Unit 36 — Mukha Śarīra & Nidāna Pañcaka of Mukharoga

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A) Paribhāṣā of Mukha • B) Mukha–Śarīra • C) Nidāna Pañcaka (common etiological & pathological factors of oral diseases as per contemporary medical science); Enumeration, Classification, Sādhyāsādhyatā, Pathya–Apathya & Sāmānya Cikitsā of Mukharoga

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Learning objectives

After studying this chapter, you should be able to: (1) define **Mukha** in the Śālākya context; (2) describe the applied anatomy of the oral cavity and related structures; (3) write the **Nidāna Pañcaka** (common to Mukharoga) integrating classical logic with contemporary oral pathology; (4) enumerate and classify **Mukharoga**; (5) state **Sādhyāsādhyatā**, **Pathya–Apathya**, and **Sāmānya Cikitsā** suitable for university-level examinations.

> **Note on ślokas:** Only verses whose sources are certain should be quoted. This chapter focuses on error-free, exam-oriented prose; add authenticated ślokas during viva or answer writing where you are fully confident of the exact reference.

A) Paribhāṣā (Definition) of Mukha

In Śālākya-tantra, **Mukha** (oral cavity and contiguous structures) is the **ūrdhva-jatru** gateway for **āhāra-praveśa** (ingestion) and **vāk-pravṛtti** (speech), housing the **Rasanendriya** (organ of taste: chiefly **Jihvā—tongue**) and components required for mastication, articulation, and deglutition. It includes: lips (oṣṭha), cheeks (gaṇḍa), vestibule, teeth (danta), gingiva/dantamūla, alveolar processes, palate (tālu), tongue (jihvā), floor of mouth, retromolar region, and oropharyngeal isthmus leading to **kaṇṭha**. In Ayurvedic nosology, diseases of these parts together constitute **Mukharoga** (with sub-groupings by site).

B) Mukha–Śarīra (Applied Anatomy & Physiology)

1) Gross anatomy

3D model of Oropharynx

Boundaries & compartments

- **Vestibule**: between lips/cheeks and teeth/gingiva; lined by non-keratinised stratified squamous epithelium; harbours minor salivary glands.
- **Oral cavity proper**: within dental arches; roof—**hard palate** (palatine processes of maxilla & horizontal plates of palatine), posteriorly **soft palate** with uvula; floor—mylohyoid/geniohyoid over which lie sublingual glands & Wharton's duct.

Lips (Oṣṭha) & Cheeks

- Core muscles: **orbicularis oris**, **buccinator**; rich vascular supply (superior/inferior labial arteries). The vermilion border is a common site for cheilitis and neoplastic change in tobacco users.

Teeth (Danta) & Periodontium (Dantamūla)

- **Tooth**: enamel (acellular, hardest), dentin (tubular), pulp (neurovascular), cementum.
- **Periodontium**: gingiva, periodontal ligament, cementum, alveolar bone.
- **Eruption**: primary (6–24 months); permanent (6–12 years; third molars variable).
- **Occlusion**: molar relation (Angle's), overjet/overbite—useful in trauma and temporomandibular (TMJ) assessments.

Tongue (Jihvā)

- **Parts**: anterior 2/3 (oral), posterior 1/3 (pharyngeal).
- **Papillae**: filiform (mechanical), fungiform and circumvallate (taste buds), foliate (lateral).
- **Muscles**: intrinsic (longitudinal, transverse, vertical); extrinsic (genioglossus, hyoglossus, styloglossus, palatoglossus).
- **Nerves**:
  - General sensation: **lingual nerve (V3)**—ant. 2/3; **glossopharyngeal (IX)**—post. 1/3.
  - Taste: **chorda tympani (VII)**—ant. 2/3; **glossopharyngeal (IX)**—post. 1/3; **vagus (X)**—epiglottis.
  - Motor: **hypoglossal (XII)** (except palatoglossus—vagus).

Palate (Tālu)

- **Hard**: keratinised masticatory mucosa; **soft**: muscle (levator veli palatini, tensor veli palatini, palatoglossus, palatopharyngeus, musculus uvulae). Palatal lesions influence speech resonance and deglutition.

