

## Definition and Introduction

### ORAL MEDICINE

Oral medicine may be defined as the branch of dentistry that deals with the diagnosis and management of diseases that are nonsurgical in nature, that may occur only in the oral cavity or may be oral manifestations of systemic disease.

*Scope of oral medicine:* It is a clinical discipline that encompasses the following:

1. Diagnosis and medical management of diseases of oral mucosa, jaws and the salivary glands.
2. Diagnosis and medical management of oro-facial pain and TMJ disorders.
3. Dental management of patients with complicated medical diseases.

### CASE HISTORY

The first and the most important step in evaluating a patient is obtaining a detailed case history. Case history means gathering relevant information from the patient for the purpose of establishing the diagnosis and providing oral health care needs to them. It involves listening patiently to the patient's complaints and obtaining the necessary details by asking him appropriate questions. This is followed by a thorough physical examination with special attention to the area of chief complaint so as to arrive at a provisional diagnosis.

The case history includes the following parts:

1. Patient's personal data
2. Chief complaint
3. Medical history
4. Past dental history
5. Personal history
6. General examination
7. Extraoral examination
8. Intraoral examination
9. Detailed examination of the area of chief complaint
10. Provisional diagnosis and investigations
11. Final diagnosis
12. Treatment plan

As an alternative to the above mentioned conventional method of history taking which involves compiling the extensive list of normal and abnormal data, a problem-oriented record (POR) can be maintained that emphasizes the evaluation and recording of pertinent abnormal findings. The POR has four components that can be described under the acronym SOAP in which,

**S**—Subjective is recording the patient's chief complaint, symptoms and a brief review of his medical history.

**O**—Objective involves a brief physical examination followed by detailed examination of the area of chief complaint.

**A**—Assessment, which involves arriving at the diagnosis.

**P**—Plan, where the required treatment is planned and executed.

### THE IMPORTANCE OF CASE HISTORY

As already mentioned above, case history is the most integral part of patient assessment. Every detail recorded can be of enormous importance and the time spent in obtaining this vital information is worthwhile.

#### 1. Patient's Personal Data

This part of the history includes recording the patient's name, age, gender, address, etc.

- i. **Name:** Apart from identification, addressing the patient by his name when he enters the office and during the appointments makes the patient feel important and at home and helps in establishing a good rapport with the patient.
- ii. **Age:** The patient's age is a vital information as it helps in diagnosis as well as treatment planning. Certain diseases have predilection to affect certain age groups, e.g. developmental anomalies, rampant caries and lesions such as primary herpetic gingivostomatitis, measles, chickenpox, etc. are more common in children, while diseases such as root surface caries, osteomyelitis, herpes zoster infection, pemphigus, etc. are common in the older age group. Another important matter that requires consideration of the patient's age is dosage of drugs in prescriptions. Dosages should be reduced appropriately for children. Drugs such as tetracycline are contraindicated in small children where it can cause permanent discoloration of the developing dentition. Similarly aspirin is contraindicated during viral infections in the pediatric age group as this can result in anicteric liver dysfunction called Reye's syndrome. Drug dosage must be adjusted for the elderly considering their general

health status. The possibility of drug interactions must also be considered as many senior individuals are under medications for co-existing medical diseases.

- iii. **Gender:** Diseases are known to have predilection to certain genders, e.g. diseases such as recurrent aphthous stomatitis, lichen planus, MPDS, iron deficiency anemia, AOT, etc. are more common in the females, while conditions such as leukoplakia, squamous cell carcinoma, ameloblastoma, hemophilia, etc. are common in the males.
- iv. **Address:** Knowing the patient's complete residential address facilitates communication. With the advent of modern technologies, it is advisable to record the patient's mobile numbers and e-mail address also so that information regarding appointments and follow ups can be done very easily!

Apart from that, the knowledge of the patient's place of residence can give a clue about his social and cultural background and prevalence of certain habits and diseases in that geographic location. For example, the habit of reverse smoking is common in the state of Goa and coastal area of Kerala, where palatal changes could result in a premalignant change. Similarly enamel fluorosis is endemic in areas where fluoride content in drinking water is high.

#### 2. Chief Complaint

Chief complaint is the problem for which the patient approaches the doctor to seek treatment. "*Listen to the patient, he is telling you the diagnosis*" is an age old adage that still holds value. The complaints mentioned by the patients are called as symptoms and must be therefore listened to attentively. Carefully framed questions should be asked that would encourage the patient to reveal some vital piece of information which otherwise the patient may not have expressed. These

questions may be of two types, open-ended questions and close questions. Open questions are those that will encourage the patient to narrate in detail the information asked to him, e.g. 'what kind of pain do you experience?' Questions like these will make the patient think and give a reply in a descriptive manner. Closed questions on the other hand are more objective in nature for which the patient has to choose just the right type of option given by the doctor, e.g. 'is the pain continuous or intermittent?'

The common chief complaints that can lead the patient to a dentist are pain, swelling, bleeding from the gums, difficulty in opening the mouth, pain in the TMJ region, ulceration or burning sensation in the mouth, etc. Each of the symptoms must be recorded in the decreasing order of their severity. The chief complaint must be recorded in the patient's own words and technical terms must be best avoided. The onset, duration, progress, aggravating and relieving factors must also be recorded which are very useful in leading to the correct diagnosis.

Onset indicates the manner in which the disease began. It denotes the acute or chronic nature of the disease, e.g. lesions such as erythema multiforme, allergic reactions, etc. have a sudden or acute onset. On the other hand, chronic lesions and conditions such as pemphigus, lichen planus, MPDS, OSMF and others have a gradual onset.

