

Fig. E-1a: B,C, tissue to be removed; A,D, tissue to reposition over area B,C (With permission from the American Academy of Periodontology)



Fig. E-1c: Pedicle grafts repositioned



Fig. E-1b: Presurgical site



Fig. E-1d: Healing after 3 months

and have a shape of either a ball, bar, or cone ([Flocken 1980](#); [Azzi 1981](#)). See also electrosurgery.

Electrodesiccation—A monoterminal electrosurgical technique that has little or no application in dentistry. It uses a dehydrating current and is the most dangerous electrosurgical technique. The active electrode is inserted *in situ* to coagulate a mass of tissue, being useful in dermatology, cancer surgery, and the treatment of cancerous hemangiomas. The operator has no control over the amount of tissue destroyed ([Flocken 1980](#), [Azzi 1981](#)). See also electrosurgery.

Electrofulguration—This monoterminal electrosurgical technique is seldom used in dentistry. The active electrode is held slightly out of tissue contact and moved

over the tissue, spraying sparks to produce a hard crust or scab, as from a burn (i.e., an eschar) ([Flocken 1980](#); [Azzi 1981](#)). See also electrosurgery.

Electromyography—The study of electrical activity in muscle. Every time a muscle contracts, a minute fraction of the total energy liberated appears as electrical energy. This electrical activity is recorded by strategically placed electrodes over muscle groups and printed out on special graph paper. Researchers or electromyographers are then able to investigate the behavior of skeletal muscle (i.e., muscles of mastication) in humans under known or controlled conditions ([Pruzansky 1960](#)).

Electrosection—A biterminal technique of electrosurgery commonly used in den-

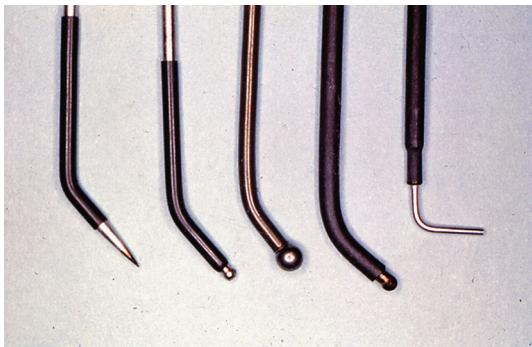


Fig. E-2: Electrocoagulation electrodes

tistry, requiring an undamped or continuous wave train. The procedures performed include (1) incisions and excisions and (2) planing. Incisions and excisions are performed by single-wire active electrodes that can be bent or adapted for any type of cutting procedure. Planing of tissue can be accomplished by selection of an appropriate loop electrode (Flocken 1980; Azzi 1981). See also electrosurgery.

Electrosurgery—The division of tissue by a high-frequency current, ranging from 1.5 to 7.5 million cycles per second, applied locally with a metal instrument or needles (AAP 2001a). Electrosurgical techniques may be either monopolar or bipolar. The monopolar method involves the cutting of tissue by means of an advancing spark with the patient grounded and in the electrical loop: it causes sparking, current spread, and thermal damage to the tissue, with delayed healing. The bipolar method involves the cutting of tissue without sparking or charring. It is not based on vaporization or an advancing spark but rather on molecular resonance. It both cuts and coagulates (Shuman 2001). The science and clinical applications of electrosurgery in both restorative dentistry and periodontics have been reviewed (Flocken 1980; Azzi 1981). See also electrocoagulation, electrode desiccation, electrofulguration, electrosection.

Enamel Matrix Derivative—Proteinaceous materials composed principally of amelogenins and related proteins derived from porcine tooth buds. The enamel matrix proteins (derivatives) are important for the development of acellular cementum, periodontal ligament, and alveolar bone (Mellonig 1999). See also amelogenins, enamel matrix proteins.

Enamel Matrix Proteins—These are thought to be synthesized by the cells of the epithelial root sheath; they play a fundamental role in the formation of acellular cementum. A dominating constituent of the enamel matrix protein is amelogenin, a hydrophobic, low-molecular-weight protein (Hammarstrom 1997, Hammarstrom et al. 1997). See also amelogenins, enamel matrix derivative.

