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COLLEGE OF DENTAL MEDICINE

HALITOSIS AND FOOD IMPACTION
DENTAL CLINICAL PRACTICE 4

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Objectives:

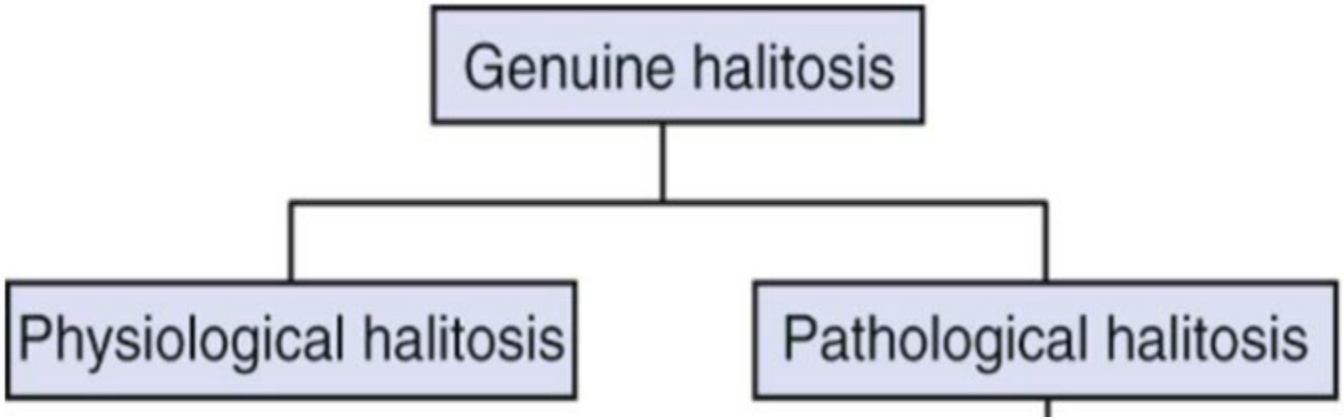
1) Learning the different types of Malodor.
2) Different methods to Diagnose Oral Malodor.
3) Treatment plan of Oral Malodor.
4) Etiology factors of food impaction and treatment.

- Halitosis is a latin word which derived from halitus (breathed air) and the osis (pathologic alteration).
- *Breath odor* can be defined as the subjective perception after smelling someone's breath. It can be pleasant, unpleasant or even disturbing, if not repulsive.
- If unpleasant, the terms *breath malodor, halitosis, bad breath,* or *fetor ex ore* can be applied.
- These terms, however, are not synonymous with *oral malodor*. This term is restricted to halitosis with an origin in the oral cavity.

- There are three main categories of halitosis:

1. Genuine halitosis.
2. Pseudo-halitosis.
3. Halitophobia.

Genuine halitosis: classification



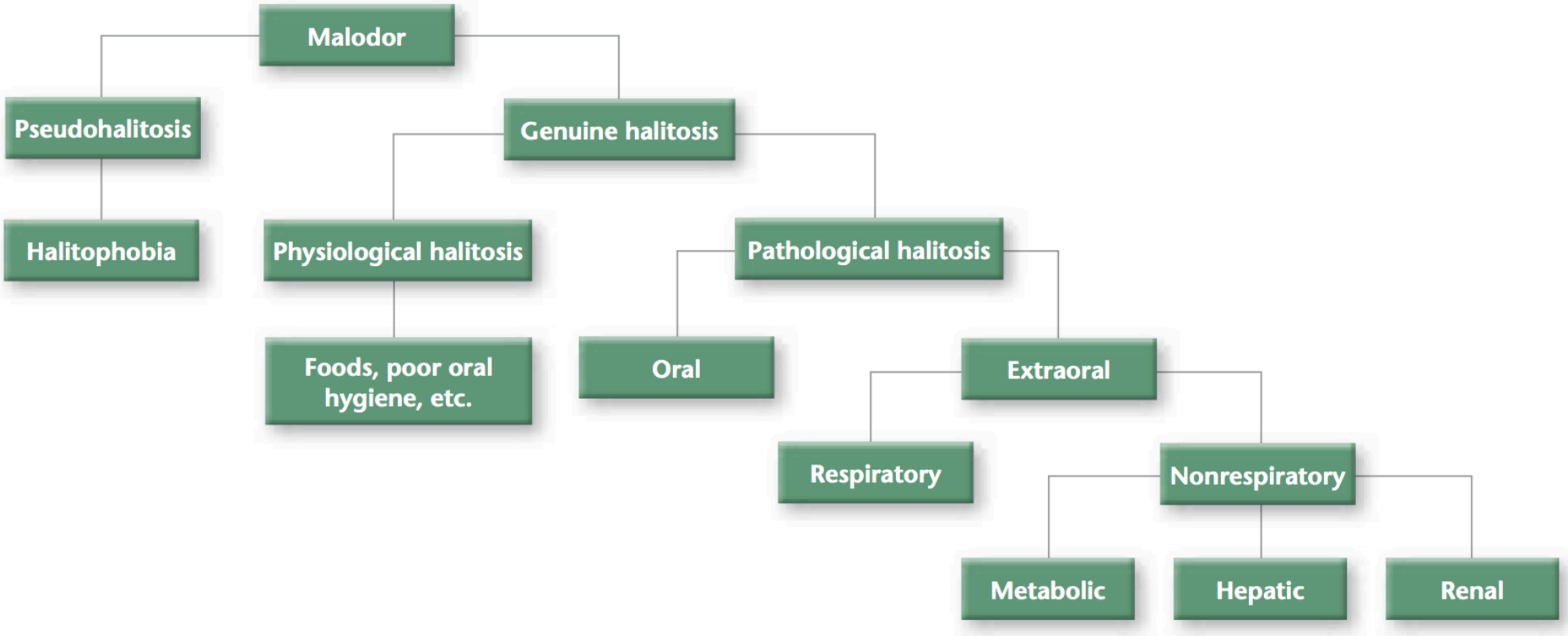
- **Genuine halitosis** is the term that is used when the breath malodor really exists and can be diagnosed by detecting the responsible compounds.

- **Physiologic Halitosis:**

① The transient disturbing odor caused by food intake (e.g., garlic, onions, and certain spices), smoking, or medication (e.g., antidepressants, diuretics) do not reveal a health problem.

② The same is true for "morning" bad breath, as habitually experienced on awakening. This malodor is caused by a decreased salivary flow and increased putrefaction during the night and spontaneously disappears after breakfast or after oral hygiene measures.

- **Pathologic Halitosis**: A persistent breath malodor, by definition, does reflect some pathology.



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- When an obvious breath malodor cannot be perceived, but the patient is convinced that he or she suffers from it, this is called *pseudo-halitosis.*
- If the patient still believes that there is bad breath after treatment of genuine halitosis or diagnosis of pseudo-halitosis, one considers halitophobia, which is a recognized psychiatric condition.

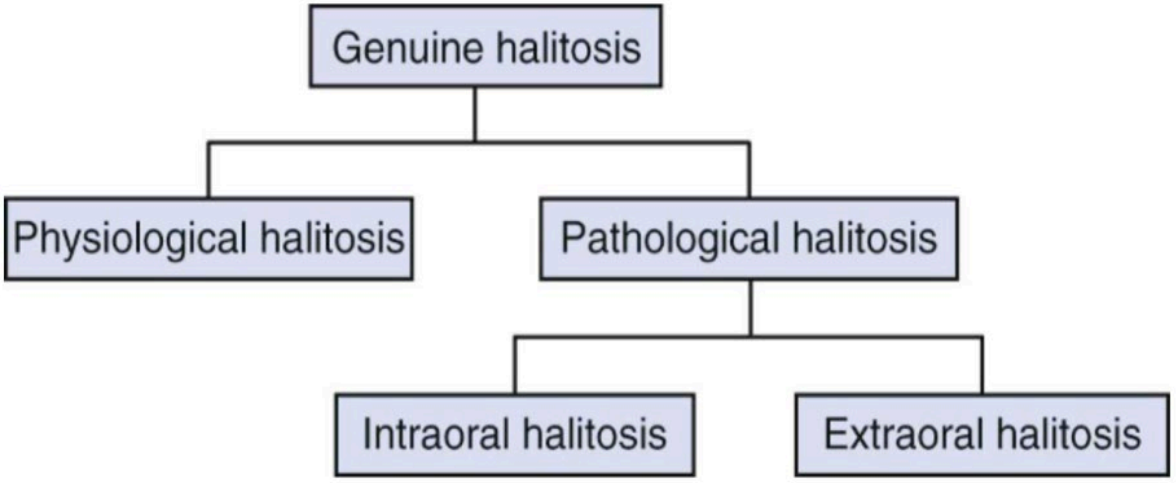
IMPACT OF HALITOSIS ON THE INDIVIDUAL AND SOCIETY

- Breath malodor is a common complain among the general population. It has a significant socioeconomic impact
- No gender predominance seems to exist for bad breath, some studies indicate a higher prevalence in women because women seek treatment more often than men.
- Age can range from 5 years to over 80 years.
- No association was found between increased age and oral malodor.

