

Chapter 10

DENTAL PROBLEMS IN FLYING

In consideration of the over-all health plan for flying personnel, certain dental problems are of importance to the success of the Aerospace Medicine Program (AFM 161-2). The Flight Surgeon should be aware of these factors and should bring these dental matters to the attention of the Base Dental Surgeon for his action. Certain general problems may require action by the Command Dental Surgeon.

The Flight Surgeon is required to have a general knowledge of the dental problems confronting the members of aircrews and should be prepared to administer emergency oral medicine when the situation requires it. This section is oriented toward that need.

It cannot be stressed too firmly that the Flight Surgeon must maintain close liaison with the dentists on his base. The Flight Surgeon should always be informed of his aircrew personnel who are being treated by the dentist, and most important, when medication has been prescribed.

ODONTALGIA

Toothaches are usually associated with one of the following:

- a. Caries.
- b. Tooth crown fractures.
- c. Erosion.
- d. Acute periapical abscess.
- e. Odontogenic infectious processes.
- f. Baro-physical phenomena.

CARIES

For convenience, the crown of a tooth is described in terms of five surfaces: the occlusal or biting surface; the lingual or tongue surface; the facial or cheek surface; the mesial and distal, or those surfaces in contact with

adjacent teeth.* These surfaces vary in their susceptibility to caries but none is immune to attack (see figures 10-1 and 10-2).

Diagnosis

Accurate localization of the offending tooth is not too difficult, and effective palliative treatment can be provided in an emergency. To obviate serious complications, however, it is important that one be cognizant of the possibility of more involved pathology—e.g., acute abscess or its sequelae.

The patient with a toothache resulting from a carious lesion will usually present the following signs and symptoms:

- a. The pain may be intermittent or continuous, but it is always intense.
- b. There is a break in the continuity of the enamel surface. In some cases only an enamel shell may remain.
- c. The enamel and dentine have a deep brownish-black discoloration.
- d. Tapping the tooth with an instrument will usually elicit pain.

If there is further difficulty in determining the involved tooth, thermal tests can be utilized. The principal value to be derived from thermal diagnostic procedures is the observation of variations in response when a normal-appearing tooth is tested along with the suspected offender. For this reason, the clinician should subject an apparently normal tooth to the identical test.

The application of heat and cold to the normal tooth elicits pain, but the response ceases soon after the stimulus is removed. A diseased tooth varies in its reaction to temperature tests. Early inflammatory pulpal changes are present when the reaction to cold persists

* Refer to section on Identification—Dental Records, for detailed description of tooth surfaces.

after application and the tooth responds very little to heat. Advanced inflammatory changes of the pulp are present when the reaction to heat persists after application and the tooth appears to respond very little or not at all to cold.

Procedures:

(1) Isolate the suspected tooth from the saliva with gauze packs.

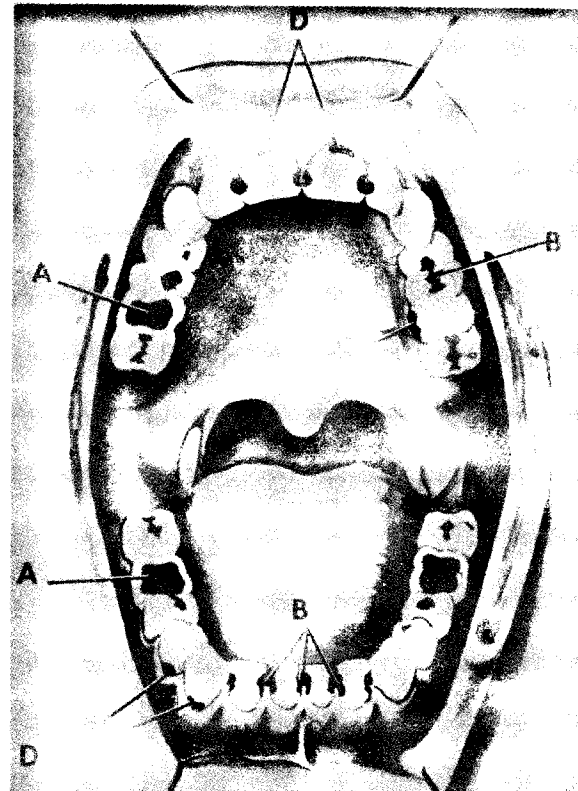
(2) Spray a cotton-tipped applicator with ethyl chloride and place the cold surface on the crown. Ice held in a sponge is equally effective. Note the response and its duration.

(3) Subject the tooth to heat stimulation. Wax or paraffin is softened over a flame and placed on the tooth. If wax is not available, an instrument such as a scalpel handle may be boiled and the tip of this touched against the tooth.

(4) Test an unsuspected tooth as a basis for comparative evaluation.

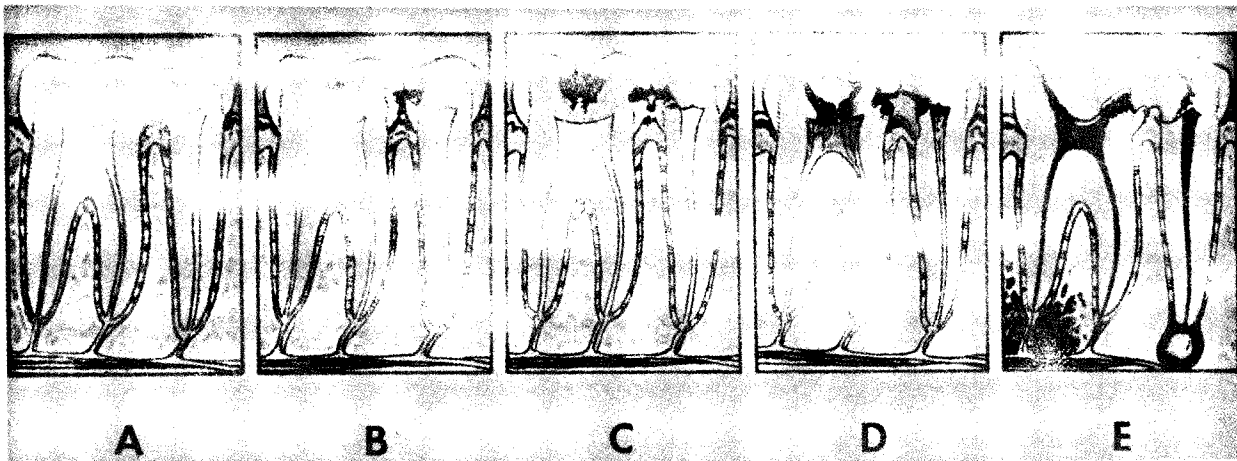
Treatment

After definite localization of the source of pain, a local anesthetic may be employed. This decision rests entirely on the evaluation by the physician.



A. Occlusal cavity. C. Lingual cavity.
B. Interproximal cavity. D. Facial cavity.

Figure 10-1. Dental Caries.



A. These teeth are clinically free of caries although a bacterial plague may exist on the surface of the enamel.
B. Cavitation of the enamel has started. This is difficult to observe, but the lesion is detectable in an x-ray.
C. Caries has invaded the dentin and is approaching the pulp.
D. Early pulpal involvement.
E. The crown of the tooth is destroyed; the pulp is necrotic.

Figure 10-2. Progression of Dental Caries.

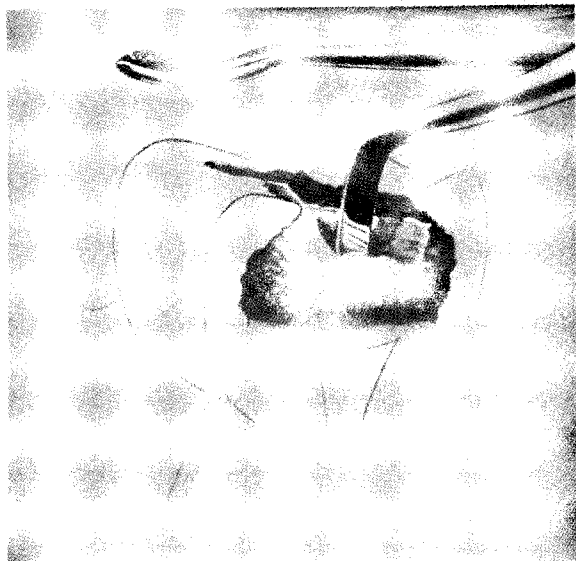


Figure 10-3. Removal of Carious Material.



Figure 10-4. Drying of the Cavity.

a. Remove the soft decayed material with a spoon-shaped instrument (see figure 10-3).

b. Since these large carious lesions frequently approximate the pulp, considerable caution must be exerted to avoid penetrating the pulp chamber. Remove only the soft decayed material within the cavity of the tooth.

c. Irrigate the cavity with warm water until loose debris has been flushed.

d. Isolate the tooth with gauze packs and gently dry the cavity with cotton pledgets (see figure 10-4).

e. Moisten a cotton pledget with eugenol (oil of cloves), remove the excess medicament by blotting, and wipe over the entire inner aspect of the cavity. A thin film of the anodyne is sufficient.

f. If zinc oxide powder is available, a sufficient amount is spatulated into two or three drops of eugenol to form a thick paste. The mixing can be accomplished on a clean, dry surface. The cavity is then filled with the zinc oxide-eugenol ointment (see figure 10-5).

g. Relieve possible interference with opposing teeth by asking the patient to bite several times. Surplus filling material is easily removed and surface contour of the



Figure 10-5. Placement of the Temporary Filling.

restoration established by light pressure with a moist cotton pledget. The pain will disappear in a few minutes and the paste will harden within 2 hours. Caution the patient not to use the treated tooth in masticatory function for the next 24 hours.

h. If zinc oxide powder is not available, the cotton pledget impregnated with the liquid anodyne can be left in the cavity.

i. Instruct the patient that the procedure is temporary and that he must be treated by a dental officer.

TOOTH CROWN FRACTURE

The anterior teeth are particularly susceptible to traumatic injuries which may result in fracture of the crown. The classification and emergency treatment for the bulk of these injuries are summarized as follows:

a. Simple fractures of the crown involving little or no dentin (figure 10-6). *Treatment:* Smooth the rough edges of the tooth.

b. Extensive fracture of the crown which involves considerable dentin (not the pulp) (figure 10-7). *Treatment:*

(1) Wash the tooth with normal saline.

(2) Isolate and dry the tooth.

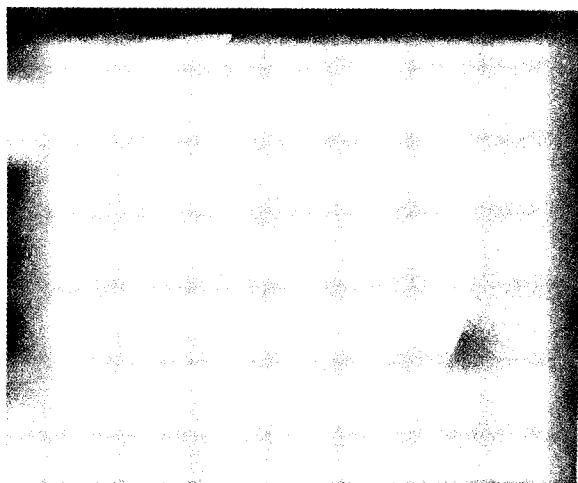


Figure 10-6. Simple Tooth Fracture.

(3) Cover the exposed dentin with a zinc oxide-eugenol ointment, or a thick paste of calcium hydroxide and sterile water.

c. Extensive fractures which involve the dentin and expose the pulp (figure 10-8). *Treatment:*

(1) Isolate and dry the tooth.

(2) Wash with normal saline.

(3) Cover the pulp and dentin with calcium hydroxide paste. Zinc oxide and

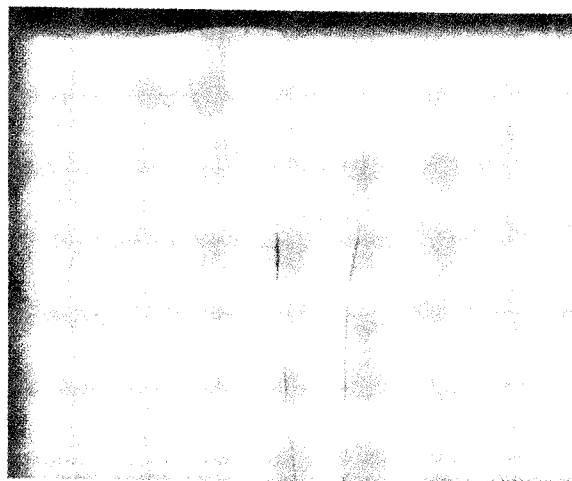


Figure 10-7. Extensive Tooth Fracture.

eugenol may be used if calcium hydroxide is not available.