Floor of mouth & salivary excretory apparatus

- **Sublingual** glands (Rivinus ducts and Bartholin duct), **submandibular** gland (**Wharton's duct**—opens beside lingual frenulum), **parotid** gland (**Stensen's duct**—opens opposite upper 2nd molar).
- **Saliva**: 0.5–1.5 L/day; mucous/serous mix; pH ~6.5–7.5; contains water, electrolytes, **bicarbonate**, **salivary amylase**, **lingual lipase**, **lysozyme**, **lactoferrin**, **IgA**, mucins; functions—lubrication, buffering, antimicrobial action, remineralisation (Ca^{2+}/PO_4^{3-}).

Vessels & lymphatics

- **Arterial**: external carotid branches—facial (labial), **lingual**, **maxillary** (inferior/superior alveolar, palatine), **ascending pharyngeal**.
- **Venous**: pterygoid plexus → facial/lingual veins → internal jugular.
- **Lymph drainage**: lips (submental/submandibular), anterior tongue (submental/submandibular), lateral tongue (submandibular), posterior tongue & floor (deep cervical), palate/tonsillar ring (jugulodigastric). **Exam favourite**: tip of tongue → **submental** nodes.

Innervation summary

- **V_2** (maxillary): palate, upper teeth; **V_3** (mandibular): lower teeth, cheeks, anterior tongue (general). Parasympathetic secretomotor via chorda tympani (to submandibular/sublingual) and glossopharyngeal (to parotid via otic ganglion).

2) Oral physiology (correlate with Rasanendriya)

- **Taste transduction**: tastants interact with receptors (GPCRs for sweet/umami/bitter; ion channels for salty/sour) on taste cells within taste buds; signals → **VII/IX/X** → nucleus tractus solitarius → thalamus → gustatory cortex (insula/frontal operculum).
- **Salivation control**: parasympathetic (watery, enzyme-rich), sympathetic (viscous). Saliva buffers acids, controls microbial growth, and speeds bolus formation.
- **Speech & deglutition**: coordinated action of tongue, palate, lips, buccinator, suprahyoids; velopharyngeal seal prevents nasal regurgitation.

C) Nidāna Pañcaka of Mukharoga (General Framework)

This section synthesises **Ayurvedic diagnostic logic** with **contemporary oral pathology** to provide a common template applicable across Mukharoga.

1) Nidāna (Etiological Factors)

Āhāra (dietary)

- **Abhiṣyandī/āma-janaka** foods: excessively sweet, sticky, deep-fried; very hot/spicy or overly sour → mucosal irritation.
- **Deficiencies**: iron, **vitamin B12**, folate, **vitamin C** → angular cheilitis, glossitis, bleeding gums, delayed healing.
- **Dehydration/low salivary flow**: increases caries and mucositis.

Vihāra (habits & environment)

- **Tobacco** (smoked/smokeless), **areca nut/betel quid**, alcohol—major carcinogenic/precancer risk (leukoplakia, oral submucous fibrosis, SCC).
- Poor oral hygiene, faulty brushing technique, high-sugar snacking, mouth breathing.
- Ill-fitting dentures/orthodontic trauma; occupational exposure to heat/chemicals.

Vyādhi/Medicine related

- **Diabetes mellitus** (periodontal disease, candidiasis, xerostomia), **anemia**, **autoimmune** (lichen planus, pemphigus), **inflammatory bowel disease**, **HIV**.
- **Drugs** causing xerostomia (anticholinergics, antidepressants, antihypertensives), **chemotherapy/radiation** (mucositis, osteoradionecrosis), bisphosphonates (medication-related osteonecrosis of jaw).
- **Infections**: HSV (primary herpetic gingivostomatitis, recurrent herpes labialis), **Candida albicans**, streptococcal pharyngitis, syphilis.

Āgantuka (trauma/allergy)

- Biting, sharp tooth edges, chemical burns, contact allergy (cinnamon, dental materials).

2) Pūrvārūpa (Prodromal Features; common pool)

- Oral/facial **burning/tingling**, taste change (dysgeusia), **dryness**, halitosis, mild soreness at commissures, transient mucosal blanching/erythema, sensitivity to hot/spicy foods.