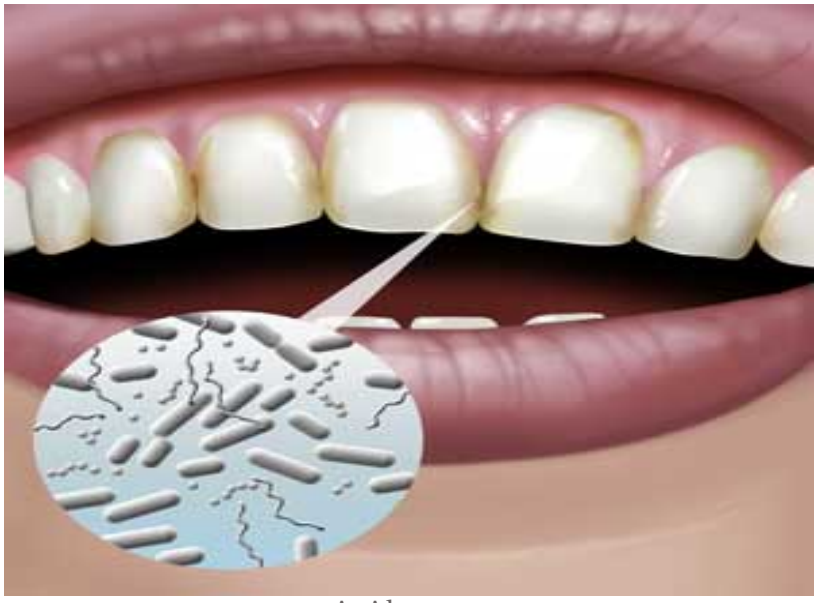
  (complaining about breath malodor for several years before seeking proper advice).

ETIOLOGY AND PATHOGENESIS:

- Genuine halitosis is classified into Physiological and Pathological halitosis.
- Pathological halitosis can be Intraoral OR Extra oral.
- Almost 90% of halitosis is Intraoral in origin while 10% is extra oral etiology. (Campisi G.et al,2011).
- Malodors, caused by oral emissions of volatile organic compounds (VOCs).

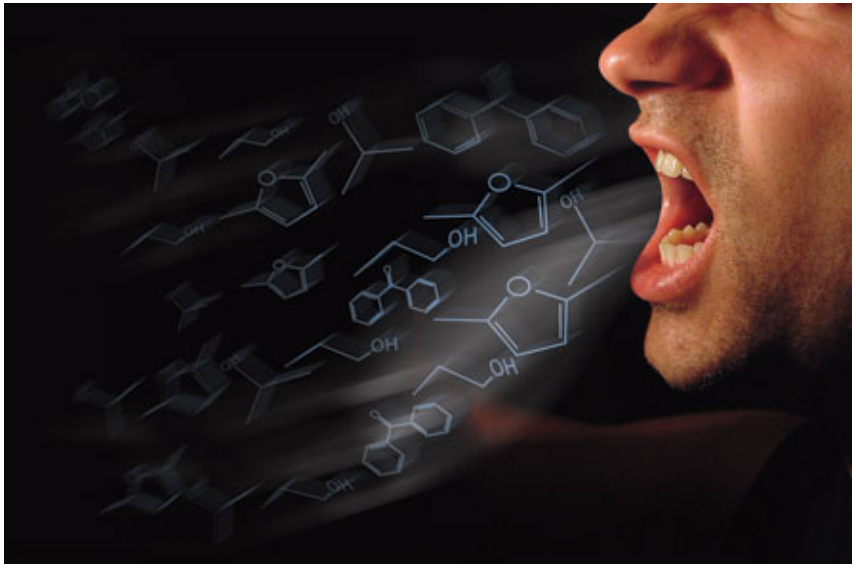


- **<u>There are two pathways for bad breath.</u>**
- The first one involves an increase of certain metabolites in the blood circulation (e.g. due to a systemic disease) which will escape via the alveoli of the lungs during breathing (blood-gas exchange) (EXTRAORAL HALITOSIS).
- The second pathway involves an increase of either the bacterial load or the amount of substrates for these bacteria at one of the lining surfaces of the oropharyngeal cavity. (INTRAORAL HALITOSIS).



INTRAORAL CAUSES

- The oral cavity and, in particular, the dorsum of the tongue, are largely responsible for intra oral halitosis through the formation and degradation of oral biofilm and residual food debris that result in the production of VOCs, specifically volatile sulfur compounds (VSCs).
- For oral malodor, the unpleasant smell of the breath mainly originates from volatile sulfur compounds VSCs, especially hydrogen sulfide (H_2S), methylmercaptan (CH_3SH) and dimethyl sulfide (DMS).



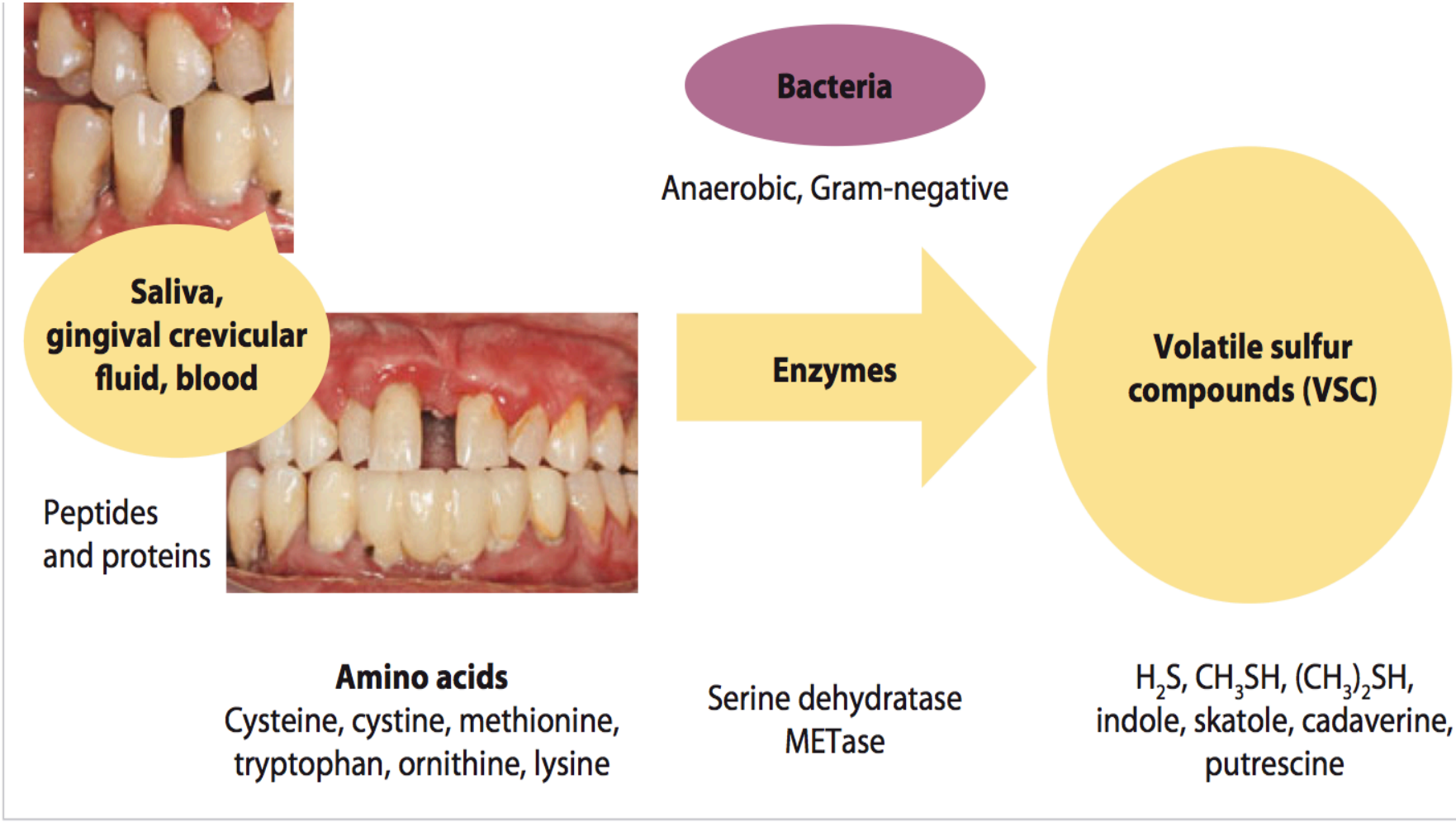
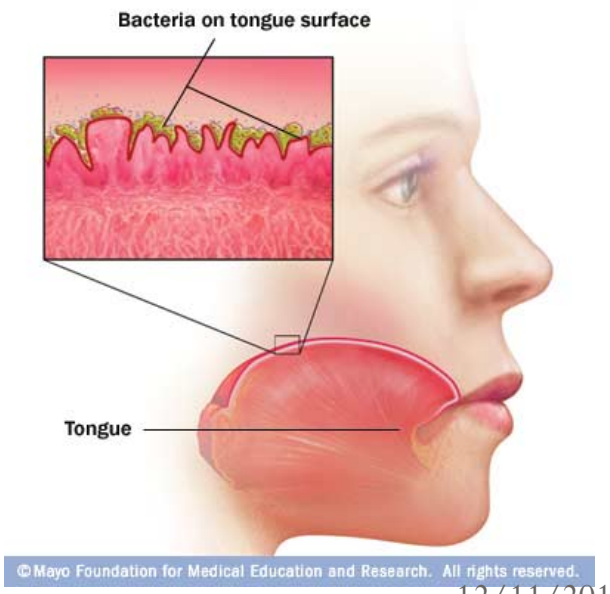


Fig 1 Schematic illustration of the development of volatile sulfur compounds (VSC). Bacteria metabolize proteins from saliva, gingival crevicular fluid, blood (particularly in periodontitis), and food residue. Thereby amino acids, such as cysteine and cystine, are generated. These can be catalyzed within further enzymatic degradation processes caused by serine dehydratase or methioninase (METase), for example, in VSC or other malodorous end products.