Prompt definitive dental treatment is essential to the survival of many of these teeth.

Clinical complications in excess of those described above will probably result in the extraction of the tooth if the patient is to obtain relief from pain. Here again the physician's evaluation, the facilities available to him, the feasibility of air-evacuating the patient to the dentist, etc., are factors that cannot be outlined.

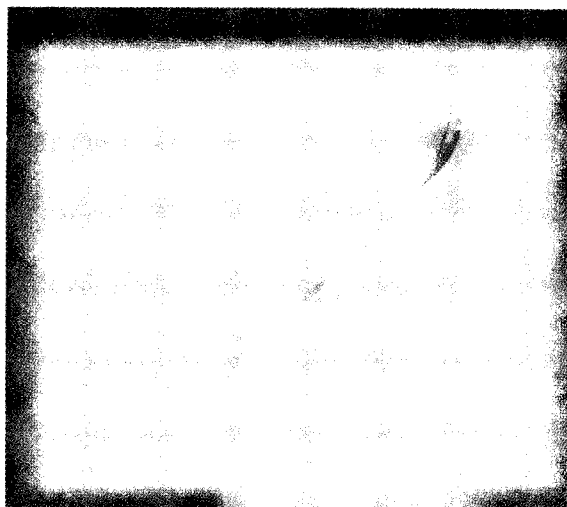


Figure 10-8. Severe Tooth Fracture.

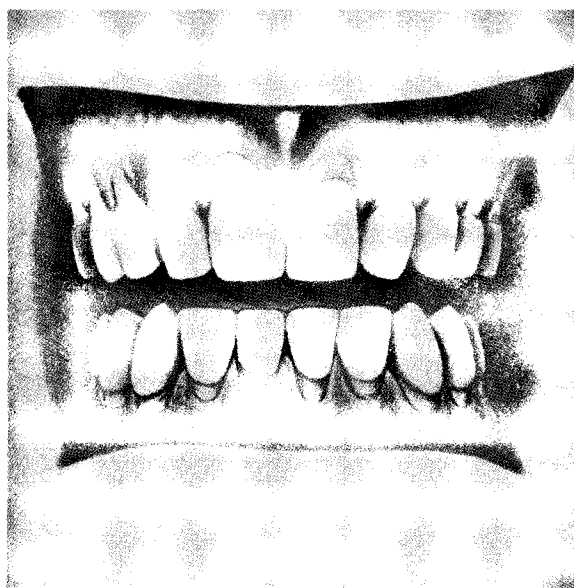


Figure 10-9. Cervical Erosion of the Teeth.

EROSION

Erosion is the progressive loss of enamel by an obscure chemical process without action of bacteria. These lesions usually occur on the facial surfaces of the teeth near the gingival border. Erosion gives rise to pain as a result of exposure of the dentin. Sensitivity increases as more of the dentin is exposed.

The involved surfaces of the tooth will be hard, smooth, and polished in appearance. Extreme pain may be felt in these teeth; they are abnormally sensitive to any kind of irritation. Sweets of any sort as well as thermal changes often initiate a painful episode. Air passing over the eroded surfaces will frequently cause considerable pain (see figure 10-9).

Gingival recession results in an exposure of the surface (cementum) of the root. The treatment of the cemental lesion is the same as that described for erosion.

Diagnosis and Treatment

- a. Isolate the eroded teeth with gauze packs.
- b. Gently tease the suspected surface with a sharp exploring instrument. The patient will feel a brief pain. A light spray of air will

also set off a pain response. These unpleasant yet necessary procedures must be carried out as adjuncts in the proper diagnosis.

c. Local anesthesia is not required.

d. A 2% solution of sodium fluoride or a 33% sodium fluoride paste applied to the eroded surfaces gives relief. Dry the involved tooth surface with a wisp of cotton prior to the application of the drug. The sodium fluoride solution is applied in the following manner:

(1) Place a few drops of the solution in a glass vessel.

(2) Moisten a small pledget of loose cotton with the sodium fluoride solution. Wipe carefully over the dry eroded surface and permit the solution to dry.

e. The sodium fluoride paste may be applied to either the anterior or posterior teeth in the following manner:

(1) Shape the tip of a wooden applicator to a flat edge and dip this in the paste. (A wooden match works equally well.)

(2) Two minutes should be spent briskly



Figure 10-10. Acute Periapical Abscess.

burnishing the moistened wood tip against the dry, eroded surface.

(3) Repeat steps in e(1) and (2).

It may be necessary to repeat these procedures at subsequent visits.

ACUTE PERIAPICAL ABSCESS

This condition results when an infection of the pulp reaches the apex of the tooth and involves the periodontal tissues.

Diagnosis

a. The patient will give a history of repeated episodes of pain that has gradually become more continuous and intense.

b. The accumulating pus causes increased pressure and the tooth will feel elongated to the patient. It will seem to be the first tooth to strike its antagonist when the teeth are brought together.

c. There is severe pain on percussion. This is a most significant sign.

d. A fetid odor may be detected from the breath.

e. Malaise, anorexia, and an elevated temperature are sometimes noted.

f. The regional lymph nodes may be involved.

g. A cellulitis may be evident.

h. Tenderness and erythema are usually characteristic of the gingival tissue around the tooth.

i. Characteristically, an untreated periapical abscess burrows through alveolar bone, and at this stage of progression, is manifest clinically as a bright red elevation of the mucous membrane.

Treatment

The provision of drainage, either spontaneous or induced, usually provides immediate relief from pain. Two methods may be utilized to accomplish adequate drainage:

a. Incise the fluctant area of the soft tissue associated with the acute infection.

b. Establish drainage from the tooth: Stabilize the tooth firmly with the fingers while the soft decay is removed with a spoon-shaped instrument. With a small probe, care-

fully create an opening into the pulp chamber. Digital pressure on the gingiva near the root of the tooth should force an exudation of pus through the chamber opening. Pain will subside immediately (see figures 10-3 and 10-10).

ODONTOGENIC INFECTIOUS PROCESSES

If the spreading odontogenic infectious process produces a cellulitis which tends to become circumscribed and suppurative, a soft tissue abscess is produced. Since the acute periapical abscess is the most frequent entity leading to this process, an outline of the usual pathogenesis of this condition is indicated. The common course of an untreated acute periapical abscess is as follows:

a. Accumulation of pus and invasion of alveolar bone at the apex of tooth.

b. Invasion of marrow spaces and destruction of trabeculae (suppurative osteitis).

c. Destruction of the cortex and displacement of the periosteum by suppurative material (subperiosteal abscess).

d. Rupture of the periosteum with resulting gingival swelling (parulis).

e. Spontaneous drainage by rupture of the parulis.

This chain of events can usually be halted at any of the stages of progression by removal of the etiologic factor. Extraction of the offending tooth is often indicated. If, however, treatment is not given, spontaneous drainage, while affording welcome relief to the patient, does not suffice. The acute process is then converted to a chronic abscess state that is subject to further exacerbation even though the opening of the sinus tract appears well healed and the patient relatively symptom-free.

The spread of the primary periapical abscess is usually in the direction of least resistance. As a general rule, it may be stated that the cortical bone in closest proximity to the abscess site will be the point of breakthrough. Positively identifying the involved tooth by its proximity to the subperiosteal abscess or parulis is an unreliable procedure. Certainly,

a tooth should not be extracted without further diagnostic evidence.

Anatomic considerations play a large part both in determining the path of progression and the possibilities of serious sequelae resulting from further spread of the infective process. The following general statements may be safely made:

(1) Periapical abscess spread is usually toward the lateral aspect of the jaws.

(2) If the primary infection involves the palatal root of an upper tooth, the soft tissue abscess is usually found in the palate. Palatal roots are present in the upper molars and first bicuspid. Abscesses on all other roots in the maxillary dentition tend to burrow through to the facial side.

(3) Abscesses developing on the lingual surface of the mandible at a level producing drainage into the mouth are rare.

(4) Drainage may be manifest other than intra-orally. A periapical abscess may perforate the cortical bone and produce a pathway for drainage that opens onto a skin surface without involving the oral mucosa. The external application of heat promotes this untoward result.

When the spread of a mandibular periapical abscess is directed lingually, the level of bone perforation dictates the course of events. If the breakthrough is above the attachments of the muscles of the mouth, sublingual infection results. If below these attachments, the avenue of spread is through the fascial spaces of the neck. Grave complications such as Ludwig's angina may result.

Treatment

In cases of more advanced progression, the provision of drainage is still of primary import. Antibiotics should be administered and their administration continued for several days subsequent to the remission of symptoms. In soft tissue abscesses, the application of heat is often helpful in localizing the suppuration, but in cases in which the abscess remains within the confines of bone, cold applications to the face are preferable. This is due to the fact that osteomyelitis may

result from the application of heat under these conditions if drainage is not provided.

Emergency treatment centers around the prevention of serious sequelae by the provision of drainage, if indicated, and the maintenance of a high blood level of antibiotics. It is highly probable that the extraction of the offending tooth will be necessary, but unless its identification is positive or evacuation of the patient impossible, the final decision on the removal of teeth should be made by a dentist having access to diagnostic aids such as roentgenographic studies, etc.

BARO-PHYSICAL PHENOMENA

World War II, with its emphasis on air power, created considerable alarm among those concerned with aviation dentistry. Some believed high-altitude flying was associated with a new clinical syndrome that included variations ranging from a localized toothache to a complex head neuralgia. Investigators of that period initiated extensive programs designed to determine the effects of flight on the oral structures. The conclusions of these studies, plus the findings of more recent research, indicate that barodontalgia or "altitude induced toothache" is not a new pathologic entity but is a condition intimately associated with preexisting pathology.

Periodontal disturbances, temporomandibular joint pains, habits of lip-biting, grinding, or clamping of teeth, cheek-sucking, etc., have developed in some fliers as a result of occupational tensions, but since toothache is the most frequent dental complaint associated with flight, and is one which responds favorably to definitive treatment, the remainder of this discussion is limited to this problem.

Determining the origin of pain in these cases is many times a most trying ordeal. If the predisposing factors are of dental origin, they usually represent an acute exacerbation of subclinical symptoms, such as a pulp exposure, pulp necrosis, and acute or chronic pulpitis.

Diagnosis

The diagnostic procedures outlined under "Caries" are again recommended. The varia-

tions in symptoms preclude dogmatic statements, but the following generalities taken from the literature may be helpful:

a. The offending tooth is likely to be one with a recently inserted filling.

b. If pain occurs during ascent, the tooth is usually vital.

c. If pain persists on the ground, periapical involvement is generally considered as the causative factor.

d. If pain occurred during descent, referred pain from barosinusitis should be suspected. Pain is commonly referred to the teeth from a maxillary sinusitis. The patient complains of dull pain in the area of his upper bicusps and molars of either one or both sides. Conditions of barotitis media, pericoronitis, and unerupted or impacted third molars may also refer pain to the dentition.

e. A repeated flight or the use of a single chamber flight is seldom helpful in establishing a diagnosis.

f. The patient experiences the one episode and may not have a recurrence of the pain.

Treatment

a. Prescribe an analgesic.

b. If it has been determined that periapical pathology exists, then follow those procedures outlined in the section thereon. Dental disturbances associated with flight continue to be a major research interest of Air Force dentistry. The physician can assist in the evaluation of these cases by reporting his findings to the Base Dental Surgeon or to the Dental Sciences Department of the School of Aerospace Medicine, Brooks AFB, Texas.

SOFT TISSUE PATHOLOGY

The soft tissues of the oral cavity offer a splendid index of the constitutional state of the patient. Among the many readily identifiable conditions in this easily examined area are blood dyscrasias, dehydration, nutritional deficiency, infectious disorders, and the developmental and local alterations. Many systemic diseases present characteristic oral changes during the prodromal stages,

thus affording an opportunity for early diagnosis and consequent rapid remedial therapy. Conversely, primary oral disease frequently produces systemic disorders that may be of considerable consequence to the patient. Thus, the mouth offers an immediately accessible, truly reliable diagnostic adjunct to the astute clinician in his search for correct diagnosis.

The great bulk of primary oral soft tissue disorders are chronic in nature and intense pain is not usually characteristic. It is not the purpose of this section to cover the entire fields of oral medicine and periodontal disease but rather to present a discussion of those oral disorders which require immediate treatment by the Air Force physician when a dental consultation is not available. Emphasis will be placed on diagnostic criteria, the temporary alleviation of pain by emergency therapy, and the careful management of those oral lesions which, though not of immediate dire consequence, may assume serious proportions if neglected.