Duration indicates the time for which the symptoms last, e.g. pain due to dental diseases usually lasts for a longer period of time, while pain in trigeminal neuralgia typically occurs in episodes and lasts for just a few seconds. Similarly lesions such as lichen planus, pemphigus, aphthous major, etc. have a long duration of history while conditions such as aphthous minor, herpes labialis, etc. have a short duration.

Progress indicates the manner in which the disease process has advanced. Rapid

fulminating infections such as Ludwig's angina spread fast and increase suddenly in size, while pain associated with TMJ disease, MPDS, etc. progress slowly in severity. Lesions such as aphthous stomatitis, benign migratory glossitis, herpes labialis, etc. characteristically show periods of remissions and exacerbations and recur periodically.

Aggravating factors are those that cause the symptoms to grow more severe. For example, pain of acute pulpitis aggravates on lying down while neuralgic pain is aggravated by smiling or even touching specific parts of the face lightly. Many oral lesions such as lichen planus, aphthous stomatitis, herpes infection, etc. are known to be aggravated by stress.

Relieving factors are those that help the patient to get relief from the symptoms. For example, pain of dental diseases is usually relieved on taking some anti-inflammatory/analgesic drugs while that due to neuralgia is refractory to analgesics. Similarly muscular pain due to MPDS may be relieved by application of hot fomentation.

### 3. Medical History

It is very important to know about the patient's general medical health status prior to beginning any sort of dental treatment. The objectives of knowing the medical history are twofold. First it helps us to understand the compromised health status of the patient so that necessary precautions can be taken to avoid any untoward complications. Thus as it is rightly said, '*When you prepare for an emergency, the emergency ceases to exist.*' A sound knowledge of management of medically compromised patient is important so as to avoid undesirable complications and embarrassment that accompanies it. Secondly, the patient may have certain oral lesions that may be manifestation of systemic disease as oral physicians it is our responsibility to manage these lesions effectively.

A variety of medical problems are of importance to be considered by a dentist during treatment planning. This list can be easily remembered by following the mnemonic mentioned as below.

- A — Asthma, allergy, anemia
- B — Bleeding disorders
- C — Cardiovascular disorders
- D — Diabetes
- E — Endocrine disorders such as hyperthyroidism, etc.
- F — Fits and faints (epilepsy)
- G — Gastrointestinal disorders such as peptic ulcer, hyperacidity, etc.
- H — Hospitalization and blood transfusion
- I — Infections such as HIV, hepatitis, tuberculosis, etc.
- J — Jaundice
- K — Kidney disorders
- L — Lactation and pregnancy

#### A—Asthma, Anemia

**Asthma** is a respiratory disorder characterized by hyper-responsiveness of the bronchi to stimuli resulting in wheezing and dyspnea. Asthma may be extrinsic or intrinsic. Extrinsic asthma is essentially allergic disorder seen commonly in children, while intrinsic asthma is nonallergic and caused due to mast cell instability.

##### *Dental considerations:*

- i. Anxiety due to dental treatment can precipitate an asthma attack. Hence these patients must be reassured and handled gently during treatment procedures.
- ii. Local anesthesia is safe. However, LA containing adrenaline must be avoided as sodium metabisulphite which is used to preserve adrenaline from being oxidized can trigger an allergic reaction in asthmatics.
- iii. Patients should not forget to take their medication and carry their inhaler pump with them.
- iv. Benzodiazepines and sedatives must be avoided as they too can precipitate an attack.
- v. Drugs such as aspirin and NSAIDs like mefenamic acid may induce an attack. Nimesulide is safer in these patients. Similarly morphine, thiopentone and other opioids can stimulate histamine release and so should be avoided.
- vi. Severely asthmatic patients may be under steroid therapy and hence necessary adjustments of steroid dose may be required to prevent adrenal crisis. Long-term and frequent use of steroid inhalers predisposes these patients to oral candidiasis.
- vii. Emergency medications such as adrenaline and hydrocortisone must be available in the clinic to be used, should any sudden attack be precipitated.

**Anemia** is a disorder characterized by reduction in the hemoglobin levels in the blood. Based on the cause, anemia may be categorized into iron deficiency anemia, hemolytic anemia, pernicious anemia, etc. Some of the common clinical presentations include general lassitude, pallor of nails, conjunctiva and oral mucosa, bald depapillated tongue, glossitis, angular cheilitis, etc.

##### *Dental considerations:*

- i. The patient's hemoglobin level and RBC count must be ascertained prior to any surgical procedures. It is advisable to postpone any surgical procedures if the hemoglobin levels are below 10 mg/dl and the patient needs to be referred to a hematologist/physician for opinion. GA may not be safe in severe anemics.
- ii. Oral manifestations of anemia include frequent aphthous ulcerations, glossitis, angular cheilitis, Plummer-Vinson syndrome, candidiasis, etc. Patients presenting with burning mouth or bald tongue must be investigated for anemia when there is no other notable cause for these symptoms.



### B—Bleeding Disorders

Disorders of hemostasis can cause management problems mainly due to excessive post-operative bleeding. The causes for prolonged bleeding may be due to platelet disorders like thrombocytopenia, idiopathic thrombocytopenic purpura, drug such as aspirin, etc. Coagulation defects such as hemophilia, von Willebrand's disease, Bernard-Soulier syndrome, etc. can also result in abnormal excessive bleeding.

