAL ABSCESS

SALIENT FEATURES

- Same as in acute periapical abscess. Often associated with bad taste.
- Tooth is usually mobile and tender on tooth percussion, with associated localized or diffuse swelling of the adjacent periodontium.

- A deep periodontal pocket is usually associated which will extrude pus on probing.
- Vitality test usually positive, if no associated pulpal problem.
- Radiograph shows vertical or horizontal bone loss in relation to the tooth.

Treatment

Pharmacological

1. Cap. Amoxycillin 250-500 mg 3 times a day for 5 days.
2. Tab. Metronidazole 400 mg 3 times a day for 5 days.
   Refer to a dentist for surgical management.

Management

- Debridement of pocket and drainage of pus and irrigation with povidone iodine or chlorhexidine.
- Spread of infection to be closely observed to prevent complications like Ludwig's angina.

Patient education

- Maintenance of oral hygiene (see section on Good Oral Hygiene).
- No hot fomentation over the skin.
- Control of diabetes mellitus, if present.

References

1. Ramford and Ash. Periodontology and Periodontics. In: Modern Therapy and Practice, 1st Indian Edition, AITBS Publishers 1996; pp 126.
2. Mitchell DA, Mitchell L. In: Oxford Handbook of Clinical Dentistry. 2nd Edition, Reprint 1996; pp 266.

DENTAL CARIES

This is a multifactorial infectious disease of hard tissues of teeth characterized by demineralization of inorganic and destruction of organic part of the tooth.

SALIENT FEATURES

- Usually asymptomatic in early stages. Patient presents with tooth sensitivity and toothache when it reaches the dentine or deeper towards the pulp.
- Signs of dental caries are:
  - Incipient (enamel) caries: White spot can be remineralized
  - Further extension leads to pitting and cavitations.
  - Probing will give a catch in the carious lesion.

Treatment

Examine for stage of caries and treat accordingly.

- In non-cavitated lesion and low-risk patient with good oral hygiene practices, no treatment is required. Caries prevention measures should be advised.
- Cavitated lesions require restoration, and require referral to dentist.

Caries risk assessment

- For caries active patient—follow-up visit every 3 months and to check the progression of white spot on the teeth.
- For normal patients—follow-up every 6 months to 1 year to check the development of the white spot/cavitation.

Patient education/caries prevention

Classically three main approaches are possible:

- Tooth strengthening
  - o Topical fluoride application
  - o Pit and fissure sealants
- Reduction in the availability of microbial substrate: physical or chemical means (see also section on Good Oral Hygiene)
  - o Dental prophylaxis
  - o Tooth brushing
  - o Dental flossing
  - o Mouth rinsing: chlorhexidine
  - o Detergent foods
- Diet counselling
  - o Reduced sugar intake
  - o Avoid in between meal/snacking
  - o Sugar substitutes
  - o Sugar free chewing gums

ADULT TYPE PERIODONTITIS

Most common dental disease includes diseases of gum.

SALIENT FEATURES

- Swollen gums, bleeding from gums either spontaneously or on eating something hard, difficulty in chewing food, dull pain in gums, pus discharge from gum on pressing, loosening of teeth, recession of gums.
- There is slowly progressive destruction of periodontium, loss of periodontal attachment and presence of periodontal pocket.
- Diagnosis: Probing to elicit bleeding, measure pocket depth attachment levels and to detect subgingival calculus; testing teeth for mobility and vitality; and radiography.

Treatment

- Initial phase: Aim is to control or eliminate gingivitis and arrest any further progression of periodontal disease by the removal of plaque and other contributory factors.
- Corrective therapy like scaling, root planning, periodontal surgery.
- Maintenance phase: Motivation and guidance to maintain good oral hygiene.

Non-pharmacological

Advise brushing twice daily with super-soft tooth brush for at least 3 mins. Refer to dentist for oral prophylaxis by thorough scaling and root planning (see also section on General Measures for Good Oral Hygiene).

Pharmacological

Local therapy:

- Rinse with 0.2% Chlorhexidine twice daily.
- Gel Metronidazole to be massaged on gums twice daily.
- Gel Chlorhexidine to be massaged on the gums twice daily.

Systemic therapy:

Cap. Tetracycline 250 mg, 4 times a day for 5-7 days

In children with deep pockets:

1. Tab. Ciprofloxacin 500 mg twice daily for 5-7 days
2. Tab Tinidazole 600 mg twice daily for 5-7 days

Re-check the depth of periodontal pockets, if it persists, refer to a periodontist for further management.

References

1. Ramford and Ash. Periodontology and Periodontics. In: Modern Theory and Practice. 1st Indian Edition on AITBS Publishers 1996; pp 166.
2. Carranza. In: Clinical Periodontology, 5th Edition, Saunders, pp 299.

JUVENILE PERIODONTITIS

Common in the age group of 13-25 years, characterized by rapid destruction of periodontal tissues.

SALIENT FEATURES

- Mobility in incisors and molars, spacing in upper incisors, distolabial migration of upper incisors, arc-shaped bone loss extending from distal surface of second premolar to medial surface of second molar.