ACUTE NECROTIZING ULCERATIVE GINGIVITIS (VINCENT'S INFECTION)

Chief Complaint

Constant gnawing pain and marked gingival sensitivity are usually the outstanding complaints on admission. These subjective symptoms are characteristically accompanied by pronounced gingival hemorrhage, a foul metallic taste and fetid odor in the mouth, general malaise, and anorexia.

Clinical Appearance

Necrosis and ulceration are the principal characteristics of this exceedingly painful inflammatory disease of the gingival tissues. Necrotic lesions commonly appear between the teeth in the interproximal spaces. These crateriform ulcerations covered by a grayish pseudomembrane are generally pathognomonic. Cervical lymphadenitis and elevation of temperature may develop subsequent to the onset of acute oral symptoms. Untreated lesions are destructive with progressive involvement of the gingival tissues and underlying structures.

Etiology

Although it was felt for many years that fusospirochetal organisms were responsible, the precise etiology has not been irrevocably established. It is now considered by many to be an endogenous infection arising as a result of the action of ordinarily harmless surface parasites exposed to an altered environment. It is beyond doubt that general health, diet, fatigue, stress, and oral hygiene are more important as precipitating factors than are proximity, intimacy, and contamination.

Treatment

The primary problem in therapy is the establishment of good oral hygiene. Simple emergency treatment is outlined as follows:

- a. Spray the teeth and gingiva thoroughly with a 1:1 aqueous solution of 3% hydrogen peroxide. Repeat.
- b. Instruct the patient to rinse his mouth at hourly intervals with this solution.
- c. Place the patient on an adequate soft diet and advise a copious fluid intake.

Institution of the above regimen will usually suffice for the management of the typical acute case. As a result of this treatment, which can be considered by no means definitive, the acute form subsides and the chronic phase ensues. Although clinical symptoms are minimal, tissue destruction continues unabated unless further corrective measures are instituted. For this reason, definitive dental treatment must be obtained as rapidly as possible.

Unless the patient develops systemic manifestations as a result of the oral disorder, antibiotic therapy should not be instituted. Antibiotic lozenges should never be employed in the management of this disease. As in other oral disorders, the use of silver nitrate or like caustics is definitely contraindicated.

Remarks

Lesions similar to those of acute necrotizing gingivitis frequently appear in patients suffering from blood dyscrasias. Any case of gingivitis which does not respond reasonably well within 24 hours requires hematologic analysis.

PERIODONTAL ABSCESS

Chief Complaint

A deep, throbbing, well-localized pain and a tenderness of the surrounding tissues are characteristic. The patient frequently complains that the involved tooth seems elevated in its socket (see figure 10-11).

Clinical Appearance

This acute suppurative process occurring in the periodontal tissues alongside the root of a tooth, and involving the alveolar bone, periodontal membrane, and gingival tissues, usually presents the following signs and symptoms:

- a. Redness and swelling of the adjacent gingiva.
- b. Sensitivity of the tooth to percussion.
- c. Mobility of the tooth.
- d. Cervical lymphadenitis.
- e. General malaise and elevation of temperature.

Etiology

This condition results from bacterial invasion of periodontal tissues that have been rendered susceptible as a result of irritation from a foreign body, subgingival calculus, or local trauma.



Figure 10-11. Periodontal Abscess.

Treatment

a. Carefully probe the gingival crevice to determine the presence or absence of a foreign body. Foreign bodies must be removed.

b. Establish drainage from the fluctuant area by means of the probe or with an incision made to parallel the long axis of the tooth and to extend to the periosteum.

c. Spread the tissues and irrigate with warm water to remove remaining pus and debris from the abscess area.

d. Instruct the patient to use a hot saline mouth rinse hourly. With definitive treatment, the prognosis is good.

Remarks

The symptoms of a periodontal abscess closely resemble those of a periapical abscess. Because of variations in prognosis, it is important to differentiate positively between the two. Involvement of the lateral aspect of a tooth root by a single lesion, which can be entered from the gingival crevice, is indicative of a periodontal abscess. The presence of suppurative material in the gingival crevice of the affected tooth also points to this diagnosis.

HERPETIC INFECTION**Chief Complaint**

Intense pain is the most frequent admission symptom when the fully developed herpetic ulcer is present. Itching, burning, and a feeling of tissue tautness are more characteristic in the earlier developmental stages. Pain on mastication and during the ingestion of acid fluids is especially severe.

Clinical Appearance

Oral herpetic lesions usually appear as localized ulcerations, but extensive involvement of the oral mucosa is occasionally seen. The vesicular stage, so characteristic of involvement of the lips and commissures, is seldom seen within the oral cavity. Intra-oral vesicles are quickly ruptured and the herpetic lesion then appears as a small eroded area with a characteristically bright red, flat, or slightly raised border. In later stages, the

lesion becomes covered with an all-white plaquelike mass of epithelial cells, fibrin, and debris.

Generalized herpetic infections produce large areas of fiery red, swollen, and extremely painful oral mucosa. It is in this type that systemic symptoms of toxemia are pronounced.

Etiology

It seems clearly established that the lesions are due to the herpes simplex virus. This virus persists throughout the lifetime of the patient in loci closely approximating the site of primary infection. In an otherwise healthy mouth, a degree of lowered resistance must be present in the oral structures for the virus to produce its pathogenetic pattern. The more frequently observed predisposing factors are emotional stress, the common cold and other upper respiratory infections, gastrointestinal disorders, nutritional deficiencies, food allergies, and traumatic injuries to the oral structures. It is interesting to note that, in females, menstruation and pregnancy often seem to trigger this process.

Treatment

Therapy is primarily palliative in nature. Although there are reports to the contrary, antibiotic therapy does not seem to produce regression of the lesions. Systemic therapy of this type may be indicated in the prevention and control of secondary infection. Palliation is afforded by the following treatment:

- a. Dry the ulcer with a gauze pack.
- b. Apply tincture of benzoin with a cotton-tipped applicator and allow to dry.
- c. Repeat.
- d. Instruct the patient to rinse hourly with a warm saline mouthwash.
- e. Prescribe a soft diet and encourage copious fluid intake.

This treatment, which should be repeated daily, will afford relief from pain and provide a protective covering for the lesion.

Remarks

In the typical case, healing follows an uneventful course of about two weeks. Scar

formation or serious sequelae are exceedingly rare.

The primary infection with herpes simplex virus, usually seen during childhood, produces a much more extensive and serious oral involvement than do the later episodes. Lesions are usually larger and more numerous and, consequently, the pain is greater.

CHRONIC RECURRENT APHTHAE (CANKER SORES)

Chief Complaint

Pain, from the primary lesion or as a result of secondary infection, is the predominant feature.

Clinical Appearance

These lesions—most commonly seen in the buccal mucosa, tongue, and floor of the mouth—are markedly similar to oral herpetic lesions except for the following:

- a. The border of the aphthous ulcer is usually more elevated.
- b. These lesions tend to produce small scars.
- c. Healing is not ordinarily complete in less than 3 weeks.
- d. Aphthae tend to recur in groups, and in some instances, the remissions and exacerbations are so definite as to be relatively predictable by the patient.

Etiology

The etiology is unknown. It was formerly felt that this condition was of herpetic viral origin, but the inability to cultivate a virus from these lesions, along with the reported findings that no intranuclear inclusion bodies were present in biopsy specimens, tends to discount this possibility. It has been reported further that there is no alteration in antibody titer against the herpes simplex virus as a result of an attack of aphthous stomatitis.

Treatment

Antibiotics are of no value in the management of the primary lesions but systemic therapy of this nature is, of course, essential if secondary infection ensues. Emergency

treatment is identical to that outlined for herpetic lesions.

Remarks

Routine therapy for recurrent aphthous stomatitis is by no means clear cut in definition. Repeated vaccination with cowpox vaccine is said to afford relief in about half the cases. When this therapy fails, complete allergy studies should be undertaken and the patient evaluated as to endocrine status. Although many therapeutic trials have been undertaken, there is no specific definitive therapeutic agent at this time.

PERICORONITIS

Chief Complaint

Marked pain in the area of a mandibular third molar is the most constant complaint on admission.

Clinical Appearance

This acute inflammatory process is manifest in tissue flaps over partially erupted teeth. The clinical picture is that of a markedly red, swollen, suppurative lesion which is very tender and often accompanied by pains radiating to the ear, throat, and floor of the mouth. Excruciating pain is produced when

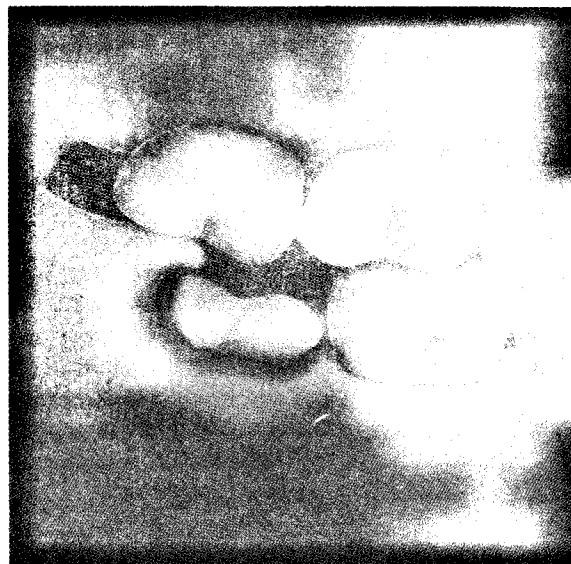


Figure 10-12. Pericoronitis.

the opposing tooth impinges upon this swollen flap during mastication. Fever and general malaise are usually present. There may be trismus of the masticatory muscles of the affected side. Involvement of the cervical nodes is also quite common (see figure 10-12).

Etiology

Principal etiologic factors include trauma from opposing teeth, accumulation of food and debris, and bacteria and their products.

Treatment

Satisfactory emergency treatment is as follows:

- a. Wrap the tip of a blunt silver probe with a wisp of cotton.
- b. Dip the cotton in 3% hydrogen peroxide.
- c. Carefully cleanse beneath the tissue flap.
- d. Apply gentian violet or thimerosal to the area in a like manner.
- e. Instruct the patient to use a hot saline mouth rinse hourly.
- f. Prescribe a soft diet and caution the patient to refrain from chewing on the affected side of the mouth.
- g. Repeat this treatment at daily intervals until the inflammatory reaction subsides.

Remarks

Antibiotic therapy should be limited to the treatment of systemic symptoms. Since extraction of the offending tooth is frequently necessary, and since the inflammatory process is prone to recur, definitive dental treatment will be necessary in many instances.

LOCAL ANESTHESIA

The control of pain incidental to dental procedures may be accomplished by local or general anesthetic methods. Local anesthesia is usually the method of choice.

ARMAMENTARIUM

Local anesthetic agents may be administered intra-orally with either a Luer-Lok or cartridge type syringe. A 25-gage, 1 $\frac{7}{8}$ -inch



Figure 10-13. Facial Injection.

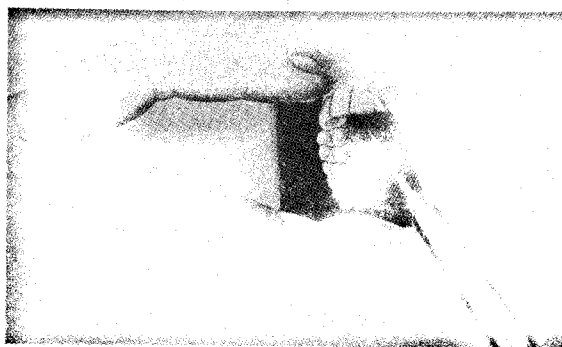


Figure 10-14. Palatal Injection.

needle is most practical for conduction (block) anesthesia and a 25-gage, 1-inch needle for infiltration. A 2% solution of lidocaine or procaine hydrochloride with epinephrine (1:50,000 to 1:100,000) is commonly employed.

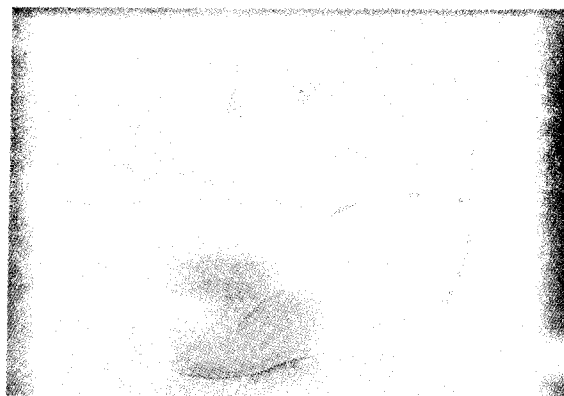


Figure 10-15. Locating the Mandibular Foramen.