CAUSES OF INTRAORAL HALITOSIS

TONGUE AND TONGUE COATING

- The dorsal tongue mucosa, shows a very irregular surface topography. The anterior part is even rougher because of the high number of papillae.
- These innumerable depressions in the tongue surface are ideal niches for bacterial adhesion and growth, sheltered from cleaning actions. Moreover, desquamated cells and food remnants also remain trapped in these retention sites and consequently can be putrefied by the bacteria. A fissure tongue & hairy tongue have an even rougher surface.

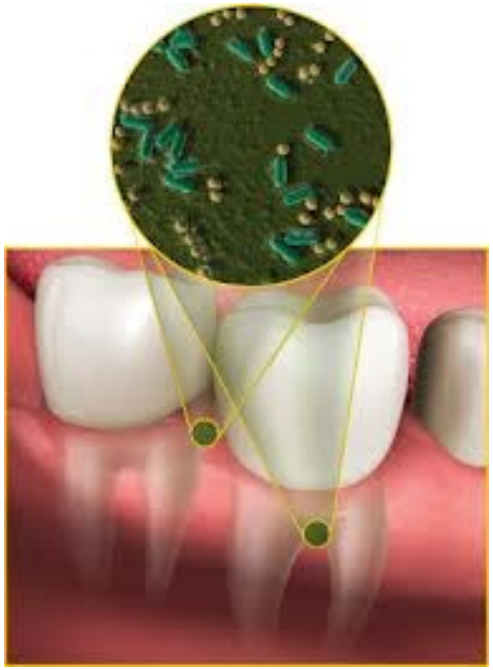


- The accumulation of food remnants intermingled with exfoliated cells and bacteria causes a coating on the tongue dorsum. (The two factors essential for putrefaction are united).
- High correlations have been reported between tongue coating and odor formation and the total bacterial load of anaerobic bacteria in both saliva and tongue coating

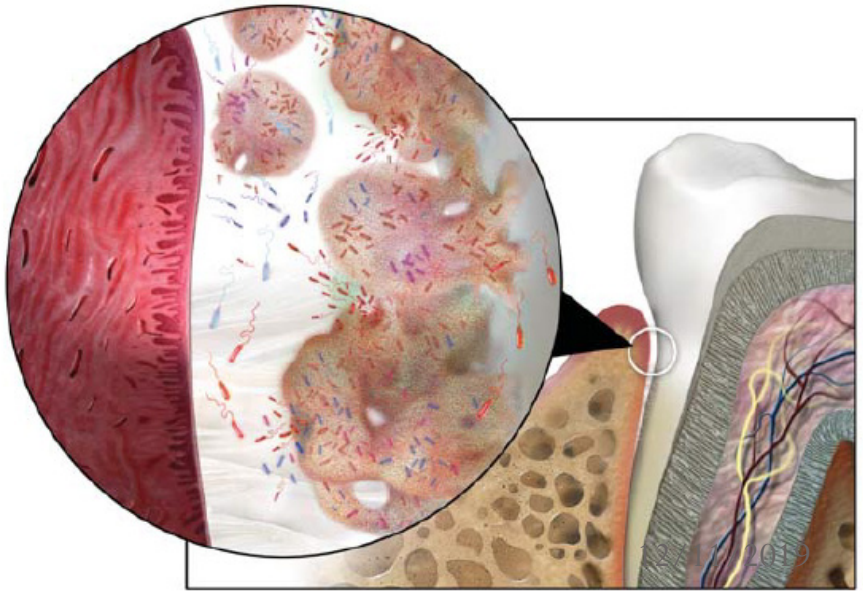
Different clinical pictures of heavily coated tongues.

PERIODONTAL INFECTIONS

- Not all patients with gingivitis and/or periodontitis complain about bad breath, and there is some disagreement in the literature as to what extent oral malodor and periodontal disease are related. Bacteria associated with gingivitis and periodontitis are indeed able to produce VSCs.
- It is clear that gram-negative species in particular can cause an unpleasant smell by production of sulfur compounds.



- Several studies have shown that the VSC levels in the mouth correlate positively with the depth of periodontal pockets (the deeper the pocket, the more bacteria, particularly anaerobic species) and that the amount of VSCs in breath increases with the number, depth, and bleeding tendency of the periodontal pockets.(.Yaegaki K and Sanada K,1992, Persson S,1992, Coil J and Tonzetich J, 1992) .
- VSCs aggravate the periodontitis process by increasing the permeability of the pocket and mucosal epithelium and therefore exposing the underlying connective tissues of the periodontium to bacterial metabolites.



- Other relevant malodorous pathologic manifestations of the periodontium are pericoronitis (the soft tissue "cap" being retentive for microorganisms and debris), major recurrent oral ulcerations, herpetic gingivitis, and necrotizing gingivitis/periodontitis.
- Microbiologic observations indicate that ulcers infected with gram-negative anaerobes (i.e., *Prevotella* and *Porphyromonas* species) are significantly more malodorous than noninfected ulcers. (Bowler PG, Davies BJ,1999)

Dental Pathologies

Possible causes within the dentition are

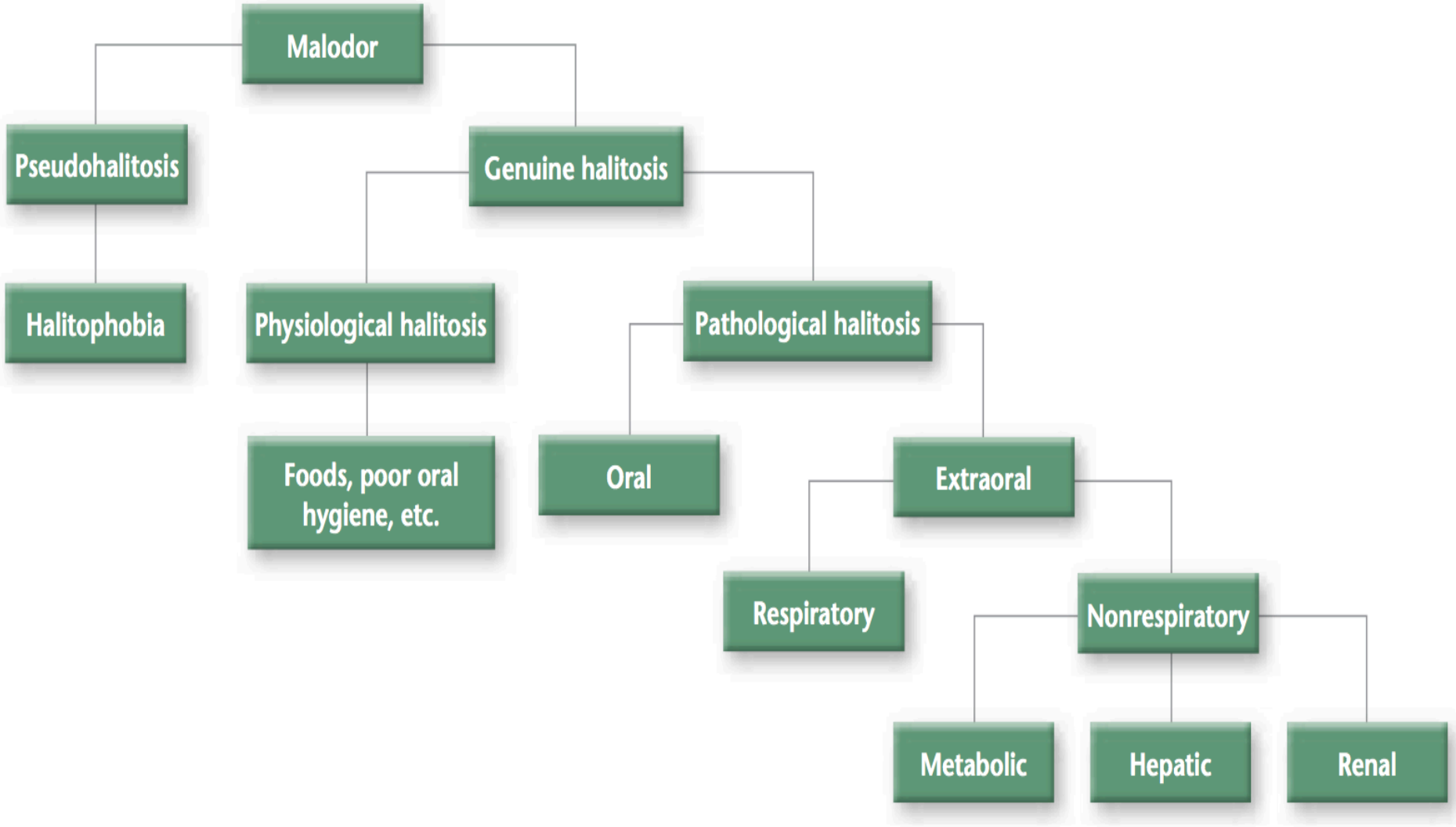
- Deep carious lesions with food impaction .
- Extraction wounds filled with a blood clot, and purulent discharge.
- Interdental food impaction in large interdental areas and crowding of teeth favor food entrapment and accumulation of debris.
- Acrylic dentures, especially when kept continuously in the mouth at night or not regularly cleaned (denture surface facing the gingiva is porous).

