

2.1. Yantra - Nirukti, Prakara, Guna, Prayog, Dosha, Karma, Upayantra and Relevant modern instruments

Unit 2. Yantra and Śastra — Topic 1. Yantra: Nirukti, Prakāra, Guna, Prayoga, Doṣa, Karma, Upayāntra and Relevant Modern Instruments

1) Nirukti (etymology) and Paribhāṣā (definition)

The term **Yantra** stems from the Sanskrit root “**yam-niyamane**” (to restrain/control), hence a device that **holds, restrains or facilitates** a mechanical action without cutting. In Śalyatantra, Yantras are the **non-sharp surgical appliances** used to hold, press, probe, dilate, drain, splint, retract and extract—often preparing or completing steps that sharp instruments (Śastra) alone cannot achieve safely.

श्लोक (अर्थ-परिभाषा):

“तत्र, मनःशरीरावधकराणि शल्याणि ; तेषामाहरणोपायो यन्त्राणि ॥” — सुश्रुत संहिता, सूत्रस्थान 7/4

Meaning: “Shalya (foreign bodies/injurious factors) afflict mind and body; the means of removing them are **Yantras**.”

Why this matters to you: the verse anchors Yantra in **purpose**—āharaṇa (removal/extraction) and allied non-cutting actions that make surgery safe, tissue-respectful, and efficient.

2) Prakāra (types) and Saṅkhyā (number)

Suśruta enumerates **six principal groups** of Yantra and their **sub-type counts**:

वर्गीकरण :

“तानि पट्टप्रकाराणि ; तद्यथा— स्वस्तिक्यन्त्राणि, सन्दर्शयन्त्राणि, तालयन्त्राणि, नाडीयन्त्राणि, शलाकायन्त्राणि, उपयन्त्राणि चेति ॥” — सु. सं., सू. 7/5

संख्या :

“तत्र चतुर्विंशतिः स्वस्तिक्यन्त्राणि, द्वे सन्दर्शयन्त्रे, द्वे एव तालयन्त्रे, विंशतिर्नाड्यः, अष्टाविंशतिः शलाकाः, पञ्चविंशतिरूपयन्त्राणि ॥” — सु. सं., सू. 7/6

Functional sense you should remember (with modern mapping)

Group (Suśruta)	Core action (Karma)	What you achieve	Modern analogues
Svastika-yantra (24)	Splinting, stabilising, traction	Immobilise/align parts	Splints, traction frames, braces
Samḍamṣa-yantra (2)	Grasping, extracting	Secure grip & removal	Tissue forceps, hemostats
Tāla-yantra (2)	Pressing, levering, exposure	Compression & retraction	Towel clips, basic retractors
Nāḍī-yantra (20)	Conduction of fluids	Drain or instill	Cannulae, catheters, suction tips
Śalākā-yantra (28)	Probing, dilating, exploring	Define tracts & patency	Probes, dilators, specula
Upa-yantra (25)	Assisting/ancillary	Field support & safety	Lights, trays, drapes, tourniquet

3) Guṇa (desirable qualities) — what makes a good Yantra?

Suśruta embeds **quality** inside **purpose**. Example: for Saṃḍamṣā (forceps), he specifies **length and indication**—a practical cue to “fit-for-purpose” design.

श्लोक (उदाहरण—सन्दर्भ):

‘सनिग्रहोऽनिग्रहस्त्र सन्देशी षोडशाङ्गुलौ भवतः, तौ त्वइ-मांस-शिरा-स्नायु-गत-शल्योद्धरणार्थम् उपदिश्येते ॥’ — सु. सं., सू. 7/8

Meaning: Two Saṃḍamṣas—with **catch** and **without catch**—each about **16 aṅgula** in length, are prescribed for removing foreign bodies lodged in **skin, muscle, vessels, tendons**.

From this and the Yantra doctrine, derive these Guṇa for any Yantra:

- **Proper dimensions & geometry:** length/curvature suited to the anatomical site (e.g., ~16 aṅgula for Saṃḍamṣā).
- **Structural integrity:** no looseness in joints/catch; resilient yet not brittle.
- **Atraumatic finish:** smooth, non-porous, corrosion-resistant; tip geometry suited to task (rounded for probing; serrated/toothed for firm grasp).
- **Ergonomics & balance:** firm, comfortable grip, good tactile feedback.
- **Sterilisability:** compatible with repeated cleaning and sterilisation cycles.

Clinically translate Guṇa → safety: proper size and atraumatic tips reduce slippage, crush, false passage and infection.