Figure 10-16. Inferior Alveolar Lingual Injection.

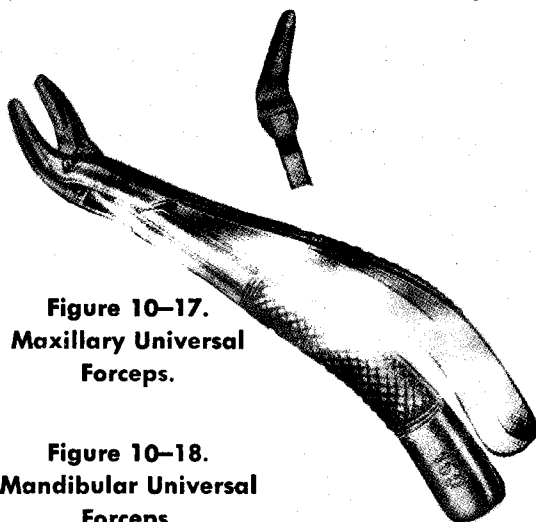


Figure 10-17.
Maxillary Universal
Forceps.

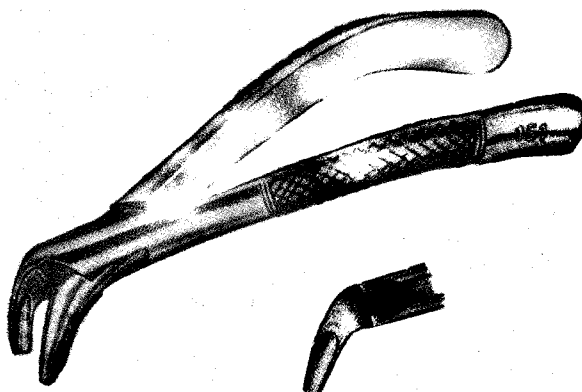


Figure 10-18.
Mandibular Universal
Forceps.

MAXILLARY

Infiltration will provide adequate anesthesia of the maxillary teeth. The facial and palatal injections required for effective anesthesia are carried out as follows:

a. *Facial injection:*

(1) Insert the needle into the mucobuccal fold directly above the tooth to be anesthetized. This fold is formed by the junction of the alveolar mucosa with that of the lip or cheek (figure 10-13).

(2) Advance the needle upward for about $\frac{3}{8}$ inch, approximately the apical end of the root. Maintain the point of the needle in close proximity to the maxilla.

(3) Slowly deposit $1\frac{1}{2}$ cc of solution.

b. *Palatal injection:*

(1) Insert the needle $\frac{1}{2}$ inch above the gingival margin of the tooth to be anesthetized (figure 10-14).

(2) Gradually expel $\frac{1}{2}$ cc of solution in the submucosal area. After a 5-minute interval, the facial and palatal soft tissues should be tested for reaction to painful stimuli.

MANDIBULAR

Conduction anesthesia, supplemented by infiltration, is the method of choice in anesthetizing the lower teeth. The inferior alveolar nerve is blocked as it enters the mandibular foramen on the medial aspect of the ramus. This foramen is located midway between the anterior and posterior borders of the ramus and approximately $\frac{1}{2}$ inch above the biting surface of the lower molar teeth. The width of the ramus at this level can be estimated by placing the thumb on the anterior surface of the ramus intra-orally, and the index finger on the posterior surface extra-orally. The inferior alveolar and lingual nerve are anesthetized by a single injection (see figure 10-15).

The inferior alveolar-lingual injection is carried out as follows:

a. Place the index finger on the biting surface of the lower molar teeth so that the ball of the finger will contact the junction of the medial surface and the anterior border

of the ramus. The fingernail will then be parallel to and facing the sagittal plane.

b. Place the barrel of the syringe on the lower bicuspid of the side opposite that to be anesthetized.

c. Insert the needle at a point $\frac{1}{2}$ inch ahead of the tip of the finger and on a line bisecting the nail. The angulations established by carrying out steps b and c are maintained throughout the procedure.

d. Advance the needle to contact the medial surface of the ramus. One-inch penetration will usually suffice to position the needle point in direct proximity with the mandibular foramen (figure 10-16).

e. Slowly deposit approximately $1\frac{1}{2}$ cc of solution at this point.

f. Withdraw the needle halfway and inject $\frac{1}{2}$ cc of the agent to anesthetize the lingual nerve.

After a 10-minute interval, the results of the injection are evaluated by checking the following subjective and objective symptoms:

(1) Inferior alveolar nerve:

(a) A sensation of swelling and numbness extending to the midline of the lower lip on the injected side.

(b) Insensitivity of the facial gingival tissue in the region of the first bicuspid.

(2) Lingual nerve.

(a) A tingling, swollen, numb sensation extending to the midline of the tongue.

(b) Insensitivity of the lingual gingival tissue.

Anesthesia of the area is completed by infiltrating 1 cc of solution into the mucobuccal fold directly below the tooth to be anesthetized.

TOOTH EXTRACTION

This section emphasizes techniques applicable in the majority of cases requiring tooth extraction. Although many types of extraction forceps are manufactured, the removal of any erupted tooth can be accomplished with one of the two instruments illustrated (figures 10-17 and 10-18).



Figure 10-19. Placement of Forceps.

TECHNIC

Use the free hand to guide the beaks of the forceps under the gingival margin on the facial and lingual aspects of the tooth and to support the alveolar process. Apply pressure toward the apex of the root to force the tips of the beaks between the tooth and the alveolar bone (figures 10-19 and 10-20).

Placement should insure a parallel relationship between the beaks of the forceps and the long axis of the tooth. The maintenance of this parallel relationship and apical pressure throughout the process of loosening the tooth will decrease the incidence of tooth fracture.

Exert firm digital pressure upon the alveolar process and the beaks of the forceps with the free hand. This aids the operator in the interpretation of the motion that produces luxation, and protects the teeth in the opposite arch should the tooth suddenly break free



Figure 10-20. Application of Apical Force.



Figure 10-21. Application of Labial Force.



Figure 10-22. Application of Lingual Force.

or accidentally fracture. Rock the tooth with progressively increasing pressure in a facial-lingual direction (figures 10-21 and 10-22).

This force is used for the loosening of multirooted teeth such as molars and upper first bicuspid. Single-rooted teeth are loosened by combining this rocking motion with an alternately reversing rotary force (figures 10-23 and 10-24).

When considerable mobility has been established, deliver the tooth by exerting gentle traction. Note the direction in which the tooth tends to move most easily and follow this path of delivery (figure 10-25).

Inspect the extracted tooth to determine whether root fracture has occurred. Leaving any portion of the tooth, bone fragments, or foreign bodies within the alveolus is highly undesirable and, if deficiencies in the armamentarium preclude their removal, treatment by a dental officer should be sought. Place a folded sponge over the wound and instruct the patient to maintain light biting pressure on this compress for 20 minutes. It may be necessary to repeat this procedure if hemor-

rhage persists. Caution the patient against rinsing the mouth for at least 12 hours since this may disturb the clot.

POST-EXTRACTION COMPLICATIONS

Two prominent untoward reactions following tooth removal are pain and hemorrhage.

Pain

A moderate amount of pain can be anticipated for a period of a few hours following extraction. This pain is readily controlled by analgesics. Occasionally, a patient will complain of a severe constant, radiating pain that usually begins two to four days postsurgically. Loss of the blood clot, with resultant exposure of alveolar bone, is the most common predisposing factor.

Treatment:

a. Irrigate the socket with warm saline solution.

b. Pack the socket lightly with a strip of 1/4-inch gauze. Iodoform gauze saturated with several drops of eugenol and/or guaiacol is ideal.

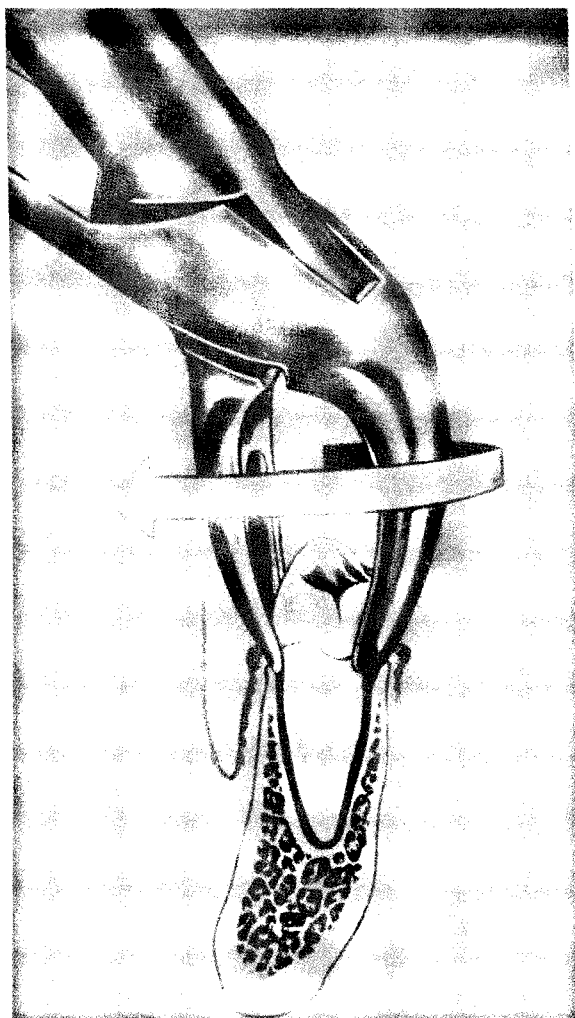


Figure 10-23. Application of Clockwise Force.

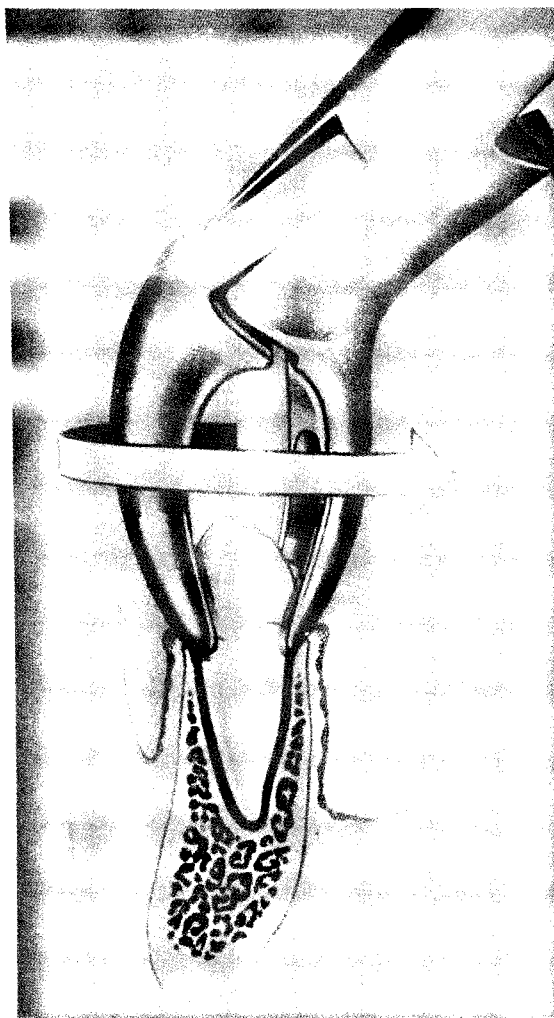


Figure 10-24. Application of Counterclockwise Force.

c. Irrigate and change the dressings daily. Treatment extended over a period of 10 to 14 days is usually necessary.

Hemorrhage

Persistent hemorrhage following tooth extraction can usually be controlled by local measures.

Treatment:

- a. Remove the old blood clot.
- b. Insert hemostatic agents into the wound.
 - (1) Fibrin foam or absorbable gelatin sponge with thrombin.
 - (2) A strip of 1/2-inch gauze satu-

rated with tannic acid (10%) or epinephrine (1:1,000).

c. Place a gauze sponge over the hemostatic agent.

d. Instruct the patient to maintain light biting pressure on the gauze pack for 20 minutes.

The above procedure may be repeated in order to control hemorrhage.

