# Evaluation of the Dental Patient



The first routine dental examination should take place by age 1 yr or when the first tooth erupts. Subsequent evaluations should take place at 6-mo intervals or whenever symptoms develop. Examination of the mouth is part of every general physical examination. Oral findings in many systemic diseases are unique, sometimes pathognomonic, and may be the first sign of disease. Oral cancer may be detected at an early stage.

**History**

Important dental symptoms include bleeding, pain, malocclusion, new growths, numbness or paresthesias, and chewing problems; prolonged dental symptoms may decrease oral intake, leading to weight loss. General information includes use of alcohol or tobacco (both major risk factors for head and neck cancer) and systemic symptoms, such as fever and weight loss.

**Table 2**

## Some Oral Symptoms and Possible Causes

| Symptom | Causes |
|---|---|
| Bleeding or pain with brushing (common) | Acute necrotizing ulcerative gingivitis (rare)<br>Bleeding diathesis*<br>Gingivitis (most common)<br>Leukemia* |
| Ear pain, referred (fairly common) | Inflamed gingival flap around a partly erupted mandibular 3rd molar |
| disorders) | grade anaerobic infections spreading to the bone<br>Poorly fitting dental appliances<br>Spasm of the masticatory muscles<br>Temporomandibular disorders |
| Facial numbness or paresthesias (uncommon, except with stroke) | Antrum or nasopharynx tumor<br>Brain stem tumors |

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| | Extraction of a mandibular molar causing damage to the inferior alveolar nerve‡<br>Multiple sclerosis<br>Oral tumor (rare)<br>Stroke<br>Viral infection |
| Masticatory fatigue (rare, except with poorly fitting dentures) | Congenital muscular or neuromuscular disorder (in younger people)<br>Myasthenia gravis (a cardinal symptom) |
| | Stomatitis<br>Temporomandibular disorder<br>Too loose, too few, or painful teeth |



*May be indicated by easily induced gingival hemorrhaging.

†Elongation of the styloid process or ossification of the stylohyoid ligament, causing pain when the head is turned.

‡May cause paresthesia of the lower lip.

**Physical examination**

A thorough inspection requires good illumination, a tongue blade, gloves, and a gauze pad. Complete or partial dentures are removed so that underlying soft tissues can be seen.



Most physicians use a head-mounted light. However, because the light cannot be precisely aligned on the axis of vision, it is difficult to avoid shadowing in narrow areas. Better illumination results with a head-mounted convex mirror; the physician looks through a hole in the center of the mirror, so the illumination is always on-axis. The head mirror reflects light from a source (any incandescent light) placed behind the patient and slightly to one side and requires practice to use effectively.

The examiner initially looks at the face for asymmetry, masses, and skin lesions. Slight facial asymmetry is universal, but more marked asymmetry may indicate an underlying disorder, either congenital or acquired.

**Table 3**

## Some Disorders of the Oral Region by Predominant Site of Involvement

| Site | Disorder or Lesion | Description |
|---|---|---|
| Lips | Actinic atrophy | Thin atrophic mucosa with erosive areas; predisposes to neoplasia |
| | Angioedema | Acute swelling |
| | Angular cheilitis (cheilosis) | Fissuring at corners of mouth, often with maceration |
| | Cheilitis glandularis | Enlarged, nodular labial |



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| | | hemorrhagic ulcers; includes Stevens-Johnson syndrome |
| | Exfoliative cheilitis | Chronic desquamation of superficial mucosal cells |
| | Keratoacanthoma | A benign, locally destructive epithelial tumor resembling squamous cell carcinoma; regresses spontaneously in about 6 mo |
| | Peutz-Jeghers | Brownish black melanin |

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| | syndrome | spots, with GI polyposis |
| | Secondary herpes simplex (cold sore) | Short-lived (< 10 days) vesicle followed by small painful ulcer at the vermillion border (common) |
| | Verruca vulgaris (wart) | Pebbly surface |
| Buccal mucosa | Aspirin | Painful white area; when wiped off, exposes an inflamed area |



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| | | mild |
| | Herpangina | Vesicles in posterior of mouth |
| | Irritation fibroma | Smooth-surfaced, dome-shaped, sessile |
| | Koplik's spots | Tiny, grayish white macules with red margins near orifice of parotid duct; measles precursor |
| | Linea alba | Thin white line, typically bilateral, on the level of the |

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| | | occlusal plane; benign |
| | Smokeless tobacco lesion | White or gray corrugated; usually behind lower lip; tends toward cancer |
| | Verrucous carcinoma | Slow-growing, exophytic, usually well differentiated; at site of snuff application; metastasis unusual, occurs late |
| | White sponge nevus | Thick white folds over most of buccal mucosa except gingivae; benign |