4) Prayoga (clinical use) — when and how you actually use them

The **definition verse** (Su. 7/4) already tells you Yantras are for **āharaṇa** (removal). The **Saṃḍamṣā verse** (Su. 7/8) specifies **foreign-body extraction** across tissue planes. Build your mental map from these anchors:

- **Saṃḍamṣā:** grip and extract splinters/thorns, slough or necrotic tags—apply **co-axial traction**, avoid over-squeezing (crush injury).
- **Śalākā:** gently **probe** a sinus/tract, determine direction and depth, and **dilate** stepwise when indicated.
- **Nāḍī:** **drain** pus/blood; **instill** medicated fluids; connect to suction where needed.
- **Tāla:** **press** for hemostasis, **lever** to gain exposure (basic retraction).
- **Svastika:** **splint/immobilise** fractured or injured part before and after definitive procedures.
- **Upayantra:** everything that **assists**—illumination, drapes, trays, tourniquet, pads—so the principal action is clean and safe.

Use the **verse as your justification** in theory answers: “Because Suśruta defines Yantra as the means for **śalyāharaṇa** (Su. 7/4), I first probe with Śalākā, then grasp with Saṃḍamṣā (Su. 7/8), finally leave a Nāḍī drain.”

5) Doṣa (defects/malfunctions) — the 12 Yantra-doṣa and their clinical implications

‘तत्र, अतिस्थूलम्, असारम्, अतिदीर्घम्, अतिहङ्करम्, अग्राहि, विषमग्राहि, वक्र, शिथिलम्, अत्युन्नतम्, मृदुकीलं, मृदुमुखं, मृदुपाशम्, इति द्वादश यन्त्रदोषाः ॥’ — सु. सं., सू. 7/19

Concise explanations you can write in exams:

1. **Atisthūlam (too thick):** Bulky body/tip → poor access; causes tissue crush.

2. **Asāram (weak/unsound):** Inferior metal/workmanship → bending or breakage in vivo.
3. **Atidirgham (too long):** Overshoots target; leverage becomes unsafe in small fields.
4. **Atihrasvam (too short):** Inadequate reach; operator grip compromised.
5. **Agrāhi (non-grasping):** Smooth jaws/tips that fail to hold → slippage.
6. **Viśamagrāhi (uneven grasp):** Mal-aligned jaws → shearing/partial hold → trauma.
7. **Vakram (unduly curved):** Uncontrolled curvature → off-axis forces and false passage.
8. **Śithilam (loose):** Loose rivets/springs → erratic opening/closure; unreliable hold.
9. **Atyunnatam (over-raised/over-projecting):** Prominent shoulders/flanges obstruct the field.
10. **Mṛdūkilam (soft rivet/pin):** Hinge weakens under stress → loss of function mid-procedure.
11. **Mṛdumukham (soft/rounded tip where firmness is needed):** Poor penetration/contact → inefficacy.
12. **Mṛdupāśam (weak/soft catch):** Lock fails; grip released unintentionally.

Prevention mantra: “**Right size-Right tip-Right force.**” Add rigorous inspection, proper maintenance, and sterile processing discipline.

6) Karma (surgical actions) — how Yantra enable safe surgery

यन्त्रकर्मणि

तु-

निर्धार्तनपूरणवन्धनवर्तनचालनविवर्तनविवरणपीडनमार्गविशेषधनविकर्षणाहरणाज्ञनोन्मन-

विनमनभज्जनोन्मथनाचूषणैषणदारणजूकरणप्रक्षालनप्रधमनप्रमार्जनानि चतुर्विंशतिः ॥१७॥

Below are the **24 actions** with plain-English gloss, classical intent, and **typical modern correlates** you may actually use:

1. **Nirghātana (निर्धार्तन) —** Tapping/percussing to dislodge/loosen; e.g., gentle tapping to mobilise a foreign body. *Tool:* probe handle, light mallet.
2. **Pūraṇa (पूरण) —** Filling/packing cavities for compression/support. *Tool:* ribbon gauze, packers, dental pack for sockets.
3. **Bandhana (बन्धन) —** Binding/strapping for fixation or hemostatic pressure. *Tool:* crepe bandage, pressure dressing, tourniquet (as upayāntra).
4. **Vyūhana (व्यूहन) —** Repositioning/setting displaced parts. *Tool:* reduction maneuvers; traction frames (svastika-concept).
5. **Vartana (वर्तन) —** Rolling/turning along axis to coax out an object. *Tool:* forceps/probe with coaxial rotation.
6. **Chālana (चालन) —** Gentle moving/shaking to test mobility or free adhesions. *Tool:* probe, blunt dissector.
7. **Vivartana (विवर्तन) —** Everting a margin/edge for exposure. *Tool:* skin hooks, retractors.
8. **Vivaraṇa (विवरण) —** Opening/separating for access (without cutting). *Tool:* blunt dilators/speculum; basic retractors.
9. **Pīḍana (पीडन) —** Pressing/compression for hemostasis/evacuation. *Tool:* artery forceps for clamp-pressure; compressive pads.
10. **Mārga-viśodhana (मार्गविशेषधन) —** Cleansing the tract/path. *Tool:* irrigation cannula (nāḍī), suction.
11. **Vikarṣaṇa (विकर्षण) —** Traction/drawing out in the line of entry. *Tool:* toothed forceps; traction sutures.
12. **Āharaṇa (आहरण) —** Extraction/removal of shalya. *Tool:* **Samḍamśa** forceps (see Su.Su. 7/8).
13. **Āñchana (आञ्चन) —** Smearing/lining (protective unction to passage). *Tool:* applicators to smear ghee/medicated oil.
14. **Unnamana (उन्नमन) —** Elevating/raising a depressed part. *Tool:* levers, elevators.
15. **Vinamana (विनमन) —** Depressing/pressing down a raised part. *Tool:* depressors, spatulas.
16. **Bhañjana (भञ्जन) —** Breaking/cracking a hard mass/calcific concretion when indicated. *Tool:* stone forceps, lithotrites (special contexts).
17. **Unmathana (उन्मथन) —** Macerating/loosening thick contents. *Tool:* blunt curettes, stirring with probe.
18. **Cūṣaṇa (चूषण) —** Suction/aspiration. *Tool:* suction apparatus, Yankauer/Frazier tips.
19. **Eṣaṇa (एषण) —** Probing/exploring. *Tool:* **Śalākā**/probe (see class & counts above).
20. **Dāraṇa (दारण) —** Tearing/splitting (blunt separation) where safe. *Tool:* blunt dissecting with forceps handles.
21. **Rjūkaraṇa (ऋजूकरण) —** Straightening a bent/deformed part or instrument path. *Tool:* splints, aligning forceps.
22. **Prakṣālana (प्रक्षालन) —** Washing/irrigation. *Tool:* syringes, irrigation sets (nāḍī).

23. **Pradhamana** (प्रधमन) — Insufflation/blowing (introducing air/medicaments). *Tool:* insufflators/air syringe (context-specific).
24. **Pramārjana** (प्रमार्जन) — Wiping/mopping to clear field. *Tool:* swabs, mops.

7) Upayāntra (ancillary devices) — concept and exam-grade examples

पञ्चविंशतिरुपयन्नाणि – Suśruta recognises a **distinct class** of 25 **Upayāntras** (Su.Su. 7). While the text lists and describes them, for applied recall focus on **what they enable**:

- **Prakāśa-karaṇa** (illumination): OT lights/head-lamps—visibility and depth perception.
- **Bandhana-dravyāṇi** (bandaging suite): Gauze, pads, crepe bandages—compression and coverage.
- **Yantra-pīṭha & trays**: Sterile layout and sequencing—efficiency and sterility.
- **Śodhana-pāṭra**: Cleaning/sterilisation containers—bioburden control.
- **Stambhana-upakaraṇa**: Tourniquet/pressure devices—bloodless field.
- **Āvaraṇa (drapes)**: Field isolation—reduces contamination.
- **Dharaka/Samsthāpaka**: Positioners, sandbags, splints—stability and access.

उपयन्नाण्यपि-
रज्जुवेणिकापट्टचर्मान्तवल्कलतावस्त्राच्छीलाश्ममुद्गरपाणिपादतलाङ्गुलिजिह्वा-
दन्तनखमुखबालाश्वकटकशास्त्रीवनप्रवाहणहर्षायस्कान्तमयानि क्षाराग्निभेषजानि चेति ॥५॥
एतानि देह सर्वस्मन् देहस्यावयवे तथा ।
सन्धौ कोष्ठे धमन्यां च यथायोगं प्रयोजयेत् ॥६॥

8) Sterilisation and care (Śodhana-niyama) — apply classical intent today

Although detailed sterilisation science is modern, Suśruta's instrument doctrine implies: **clean → inspect → package → sterilise → store**. Translate for today:

- **Decontaminate fast** (rinse/enzymatic soak), **clean** (manual + ultrasonic for lumens), **inspect** (magnify serrations/hinges), **pack** (pouches/cassettes), **sterilise** (steam preferred; low-temp for heat-sensitive), **store** dry and traceably.
- Link back to **doṣa prevention**: rough surfaces, loose hinges, weak catches are eliminated by **quality control** and **maintenance cycles**.