#### *Dental considerations:*

- i. The coagulation profile must be obtained for these patients before beginning dental procedure. These include assessment of the bleeding time (BT), clotting time (CT), prothrombin time (PT), activated partial thromboplastin time (aPTT), etc.
- ii. Adequate factor replacements such as factor VII for hemophilia A, factor IX for hemophilia B, etc. must be given and their levels must be maintained during and after the surgery to prevent excessive bleeding.
- iii. Preventive dental care must be emphasized for these patients so that serious consequences of dental neglect that result in the need for surgeries can be avoided.
- iv. Endodontics is safer than exodontia.
- v. Nerve block anesthesia such as pterygo-mandibular block, etc. must be avoided as these techniques are blind procedures and can result in extensive bleeding into the deeper planes of the tissues. Infiltration anesthesia may be given but with caution for they too can lead to extensive bleeding. However, lingual infiltrations must be avoided as the bleeding may track down and posteriorly into the parapharyngeal spaces causing air space compression and respiratory distress. Intraligamentary injections are safer in these patients.
- vi. Surgical procedures must be carried out with minimal trauma and antifibrinolytic drugs such as tranexamic acid can be used to arrest uncontrolled bleeding.
- vii. It is ideal to carry out surgical procedures in a hospital setting so that emergencies can be immediately handled.

### C—Cardiovascular Diseases

Cardiovascular diseases such as hypertension, ischemic heart diseases, etc. are becoming increasingly common in the modern days. Hypertension may be defined as a persistent rise in the arterial blood pressure. Ischemic heart disease such as angina pectoris, myocardial infarction, etc. result in a compromised state of health that these patients require special care during dental treatment procedures.

#### *Dental considerations:*

- i. As most dental procedures are stressful and stress can precipitate cardiac disease, it is important that adequate stress reduction protocols be initiated before beginning extensive dental treatment. Short morning appointments are preferable and the patient may be pre medicated with anti-anxiety drugs such as diazepam 5 mg.
- ii. It is advisable to check the patient's blood pressure before any surgical procedure is attempted. In patients who have suffered from myocardial infarction, dental treatment may be postponed until complete recovery has taken place, i.e. for a period of 6 months after the attack.
- iii. Many patients with cardiac disease take a low dose of aspirin daily. As aspirin has antiplatelet effects, it may result in prolonged bleeding after extractions or other surgical procedures. Hence, it is recommended that aspirin be stopped at least 7 days before the surgery with the physicians consent. However, recent studies indicate that patients may be allowed to continue aspirin if the bleeding time and clotting time are within normal limits.
- iv. Antihypertensive agents such as nifedipine can induce gingival hyperplasia.

v. Local anesthesia can be used safely. Adrenaline containing solutions may be avoided as adrenaline being a vasoconstrictor can raise the blood pressure. However, the low concentration of adrenaline (1:80000) that is used in LA solutions is considered safe, and advisable as anesthetic effect is longer lasting, but not more than 4 ml of such LA solution must be used. It is more likely that the release of endogenous catecholamines [associated with stress in HT patients] can suddenly shoot up the blood pressure.

Patients on antihypertensive beta blockers, for example, propranolol—if these patients are given adrenaline there will be an un-opposed action of alpha receptors which leads to exaggerated vasoconstriction and will precipitate anginal attack.

- vi. Emergency drugs including nifedipine, isosorbide, etc. must be readily available while treating unstable hypertensive and angina patients.
- vii. Referral to the physician is an essential prerequisite for reassurance and also immediate hospital support if warranted.

Rheumatic heart disease is another condition affecting the CVS that requires special considerations. These patients require antibiotic prophylaxis prior to dental treatment procedures such as extraction, scaling, curettage or even deep periodontal probing and placement of wedges or rubber dam. Bacteremia caused due to these procedures can affect the heart valves and result in subacute bacterial endocarditis. Antibiotic prophylaxis is also required for patients with valvular heart disease or prosthetic heart valves. The recommended antibiotic prophylaxis is as follows:

- i. *Adults who are not allergic to penicillin:* 2 gm amoxycillin to be taken 1 hour before the procedure.
- ii. *Adults who are allergic to penicillin:* 600 mg clindamycin to be taken 1 hour before the procedure.

- iii. *Children between 5 and 10 years who are not allergic to penicillin:* 500 mg amoxycillin 1 hour prior to the procedure.

- iv. *Children between 5 and 10 years who are allergic to penicillin:* 300 mg clindamycin 1 hour prior to the procedure.

- v. *Children less than 5 years who are not allergic to penicillin:* 250 mg amoxycillin 1 hour prior to the procedure.

- vi. *Children less than 5 years who are allergic to penicillin:* 150 mg clindamycin 1 hour prior to the procedure.

Procedures such as radiography, routine dental examination, endodontics (confined to the apex), exfoliation of primary teeth, suture removal, etc. do not require antibiotic coverage.

#### D—Diabetes

Diabetes is a condition in which there is impaired carbohydrate metabolism caused by insulin resistance or deficiency. The common symptoms of diabetes are polyphagia (increased appetite), polyuria (increased urination) and polydipsia (increased thirst). Diabetic patients are under antidiabetic therapy and sometimes pose difficulty in management. They may frequently slip into hypoglycemic coma and fall unconscious during treatment. Further as dental treatment can impose restrictions on their dietary intake, this may affect their glycemic balance that is critically maintained by drug therapy.

##### *Dental considerations:*

- i. Routine dental therapy can be carried out without any special considerations. However, when major therapy or surgeries such as even extractions are planned, the patient's blood sugar level must be evaluated before beginning the treatment as hyperglycemia may predispose to infection and delayed wound healing. Changes in the vessel wall such as microangiopathy leading to luminal narrowing also causes delayed wound healing. Treatment is best carried out in the morning after the patient has had his breakfast and a regular dose of antidiabetic medicines.