INJURIES OF THE JAWS

Early temporary stabilization of facial fractures has vital therapeutic implications. This immobilization of the fractured ele-

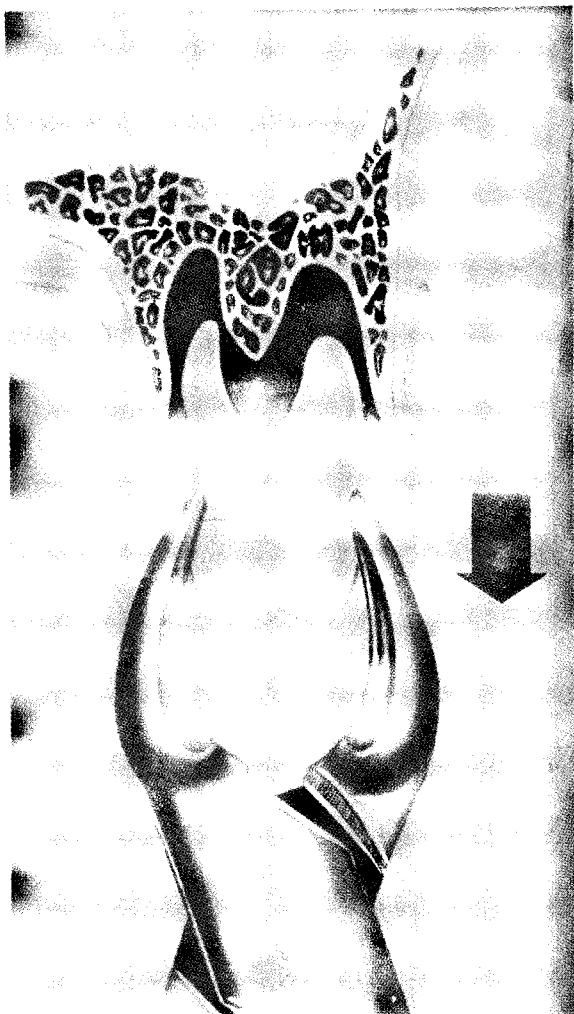


Figure 10-25. Removal of the Tooth.

ments will make the patient more comfortable and will be instrumental in controlling shock, infection, pain, swelling, trismus, and hemorrhage. Furthermore, it has a direct bearing upon the reestablishment of normal function of the masticatory apparatus and on the cosmetic result. The procedures incident to evacuation of the patient for definitive treatment can be carried out more expeditiously and with less resultant trauma when temporary stabilization has been accomplished.

The immediate treatment of facial trauma consists of the establishment of an airway, the control of hemorrhage, the treatment of shock, and the evaluation of neurologic find-

ings. After consideration of these basic therapeutic measures, early temporary stabilization will greatly contribute to the successful treatment of facial fracture.

DIAGNOSIS

This section will be limited to diagnostic procedures and to the presentation of simple but effective techniques for the temporary stabilization of jaw fractures. Diagnosis is more difficult when edematous distortion and muscular trismus are present. A thorough clinical examination should include inspection and palpation of the masticatory system for the following:

- a. Wounds, swelling, and discoloration.
- b. Pain, tenderness, crepitus, and mobility at suspected fracture site.
- c. Facial asymmetry.
- d. Trismus.
- e. Abnormal mandibular excursions.
- f. Altered occlusal relationship of the teeth.

g. Segmental alveolar fractures. Pressure should be exerted upon each tooth to determine the integrity of the underlying alveolar bone.

When facilities are available, a radiographic survey should include the following:

- (1) Postero-anterior mandible and maxillae.
- (2) Right and left lateral oblique of the mandible and maxillae.

TEMPORARY STABILIZATION

The method of choice in attaining temporary stabilization is intermaxillary fixation supplemented by a head bandage for support of the mandible. In maxillary fractures, the intact mandible is used as a splint against which the elements of the maxilla are repositioned and immobilized. In mandibular fractures, the intact maxilla is used as the splint. Although intramaxillary wiring may be accomplished without the use of an anesthetic, local anesthesia may facilitate the procedure. Stainless steel wire of approximately 0.02 inch diameter (26 gage) is ideal.

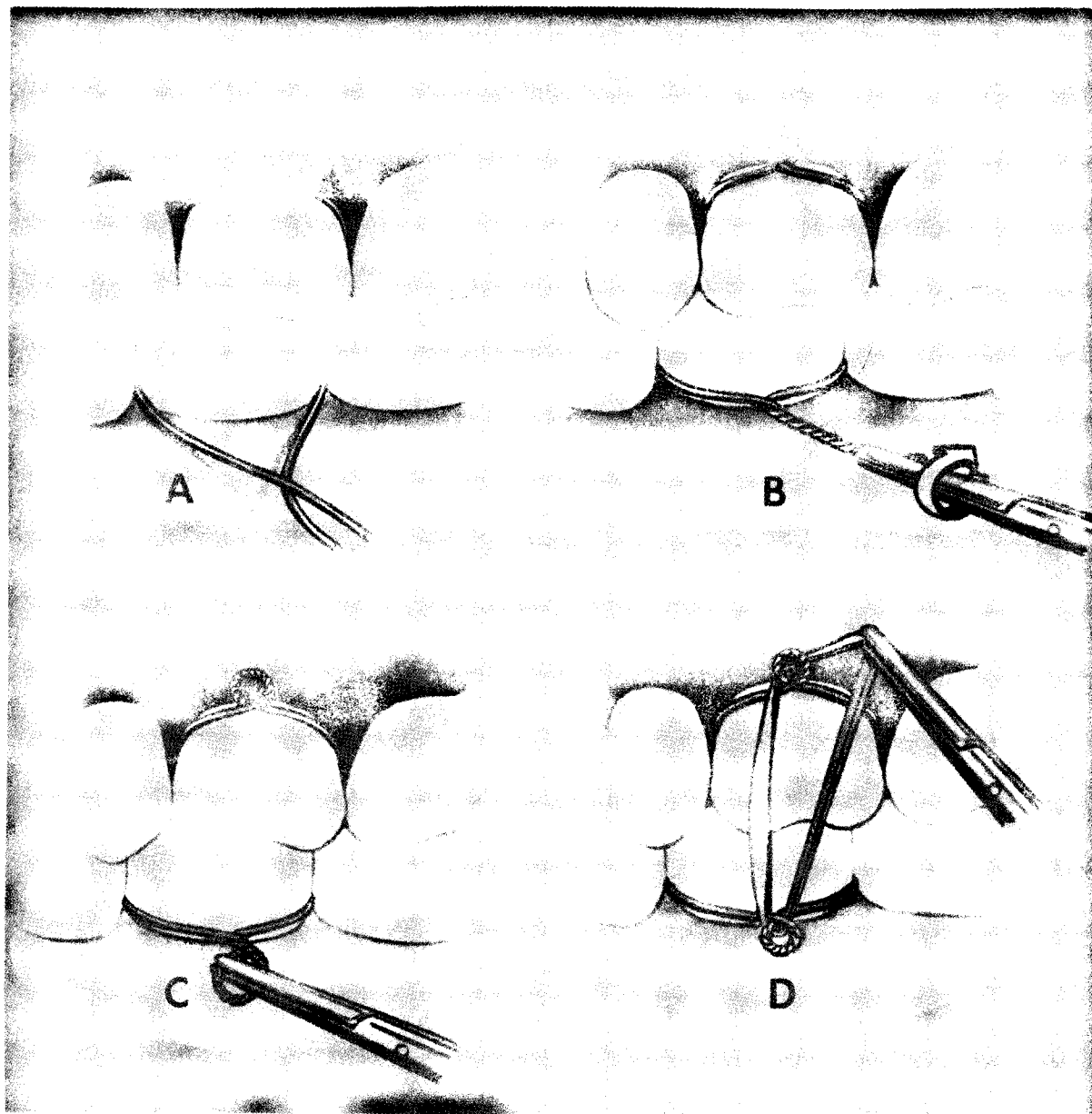


Figure 10-26. Wiring Technic.

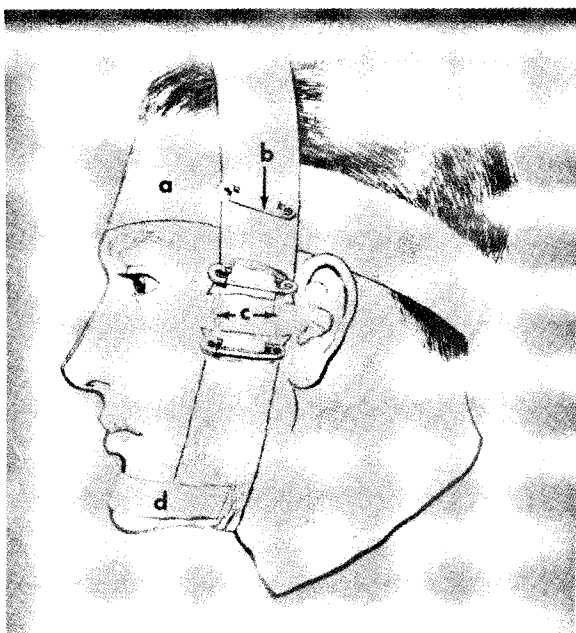
A minimum of two posterior teeth in each quadrant should be selected for wiring. Each of these teeth should be firm and have an opponent in the opposite arch; that is, the biting surface of the upper tooth that is selected for wiring should contact that of the wired lower tooth when the jaws are brought together.

The combined wiring-head bandage technic is carried out as follows:

a. Pass a 2-inch length of wire around the neck of a tooth (figure 10-26(A)).

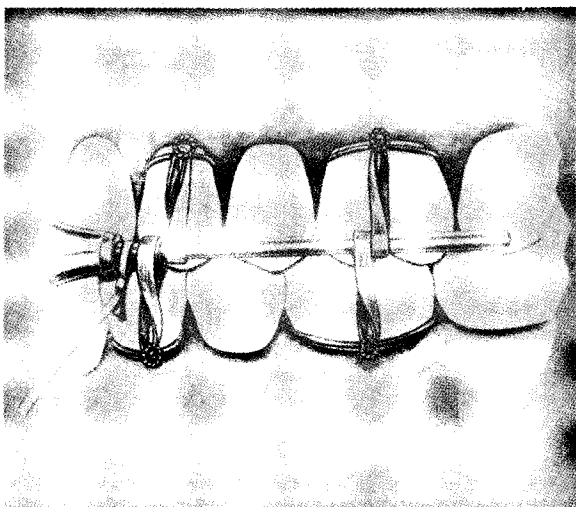
b. Twist tightly with a hemostat to prevent its slipping over the crown (figure 10-26(B)).

c. Twist the free ends completely.



- a. Gauze.
- b. Safety pins.
- c. Elastic band.
- d. Adhesive tape.

Figure 10-27. Supplemental Head Bandage.



**Figure 10-28. Quick Release Mechanism—
Modified Cotter Key.**

- d. Cut the twisted wire $\frac{1}{2}$ inch from the tooth.
- e. Form a tight loop with the twisted end (figure 10-26(C)).
- f. Adapt this loop against the gingiva.

g. Form similar loops on all of the teeth selected for wiring.

h. Anchor small intermaxillary elastic bands on these curved loops so that the forces tend to bring the upper and lower jaws together. Elastic loops may be cut from pipette tubing (figure 10-26(D)).

i. Apply the supplemental bandage (figure 10-27).

EMERGENCY RELEASE MECHANISM

When a marked susceptibility to vomiting is evident, or when the patient is to be evacuated, it is highly desirable to provide an emergency release mechanism which can be activated by the patient or attendant. This procedure is carried out as follows:

- a. Blunt the point of a 13-gage needle. (Coat hanger wire serves as a suitable substitute.)
- b. Attach a small elastic band to an intramaxillary loop. Pass the needle through the band.
- c. Repeat this procedure for alternate loops of the maxillary and mandibular arches.
- d. Tie a strong cord to the needle or wire to facilitate its rapid removal (figure 10-28).