Enamel Pearl—Isolated islands of large spheroidal ectopic enamel, rather than extensions of coronal enamel, formed apical to the cementoenamel junction on the root surface (See Fig. E-3a,b). The later cervical enamel projections are found on the lateral surface of the roots or furcations of molars (See Fig. C-3a,b) (Moskow and Canut 1990). See also cervical enamel projections (CEP), radicular enamel.

Endodontic-Periodontal Lesion—This lesion is characterized by a deep, localized periodontal pocket emanating from infected pulpal tissue. After a thorough examination, definitive treatment and cure is obtained by endodontic treatment (Solomon et al. 1995) See also retrograde periodontitis.

Envelope Flap—A periodontal flap with no vertical or releasing incisions (Dello Russo 1998). It is created by an inverse bevel incision and then freed from the remaining gingival margin and positioned according to the requirements of the area. It cannot be moved obliquely or laterally to a different position (Barrington 1973). See also relaxed flap.

Envelope Of Motion—The capacity of the mandible to move in all three planes in space, including the postural position, the



Fig. I-1a: (With permission from the American Dental Association)



Fig. I-1b: (With permission from the American Dental Association)



Fig. I-1c



Fig. I-2a: Arrow, elastic band in situ (With permission from the American Dental Association)



Fig. I-2c: Loss of periodontal attachment (With permission from the American Dental Association)



Fig. I-2b: (With permission from the American Dental Association)



Fig. I-2d: Healed after 1 year

Iliac Crest Autograft—This type of autogenous bone graft utilizes hematopoietic bone marrow removed from the lateral or posterosuperior iliac crest (Schallhorn 1968). This approach to managing infrabony periodontal defects was fraught with complications in the 1970s and is no longer recommended for autogenous bone grafting. The reported postoperative problems were: (1) infection, (2) exfoliation and sequestration of the implanted iliac bone, (3) resorption of the root, and (4) rapid recurrence of the defect (Schallhorn 1972). See also autogenous bone graft.

Implant, Ailing—One with radiographic bone loss but no clinical inflammation when examined at 3 to 4-month mainte-

nance checks. Such an implant exhibits bone loss with pocketing; however, a lamina dura may be present at the borders of the osseous defect, indicating a state of chronicity (Meffert 1992). See also peri-implantitis.

Implant, Bladevent—These are endosseous implants that are placed directly into the bone through a small mucosal incision (See Fig. I-3). They are tapped into the bone until they are completely or almost completely in contact with bone to encourage overall retention and resist lateral forces. This is indeed an intraosseous device (Linkow 1970). These implants have been defined as having a flat, blade-shaped surface, which derives its support from its horizontal length in bone. Most



Fig. P-1c: Plantar hyperkeratosis



Fig. P-1d: Palmar hyperkeratosis (Illustrations P-1a,b,c,d courtesy of Dr. John R. Billen; with permission from Elsevier Publishing)

a Manifestation of Systemic Diseases" in the new classification system of periodontal diseases (Armitage 1999).

Paradentium—This term was suggested by Oskar Weski, a German physician and dentist, for the complex tissue structures that hold the teeth in position; namely, the gingiva, alveolar bone, periodontal ligament, and cementum (Weski 1921). It is now known as the periodontium. See also periodontium.

Paradontosis—This term was used by Kurt H. Thoma and Henry M. Goldman for Bernhard Gottleib's diffuse alveolar atrophy or juvenile periodontitis. They also believed that the disease was degenera-

tive, not inflammatory, and of systemic origin in which the bone was affected first. They described paradontosis as a generalized involvement of the permanent dentition of young people between the ages of 14 and 25 years (Thoma and Goldman 1937, 1940). See also juvenile periodontitis.

Parafunction—This term is synonymous with all contact movements of the maxillary and mandibular teeth other than the functional movements. This includes bruxism, clenching, and any other disordered or perverted functions/movements of the maxillomandibular occlusion. It was a term suggested and introduced in the German literature by W. Drum (Drum 1950). See also bruxism, clenching.