- ii. Infections must be treated aggressively with suitable antibiotics as they may precipitate ketosis.
  - iii. Local anesthesia is safe and the low dose and concentration of adrenaline does not seem to affect much.
  - iv. Diabetic patients may also present with oral manifestations such as burning mouth, multiple periodontal abscesses, aggressive periodontal disease, non-healing wound, candidiasis, etc. These conditions must be recognized early and managed effectively. Antidiabetic drugs can cause oral side effects such as lichenoid reaction or even xerostomia.
  - v. Emergency medicines such as iv dextrose, glucose, glucagon, etc. must be readily available to manage unexpected complications.
- everyday. Pigmentation of oral tissues may also be seen in Addison's disease.
  - ii. Aspirin and other NSAID must be used cautiously in patients receiving steroid therapy as this can cause peptic ulcerations. Long-term steroid therapy can cause immunosuppression. Lesions such as candidiasis, hairy leukoplakia, Kaposi's sarcoma, etc. may then begin to appear.
  - iii. During an event of acute adrenal insufficiency, the patient must be laid flat with his legs raised and intravenous steroids (hydrocortisone 200 mg) along with electrolytes must be administered.
  - iv. Hypothyroid patients may precipitate myxedema when drugs such as opioids, diazepam or GA are given to them. LA is safer in these patients.
  - v. Similarly, pain, anxiety or trauma can precipitate thyroid crisis in hyperthyroidism that is untreated.
  - vi. Hyperparathyroidism may cause generalized rarefaction of the jaw bone and occasionally cause giant cell lesions called Brown's tumor.

### **E—Endocrine Disorders**

The term endocrine disorders encompass various diseases such as hyperthyroidism, hypothyroidism, Addison's disease, Cushing's syndrome, etc. Although these conditions are rare in practice, the clinicians must have a brief knowledge of these conditions as they may alter the dental treatment plan.

#### *Dental considerations:*

- i. Patient's with adrenal insufficiency (Addison's disease) often receive exogenous steroids for treatment. This further suppresses the hypophyseal axis and inhibits the release of endogenous steroids that is required during periods of stress. This can precipitate hypotensive collapse during stressful dental procedures. Hence high doses of corticosteroids were advocated in the past before and after dental procedures or during events like trauma or infection. However, according to the recent literature, the patient's steroid dose may be increased prior to the treatment only if patient is taking more than 50 mg of hydrocortisone (12.5 mg of prednisolone)

### **F—Fits and Faints**

Epilepsy is a central nervous system disorder which causes episodic disturbances of consciousness and is often accompanied by seizures. Sometimes these patients may suffer from prolonged uncontrolled seizures that are referred to as status epilepticus.

#### *Dental considerations:*

- i. Epileptic patients have a greater chance of injuring their tongue, lip or buccal mucosa during the attacks. Occasionally, they may also sustain dental or jaw fractures.
- ii. Antiepileptic drugs such as phenytoin sodium can cause gingival enlargement, folate deficiency and hence aphthous stomatitis. Sodium valproate can result in increased bleeding tendencies.

- iii. The clinician should be ready to manage an emergency situation created by the onset of epileptic attack. All procedures must be stopped immediately and the patient must be put in a lateral position with a soft mouth gag inserted between the teeth to prevent the tongue from being bitten. If the seizures do not stop, diazepam injections may be given intramuscularly and medical help must be sought.

### G—Gastrointestinal Disorders

Gastrointestinal disorders include an array of diseases affecting any part of the system from the mouth to the rectum. Of particular interest to the dentist are, however, common conditions such as peptic ulceration, liver disorders, etc.

#### *Dental considerations:*

- i. Drugs such as aspirin and other NSAIDs must be used cautiously in patients with history of peptic ulcerations as they can aggravate the existing condition. Selective COX<sub>2</sub> inhibitors like nimesulide, pofecoxib, etc. are less harmful to the gastric mucosa. The patients must be instructed to have the medications with a glass of milk or plenty of water. If required tablets of ranitidine (150 mg BD) or omeprazole (20 mg BD) can be added to the patient's prescription. These drugs help to reduce the acidity in the stomach. Also use of systemic steroids is contraindicated for they too can inhibit prostaglandin synthesis and thus aggravate peptic ulceration.
- ii. Use of broad-spectrum antibiotics such as amoxycillin can lead to diarrhea as they suppress the normal intestinal microflora. Combinations with lactobacillus spores are available which prevent such complications.
- iii. Severe liver disease can inhibit the production of clotting factors and hence these patients are at a greater risk of bleeding during or after dental surgeries. Patients with hepatitis have reduced secretion of Bile so that fats are not emulsified and fat-soluble vitamins such as vitamin K is not

absorbed from the intestine causing deficiency and consequent chances of bleeding. Drug dosage must be reduced and hepatotoxic drugs must be avoided in these patients. Patients with hepatitis B infection have to be managed more cautiously [universal precautions to prevent cross-infection].

- iv. Patients with history of gastroesophageal reflux disease suffer from frequent regurgitation of stomach acids that can lead to erosion of the lingual surfaces of their teeth.

### H—Hospitalization and Blood Transfusion

Patients having a frequent history of hospitalization usually have some of the medical problems mentioned above. Causes of hospitalization and medication must be ascertained and necessary precautions must be taken to avoid complications. Similarly patients who have received frequent blood transfusion may run a high risk of contracting blood-borne infections such as HIV or hepatitis B, etc. Also they may be suffering from conditions such as thalassemia or hemophilia for which they have received many transfusions.