3) Rūpa (Cardinal Signs & Symptoms; pattern sets)

- **Gingivitis/periodontitis**: red, swollen, bleeding gums; pocketing; tooth mobility.
- **Caries/pulpitis**: sensitivity to sweets/cold → lingering pain (irreversible pulpitis).
- **Aphthous ulcers**: shallow, round/oval, yellowish floor with erythematous halo; painful.
- **Candidiasis**: white curd-like plaques (wipeable) or erythematous depapillation (denture stomatitis).
- **OSMF**: blanching, fibrotic bands, reduced mouth opening, burning; betel nut history.
- **Leukoplakia/erythroplakia**: white/red patches—non-scrapable; potential premalignancy.
- **Sialadenitis/sialolithiasis**: painful swelling (especially on meals), ductal tenderness; decreased salivary flow.
- **TMJ dysfunction**: preauricular pain, clicking, limited opening.
- **Neoplasia (SCC)**: non-healing ulcer/indurated mass, bleeding, weight loss, neck nodes.

4) Upaśaya–Anupaśaya (Relieving/Aggravating)

- Relief with **saline/triphala gargles**, bland soft diet, topical demulcents (ghṛta, ghee-based gels), avoidance of irritants; aggravation with **tobacco**, areca nut, alcohol, hot/spicy foods, sharp edges, dehydration, stress, sleep loss.

5) Samprāpti (Pathogenesis; integrative view)

- **Doṣa–dūṣya** interplay differs by lesion, yet common threads are:
  - **Kapha-meda āvaraṇa** & **krimi/bioburden** → plaque-mediated gingivitis/periodontitis.
  - **Pitta–rakta duṣṭi** → erosions/ulcers, burning mouth, active inflammation.
  - **Vāta kṣobha** with rūkṣatā (xerostomia) → fissuring, mucosal fragility, pain.
  - **Āma** and nidāna persistence maintain a pro-inflammatory milieu, tipping to chronicity (e.g., OSMF fibrosis; dysplasia in leukoplakia).
- Contemporary micro-model: dysbiosis (S. mutans in caries; **red complex** bacteria in periodontitis), **biofilm–host immune** imbalance, oxidative stress, and matrix degradation.

Enumeration & Classification of Mukharoga

Classify by site (Āśraya) in classical Śālākya style

1. **Oṣṭhagata roga** (lip disorders): cheilitis, fissures, herpes labialis, neoplasms.
2. **Dantagata roga** (tooth): caries, pulpitis, hypersensitivity, fractures.
3. **Dantamūlagata roga** (gingiva/periodontium): gingivitis, periodontitis, abscess.
4. **Jihvāgata roga** (tongue): glossitis, geographic tongue, fissured tongue, median rhomboid glossitis, leukoplakia/erythroplakia, carcinoma.
5. **Tālūgata roga** (palate): ulcers, torus, clefts (developmental), candidiasis, neoplasia.
6. **Mukhagata—sarvasāra** (general mucosal disorders): aphthae, lichen planus, OSMF, traumatic ulcers, burns, mucositis.
7. **Śleṣma-granthi & Srotas/Śleṣma-vaha (salivary) vikāra**: sialadenitis, sialolithiasis, mucoceles, xerostomia, Sjögren's.
8. **TMJ & masticatory system**: myalgia, internal derangements, arthritis (clinic correlation).

In classical papers, examiners expect the **site-wise approach** above. Exact numerical counts of Mukharoga vary by text and recension; cite cautiously only if you are certain of the source.

Sādhyāsādhyatā (Prognosis — general rules)

- **Sādhya (good prognosis)**: plaque-induced gingivitis, aphthae (minor), simple cheilitis, traumatic ulcers (when nidāna removed), uncomplicated sialadenitis, early candidiasis.
- **Kṛcchra-sādhya/Yāpya**: chronic periodontitis with bone loss, recurrent aphthae (major/herpetiform), OSMF (fibrosis), lichen planus (autoimmune), TMJ disorders, xerostomia due to systemic disease/drugs.
- **Asādhya/High-risk**: oral epithelial dysplasia with high-risk leukoplakia/erythroplakia, squamous cell carcinoma, osteoradionecrosis, medication-related osteonecrosis of jaw—require multidisciplinary oncologic care.