Dry Mouth

- Saliva has an important cleaning function in the oral cavity. Patients with xerostomia often present with large amounts of plaque on teeth and an extensive tongue coating. The increased microbial load and the escape of VSCs as gases when saliva is drying up explain the strong breath malodor. (Kleinberg I, Codipilly M, 1995).
- All intraoral origin halitosis usually has a sulfur smell due to VSCs.

EXTRA ORAL CAUSES

- For the extra oral causes of halitosis, other compounds besides the VSCs may be involved, which have not all been identified yet. Bad smelling metabolites can be formed/absorbed at any place in the body (e.g., the liver, the gut) and be transported by the bloodstream to the lungs.
- Exhalation of these volatiles in the alveolar air then causes halitosis, at least when the concentrations of the bad smelling metabolites are sufficiently high. The crevicular fluid reflects the circulating molecules in the blood and can thus also play a relevant role but due to the small amount probably not a very dominant one.
- Extra oral halitosis can be Respiratory OR Nonrespiratory which includes; Metabolic, Hepatic and Renal origin.



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EAR-NOSE-THROAT

- During chronic or purulent tonsillitis, the tonsils accumulate debris and bacteria, resulting in putrefaction. Other examples include acute pharyngitis (viral or bacterial).A foreign body in a nasal or sinus cavity can cause local irritation & ulceration. The air existing he nostrils has a pungent/rotten eggs odor.

BRONCHI AND LUNGS

- Pulmonary causes include chronic bronchitis,, pneumonia, pulmonary abscesses, bronchial carcinoma, and carcinoma of the lung.

GASTROINTESTINAL TRACT

- In contrast to the common public opinion, even among medical physicians, gastrointestinal pathologies are rarely responsible for bad breath.(Norfleet RG,1993), except in vomiting and belching.

SYSTEMIC METABOLIC DISORDERS

- Uncontrolled diabetes mellitus results in the accumulation of ketones (Diabetic ketoacidosis), which have a sweet smell, like the odor of rotten apples.

HORMONAL CAUSES

- At certain moments during the menstrual cycle, a typical breath odor can develop; partners are often well aware of this odor. Evidence also indicates that VSC levels in the expired air are increased twofold to fourfold around the day of ovulation .

LIVER

- Patients with various degrees of hepatocellular failure may acquire a sweet, musty, or even slightly fecal aroma of the breath called fetor hapaticus (Tangerman A et al,1994,Van den Velde S et al ,2008).

KIDNEY

- Kidney insufficiency, chronic kidney disease (CKD) that leads to kidney failure (hemodialysis /peritoneal dialysis), no kidney filtration of proteins will lead to an increase of the amines dimethylamine and trimethylamine, which causes a typical fishy odor of the breath.

DIAGNOSIS OF MALODOR

MEDICAL HISTORY

- The proper diagnostic approach to a malodor patient starts with a thorough questioning about the medical history.
- Asking about all the relevant pathologies for breath malodor just discussed is not time-consuming; it may save time and expenses to achieve a proper differential diagnosis. As often repeated, "listen to the patient and the patient will tell you the diagnosis."
- It should take place at the clinician's desk in private and before any clinical examination (not in a dental chair). The patient's history should be discretely noted.
- The clinician should ask about the frequency (e.g., every month), the time when the problem first appeared, which medications are taken, and whether there are possible contributing factors such as mouth breathing, dry mouth, allergies, and nasal problems.

CLINICAL AND LABORATORY EXAMINATION

SELF-EXAMINATION

- It can be worthwhile to involve the patient in monitoring the results of therapy by self-examination, especially when an intraoral cause has been identified. This can motivate the patient to continue the oral hygiene instructions. The following self-testing can be used:

✓ Smelling a metallic or nonodorous plastic spoon after scraping the back of the tongue.

✓ Smelling a toothpick after introducing it in an interdental area.

✓ Smelling saliva spit in a small cup or spoon (especially when allowed to dry for a few seconds so that putrefaction odors can escape from the liquid).

✓ Licking the wrist and allowing it to dry (reflects the saliva contribution to malodor).

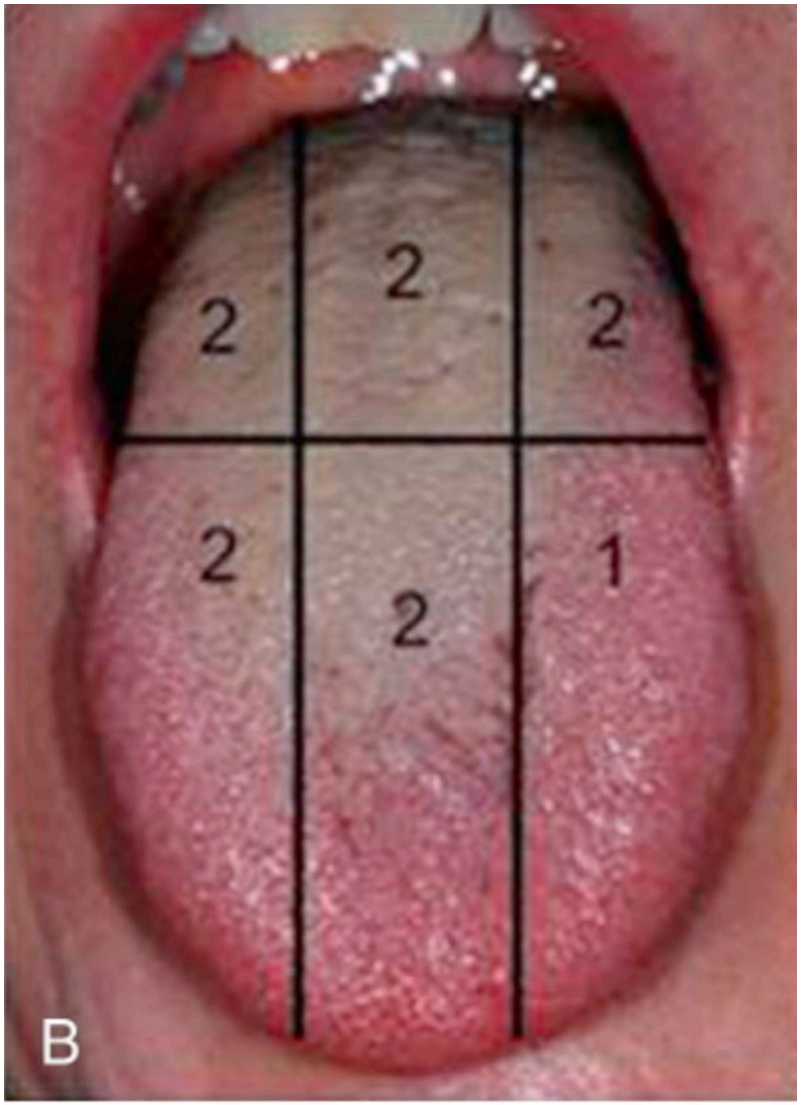
Removing the odorous substances from the body allows a less emotional and thus more objective assessment. Smelling one's own breath by expiring in the hands kept in front of the mouth is not relevant because the nose gets used to the odor and the smell of the skin and soaps used for hand washing may interfere.

OROPHARYNGEAL EXAMINATION

- The oropharyngeal examination includes inspection of deep carious lesions, interdental food impaction, wounds, bleeding of the gums, periodontal pockets, tongue coating, dry mouth, and the tonsils and pharynx.

A, Miyazaki tongue coating index. Score 0 = none visible, score 1 = less than one-third of the tongue dorsum covered, score 2 = less than two-thirds, and score 3 = more than two-thirds; here score 2 applies since less than two-thirds of the tongue dorsum is covered.