### I—Infections

Such as tuberculosis, HIV, hepatitis, etc. are highly communicable and the dentist must take adequate precautions to protect himself from getting infected as well as spreading the disease to other patients visiting his clinic. Proper cross-infection control protocol and aseptic precautions must be followed and instruments used for these patients must be sterilized thoroughly before they are used for the next patients. Also patients with HIV may have many oral manifestations which shall be discussed in the appropriate sections. The dentist must also be immunized against hepatitis B virus.

### J—Jaundice

Jaundice refers to the rise in the serum bilirubin level which in turn results in yellowish

discoloration of the sclera, skin and the mucous membrane. Jaundice may be categorized into three main types, i.e. hemolytic, infective and obstructive jaundice. The liver functions are affected in jaundice and the patients must be tested for blood levels of bilirubin, SGOT, SGPT, HbS antigen, etc.

Dental treatment procedures may be postponed until the patient completely recovers and drug prescription should be kept at minimum. Patients with advanced liver diseases may exhibit a greater tendency of bleeding after surgical procedures as vitamin K absorption is low and coagulation factors production which takes place in the liver is affected.

Patients who are HbsAg positive, i.e. with hepatitis B infection are a potential source of cross-infection and need to be handled cautiously in addition to following the universal precautions. All dental clinicians including the paramedical staff should be vaccinated against the hepatitis B virus.

#### **K—Kidney Disorders**

Kidney disorders such as renal failure, nephrotic syndrome, etc. are commonly encountered in practice. Some of these patients may be receiving dialysis or may have even undergone renal transplants. Many of these patients thus require modifications in their dental treatment plan.

- i. Nephrotoxic drugs such as tetracycline, aminoglycosides must be avoided. Antibiotics like cloxacillin, doxycycline, metronidazole are safe and can be prescribed in their usual doses. Ampicillin, amoxicillin, benzylpenicillin, erythromycin are fairly safe, but their dosages must be reduced in severe renal disease. NSAIDs including aspirin are less safe and their doses need to be reduced even in patient's with mild renal disease. Safer analgesics include paracetamol and codeine. Lignocaine and diazepam are safe for use.
- ii. Patients with severe uremia may present with oral ulceration due to uremic stomatitis.
- iii. Dental treatment for patients undergoing hemodialysis may be carried out on the next day after the dialysis when there is maximum benefit of the dialysis and the effect of heparin which is given during hemodialysis has also worn off.
- iv. Patients who require dental extractions, scaling or periodontal surgeries must be provided antibiotic prophylaxis as bacteremia can result in peritonitis in patients undergoing peritoneal dialysis.

#### **L—Lactation and Pregnancy**

- i. Dental treatment during pregnancy requires special consideration. Pregnancy may predispose to gingivitis and localized gingival enlargements called as pregnancy tumor.
  - ii. Injudicious prescription of drugs must be avoided as there is a risk of fetal damage. Tetracyclines must be avoided as they can cause irreversible staining of teeth in the child. Drugs such as thalidomide, aspirin, etc. must not be prescribed due to their teratogenic side effects.
  - iii. Penicillins, erythromycin and paracetamol are safe during pregnancy, but drug prescription should be kept to minimum especially during the first trimester. Local anesthetic lignocaine is safe but must be used only when necessary.
  - iv. Extensive dental treatment should be avoided during the first and last trimester. The second trimester is comparatively safe for treatment.
  - v. Exposure to X-rays must be strictly avoided in the first trimester. If radiographs are unavoidable during pregnancy, the patient must be adequately protected with a lead apron, as otherwise, X-rays are potentially dangerous to the fetus.
- 10-day rule:* The basis of this rule was to do X-ray examinations only during the



10 days following the onset of menstruation as ovulation and fertilization of the ovum is least likely during this period and hence no chances of radiation hazard to the foetus.

Now it is understood that the organogenesis starts 3–5 weeks after conception and the focus is now shifted to missed period and possibility of pregnancy.

- vi. If a pregnant patient develops syncope which is more common in the third trimester, the patient must not be put in a head low position as this may result in compression of the inferior vena cava by the gravid uterus thereby reducing venous return to the heart and consequent supine hypotensive failure. Instead the patient must be made to remain supine in the left lateral position.
- vii. A lactating mother should be prescribed drugs with caution as some of the drugs can be transferred to the child through breast milk.

#### 4. Past Dental History

A brief record of the patient's past dental visits must be noted including the frequency of need for dental treatment, nature of any treatment received. Particular attention must be given to any untoward reactions that the patient may have experienced such as drug allergy or any complications such as excessive bleeding, etc. so that such events can be safely avoided. The information obtained can also provide an insight towards the patient's level of awareness about dental procedures and expectations from the dentist.

#### 5. Personal History

Personal history includes information about habits such as paan, supari (areca nut), tobacco chewing or smoking, clenching, bruxism, teeth cleaning habits, etc. Lesions such as leukoplakia, OSMF, oral squamous cell carcinoma are found with higher frequency in people with tobacco-related habits. Stress and anxiety may be a contributing factor for conditions

such as aphthous stomatitis, MPDS, etc. Stoppage of such habits plays a crucial role in the treatment of these conditions. Patients with the habit of bruxism and/or of clenching have increased chances of attrition of teeth and tenderness of masseter.