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| | | appears grossly malignant; heals spontaneously in 1–3 mo |
| | Papillary inflammatory hyperplasia | Red, spongy tissue, succeeded by fibrous tissue folds; velvety texture; benign; occurs under poorly fitting dentures |
| | Pipe smoker's palate (nicotine stomatitis) | Red punctate areas, are ducts of minor salivary glands, appearance is red spots surrounded by (often |

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| | | severe, usually benign) leukoplakia |
| | Secondary herpes simplex | Small papules quickly coalescing into series of ulcers (uncommon) |
| | Torus palatinus | Overgrowth of bone in midline; benign |
| | Wegener's granulomatosis | Lethal midline granuloma, with bone destruction, sequestration, and perforation |



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| | glossitis (geographic tongue, erythema migrans) | hyperkeratosis and erythema on dorsum and edges; desquamated filiform papillae in irregular circinate pattern, often with an inflamed center and a white or yellow border |
| | Dermoid cyst | Swelling in floor of mouth |
| | Enlargement of tongue (macroglossia) | Localized or generalized depending on how many teeth are missing; adjacent teeth may indent tongue; |

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| | | posterior enlargement associated with obstructive sleep apnea and snoring |
| | Fissured (scrotal) tongue | Deep furrows in lateral and dorsal areas |
| | Glossitis | Red, painful tongue; often secondary to another condition, allergic, or idiopathic |
| | Hairy tongue | Dark, elongated filiform papillae |



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| | | under the tongue; can compromise the airway by forcing the tongue superiorly and posteriorly |
| | Median rhomboid glossitis | Red (usually) patch in midline of tongue, without papillae; asymptomatic |
| | Neurilemoma | Persistent swelling, sometimes at site of prior trauma; can be painful |
| | Pernicious anemia | Smooth, pale tongue, often with glossodynia or |

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| | | glossopyrosis |
| | Ranula | Large mucocele penetrating the mylohyoid muscle; may plunge deep into the neck; swollen floor of mouth |
| | Thyroglossal duct cyst | Midline swelling that moves upward when tongue protrudes |
| | TB | Ulcers on dorsum (firm), cervical adenopathy |
| Salivary | Benign | Unilateral or bilateral |



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| | | pickle |
| | Sjögren's syndrome | Systemic disease causing dry mucous membranes |
| | Xerostomia | Dry mouth; usually secondary to drugs |
| Various | Acute herpetic gingivostomatitis | Widespread ulcerating vesicular lesions; always present on gingiva; other locations may be involved; usually in young children |

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| | Behçet's syndrome | Multiple oral ulcers similar to those of aphthous stomatitis; also includes dry eyes |
| | Cicatricial pemphigoid | Bullae that rupture quickly, leaving ulcers; ocular lesions develop after oral lesions; found on alveolar mucosa and vestibules |
| | Condyloma acuminatum | Venereally transmitted wart forming cauliflower-like clumps |
| | | benign |
| | Hereditary hemorrhagic telangiectasia | Localized dilated blood vessels |
| | Lichen planus | Lacy pattern (Wickham's striae), sometimes erosive; may become malignant; most common on buccal mucosa, lateral tongue |
| | Lymphangioma | Localized swelling or discoloration; benign; most common on tongue |

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| | Mucocele (mucous retention cyst) | Soft nodule; if superficial, covered by thin epithelium; appears bluish; most common on lips and floor of mouth |
| | Noma | Small vesicle or ulcer that rapidly enlarges and becomes necrotic |
| | Pemphigoid | Small yellow or hemorrhagic tense bullae; may last several days before rupture; most common on |



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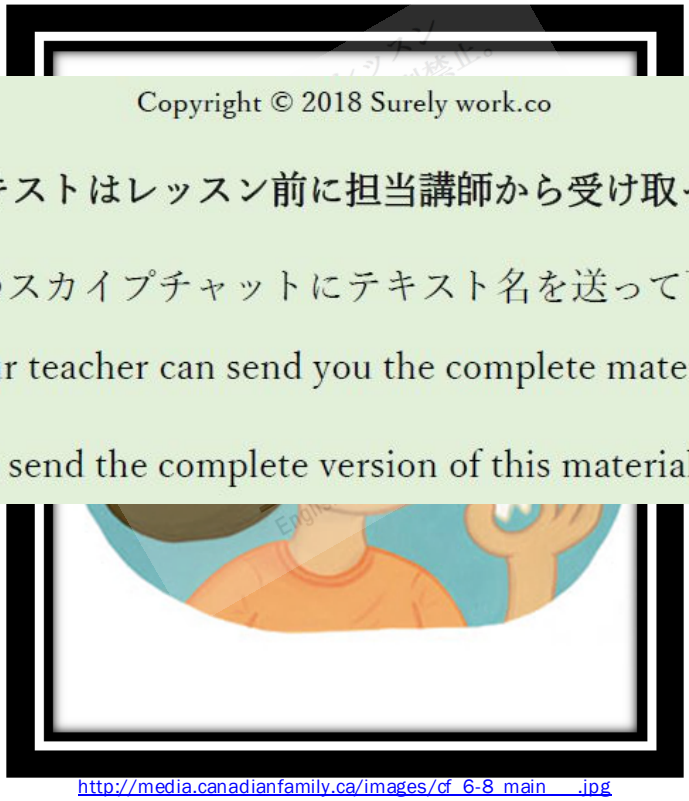
| | Syphilis | Chancre (red papule rapidly developing into a painless ulcer with a serosanguineous crust), mucous patch, gumma |