- B, Winkel tongue coating index. Divide the dorsum of the tongue is into six areas, i.e., three in the posterior and three in the anterior part of the tongue. The tongue coating in each sextant is scored as
- 0 = no coating, 1 = light coating, and 2 = severe coating.



Measurement of Halitosis:

- For the quantification of halitosis, different methods have been developed. The most commonly used methods are: organoleptic measurements, sulfide monitoring, gas chromatography, microbial testing (cultures, smears, enzyme assays) and chemical test strips. (Tangerman et al,2010, Ongole et al,2010, Jana S.et al,2015).

ORGANOLEPTIC RATING

- Organoleptic: Sensory properties that can be detected by the sense organs.
- Even though devices are available, the organoleptic assessment by a Odor judge is still the "gold standard" in the examination of breath malodor. It is the easiest and most often used method because it gives a reflection of the everyday situation when halitosis is noticed. Moreover, the human nose can smell 10,000 different odors.(Hatt H,2004).
- It is considered a subjective measurement.

- In an organoleptic evaluation, a trained and preferably calibrated "judge"/calibrated breath assessors, sniffs the expired air and assesses whether it is unpleasant by using an intensity rating scale (Rosenberg Scale) normally from 0 to 5 (proposed by Rosenberg and McCulloch,1992)
- Solely based on the olfactory organs of the clinician

1. 0 = no odor present,
2. 1 = barely noticeable odor,
3. 2 = slight but clearly noticeable odor,
4. 3 = moderate odor,
5. 4 = strong offensive odor
6. 5 = extremely foul odor.

- Judge should not have anosmia (lost or impaired smelling capacity)
- Judge Should have tested their capacity to smell.
- Assessors must be able to smell and recognize different odors (qualitative assessment) and also be able to detect odors at low concentrations (quantitative assessment).
- Two days before the measurements they have to avoid the intake of spicy food, garlic, and onions.
- The use of any fragrance, shampoo, body lotion, tooth paste, or mouth rinse; smoking; and the consumption of alcohol or coffee are prohibited 12 hours before the organoleptic assessment is made.
- Judge should not wear rubber gloves.
- It involves two judges.

- The judge smells a series of different air samples as follows:

1 *Oral cavity odor:*

2. ***Breath Odor :***

3 After allowing the wrist to dry, the clinicians organoleptically assess it to evaluate the volatiles originating from the saliva and anterior part of the tongue.

4 Inspection of the posterior part of the tongue and pharynx can reveal coating, ulcerations, or inflammation.

5 *Nasal breath odor:*

INSTRUMENT-BASED MEASURING SYSTEMS (OBJECTIVE MEASUREMENT):

PORTABLE VOLATILE SULFUR MONITOR

- The portable volatile sulfur monitor (Halimeter, Interscan, Chatsworth, CA) is an electronic device that analyzes the concentration of hydrogen sulfide and methyl mercaptan but without discriminating them.

- The most important drawback of the device:

① That it detects only sulfur compounds.

② The instrument has no specificity, can thus not discriminate among the different sulfur compounds.

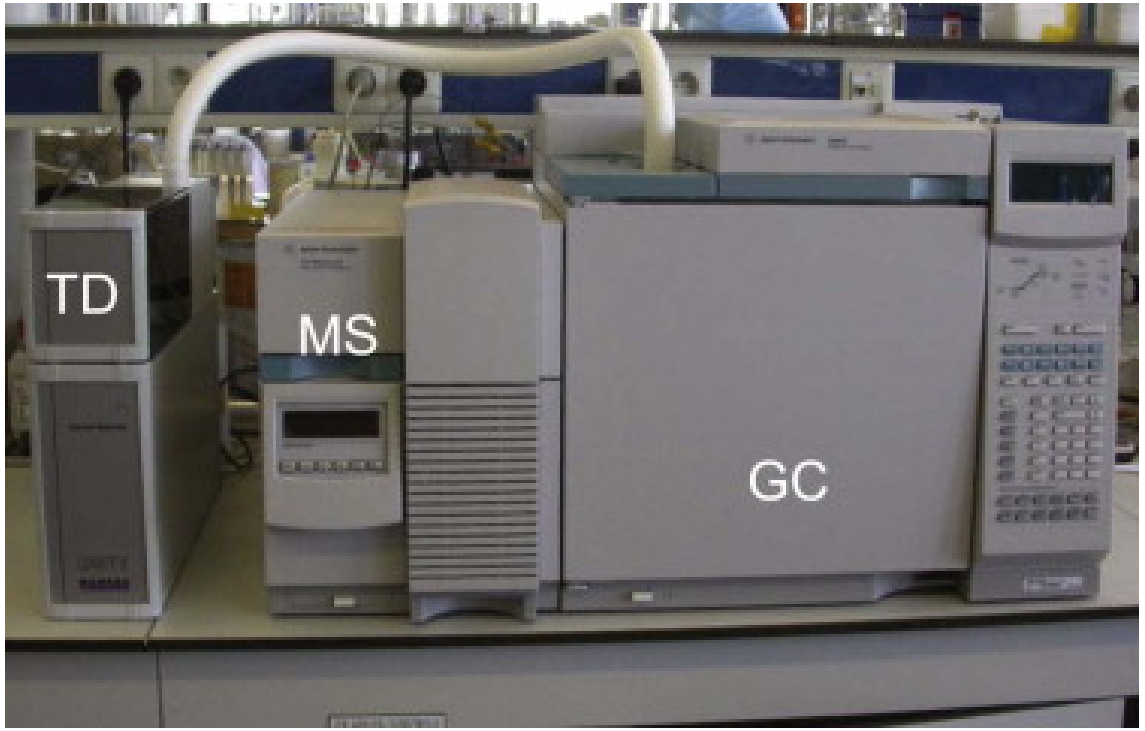
③ Is used only for intraoral causes of halitosis.

④ The absence of VSCs does not prove that no breath odor is present.

GAS CHROMATOGRAPHY

- A gas chromatography device can analyze air, saliva, or crevicular fluid.
- The most important advantage of the technique is that it can detect virtually any compound when using adequate materials and conditions. Moreover, it has a very high sensitivity and specificity.

Gas chromatography machinery, including thermal desorber *(TD)* to release molecules trapped in special collectors); gas chromatograph *(GC)* for separation of molecules; and mass spectrometer *(MS)* for identification of molecules.



- Recently, a small, portable "gas chromatograph" (OralChroma, Abilit, Japan) has been introduced, which makes this technique available for periodontal clinics ..
- It has the capacity to measure the concentration of the three sulfur compounds (hydrogen sulfide, methylmercaptan, and dimethyl sulfide) separately. This can be helpful for a differential diagnosis.

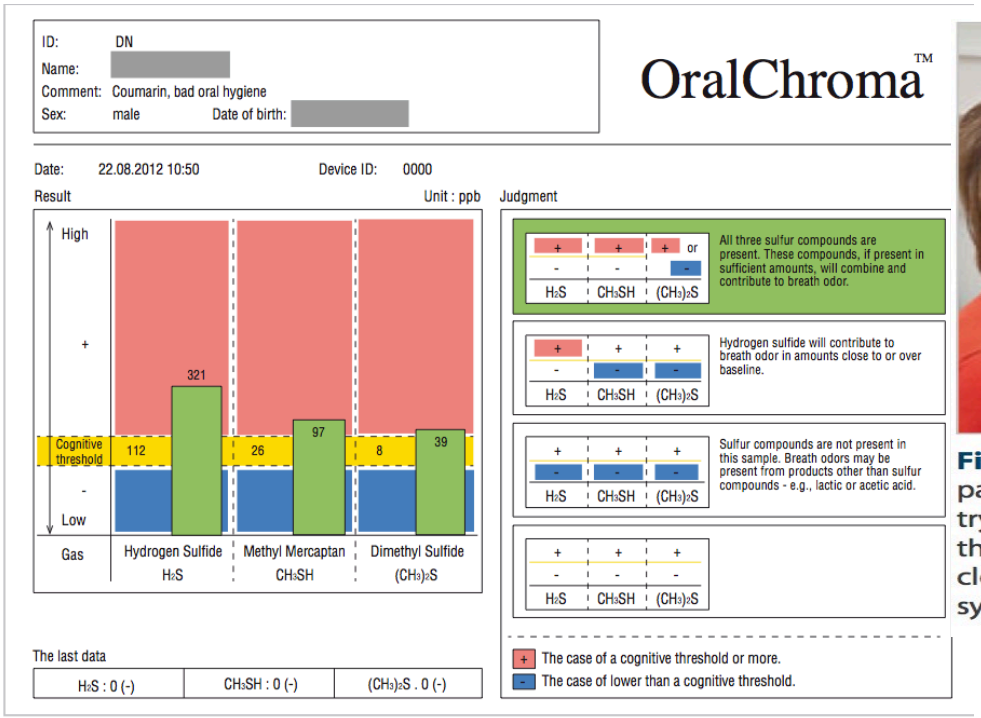


Fig 10 Analysis of the respiratory gas with the OralChroma. The patient holds a disposable syringe with the lips and anterior teeth, trying not to touch the tip of the syringe with the tongue. After the patient has breathed through the nose for 1 minute with a closed mouth, air is extracted from the oral cavity using the syringe and "injected" into the device using a cannula.