Treatment

Pharmacological

Cap. Tetracycline 250 mg 4 times a day for 14 days.
Or
Cap. Doxycycline 100 mg once daily for 2-3 weeks
Refer to a periodontist.

Surgical

- Meticulous oral hygiene, conventional scaling, root planning often in conjunction with flap surgery.
- 3 monthly monitoring of subgingival oral flora.

Patient education

- Proper brushing twice daily with super-soft tooth brush (see also section on Good Oral Hygiene).

References

1. Ramford and Ash. Periodontology and Periodontics. In: Modern theory and practice. 1st Indian Edition AITBS Publishers 1996, pp 166.
2. Carranza. In: Clinical Periodontology, 5th Edition, Saunders, pp 299.

INFLAMMATORY GINGIVAL ENLARGEMENTS

The gingival enlargement can be acute which is very painful or they can be chronic which may be painless.

SALIENT FEATURES

- Acute enlargements may be localized or generalized, very painful, deep red in colour, soft friable with shiny surface.
- Chronic type may be localized or generalized, often painless and slowly progressive.

Treatment

Pharmacological

1. Tab. Ciprofloxacin 500 mg 2 times a day for 3-5 days.
2. Tab. Nimesulide 100 mg 2 times a day for 3-5 days.
3. Rinsing with 0.2% Chlorhexidine twice daily.

   Refer to a periodontist for surgical management and drainage of pus.

Patient education

- Proper brushing twice daily with super-soft tooth brush.

References

1. Ramford and Ash. Periodontology and Periodontics. In: Modern Theory and Practice. 1st Indian Edition. AITBS Publishers 1996; pp 145.
2. Shafer, Hine, Levy. In: A textbook of Oral Pathology. 4th Edition, Saunders, pp 782.

GENERAL MEASURES FOR GOOD ORAL HYGIENE

Tooth brushing is extremely important for cleaning teeth, for massage of the surrounding gums and maintaining oral hygiene. Regular brushing keeps the tooth surface free of plaque, which is soft material that gets deposited on the tooth surface and is the cause of dental caries and periodontal problems.

- Select the right quality of tooth brush which should be short, soft and have uniformly trimmed bristles.
- Brush teeth at least twice a day for 2-3 minutes particularly at night before going to sleep and flossing daily.
- Use right technique of tooth-brushing and NEVER use force while brushing.
- Eating healthy food such as fruits, vegetables, gram products (especially whole grain) and dairy products during meals and snacks.
- Avoid eating in between meals, if cannot be avoided rinse mouth or preferably brush teeth.
- Eating food containing only sugar at meal times and limiting the amount. Frequent consumption of foods high in sugar, such as toffees, cookies, cake, sweetened beverages increase the risk for the tooth decay. Avoid frequent consumption of foods that easily adhere to the tooth surface such as dried fruits and candy.
- Rinsing every night with an alcohol free over-the-counter fluoridated mouth rinse.
- No smoking or chewing tobacco.
- Ensure regular dental check-up at 6 monthly intervals and restoration of all active decay as soon as possible.

ANTIBIOTIC PROPHYLAXIS IN DENTAL PROCEDURE

If patient is in the high or moderate risk groups, then antibiotic prophylaxis is recommended for the following dental procedures:

- Dental extractions.
- Periodontal procedures including surgery, scaling and root planing, probing, and recall maintenance.
- Dental implant placement and reimplantation of avulsed teeth.
- Endodontic (root canal) instrumentation or surgery only beyond the apex.
- Subgingival placement of antibiotic fibres or strips.

- Initial placement of orthodontic bands but not brackets.
- Intraligamentary local anaesthetic injections.
- Prophylactic cleaning of teeth or implants where bleeding is anticipated.

Antibiotic prophylaxis is NOT recommended for the following dental procedures:

- o Restorative dentistry (operative and prosthodontic) with or without retraction cord.
- o Local anaesthetic injections (nonintraligamentary).
- o Intracanal endodontic treatment; post-placement and build-up.
- o Placement of rubber dams, postoperative suture removal, taking of oral impressions, and fluoride treatments.
- o Placement of removable prosthodontic or orthodontic appliances and orthodontic appliance adjustment.
- o Taking of oral radiographs.
- o Shedding of primary teeth.

Patients who have taken prophylatic antibiotics routinely in the past NO longer need them include people with:

- Mitral valve prolapse
- Rheumatic heart disease
- Bicuspid valve disease
- Calcified aortic stenosis
- CHD such as septal defects

Preventive antibiotics prior to a dental procedure are advised for patients with:

1. Artificial heart valves
2. A history of infective endocarditis (see section on Bacterial Endocarditis)
3. Certain specific serious congenital heart disease (CHD) including:
   - Unrepaired or incompletely repaired cyanotic heart conditions including those with palliative stunts and conduits.
   - A completely repaired CHD defect with prosthetic material or devices
   - Any repaired CHD with residual defect at the site
4. A cardiac transplant that develops a problem in a heart valve.
   For details, see section on Antibiotic Prophylaxis in Chapter 18.

Reference

1. Antibiotic Prophylaxis Guidelines - Dentistry. American Heart Association, 2007. Journal of ADA April 2007.