Teeth are inspected for shape, alignment, defects, mobility, color, and presence of adherent plaque, materia alba (dead bacteria, food debris, desquamated epithelial cells), and calculus (tartar).

Teeth are gently tapped with a tongue depressor or mirror handle to assess tenderness (percussion sensitivity). Tenderness to percussion suggests deep caries that has caused a necrotic pulp with periapical abscess or severe periodontal disease. Percussion sensitivity or pain on biting also can indicate

an incomplete (green stick) fracture of a tooth. Percussion tenderness in multiple adjacent maxillary teeth may result from maxillary sinusitis. Tenderness to palpation around the apices of the teeth also may indicate an abscess.

Loose teeth usually indicate severe periodontal disease but can be caused by bruxism or trauma that damages periodontal tissues. Rarely, teeth become loose when alveolar bone is eroded by an underlying mass (eg, ameloblastoma, eosinophilic granuloma). A tumor or systemic cause of alveolar bone loss (eg, diabetes mellitus, hyperparathyroidism, osteoporosis, Cushing's syndrome) is suspected when teeth are loose and heavy plaque and calculus are absent.





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Calculus is mineralized bacterial plaque—a concretion of bacteria, food residue, saliva, and mucus with Ca and phosphate salts. After a tooth is cleaned, a mucopolysaccharide coating (pellicle) is deposited almost immediately. After about 24 h, bacterial colonization turns the pellicle into plaque. After about 72 h, the plaque starts calcifying, becoming calculus. When present, calculus is deposited most heavily on the lingual (inner, or tongue) surfaces of the mandibular anterior teeth near the submandibular

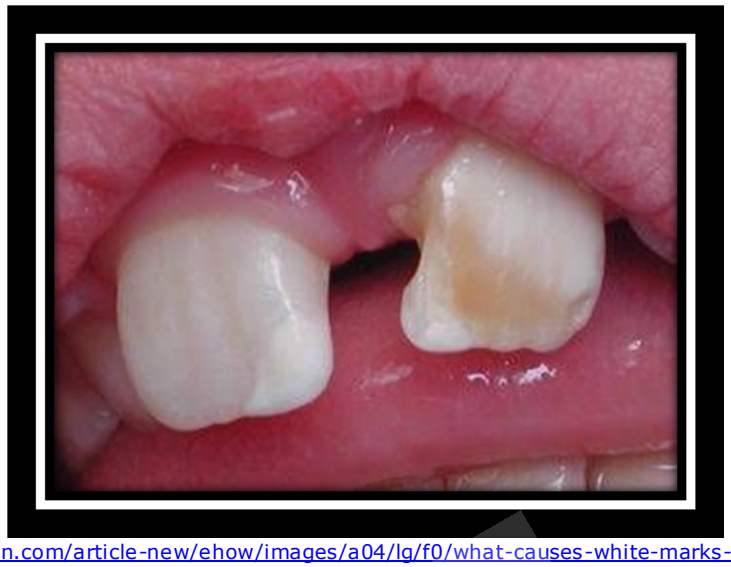
and sublingual duct orifices (Wharton's ducts) and on the buccal (cheek) surfaces of the maxillary molars near the parotid duct orifices (Stensen's ducts).

Caries first appears as defects in the tooth enamel. Caries then appears as white spots, later becoming brown.