Portable gas chromatograph (GC). A small amount of the breath sample, aspirated with a plastic syringe, is injected into the input port of the GC. The computer displays the detection and amount of the three important VSCs (in ppb) within 8 minutes.

DARK-FIELD OR PHASE-CONTRAST MICROSCOPY

- Gingivitis and periodontitis are typically associated with a higher incidence of motile organisms and spirochetes, so shifts in these proportions allow monitoring of therapeutic progress.
- Another advantage of direct microscopy is that the patient becomes aware of bacteria being present in plaque, tongue coating, and saliva. Too often, patients confuse plaque with food remnants.

SALIVA INCUBATION TEST

ELECTRONIC NOSE

TREATMENT OF ORAL MALODOR

- Treatment consists of identifying, eliminating or managing the causal predisposing and modifiable factors.

Table 6. Summary of treatment plan protocol.

- Establish the origin of the odor.
- Obtain a complete medical, dental, halitosis history.
- List all current medications.
- Evaluate dietary and personal habits.
- Perform an intra and extra oral examination.
- Analyze VSCs [intra and extra oral halitosis have different treatment protocols].
- Classify the treatment needs (TN).
- Refer to medical specialist, if halitosis is unresolved with oral hygiene measures.

Adapted from Armstrong BL, Sensat ML, Stoltenberg JL. Halitosis: a review of current literature. *J Dent Hyg*. 2010;84(2):65–74[5] with permission from the American Dental Hygienists' Association.

Treatment Needs (TN) for Halitosis

TN-1*	Explanation of halitosis and instructions for oral hygiene (support and reinforcement of a patient's own self care for further improvement of his or her oral hygiene).
TN-2	Oral prophylaxis, professional, cleaning and treatment of oral diseases, especially periodontal disease.
TN-3	Referral to a physician or medical specialist.
TN-4	Explanation of examination data, further professional instruction, education and reassurance.
TN-5	Referral to a clinical psychologist, psychiatrist or other psychological specialist.

*TN-1 is applicable to all cases requiring TN-2 through TN-5

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TN-1 is applicable to all cases requiring TN-1 through TN-5

- The responsibility of dental practitioners.
  - Treatment of physiologic halitosis (TN-1).
  - Oral pathologic (intraoral) halitosis (TN-1 and TN-2)
  - Pseudo-halitosis (TN-1 and TN-4)
- Treatment of extraoral pathologic halitosis (TN-3) would be managed by a physician or medical specialist.
- Treatment of halitophobia (TN-5) would be managed by a physician, psychiatrist or psychological specialist.

- The treatment of oral malodor (intraoral origin) should preferably be cause related, the following general **treatment strategies can be applied:**
- **Treating the dental pathologies**

1) Mechanical reduction of intraoral nutrients (substrates) and microorganisms
2) Chemical reduction of oral microbial load
3) Rendering malodorous gases nonvolatile
4) Masking the malodor

MECHANICAL REDUCTION OF INTRAORAL NUTRIENTS (SUBSTRATES) AND MICROORGANISMS

- Because of the extensive accumulation of bacteria on the dorsum of the tongue, tongue cleaning should be emphasized.
- Previous investigations demonstrated that tongue cleaning reduces both the amount of coating (and thus bacterial nutrients), as well as the number of bacteria and thereby improves oral malodor effectively.

- Cleaning of the tongue can be carried out with a normal toothbrush, but preferably with a tongue scraper if a coating is established(Outhouse TL et al 2006, Pedrazzi V et al ,2006)

- Tongue cleaning using a tongue scraper reduced the halitosis levels with 75% after 1 week.
- This should be gentle cleaning (no soft tissue damage)
- It is best to clean as far backward as possible; (posterior portion has the most coating)
- Tongue cleaning should be repeated until almost no coating material can be removed.
- Gagging reflexes often are elicited, especially when using brushes
- It can also be helpful to pull the tongue out with a gauze pad. Tongue cleaning has the additional benefit of improving taste sensation.

- Interdental cleaning and tooth brushing are essential mechanical means of dental plaque control
- Because periodontitis can cause chronic oral malodor, professional periodontal therapy is needed. A one-stage, full-mouth disinfection, combining scaling and root planing with the application of chlorhexidine, reduced the organoleptic malodor levels up to 90% (Quirynen M et al 1998)

CHEMICAL REDUCTION OF ORAL MICROBIAL LOAD

- Mouth rinsing has become a common practice in patients with oral malodor. The active ingredients in oral rinses are usually antimicrobial agents such as chlorhexidine, essential oils, chlorine dioxide, hydrogen peroxide, and triclosan. All these agents have only a temporary reducing effect on the total number of microorganisms in the oral cavity.

Chlorhexidine

- Chlorhexidine is considered the most effective antiplaque and antigingivitis agent.
- Because of its strong antibacterial effects and superior substantively in the oral cavity, chlorhexidine rinsing provides significant reduction in VSC levels and organoleptic ratings.

- Halita (Dentaid, Spain), a new solution (0.05% chlorhexidine, 0.05% cetylpiridine chloride [CPC], 0.14% zinc lactate, no alcohol), has been even more efficient than chlorhexidine alone, suggesting that the other compounds are also important.
- The special effect of Halita may result from the VSC conversion ability of zinc, besides its antimicrobial action.

- **Essential Oils**
- **Two-Phase Oil-Water Rinse**
- **Hydrogen Peroxide**
- **Oxidizing Lozenges**

CONVERSION OF VOLATILE SULFUR COMPOUNDS

- Metal Salt Solutions
- Toothpastes
- Chewing Gum

MASKING THE MALODOR

- This provides only a short-term effect. Typical examples are the mint-containing lozenges.
- Another pathway is to increase the solubility of malodorous compounds in the saliva by increasing the secretion of saliva; a larger volume allows the retention of larger volumes of soluble VSCs.

Why do people with bad breath always want to tell me secrets?

yourecards
someecards.com

FOOD IMPACTION

- *Food impaction* is the forceful wedging of food into the periodontium by occlusal forces.
- Food impaction is the phenomenon appearing in the chewing course when the food dregs or fibers are pushed into the clearance by occlusal force or owing to the gingival shrinkage.
- It's a disease of high prevalence in population.
- There is a close relationship among the contact, contour, and shape of the teeth that creates the interproximal space with the help of the interdental gingiva.
- Food impaction is a clinical situation that arises from a complex interaction process involving age, periodontal disease, caries and excessive attrition and so on. It will cause halitosis, gingivitis, periodontitis, gingival abscess, alveolar bone absorption, root caries,etc.

- Food impaction may be vertical or horizontal.
- Most of vertical food impaction is anatomic or clinician induced during fabrication of restoration, where as horizontal food impaction may be secondary to periodontal disease
- Vertical food impaction as the name suggests is the impaction from occlusal direction due to action of opposing tooth.

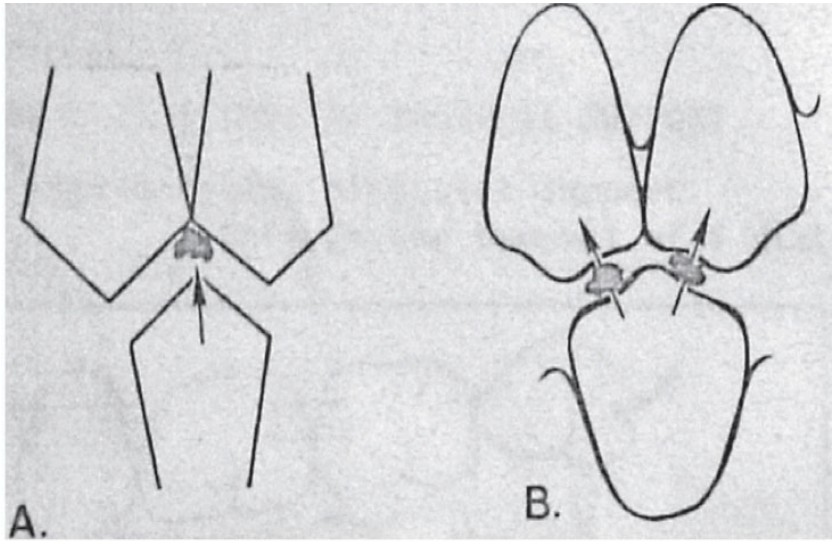


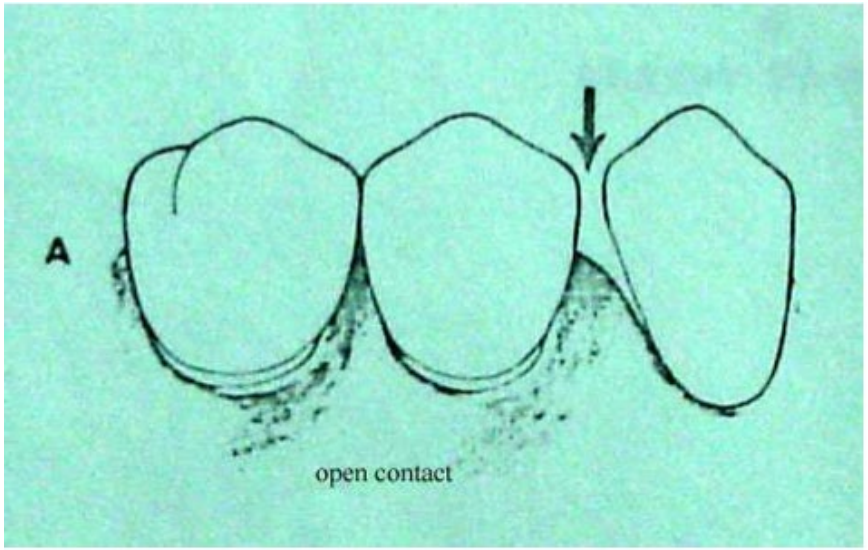
Fig 3 - Role of contour of marginal ridge in prevention of food impaction.