Partial-Thickness Flap—This periodontal surgical procedure involves the elevation of a flap while leaving some connective tissue and periosteum on the bone. An inverse bevel incision is utilized without contacting the alveolar crest margin, but the blade passes externally to the periosteum. The flap is reflected, leaving the bone surface covered by periosteum and a layer of connective tissue (Barrington 1973). Harry Staffileno and coworkers have published extensively on the healing, histology, and cellular mobilization of the partial- or split-thickness flap (Staffileno 1960, 1969a; Staffileno et al. 1962, 1966). See also gingival mucosal flap, mucosal flap, split-thickness flap.

Party Gums—This is a prosthetic device to correct definite esthetic problems of major concern to the patient in the anterior segment of the dentition (See Fig. P-2a,b). It reestablishes gingival contour to correct gingival recession from vigorous tooth-brushing and/or major periodontal surgery (See Fig. G-4a,b) (Risch et al. 1977). See also gingival facade, gingival prosthesis, gum veneer, prosthetic gingival veneer.

Passive Eruption—This term refers to tooth exposure secondary to apical migration of the gingiva. It occurs in four stages: stage



Fig. P-2a: Preparty gums

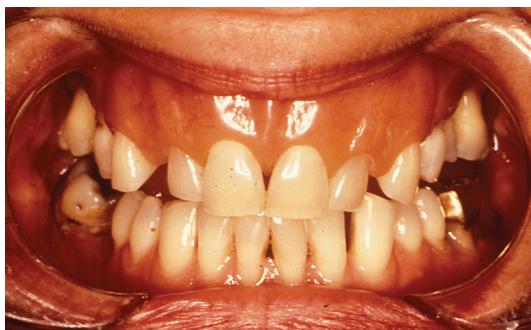


Fig. P-2b: Post-party gums (Courtesy of Dr. W. Peter Nordland)

I, gingival margin and junctional epithelium are on enamel; stage II, gingival margin is on enamel and the junctional epithelium is partially on enamel and cementum; stage III, gingival margin is at the cementoenamel junction and the junctional epithelium is totally on cementum; and stage IV, gingival margin and junctional epithelium are totally on cementum (Gargiulo et al. 1961). See also active eruption, altered passive eruption, delayed passive eruption.

Patient Hygiene Performance Index (PHP-I)—

This index was developed to assess an individual's ability to eliminate plaque and debris. Following the application of a disclosing solution, five surfaces (mesial, distal, and three divisions in the middle third

of the tooth: cervical, central, coronal) on six teeth (maxillary right first molar, right central incisor, left first molar, and the mandibular left first molar, left central incisor, and the right first molar) are evaluated for cleanliness. The scale is either 0 for no debris or 1 for the presence of debris. The range is 0 to 5 per tooth. The scores for all individual teeth are added and divided by the number of teeth examined. No score will be higher than 5 (Podshadley and Haley 1968).

Pedicle Flap—This is a surgical procedure intended to repair a gingival defect or cleft with either a full- or partial-thickness flap attached to the donor site by a “pedicle” with a nutrient supply (See Fig. P-3a,b,c). It is a synonym for the sliding flap of Grupe and Warren (1956) and has been studied both clinically and histologically by numerous authors (Patur and Glickman 1958; Wilderman and Wentz 1965; Sugarman 1969). See also pedicle graft, sliding flap.

Pedicle Graft—This surgical procedure refers to all flaps, full or partial thickness, that are raised from an area with a base attached to the donor site and in which the free margin is moved (Wilderman 1967). It is also known as *pedicle flap, sliding flap, lateral sliding flap, horizontal sliding flap, etc.* See also pedicle flap, horizontal sliding flap, lateral sliding flap, sliding flap.

Pergingival GTR—This expression refers to placing a barrier membrane, which has been perforated with a 3 mm hole, around a dental (titanium) implant for the purpose of guided tissue regeneration (GTR). The prefix *per*, meaning “through,” explains the technique of pergingival GTR (Jovanovic 1996).