Attrition (wearing of biting surfaces) can result from chewing abrasive foods or tobacco or from the wear that accompanies aging, but it usually indicates bruxism. Another common cause is abrasion of a porcelain crown occluding against opposing enamel, because porcelain is considerably harder than enamel. Attrition makes chewing less effective and causes noncarious teeth to become painful when the eroding enamel exposes the underlying dentin. Dentin is sensitive to touch and to temperature changes. A dentist can desensitize such teeth or restore the dental anatomy by placing crowns or



absent or conical, so that dentures are needed from childhood. Dentinogenesis imperfecta, an autosomal dominant disorder, causes abnormal dentin that is dull bluish brown and opalescent and does not cushion the overlying enamel adequately. Such teeth cannot withstand occlusal stresses and rapidly become worn. People with pituitary dwarfism or with congenital hypoparathyroidism have small dental roots; people with gigantism have large ones. Acromegaly causes excess cementum in the roots as well as enlargement of the jaws, so teeth may become widely spaced. Acromegaly also can cause an open bite to develop in adulthood. Congenitally narrow lateral incisors occur in the absence of systemic disease. The most commonly congenitally absent teeth are the 3rd molars, followed in frequency by the maxillary lateral incisors and 2nd mandibular premolars.



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Defects in tooth color must be differentiated from the darkening or yellowing



Affected teeth fluoresce with distinctive colors under ultraviolet light corresponding to the specific tetracycline taken. In congenital porphyria, both the deciduous and permanent teeth may have red or brownish discoloration but always fluoresce red from the pigment deposited in the dentin. Congenital hyperbilirubinemia causes a yellowish tooth discoloration. Teeth can be whitened.

**Table 4**

**Tooth Whitening Procedures**

| Done By | Ingredients | Comments |
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| **Dentist** | | |

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| In office | Concentrated hydrogen peroxide is applied to teeth, which is exposed to a light or laser | Very effective<br>Gingiva, skin, and eyes must be protected |
| **Patient** | | |
| At home | 6% carbamide peroxide (becomes 3% hydrogen peroxide when applied) and a thickening agent containing copolymers of acrylic acid cross-linked with a polyalkenyl polyether are added to a | Very effective |



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| Paint-on whitening | Usually composed of titanium dioxide | Not very effective |

Defects in tooth enamel may be caused by rickets, which results in a rough, irregular band in the enamel. Any prolonged febrile illness during odontogenesis can cause a permanent narrow zone of chalky, pitted enamel or simply white discoloration visible after the tooth erupts. Thus, the age at which the disease occurred and its duration can be estimated from the location and height of the band. Amelogenesis imperfecta, an autosomal dominant disease, causes severe enamel hypoplasia. Chronic vomiting and esophageal reflux can decalcify the dental crowns, primarily the lingual surfaces of the maxillary anterior teeth. Chronic snorting of cocaine can result in widespread decalcification of teeth, because the drug dissociates in

saliva into a base and HCl. Chronic use of methamphetamines markedly increases dental caries ("meth mouth").

Swimmers who spend a lot of time in overchlorinated pools may lose enamel from the outer facial/buccal side of the teeth, especially the maxillary incisors, canines, and 1st premolars. If Na carbonate has been added to the pool water to correct pH, then brown calculus develops but can be removed by a dental cleaning.

Fluorosis is mottled enamel that may develop in children who drink water containing > 1 ppm of fluoride during tooth development. Fluorosis depends on the amount of fluoride ingested. Enamel changes range from irregular whitish opaque areas to severe brown discoloration of the entire crown with a roughened surface. Such teeth are highly resistant to dental caries.



abnormal distribution of keratinized or nonkeratinized oral mucosa demands attention. Keratinized tissue that occurs in normally nonkeratinized areas appears white. This abnormal condition, called leukoplakia, requires a biopsy because it may be cancerous or precancerous. More ominous, however, are thinned areas of mucosa. These red areas, called erythroplakia, if present for at least 2 wk, especially on the ventral tongue and floor of the mouth, suggest dysplasia, carcinoma in situ, or cancer.

With gloved hands, the examiner palpates the vestibules and the floor of the mouth, including the sublingual and submandibular glands. To make palpation more comfortable, the examiner asks the patient to relax the mouth, keeping it open just wide enough to allow access.

The temporomandibular joint (TMJ) is assessed by looking for jaw deviation on opening and by palpating the head of the condyle anterior to the external

auditory meatus. Examiners then place their little fingers into the external ear canals with the pads of the fingertips lightly pushing anteriorly while patients open widely and close 3 times. Patients also should be able to comfortably open wide enough to fit 3 of their fingers vertically between the incisors (typically 4 to 5 cm). Trismus, the inability to open the mouth, may indicate temporomandibular disease (the most common cause), pericoronitis, scleroderma, arthritis, ankylosis of the TMJ, dislocation of the temporomandibular disk, tetanus, or peritonsillar abscess. Unusually wide opening suggests subluxation or type III Ehlers-Danlos syndrome.

**Testing**

For a new patient or for someone who requires extensive care, the dentist takes a full mouth x-ray series. This series consists of 14 to 16 periapical films to show the roots and bone plus 4 bite-wing films to detect early caries between posterior teeth. Modern techniques reduce radiation exposure to a



**Reference: http://www.merckmanuals.com**