A history of exposure to commercial sex workers or multiple partners may be asked in certain cases where oral lesions associated with sexually transmitted diseases such as HIV, syphilis, etc. are suspected.

#### 6. General Examination

General examination should include examination of the patient's general health and vital signs. 'A good clinical examination begins from the moment the patient enters the clinic.' The patient's general body composition, built, gait, etc. must be observed as he walks into the clinic. While evaluating cases of trauma, it is imperative to assess the patient's level of consciousness and orientation to space and time. Partial or complete loss of consciousness after trauma may be sign of CNS involvement and should immediately receive the attention of neurosurgeon. Vital statistics such as the patient's blood pressure, pulse, etc. must be recorded, particularly if the patient has any medical history or signs of an underlying systemic disease.

The exposed parts of the skin should be examined for any lesions, scars or pigmentation. Many oral lesions such as lichen planus, erythema multiforme, etc. may also show skin involvement. Pigmentation of the skin may be observed in lichen planus, Addison's disease, Peutz-Jegher's syndrome, Albright's syndrome, neurofibromatosis, etc. Occasionally, sinus tract opening may be seen on the skin in chronic infections such as osteomyelitis, tuberculosis, chronic periapical infection, etc.

Nails should be checked for pallor, clubbing or other deformities. Pallor of nails means paleness or lack of the normal pink color of the nails and could indicate anemia. Spoon-shaped nails (koilonychias) and cracking of

nails may be also seen in anemia. Such patient's should be referred for suitable investigations such as complete blood count, hemoglobin level estimation, etc. Clubbing indicates alteration in the shape of the nails. The nail bed swells up and the nails become convex. Clubbing may be of varying grades and is seen in conditions such as alcoholic liver disease, cardiac ailments, bronchiectasis, lung abscess, etc. Grooving or ridging of nails may be a feature in lichen planus.

Conjunctiva which is the mucosal lining of the eyeball (bulbar conjunctiva) and the eyelid (palpebral conjunctiva) should be examined for ecchymosis, ulceration and pallor. The normal colour of the palpebral conjunctiva is pink. Pallor of palpebral conjunctiva may be sign of anemia. Ecchymosis of the conjunctiva may indicate fracture of the zygoma or the infraorbital bone. Ulcerations of the conjunctiva may be noted in Stevens-Johnson syndrome, herpes zoster, etc. Symblepharon refers to the fusion of the palpebral and bulbar conjunctiva that is a complication of cicatricial pemphigoid.

The sclera which is the white portion of the eye should be examined for icterus, yellowish discoloration that is seen in jaundice. Appropriate investigations may be ordered and the patient must be sent to a physician for complete evaluation if needed.

### 7. Extraoral Examination

Extraoral examination includes the examination of the face, jaws, neck and the TMJ. Observe keenly for any swellings or facial asymmetry. If a swelling is present, its location, size, shape, margins must be inspected. The swelling must be palpated to study its consistency, and presence of tenderness. Presence of any ulcer or draining sinus tract must be noted.

Lymph nodes must be palpated to study their location, number, consistency and fixity to the underlying tissues. The submandibular, submental and cervical group of lymph nodes

must be checked thoroughly. Tender, firm lymph nodes are usually seen in infections, while hard, fixed lymph nodes may be due to metastasis from malignant tumor. Multiple lymph nodes may be present in tuberculosis, lymphomas, HIV, etc. For examining the submandibular nodes, the operator must stand behind the patient. The patient is asked to look slightly downwards and the operator must palpate the nodes with the tip of his first two fingers placing them medial to the body of the mandible. Similarly the cervical group of lymph nodes must be palpated anterior and posterior to the sternocleidomastoid muscle. The common causes of lymphadenopathy include, dental infections, metastatic malignancies, lymphomas, tuberculosis, etc.

The TMJ must be examined for any tenderness, restricted mouth opening, deviation, clicking, etc. which indicate pathology. In order to check for tenderness and clicking, the operator must stand behind the patient and place a finger over the joint bilaterally and instruct the patient to open and close the mouth. The joint may be auscultated with a stethoscope to detect clicking sound which may indicate disc derangement. Suitable investigations may be then ordered to confirm the diagnosis after clinical examination.

### 8. Intraoral Examination

Intraoral examination may be divided into soft tissue and hard tissue examination.

- a. Soft tissue examination includes, checking the labial mucosa, buccal mucosa, hard and soft palate, gingiva, tongue, pharyngeal and tonsillar areas. Normal anatomical variations such as Fordyce's spots and linea alba should not be mistaken for any pathology. The papillae on the tongue must be examined carefully depapillation of tongue may be noted in geographic tongue, median rhomboid glossitis, anemia, OSMF, etc. The gingiva should be examined to identify the presence of inflammation, enlargements or pocket formation. The

floor of the mouth should also be inspected carefully. If any growth or ulceration or white lesion is present, it must be thoroughly checked. Openings of Wharton's duct in the floor of mouth and of Stensen's duct in cheek mucosa opposite the upper molars should be checked for normal secretions, inflammation, etc.

- b. Hard tissue examination includes inspecting the overall status of the patient's dentition. The teeth should be examined for their total number, presence of any developmental anomalies, hypoplasia, caries, discoloration, wasting diseases such as attrition, abrasion, erosion and abfraction.

### 9. Examination of the Area of Chief Complaint

The area of chief complaint must be examined in detail. Presence of any soft tissue swelling, pus discharge, bony expansion must be noted. The teeth in the area must be evaluated for dental caries and periodontal disease. The teeth may be gently percussed by tapping the occlusal surface lightly with the blunt end of the probe. Pain elicited on percussion indicates tenderness which may be a sign of periapical disease. The teeth should be checked for abnormal mobility and vitality.