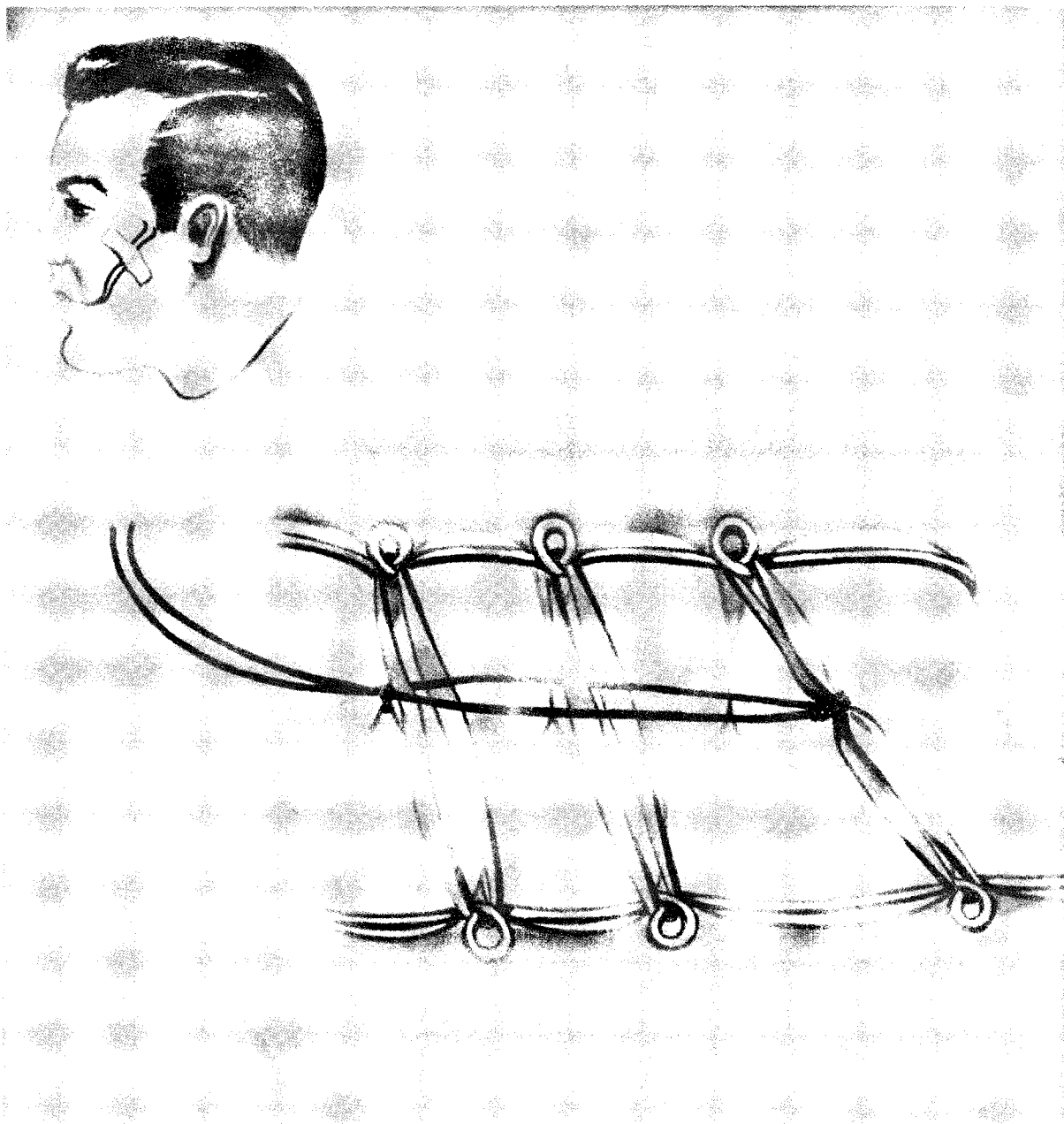


Figure 10-29. Quick Release Mechanism—Rip Cord.

An alternate technic is carried out as follows:

(1) Pass a strong cord through the intermaxillary elastic band.

(2) Tie the free ends of the cord and tape to the patient's cheek (figure 10-29).

Repositioning of fractured elements by

judicious manipulation may also be indicated. However, a satisfactory occlusal relationship and a realignment of the displaced bony fragments will usually be achieved within 24 to 48-hours after the application of this gentle intermaxillary elastic traction.

If armamentarium limitations preclude



Figure 10-30. Intermaxillary Elastic Traction.

stabilization by intermaxillary traction, head bandage alone may be employed. Although the head bandage is less effective when compared to elastic traction, it is of benefit in providing gross stabilization.

EVACUATION OF THE ORAL FRACTURE PATIENT

The basic problem in the evacuation of the oral fracture patient centers around the fact that the jaws are immobilized. In the majority of these cases, fixation will have been accomplished by intermaxillary elastics (figure 10-30). Occasionally, intermaxillary wires are used (figure 10-31). Provision must be made for the rapid release of either type of fixation. The patient with jaw fixation may experience serious respiratory difficulties resulting from the aspiration of vomitus caused by motion sickness. Careful

evaluation and preparation of the patient for evacuation will greatly reduce the incidence of these complications.

Two of the principal features of patient evaluation are:

a. Susceptibility to motion sickness. The attendant should be provided with this information.

b. Type of fixation employed. The problem is more pronounced when intermaxillary wires have been used rather than elastic bands. AFR 164-1 states that patients whose upper and lower jaws are wired together are, normally, not acceptable for air transportation.

Oral and parenteral administration of certain antihistaminic preparations has been shown to be effective in reducing the incidence of motion sickness.

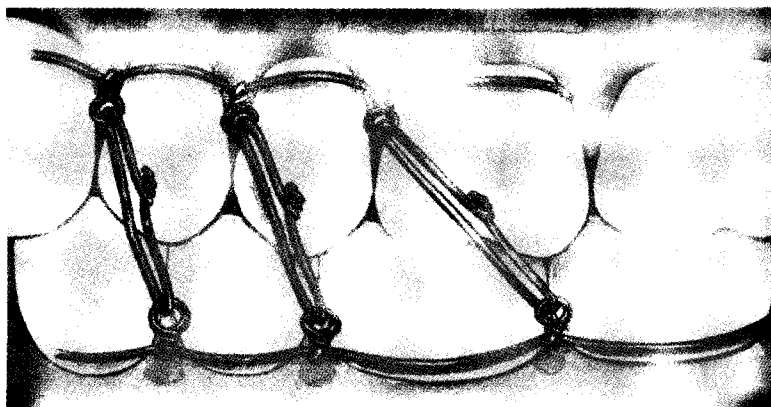


Figure 10-31. Intermaxillary Wiring.

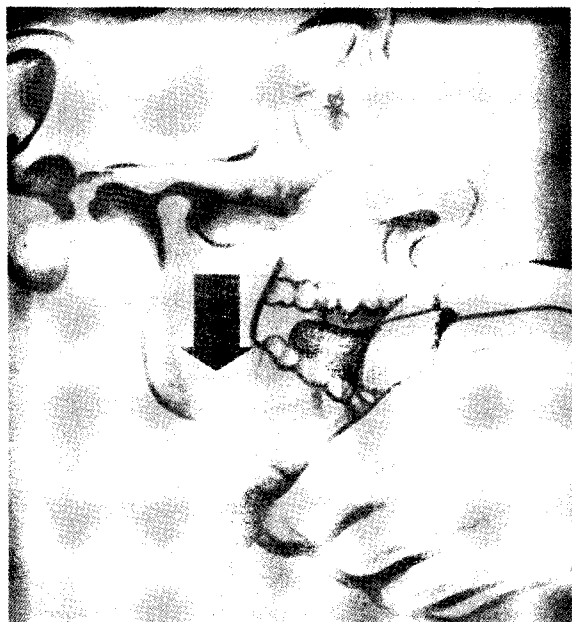


Figure 10-32. Repositioning of Dislocated Mandible (Step 1).

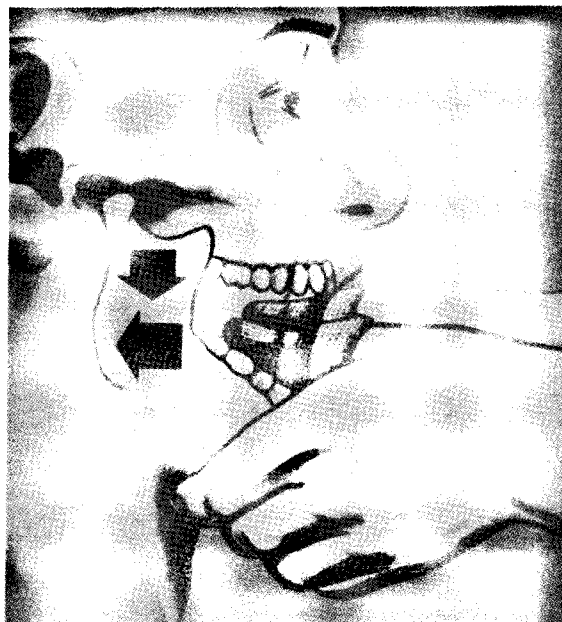


Figure 10-33. Repositioning of Dislocated Mandible (Step 2).

Drugs Effective Against Motion Sickness

	<i>Dose mg. t.i.d.</i>
1. Meclizine	50
2. Diphenhydramine HCl	50
3. Promethazine HCl	25
4. Dimenhydrinate	100

A pair of scissors suitable for cutting wire or elastic should be placed around the neck of each patient. Both the patient and attendants are instructed as to the use of these scissors in releasing the jaws.

In patients evaluated as being markedly susceptible to motion sickness, it is highly desirable to provide a quick release mechanism for the jaw fixation which can be activated by the patient or attendant (see figures 10-28 and 10-29). Dental consultation is particularly valuable in these cases.

DISLOCATION OF THE MANDIBLE

The usual type of dislocation of the mandible is bilateral and the condyles are displaced anteriorly. The mouth is locked open with the chin protruded. Trismus is present and speech is difficult. In the unilateral type, the

chin deviates away from the side of dislocation. If a fracture is suspected, radiographs are indicated.

Reduction of the dislocated jaw is normally accomplished without anesthesia. Narcotics are effective in relieving pain and apprehension and thereby prompt relaxation of the jaw muscles. In the more resistant cases, general anesthesia may be indicated.

Repositioning of the dislocated mandible is accomplished in the following manner:

a. Wrap the thumbs with several thicknesses of gauze or towel. This provides protection against snap closure of the mandible.

b. Place the thumbs on the biting surfaces of the lower molar teeth and extend the fingers to grasp the under surface of the mandible (figure 10-32). (The thumbs may also be placed lateral to the molar teeth to prevent their injury.)

c. Exert downward pressure with the thumbs to bring the condyle below the articular eminences (figure 10-33). The fourth and fifth fingers may be used to exert an upward pressure on the symphysis.

d. Maintain this pressure and force the

mandible posteriorly. This will usually return the condyles to normal position (figure 10-34).

e. Caution the patient to avoid excessive opening of the mouth for several weeks.

f. Prescribe a soft diet.

Normally, the pain following repositioning continues for approximately 72 hours. Analgesics should adequately control this pain. If marked pain persists, or if there is a tendency toward recurrence of dislocation, immobilization is indicated. This may be effected by head bandages or by intermaxillary fixation.

IDENTIFICATION—DENTAL RECORDS

In the event of an aircraft crash involving violent forces and fire, or the disrupting forces of modern warfare, positive identification of the dead may be extremely difficult. An accurate dental record of all fillings, missing teeth, prosthetic appliances, bridges and dental anomalies, when compared with a thorough post mortem dental examination will render invaluable assistance in establishing identification. The physician at the scene of the crash may be required to perform the oral examination and complete certain records which are to be compared with existing dental records. Records may be provided which may be referred to, interpreted, and compared with the oral cavity during post mortem examination. This section deals with the performance and interpretation of dental records, SF 603, "Health Record—Dental."

Terminology

Before an accurate evaluation can be made, the examiner must possess certain basic information concerning dental terminology and the materials used in dentistry.

The complete normal human dentition consists of 32 teeth: 12 molars, 8 bicuspid, 8 incisors, and 4 cuspids. These are assigned numbers beginning with the upper right third molar, No. 1, and ending with the lower right third molar, No. 32. The "#" symbol is



Figure 10-34. Repositioning of Dislocated Mandible (Step 3).

used before each tooth number or before each series of tooth numbers.

Designation of Teeth

<i>Maxillary— right side</i>		<i>Maxillary— left side</i>
#1	Third molars	#16
#2	Second molars	#15
#3	First molars	#14
#4	Second bicuspid	#13
#5	First bicuspid	#12
#6	Cuspids	#11
#7	Lateral incisors	#10
#8	Central incisors	#9
<i>Mandibular— right side</i>		<i>Mandibular— left side</i>
#32	Third molars	#17
#31	Second molars	#18
#30	First molars	#19
#29	Second bicuspid	#20
#28	First bicuspid	#21
#27	Cuspids	#22
#26	Lateral incisors	#23
#25	Central incisors	#24

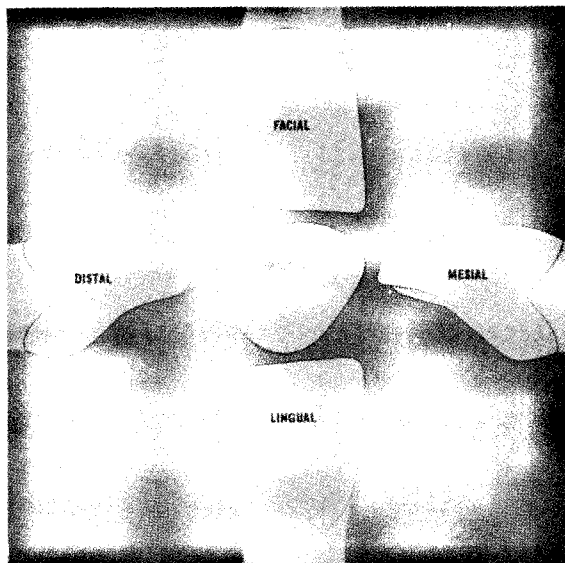


Figure 10-35. Surfaces of Clinical Crown of Anterior Tooth #8.