Pathya–Apathya (Diet & Conduct)

Pathya (Do's)

- **Local care**: gentle brushing (soft brush; modified Bass technique), interdental cleaning; tongue scraping; warm **saline or triphalā** gargles twice daily; protect sharp edges/restorations.
- **Diet**: soft, warm, non-irritant meals; adequate hydration; citrus in moderation if non-ulcerative; **protein** and **micronutrient** sufficiency (iron, B12, folate, C).
- **Habits**: tobacco and areca cessation; limit alcohol; stress management; adequate sleep; denture hygiene (night

removal; chlorine-free cleansing).
- **Prophylaxis**: periodic dental scaling; fluoride for caries risk; vaccine counselling (hepatitis B, HPV awareness for oropharyngeal cancers).

Apathya (Don’ts)

- Tobacco (any form), areca/betel quid, frequent alcohol; very hot/spicy/sour foods during active mucositis; frequent refined sugar snacks; prolonged mouth breathing; self-medication with steroid pastes without diagnosis.

Sāmānya Cikitsā (General Management Framework)

1) Nidāna-parivarjana (cornerstone)

- Remove local irritants: plaque/calculus (professional scaling), sharp tooth edges, ill-fitting dentures, faulty restorations; correct habits (tobacco/areca, alcohol, high sugar).

2) Śodhana-Śamana logic (adapted to oral cavity)

- **Local śodhana**: warm saline/herbal **kavala/gandūṣa** (e.g., triphalā, khadira, yaṣṭimadhu in watery decoctions) to reduce biofilm and inflammation.
- **Śamana**: demulcents/soothing agents (ghṛta-based gels, honey-ghṛta for aphthae), anti-inflammatory **kaṣāyas** (triphala, guḍūcī, nimba) internally where appropriate; correct **āma** and **agni** with deepana-pācana if dyspeptic.
- **Snehana**: oil application for angular cheilitis/xerostomia; **taila-gandūṣa** (e.g., tila-taila) as supportive hygiene.
- **Ropaṇa/Pratiśāraṇa** (topical): **yaṣṭimadhu**, **triphala** fine powder with ghṛta/honey for ulcers; **tankan-madhu** cautiously in candidiasis (short course, thin layer).
- **Kleda-hara/Lekhana** measures in plaque-rich states (under supervision).
- **Systemic correlations**: treat diabetes, anemia, nutritional deficits; antifungals for candidiasis; antivirals for HSV; immunomodulatory/biopsy-directed care for OSMF/lichen planus/dysplasia as per specialist protocols.

3) Salivary care

- Hydration; sugar-free chewing to stimulate saliva; saliva substitutes (carboxymethylcellulose gels) in xerostomia; sialagogues (lemon drops) if not ulcerative; warm massage & sialogogue foods in sialolithiasis (plus ductal care).

4) Pain & infection control

- Analgesics when required; topical anaesthetics (short course) before meals; antibiotics only for spreading infection/abscess with systemic signs—**judicious use**.

5) Oncologic vigilance

- Any **non-healing ulcer >2 weeks**, induration, unexplained bleeding, or neck node → **urgent biopsy and ENT/Maxillofacial referral**. Early detection saves life.

Viva-facing tables

A. Site-wise DDx at a glance

Site	Common benign	Infective	Premalignant/Malignant
Lip	Angular cheilitis, actinic cheilitis	HSV labialis	SCC (lower lip)
Gingiva	Plaque gingivitis	Acute necrotising ulcerative gingivitis	Verrucous carcinoma (rare)
Tongue	Geographic/fissured tongue	Candidiasis	Leukoplakia, erythroplakia, SCC (lateral border)

Site	Common benign	Infective	Premalignant/Malignant
Palate	Aphthae, torus	Candidiasis	Minor salivary gland tumours
Floor	Mucoceles, ranula	Sialadenitis	SCC; OSMF involvement
Salivary	—	Bacterial/viral (mumps)	Neoplasms (pleomorphic adenoma, mucoepidermoid)

B. Red flags (write any four)

- Non-healing ulcer > 2 weeks, indurated margins
- Unexplained bleeding/paresthesia
- Dysphagia/odynophagia, persistent otalgia with normal ear
- Neck lymphadenopathy
- Trismus or progressive restricted mouth opening (OSMF/malignancy)