Pericementum—This is an archaic expression for the periodontal ligament. John Oppie McCall called it a cushioning medium that softens the shock transmitted to the alveolar bone when pressure is applied to a tooth (McCall 1939). See also periodontal ligament.

T

“Take”—The “attachment” of a soft tissue autograft over an avascular bed (recipient site). It may be either epithelial in origin (long junctional epithelium) or originate from connective tissue (new attachment) (Pennel et al. 1969). Unfortunately it is often an unpredictable phenomenon. See also bridging, long junctional epithelium, new attachment.

Tartar—This term, a synonym for *calculus*, was introduced to general medicine by Phillipus Aureolus von Hohenheim (Paracelsus), a Renaissance alchemist and chemist, when he likened these stony accretions to the accumulation of minerals seen in wine casks (See Figs. S-6 and S-9) (Wynbrandt 1998). It is said that Paracelsus recognized the extensive formation of tartar on teeth and related this to toothaches (Carranza and Shklar 2003). See also calculus (dental), tooth accumulated material (TAM).

Temporomandibular Disorders (TMD)—This is an all-inclusive term referring to a heterogeneous group of psychophysiologic disorders involving the temporomandibular joint (TMJ), all of which cause orofacial pain, masticatory dysfunction, or both (Phillips et al. 2001). Another source states that TMD is a collection of medical/dental conditions affecting the TMJ and/or muscles of mastication and other contiguous tissue components. It includes myofascial pain dysfunction syndrome

(MPD), meniscal displacement with or without reduction (internal derangement), degenerative joint disease (osteoarthritis), rheumatoid arthritis and other disorders of systemic origin, facial growth disharmonies, traumatic injuries, and neoplasms (AAP 2001a). Three primary symptoms of TMD are (1) preauricular pain, (2) limited mandibular functioning, and (3) joint sounds, such as clicking, popping, or grinding (Okeson 1997). One of the most common types of temporomandibular disorders (TMD) is myofascial face pain (MFP) (Raphael et al. 2000; Raphael and Marbach 2001). This disorder of the TMJ was adopted by the American Dental Association in 1982, replacing the older, more simplistic concept of TMJ syndrome (Griffiths 1983). See also Costen syndrome, myofascial face pain (MFP), myofascial pain dysfunction syndrome (MPD).

Tension Test—A simple clinical determination of the quantity of attached gingiva surrounding a tooth. When the lips and cheeks are retracted laterally, the attached gingiva is said to be “inadequate” if it pulls away from the tooth. There must be blanching and movement of the marginal gingiva on lip/cheek “tension” (Kopczyk and Saxe 1974; Vincent et al. 1976). See also pull syndrome.

Terminal Hinge Axis—The center of rotation of the condylar heads during the rear-most rotatory opening and closing move-

ments of the mandible (Posselt 1968). See also retruded contact (RC).

Tissue Engineering—This is based on using a combination of growth factors and modulators, scaffolds or matrices, and cells to regenerate lost tissues and organs (Camelo et al. 2003). This approach to bioengineering may be used to promote periodontal (Pini Prato et al. 2000) and peri-implant bone regeneration in a way not previously considered possible (Gianobile 2002). It is very likely that in the near future the major indication for periodontal flap surgery will not be one of debridement or bone removal but of regeneration and repair through tissue engineering (Williams 2003; Williams et al. 2005). An in-depth treatise on the role of bio- or tissue engineering in maxillofacial and periodontal surgery is available (Lynch et al. 1999). See also amelogenins, enamel matrix proteins, growth and differentiation factors, platelet-rich plasma (PRP).

Tooth Accumulated Material (TAM)—The accumulation of different types of accretions on the surfaces of teeth, which may be related to different aspects of periodontal disease. Such accretions may include the acquired salivary pellicle, microbial plaque, dental calculus, food debris (Dawes et al. 1963), and material alba (bacterial and epithelial cells) (WHO 1961). A detailed review and classification of these TAMs has been published (Schwartz and Massler 1969; Schwartz et al. 1971). See also acquired cuticle, calculus (dental), material alba, tartar.