### 10. Provisional Diagnosis and Investigations

After taking a good history and performing the clinical examination, the clinician must arrive at a provisional diagnosis. Also the possible differential diagnosis should be charted so that appropriate investigations can be advised to the patient. Commonly advised investigations are an IOPA radiograph, occlusal or extraoral radiographs, blood investigations such as CBC, etc. Advanced investigations such as CT, MRI, scintigraphy may be required in certain cases. Tests which are not likely to yield any diagnostic information for that particular case must not be advised to the patient.

### 11. Final Diagnosis

Once the reports of the investigations are available, the case should be reviewed to correlate the clinical and investigatory findings to arrive at a final diagnosis. When a tumor or cyst is suspected, biopsy may be required to arrive at the final diagnosis.

### 12. Treatment Plan

Once a case has been diagnosed, the next crucial step is to chalk out a treatment plan for the patient. If the patient is suffering from pain or has signs of infection, antibiotic and anti-inflammatory drugs must be prescribed as an emergency measure. Appropriate treatment must then be planned for the patient after obtaining necessary consultation from the other specialists. While treating patients who are medically compromised, the necessary precautions and treatment modification must be incorporated in the treatment plan.

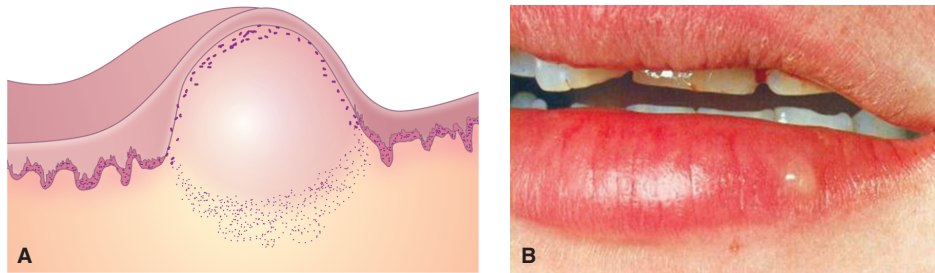
### TERMINOLOGIES USED IN CLINICAL EXAMINATION OF LESIONS

Clinical examination is by far the most important step in the Diagnostic sequence. It is essential to identify various lesions which can be manifested clinically and further analyze and correlate their significance.

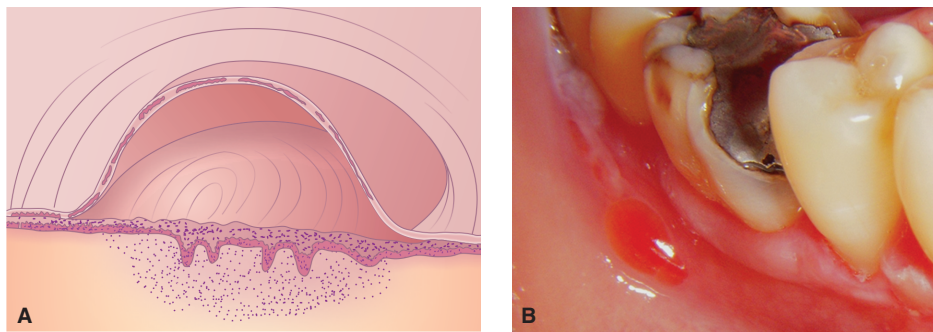
#### Terminologies

- Lesion may be described as a visible change in the normal anatomical structure caused by a pathological process.
- Primary lesion is the first pathological change manifested clinically, e.g. vesicle in herpes simplex.
- Secondary lesion is the altered primary lesion, e.g. ulceration caused by the rupture of the vesicle in herpes simplex.  
Lesions may be flat such as a macule, raised such as vesicle or depressed such as an ulcer.
- Vesicle is a circumscribed elevated serous fluid filled blister not more than 1 cm in diameter with a thin covering of epithelium, e.g. HSV infection, herpes zoster (Fig. 1.1).

- Bullae are circumscribed elevated serous fluid filled blister more than 1 cm in diameter. The epithelial covering may be thin if the lesion is intraepithelial as in pemphigus and thick if the lesion is subepithelial as in cicatricial pemphigoid (Fig. 1.2).
- Pustule is a circumscribed elevated lesion which is filled with purulent fluid or pus, e.g. chickenpox (Fig. 1.3).
- Papule is a circumscribed elevated solid (not fluid filled) lesion less than 1 cm in diameter, e.g. primary lesion of aphthous, lichen planus (Fig. 1.4).