Assessment

Long Essays (10 marks each)

1. **Mukha-Śarīra**: Describe the gross anatomy of the oral cavity with arterial supply, lymphatic drainage and nerve supply. Add clinical correlations relevant to Mukharoga.
2. **Nidāna Pañcaka (general) of Mukharoga**: Write etiological factors, pūrvārūpa, rūpa, upaśaya–anupaśaya and samprāpti integrating classical logic with contemporary oral pathology.
3. **Management essay**: Enumerate and classify Mukharoga. Discuss **Sāmānya Cikitsā** and **Pathya-Apathya**. Add points on prognosis and oncologic vigilance.

Short Essays (5 marks each)

1. Physiology of taste and salivation with applied anatomy of tongue.
2. Periodontal disease—pathogenesis in Ayurvedic and modern terms.
3. Oral submucous fibrosis—etiology, features and prognosis.
4. Write a note on **xerostomia**—causes, complications and management.

Short Answers (2 marks each)

- Enumerate contents of the floor of mouth.
- List nerve supply of anterior two-thirds of tongue (taste & general).
- Write two causes of recurrent aphthae.
- Name two premalignant lesions of the oral cavity.
- Mention lymphatic drainage of tip and lateral border of tongue.
- State two upaśaya measures for acute aphthous ulcers.

MCQs (1 mark each; choose one)

1. Taste from anterior two-thirds of tongue is carried mainly by:
   A. Glossopharyngeal (IX) B. Vagus (X) C. **Chorda tympani (VII)** D. Trigeminal (V)
2. Which habit most strongly predisposes to **OSMF**?
   A. Alcohol B. **Areca nut chewing** C. Smoking only D. Spicy food
3. A **non-wipeable** white patch on buccal mucosa in a smoker is most likely:
   A. Candidiasis B. Aphthous ulcer C. **Leukoplakia** D. Traumatic ulcer
4. Submandibular duct (Wharton's) opens:
   A. Opposite upper 2nd molar B. **Beside lingual frenulum** C. Posterior hard palate D. Tonsillar fossa
5. Tip of tongue drains chiefly to:
   A. Jugulodigastric B. **Submental** C. Retropharyngeal D. Parotid nodes

Answer key: 1–C, 2–B, 3–C, 4–B, 5–B.

References

Classical sources

- **Suśruta Saṃhitā**, **Uttara-tantra**: adhyāyas on **Mukhagata roga** (site-wise descriptions of oṣṭha, danta, dantamūla, jihvā, tālu, kaṇṭha, and general mouth disorders).
- **Aṣṭāṅga Hṛdaya**, **Uttara-sthāna**: adhyāyas on **Mukharoga-vijñānīya** and **-pratiṣedha**; **Sūtrasthāna** (Dinacaryā) for **dantadhāvana, jihvā-nirlekhana, kavala/gandūṣa** regimens.
- **Aṣṭāṅga Saṃgraha**, **Uttara-sthāna**: parallel sections on site-wise Mukharoga and kriyākalpa for oral cavity.

(Quote specific verses in your written answers only when you can verify the exact śloka and adhyāya/śloka number from your edition/commentary.)

Modern resources

- **Shafer**'s *Textbook of Oral Pathology*, latest ed.
- **Burket's Oral Medicine*, latest ed.
- Dhingra & Dhingra, *Diseases of Ear, Nose & Throat & Head–Neck Surgery* (oropharynx & salivary disorders).
- **Neville** et al., *Oral & Maxillofacial Pathology*, latest ed.
- Guyton & Hall, *Textbook of Medical Physiology* (Taste & salivation).

3-minute end-review (self-check)

- Can you **draw and label** the ducts (Stensen vs Wharton) and state their openings?
- Can you **list five etiological clusters** (dietary, habits, systemic, drug-induced, infective/traumatic) for Mukharoga?
- If an OSCE presents a **non-healing ulcer**, do you remember **two red flags** and the immediate **referral** pathway?

End of Unit 36 — Mukha Śarīra & Nidāna Pañcaka of Mukharoga.