Toothbrushing—According to Maynard K. Hine, the function of the toothbrush is to remove food debris, accumulated microorganisms, and recently deposited calculus from the teeth and to massage the gingival tissues so as to promote a good blood supply and adequate keratinization of the epithelium. Toothbrushing should not irritate or lacerate the gingiva or wear away the tooth substance (Hine 1956). Various methods of toothbrushing have

been introduced over the years. See the following toothbrushing techniques for their approach to achieving the above-mentioned goals: Bass, Bell, Charters, circular, Fones, horizontal, Leonard, modified Bass, modified Stillman's, physiologic, roll, Stillman's, vertical, vibratory.

Tooth Lengthening—A surgical procedure to increase the clinical crown of a tooth that has been mutilated by either pathologic or physiologic processes. Pathologic processes may include tooth fracture, dental decay, retrograde or excessive tooth wear or root perforations from endodontic treatment, and restorative posts or pins. Physiologic processes that are benefited by tooth lengthening are altered or delayed passive eruption or overeruption (Rosenberg et al. 1980). See also crown lengthening.

Tooth Mobility—Any degree of perceptible movement of a tooth buccolingually, mesiodistally, or axially when a force is applied to it and the tooth returns to its original position once the pressure is removed (Perlitz 1980). The horizontal movement of a tooth has been classified by Samuel Charles Miller as being 1, 2, or 3. A movement of 1 is assigned by the first distinguishable sign of movement greater than normal. A degree of 2 is given when movement of the tooth allows the crown to deviate within 1 mm of its normal position in either direction. A mobility of 3 is assigned when movement of a tooth occurs more than 1 mm in any direction or can be rotated or depressed in its socket. He further states that each tooth should be tested by holding it between two rigid instruments; only then can one obtain its true mobility (See Fig. T-1) (Miller 1938). Tooth mobility in a vertical direction (as it depresses in its socket) has been studied (Parfitt 1960; Picton 1963).

Tooth Resection—The removal of furcation from multirooted teeth. Three approaches to tooth resection are (1) root amputation (See Fig. R-3), (2) hemisection (See Fig. H-1), and (3) trisection (Lemmerman 1975).

**Fig. T-1****Fig. T-2a**

See also radectomy, root amputation, root resection.

Tooth Wear Index (TWI)—This index is designed for use in research and epidemiology for investigating the etiology, prevention, and management of tooth wear problems by monitoring long-time tooth-wear patterns in individual patients. The degree of damage to teeth caused by erosion, attrition, abrasion, and combinations of these conditions. This index is applicable whether or not the cause can be determined. Scoring of all teeth is performed while all tooth surfaces (buccal or labial, lingual or palatal, occlusal, incisal, and cervical) are examined and scored. The criterion for tooth wear (loss) is found in the reference ([Smith and Knight 1984](#)).

Torus—An elevation, swelling, or bulging of hard bone either along the midline suture of the hard palate (torus palatinus) or on the lingual aspect of the mandible above the myohyoid line in the region of the premolars (torus mandibularis) (See Figs. T-2a,b and T-3a,b,c) ([AAP 2001a](#); [Neville et al. 2002](#)). See also exostosis.

Transgingival Probing—The process of “walking” the periodontal probe along the tissue-tooth interface so as to examine, feel, and predict the underlying osseous topography (See Fig. T-4). This “sound-ing” process, under local anesthesia, helps the operator to determine flap design and

**Fig. T-2b:** Radiographic image of T-2a

methods of managing bony deformities, be they intrabony defects, craters, dehiscences, and/or fenestrations (See Figs. B-5 and P-7b) ([Tibbetts 1969](#); [Greenberg 1976](#)). See also bone sounding.

Transpositional Flap—This periodontal flap is a modification of the laterally positioned papillary flap or oblique rotated flap ([Pennel et al. 1965](#)). The modification is produced by extending the incisions of the flap more apically so as to place the turning pivot point of the flap more apically. This produces a greater stretching effect of the flap, which gives it more lateral and incisal movement to cover the de-