**Fig 1.1:** Line diagram and picture of vesicle

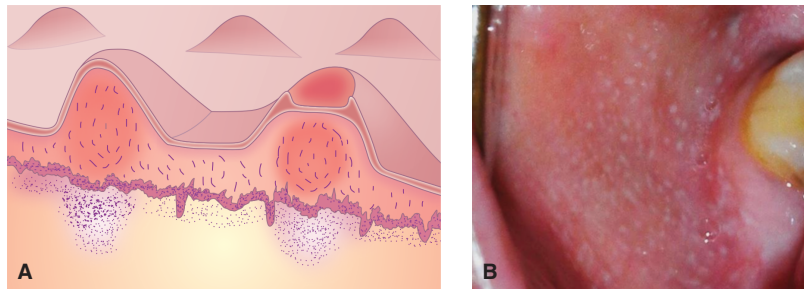


**Fig. 1.2:** Line diagram and picture of bullous lesion

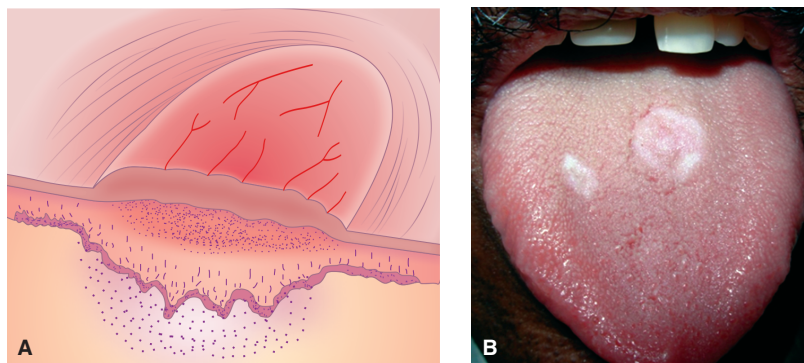


**Fig. 1.3:** Pustule

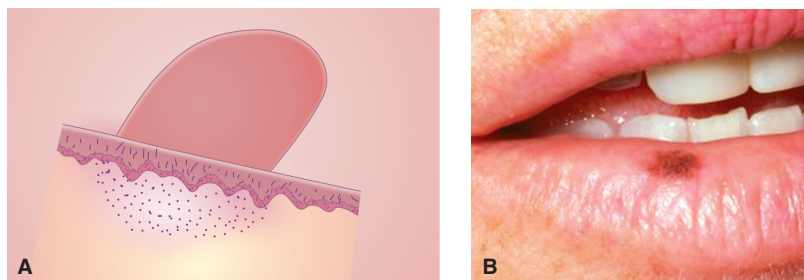




**Fig. 1.4:** Line diagram and picture of papules



**Fig. 1.5:** Line diagram and picture of plaque



**Fig. 1.6:** Line diagram and picture of macule

- Plaque is a slightly raised clearly demarcated area of gray or white discoloration, surface of which may be smooth, cracked or fissured, e.g. leukoplakia, plaque type of lichen planus (Fig. 1.5).
- Macule is a circumscribed flat (nonraised) area of altered coloration varying in size from a pin head to several cms, e.g. ephelis (freckles) (Fig. 1.6).
- Petechiae are pin head size (1–2 mm) discolored spots caused by extravasation of blood, e.g. scurvy, thrombocytopenic purpura (Fig. 1.7).
- Ecchymoses refer to larger areas of discoloration caused by extravasation of blood, e.g. subconjunctival ecchymoses in zygomatic arch fracture (Fig. 1.8).

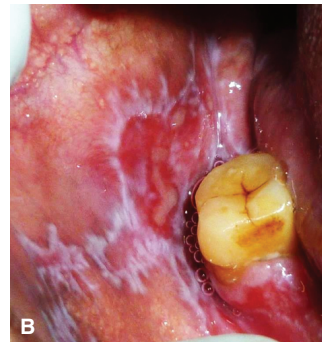
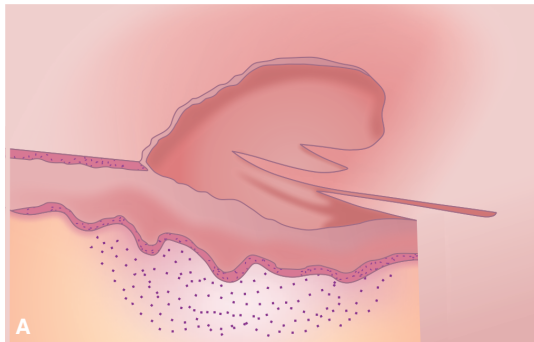




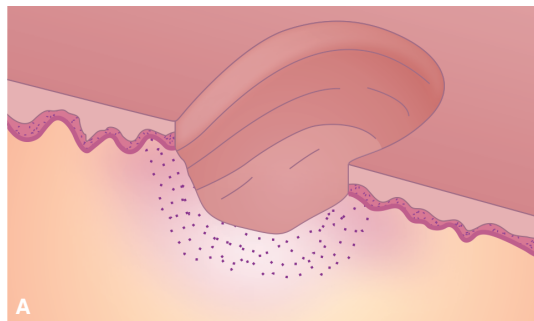
**Fig. 1.7:** Petechial spots on the palate



**Fig. 1.8:** Subconjunctival and periorbital ecchymosis



**Fig. 1.9:** Line diagram and picture of erosive lesion (lichen planus)



**Fig. 1.10:** Line diagram and picture of ulcer

- Erosion is a shallow defect in the mucosa representing a loss of epithelial coverage, e.g. erosive lichen planus (Fig. 1.9).
- Ulcer is a breach in the continuity of the skin or mucous membrane caused by pathological processes resulting in molecular death of tissue, e.g. tuberculous ulcer, aphthous ulcer (Fig. 1.10).
- Wound is a breach in the continuity of skin or mucous membrane caused by trauma.
- Nodule is a well-circumscribed condensation of tissue that may project from the



**Fig. 1.11:** An example of nodule—fibroma

surface as a polyp. It may be present in the epidermis or dermis, e.g. small fibroma, irritational fibroma (Fig. 1.11).

#### **Suggested Reading**

1. Burket's Oral Medicine 9th, 10th and 11th editions.
2. Medical problems in Dentistry, Scully and Cawson.
3. Oral and Maxillofacial Pathology, by Neville, 3rd edition.
4. Shafer's Textbook of Oral Pathology, 6th edition.