A. Flattened contour leads to food impaction.
B. Normal contours avoids it by deflecting the food away from interproximal space.

Causes Of Vertical Food Impaction

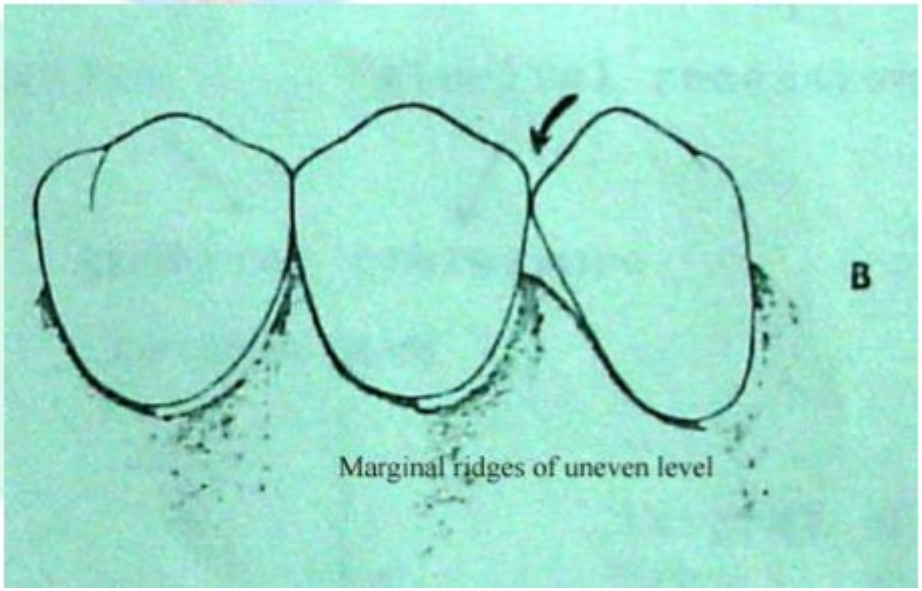
I. **<u>Open contact between teeth</u>** this obviously causes food to get stuck in between. Patient complains that he has to use a tooth pick after every meal.

Open Contact



II. **Irregular or level difference between adjacent marginal ridges**. This causes the food to remain on the occlusal surface. Patient complains that he has to either gargle compulsorily after meals or has to brush. Also he may complain of guava, pomegranate seeds getting stuck.

Irregular marginal ridge



III. **Plunger cusps** as the name suggest is the cusp which plunges between two opposing teeth.

- Multiple factors can cause plunger cusp, As the teeth wear down, their originally convex proximal surfaces become flattened and the wedging effect of the opposing cusp is exaggerated. Cusps that tend to forcibly wedge food into interproximal embrasures are known as *plunger cusps.*
- The interproximal plunger cusp effect may also be observed when missing teeth are not replaced and the relationship between proximal contacts of adjacent teeth is altered.

- Horizontal (lateral) food impaction is mainly due to periodontal destruction. The sequence of event is there is periodontal destruction along with or without recession. This causes food to get stuck causing enlargement of gingival embrasure and further food entrapment due to tongue lip and cheek

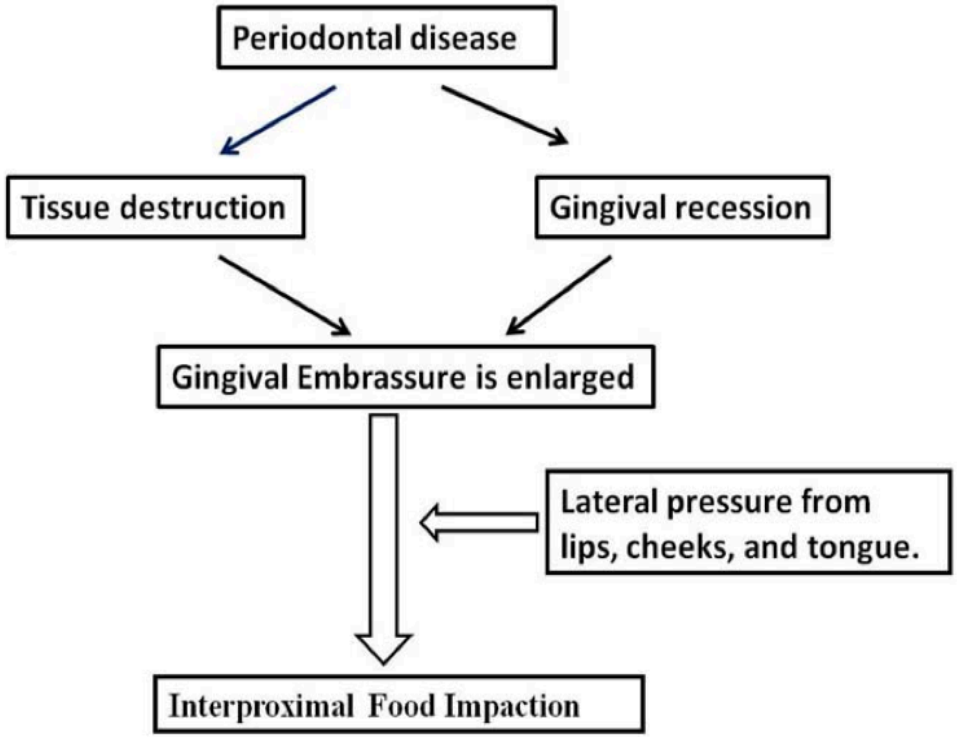
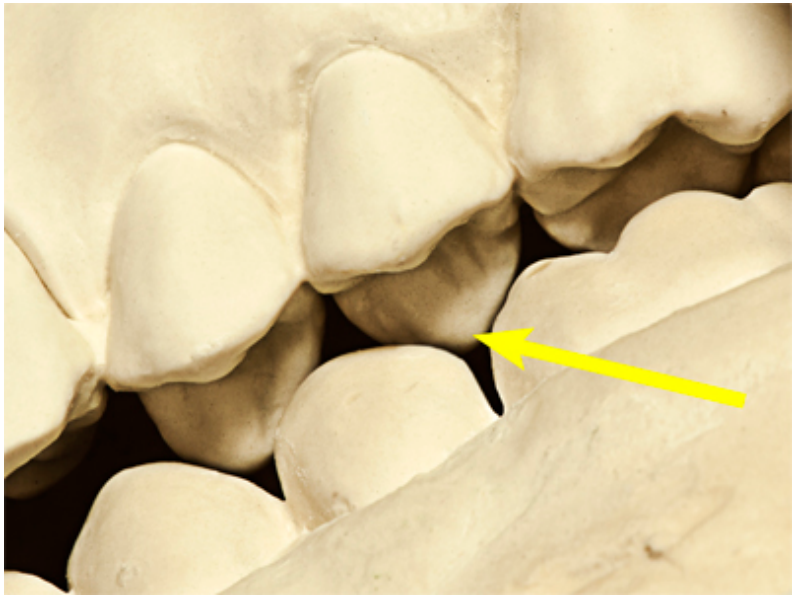
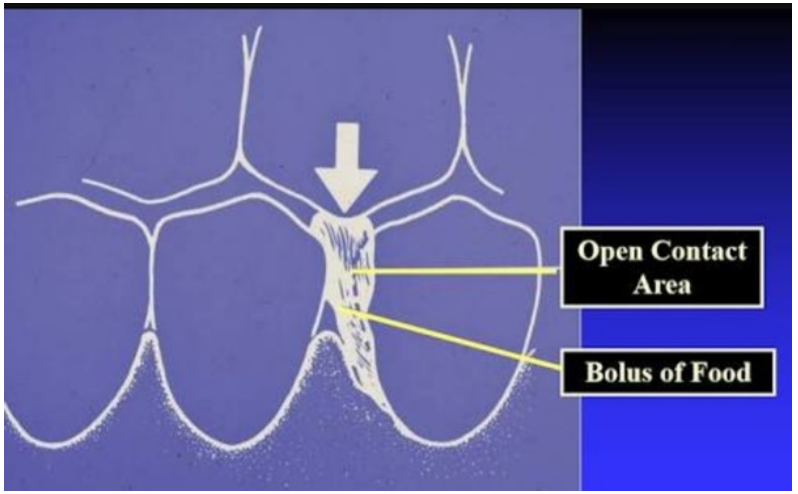