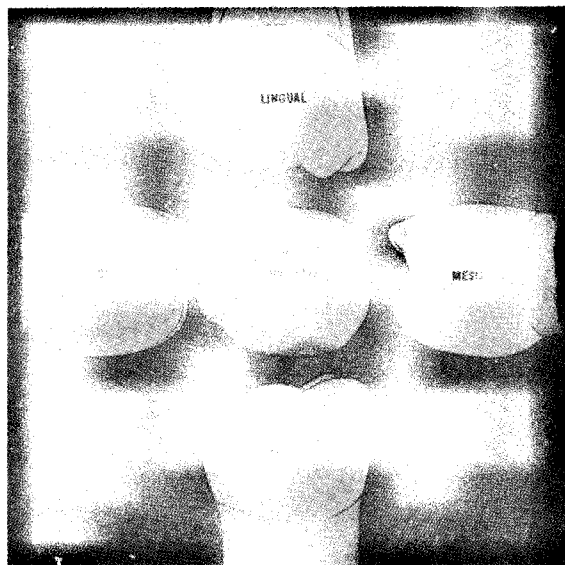


Figure 10-36. Surfaces of Clinical Crown of Posterior Tooth #30.

The clinical crown of a tooth is divided into five surfaces (figures 10-35 and 10-36):

a. *Occlusal*—the biting surface (in anterior teeth, this is termed the incisal surface).

b. *Facial*—the surface contacted by the lip or cheek.

c. *Lingual*—the surface in apposition to or contacted by the tongue.

d. *Mesial*—the surface or interproximal area facing the anterior midpoint of the dental arch at the median sagittal plane.

e. *Distal*—the interproximal surface facing away from the anterior midpoint of the dental arch.

For example: The mesial surfaces of the central incisors contact each other interproximally; their distal surfaces are in contact with lateral incisors (figure 10-37).

Restoration of tooth structures destroyed by caries or removed for prosthetic purposes are described by the surfaces which are involved and the type of material employed in the restoration. The three most common filling materials are:

(1) *Amalgam*—a silver to black colored alloy of mercury and silver.

(2) *Gold*—in the form of cast inlays and crowns, and gold foil which is malleted into cavity preparations.

(3) *Nonmetallic Materials.*

(a) *Silicate*—a tooth-colored silicate cement.

(b) *Porcelain*—a tooth-colored fired ceramic.

(c) *Plastic*—a tooth-colored polymer.

Destroyed tooth structure may be partially or completely replaced with a gold or porcelain crown or jacket. Restorations involving relatively large areas require gold inlays or partial crowns. These sometimes are utilized as retainers in fixed (cemented) bridges containing porcelain or resin artificial teeth.

Missing teeth are replaced by full dentures, partial dentures, or fixed bridges. The materials most commonly employed are:

1. *Resin (e.g. acrylic)*—the tissue-colored base material which forms the bulk of the appliance and supports the artificial teeth.

2. *Metals:*

a. *Gold.*

b. *Chrome-cobalt alloys (chrome-colored).*

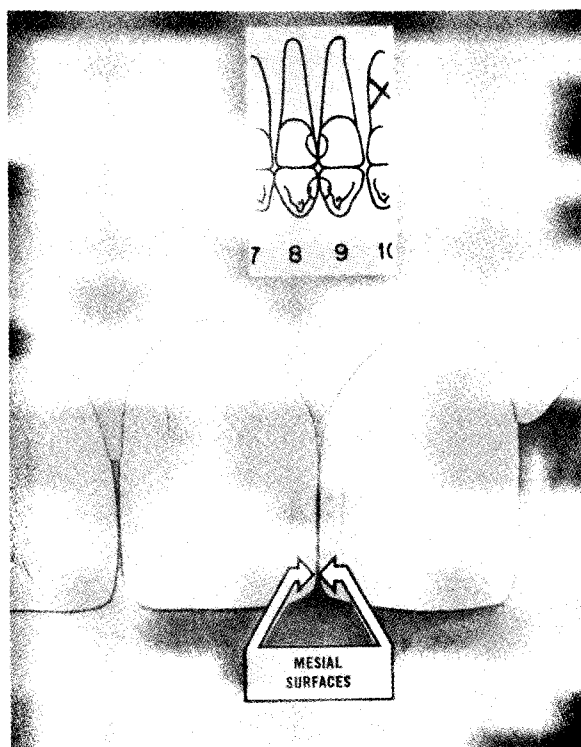


Figure 10-37. Anterior Teeth #8 and #9 in Mesial Contact at Midline of the Mouth.

These may provide the framework, base material, clasps, and support for the artificial teeth.

THE POST MORTEM DENTAL EXAMINATION

Armamentarium

Adequate illumination in the form of a supplementary light source is essential. A suitable mouth prop will be required to open the jaws for an adequate view of all tooth surfaces. The equipment should include tongue blades, 4" by 4" gauze to remove debris frequently found in the mouth and on the teeth, a mouth mirror, and rubber gloves.

Procedure

- Force mouth open.
- Remove debris and wipe the teeth.
- Check for major appliances: full dentures, partial dentures, and bridges.
- Note missing or grossly malposed

natural teeth; count and numerically locate the teeth.

e. Starting in the area of tooth number one (#1), inspect and chart each restoration, noting the surfaces involved and the material employed; use SF 603.

THE DENTAL RECORD

SF 603 is accomplished (or referred to when finished) during the post mortem examination. The following symbols are employed:

Missing Teeth

An "X" is inscribed on the root of the missing tooth. Edentulous arches are designated by one large "X" or two crossing lines, each running from the uppermost aspect of one third molar to the lowermost aspect of the third molar on the opposite side.

Prosthetic Appliances

Full denture. Having designated that the arch is edentulous, indicate whether maxillary or mandibular or both, in the "Remarks" section, and describe should the denture contain areas which are other than tissue-colored resin. The palate of the denture can be of clear, transparent plastic, or this or other areas may be constructed of gold or chrome-cobalt alloy. The artificial teeth of the denture can contain fillings in the anterior region which were placed for esthetic reasons. The notation of these variations is valuable for purposes of positive identification.

Partial denture. Draw a horizontal line directly above the numerals designating teeth replaced by the partial. The "Remarks" section should indicate whether maxillary or mandibular or both and the materials employed. List the teeth which contain clasps and note the existence of palatal bars or lingual bars, which are employed to connect sections of the appliance (figure 10-40).

Silver Amalgam Restorations

Outline the filling as accurately as possible so as to indicate the shape and extent of the restoration. Block in solidly (figure 10-41).

Note (in inset) that the molars and bicus-

Standard Form 603
Rev. November 1953
Bureau of the Budget
Circular A-32 (Rev.)

HEALTH RECORD		DENTAL	
SECTION I. DENTAL EXAMINATION			
1. PURPOSE OF EXAMINATION		2. TYPE OF EXAM.	
<input checked="" type="checkbox"/> INITIAL <input type="checkbox"/> SEPARATION <input type="checkbox"/> OTHER (Specify)		<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9	
3. DENTAL CLASSIFICATION			
<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9			
4. MISSING TEETH AND EXISTING RESTORATIONS			
		REMARKS Teeth # 7, 10 in slight labioversion. Harelip, incomplete, left lateral, repaired. History of mandibular fracture, (1944) midline, healed.	
		PLACE OF EXAMINATION DATE ----- AFB, Tex. 1 Jul 65 SIGNATURE OF DENTIST COMPLETING THIS SECTION Thomas E. Brewer, Capt, USAF, DC	
5. DISEASES, ABNORMALITIES, AND X-RAYS			
		A. CALCULUS <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> HEAVY B. PERIODONTICLUSIA <input checked="" type="checkbox"/> LOCAL <input type="checkbox"/> GENERAL <input type="checkbox"/> INCIPIENT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> SEVERE C. STOMATITIS (Specify) <input checked="" type="checkbox"/> GINGIVITIS <input type="checkbox"/> VINCENT'S D. DENTURES NEEDED (Include dentures needed after indicated extractions) FULL PARTIAL U L <input checked="" type="checkbox"/> U <input checked="" type="checkbox"/> L ABNORMALITIES OF OCCLUSION-REMARKS Tooth #12 rotated 25 degrees mesially. Def Fx Pr Dtr #19, 20, 21. Car under fill #31.	
E. INDICATE X-RAYS USED IN THIS EXAMINATION <input checked="" type="checkbox"/> FULL MOUTH PERIAPICAL <input checked="" type="checkbox"/> POSTERIOR BITE-WINGS <input type="checkbox"/> OTHER (Specify)		DATE PLACE OF EXAMINATION 1 Jul 65 ----- AFB, Tex.	
SECTION II. PATIENT DATA			
6. SEX M	7. RACE Cau	8. GRADE, RATING, OR POSITION TSgt	9. ORGANIZATION UNIT 3792 ABGP
10. COMPONENT OR BRANCH Reg		11. SERVICE, DEPT., OR AGENCY AF	
12. PATIENT'S LAST NAME—FIRST NAME—MIDDLE NAME Dobbs, Joseph Albert		13. DATE OF BIRTH (DAY-MONTH-YEAR) 27 May 24	14. IDENTIFICATION NO. AF 204 107 17

DENTAL
Standard Form 603
603-102

Figure 10-38. SF 603, "Dental Health Record, Sections I and II."

[illegible]

Figure 10-39. SF 603, "Dental Health Record, Section III."

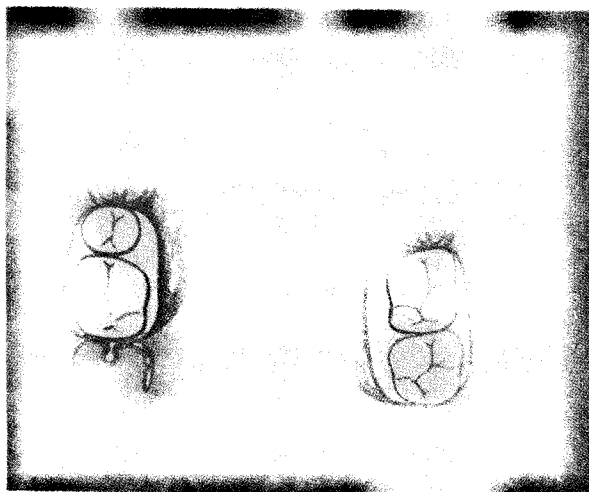
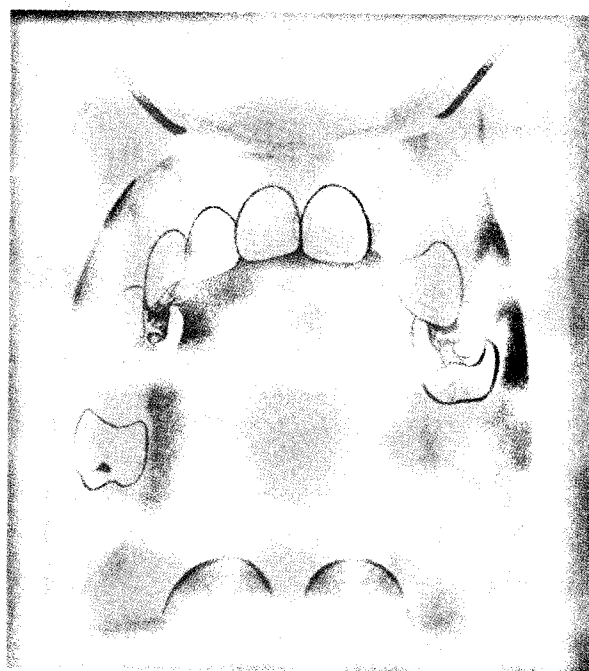
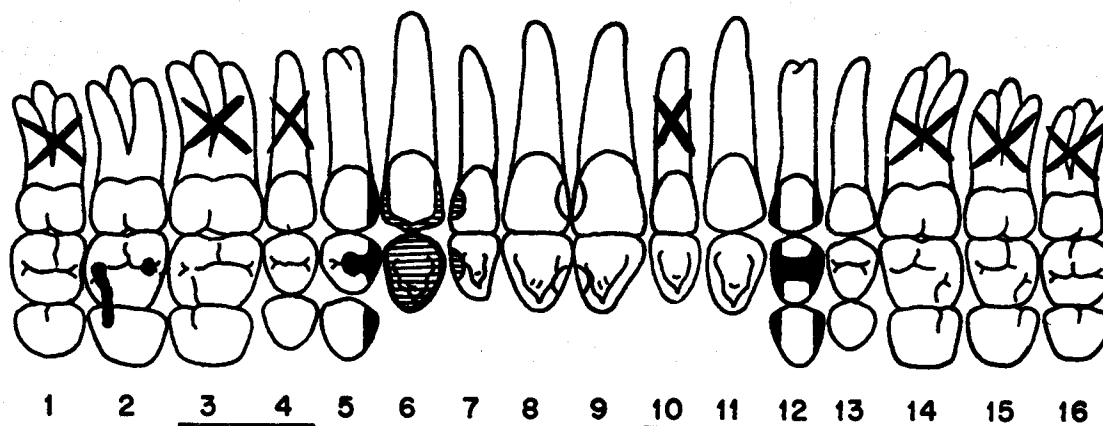


Figure 10-40. An Upper Partial Denture Replacing Teeth #3, 4, 10, 14, and 15, and Method for Graphic Indication.

pids are illustrated in three aspects. The upper is the facial, the middle is the occlusal and the lower, the lingual aspect of these teeth. Thus, the restorations may be drawn accurately so as to indicate the exact extension and areas of the tooth involved by the restoration. Insufficient area on the incisal edge of the centrals, laterals, and cuspids precludes drawing the involvement of this region.

Gold Restorations

Outline as described above and inscribe a series of parallel lines within the area of the restoration as follows:

- a. Individual restorations—the parallel lines are horizontal (figure 10-42).
- b. When inlays or crowns are parts of fixed partial dentures (bridges), the parallel lines are diagonal (figure 10-43).

Nonmetallic Restorations

Fillings, crowns, and bridge facings (usually supported by gold) are outlined so as to indicate size, shape, and location.

Special Entries for Identification

Record under "Remarks" findings such as eroded areas, mottled enamel, Hutchinson's teeth, rotation, irregularity of alignment, presence of supernumerary teeth, irregular

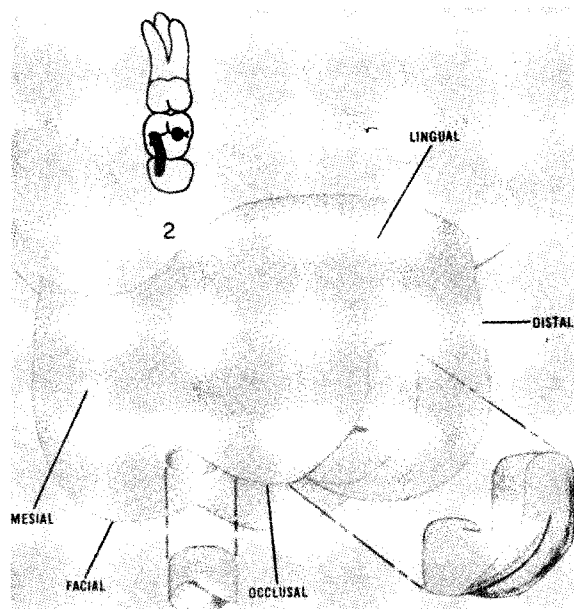


Figure 10-41. Two Amalgam Restorations in Upper Right Second Molar Indicating Surface Involvement.

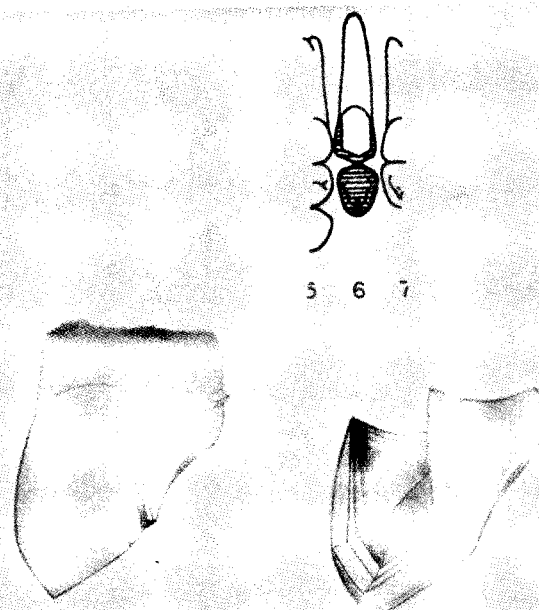


Figure 10-42. A Three-quarter Cast Gold Crown on the Upper Right Cuspid.

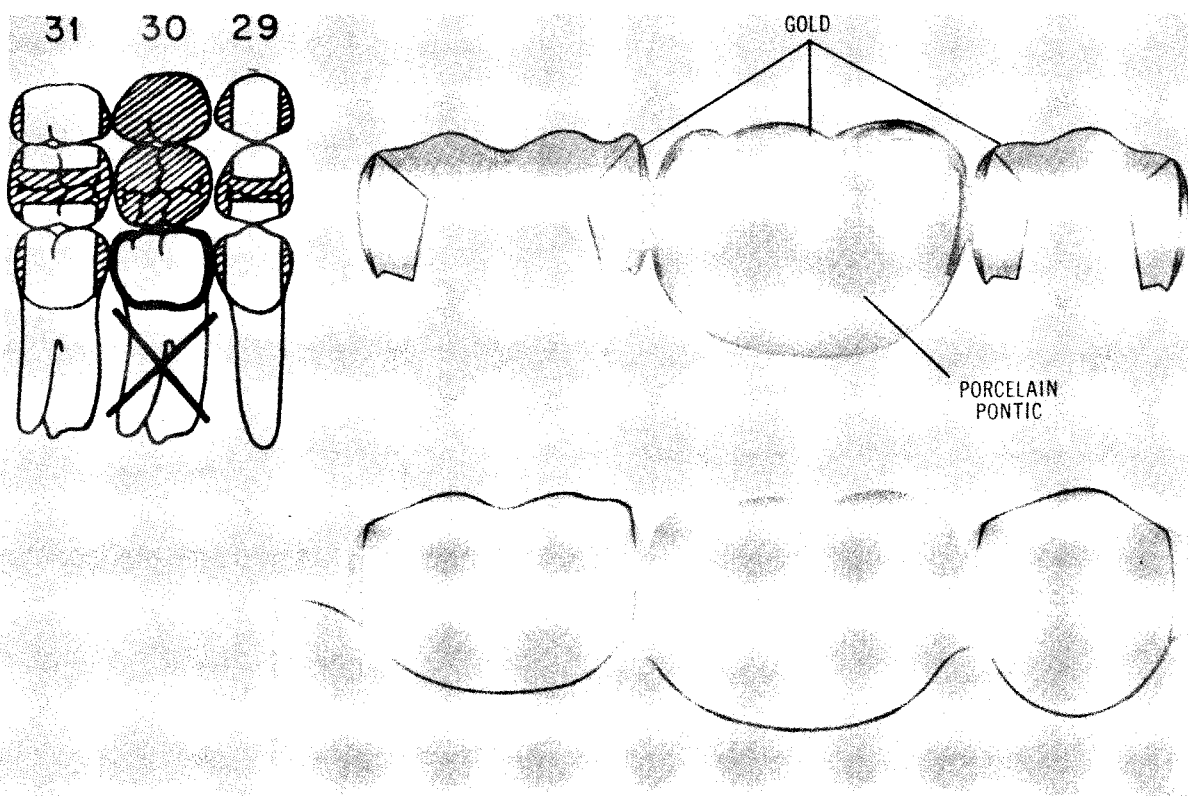


Figure 10-43. A Fixed (Cemented) Bridge Replacing Lower Right First Molar by Means of Inlays on the Second Bicuspid and Second Molar.

bone development (torus palatinus or mandibularis), and unusual restorations or appliances. These entries are important for diagnostic or identification purposes.

When SF 603 is provided as a completed record for identification prior to the post mortem dental examination, the physician must be able to interpret the symbols thereon in order to correlate them with the examination of the oral cavity. Item 4, "Missing Teeth and Existing Restorations," and item 15, "Restorations and Treatments (completed during service)," are both referred to for the current recorded condition of the mouth. On SF 603, items 4, 5, 15, and 16 apply.

ACCOMPLISHMENT OF DENTAL TREATMENT RECORDS

SF 603 under custody of the Air Force, provides the basic permanent Air Force record of a person's dental health. The physician may be called upon to record emergency dental attendance in the absence of a dental officer. These forms are to be used when dental care is provided any person. Authentic information contained in temporary records should be transcribed to the permanent records by qualified personnel. Such temporary records may include SF 603 (used as transitory materials) and AF Form 644, "Record of Dental Attendance" (white) for Air Force personnel, AF Form 644a (green) for Army Personnel, Navy-Marine, Dependents, and all others. Consultant reports and the laboratory reports are considered temporary records and should be transcribed to the permanent records.

For economy of space and uniformity of records, abbreviated entries are authorized as indicated below:

Abbreviations for tooth surfaces:

M — Mesial
I — Incisal
O — Occlusal
D — Distal
F — Facial
L — Lingual

Combinations. When more than one tooth is involved, a combination of the abbreviating capital letters is employed. *Examples:* MO, mesio-occlusal; DO, disto-occlusal; MOD, mesio-occlusal-distal; DOF, disto-occluso-facial. #9-MID, maxillary left central incisor, mesio-inciso-distal surfaces.

Other authorized abbreviations:

Abr — Abrasion	Ins — Inserted
Abs — Abscess	Max — Maxillary
Acr — Acrylic	Man — Mandibular
Adj — Adjust (ed, ment)	Pecor — Pericoronitis
Alvy — Alveolectomy	Pedon — Periodontoclasia
Am — Amalgam	Pr — Partial
AnesReg — Anesthesia, regional	Par — Parietal
AnesGen — Anesthesia, general	Per — Periapical
Apcy — Apicoectomy	Porc — Porcelain
B — Base	POT — Postoperative treatment
BrFx — Bridge fixed	Prep — Prepared (ation)
Car — Caries	Pro — Prophylaxis
Cal — Calculus	Reapt — Reappoint (ment)
Cem — Cement	Re-Exam — Re-examina- tion
Cr — Crown	Recem — Recement (ed)
Cstmy — Cystectomy	Ret — Reconstruct (ed)
Dec — Deciduous	Re — Reference
Def — Defective	Red — Reduce
Dtr — Denture	Reg — Regional
Drn — Drain	Rel — Reline
Drs — Dressing	Rem — Removal (ed)
Equil — Equilibrate (ation)	Rpd — Repaired
Eug — Eugenol	RC — Root canal
Exam — Examination	Sed — Sedative (ation)
Ext — Extraction (Tooth Removal)	Seq — Sequestrum
Fil — Filling (s)	Sil — Silicate
Fl — Fluorine	Stom — Stomatitis
Frac — Fracture (s)	Surg — Surgical
Gen — General	Su — Suture (s) (d)
Ging — Gingival (itis)	Tem — Temporary
Gtmy — Gingivectomy	Tr — Treatment
GP — Gutta percha	Uner — Unerupted
Imp — Impacted (tion)	Vin — Vincent's
Impr — Impression	XR — X-ray
Inc — Incised	ZnCl — Zinc chloride
Inl — Inlay	ZnO — Zinc oxide

FIELD PERSONNEL RECORDS GROUP

The records include certain dental records identified as "Dental Treatment Records." They are contained in DD Form 722-1, "Dental Folder—Health Record," or in manila envelopes marked "Dental Treatment Records." The base or unit dental surgeon

is normally custodian. Emergency dental treatment records are to be made available to the dental custodian requesting them. At bases with a high rate of turnover, or in certain other local circumstances the dental treatment records remain in the Field Personnel Records Group files. The records for emergency cases may be withdrawn as required.

The physician is responsible for caring for and properly administering the dental treatment records while in his temporary custody. When advised of the movement of the Field Personnel Records Group, the physician should forward the records of emergency treatment to the base or unit custodian. If necessary during movement of personnel, temporary dental treatment records may be established pending the arrival of the Records Group.

The importance of maintaining current dental records, especially for those individuals on flying status and those who otherwise may be required to fly, cannot be overemphasized.

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