Fig 6: Mechanism of Action of Lateral Food Impaction

Plunger Cusp





Factors Causing Food Impaction

Class I: Occlusal wear

Class II: Loss of proximal contact

Class III: Extrusion beyond the occlusal plane

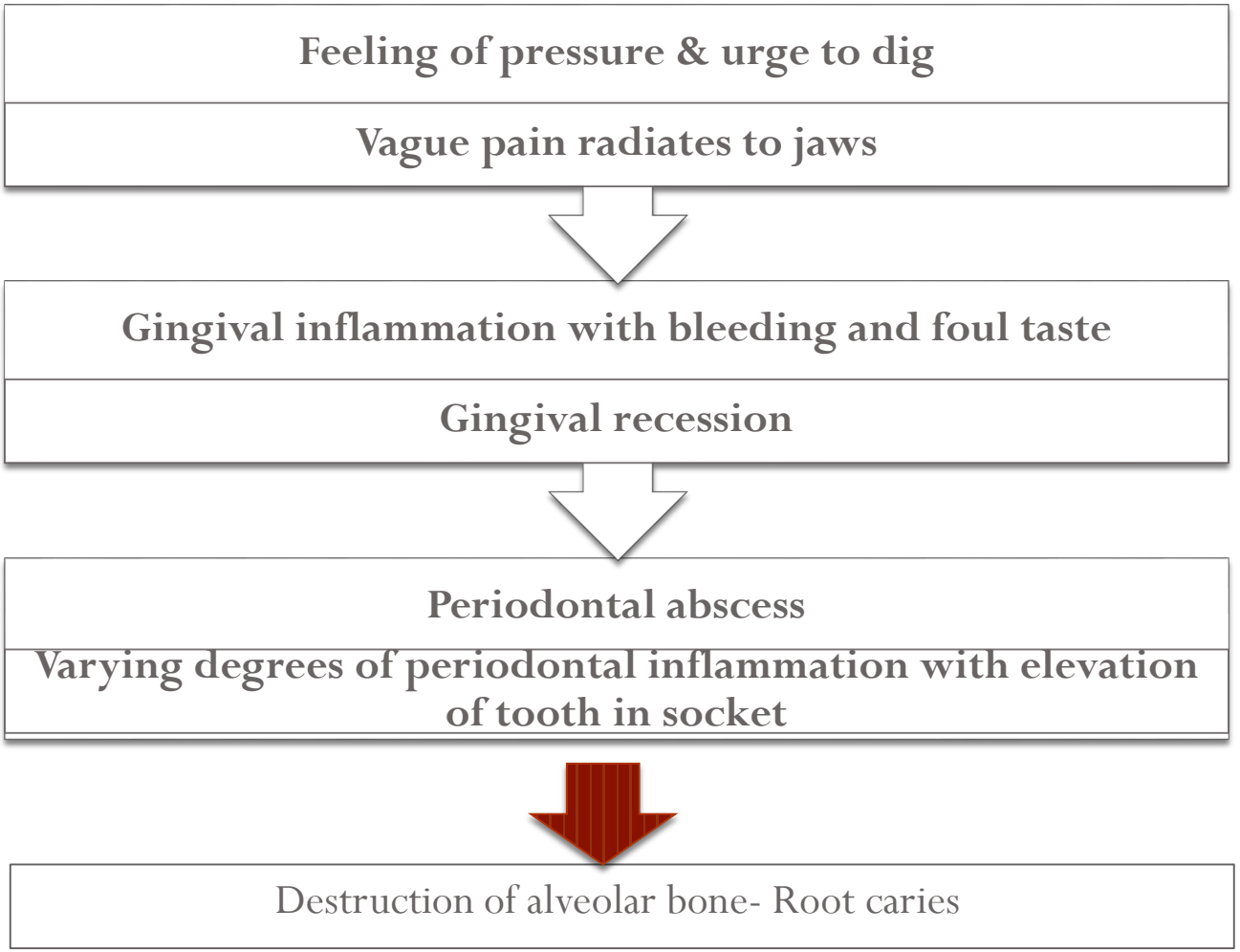
Class IV: Congenital morphological abnormality

Class V: Improperly constructed restoration

Prosthesis induced factors for food impaction

- **Materials**
- **Construction of restorations**
- **Tooth preparation**

Sequel of Food Impaction



Food impaction: Prevention and Management

Periodontal Treatment

- Scaling and root flossing/interproximal brushing, curettage, etc should be performed as one of the preliminary steps in the prevention and management of food impaction

Occlusal adjustment

- The sharp peaks of plunger cusp should be rounded. Furthermore, extrusion is associated with discrepancy in marginal ridge relationship. If extrusion is less, discrepancy can be managed simply by grinding. But if extrusion is greater, restoration with prosthesis is required to correct marginal ridge discrepancy

Restoring an ideal Contact ; ideal contact and contact tightness

Permanent Restoration

- Proximal contact, contour of occlusal surface and facial and lingual contour.

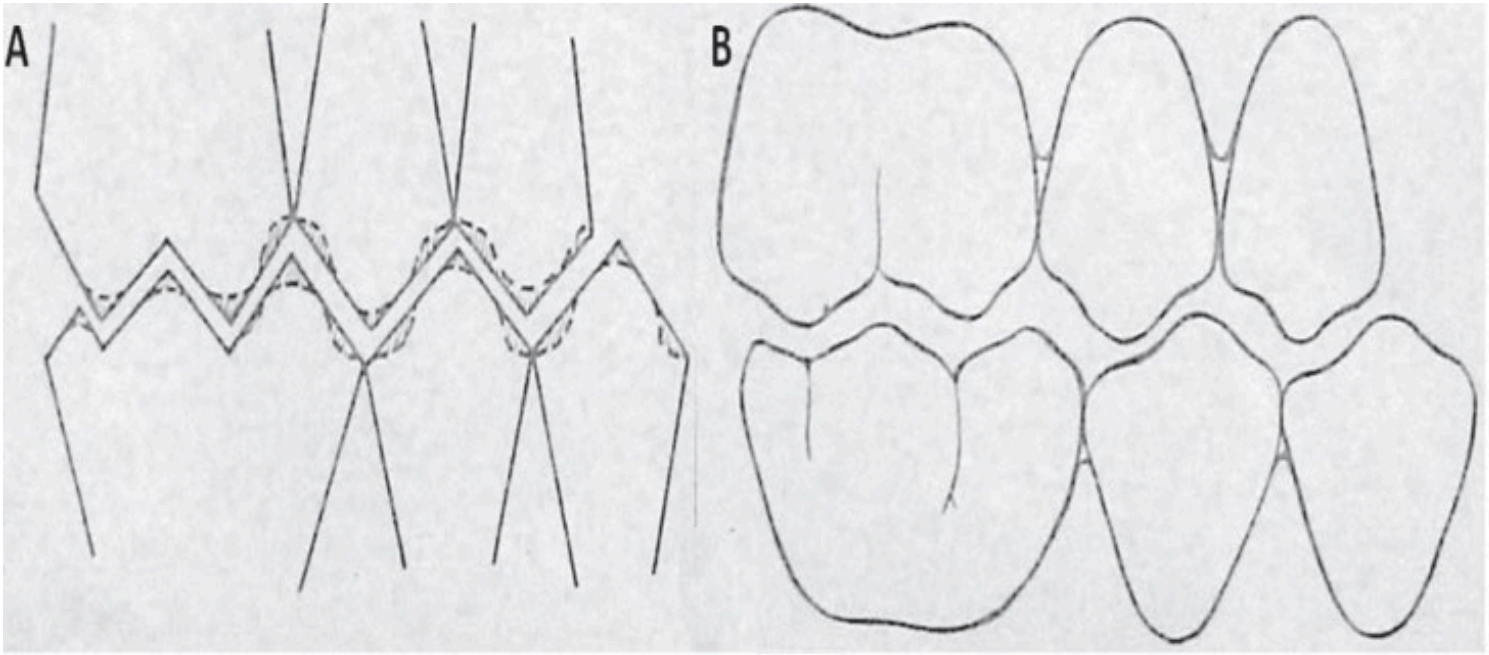


Fig 14: Occlusal Adjustment of Plunger Cusps. (A) Before. (B) After.Dotted Line shows proposed anatomy of tooth.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FRAN
BE HONEST WITH ME.. DO I HAVE BAD BREATH!.