9) Relevant modern instruments — one-glance mapping

Classical Yantra (use)	Core step you perform	Modern instruments you will actually pick
Samḍamśa (grasp/extract)	Hold foreign body, tag, vessel	Toothed/atraumatic tissue forceps, mosquito/artery forceps
Śalākā (probe/dilate)	Define tract; test patency	Straight probe, lacrimal probe, urethral/anal dilators, speculum
Nāḍī (drain/instill)	Evacuate pus/blood; instill medicaments	Romovac suction cannula, chest/penrose drain, Foley/Ryle's
Tāla (press/expose)	Pressure hemostasis; basic retraction	Towel clips, Langenbeck/Senn retractor (basic), skin hooks
Svastika (splint/immobilise)	First-aid stabilisation; post-op support	Thomas/Kramer splints, braces, traction setups

Classical Yantra (use)

Upa-yantra (assist)

Core step you perform

Make the field safe & efficient

Modern instruments you will actually pick

Lights, drapes, gauze, kidney tray, tourniquet, instrument trolley

10) Self-check recap

- **Definition & purpose:** Yantra are **means for shalyāharana** and allied non-cutting actions (Su. 7/4).
- **Six groups; fixed counts** (Su. 7/5-6) → always begin classification answers by quoting these two verses.
- **Quality → safety:** Dimensions/ergonomics from task (e.g., Samḍamṣa 16 aṅgula; Su. 7/8).
- **Doṣa (12)** (Su. 7/19) → prevent with right size, tip, force, maintenance and sterile processing.
- **Upa-yantra** are **canonically sanctioned** supports—never treat them as optional.

11) Assessment

A. MCQs (Single best answer)

1. The **primary** scriptural purpose of Yantra per Suśruta is:
a) Incision b) Excision c) **Removal of shalya and allied non-cutting actions** d) Suturing
Answer: c (cite Su. 7/4)
2. The **six groups** of Yantra include all **except**:
a) Svastika b) Nāḍī c) **Karapatra** d) Samḍamṣa
Answer: c (Karapatra is a Śastra)
3. Standard **length** and **indication** explicitly given for Samḍamṣa are:
a) 12 aṅgula; cauterity b) **16 aṅgula; foreign-body extraction** c) 20 aṅgula; bone leverage d) 8 aṅgula; probing
Answer: b (Su. 7/8)
4. **Upa-yantra** are:
a) Cutting tools b) **Ancillary devices assisting the main procedure** c) Only for bandaging d) Only for cauterity
Answer: b (Su. 7/5-6)
5. **Viṣamagrāhi** doṣa means:
a) Too thin b) Too long c) **Uneven grasp due to mal-aligned jaws** d) Loose hinge
Answer: c (Su. 7/19)
6. A **Śalākā** is primarily used to:
a) Cut fibrous bands b) **Probe/dilate a tract** c) Cauterise margins d) Saw bone
Answer: b (Su. 7/5-6)
7. **Svastika-yantra** map best to which modern role?
a) Cautery b) **Splint/traction/immobilisation** c) Catheterisation d) Suture holding
Answer: b
8. **Mṛdupāśa** doṣa will chiefly result in:
a) Over-cutting b) **Lock failing during hold** c) Excessive sharpness d) False passage
Answer: b (Su. 7/19)
9. The verse "...पटप्रकाराणि..." should be quoted when answering about:
a) **Classification of Yantra** b) Vaidyavṛtta c) Vraṇa-śodhana only d) Dhūmavarti preparation
Answer: a (Su. 7/5)
10. For **abscess drainage**, the Yantra sequence most aligned to Suśruta's doctrine is:
a) Incise → suture → bandage
b) **Probe (Śalākā) → drain (Nāḍī) → compress/dress (Upa-yantra)**
c) Dilate blindly → leave open
d) Only antibiotics
Answer: b

B. SAQs (3-5 lines each)

1. Define **Yantra** with a suitable verse and explain its **scope** in surgery.
2. Enumerate the **six groups** of Yantra and their **counts** with references.
3. Write **four Guṇa** of a good Saṃdamśa and relate them to **patient safety**.
4. Explain **any four** Yantra-doṣa with clinical examples.
5. List **three** Upayāntras and state how each **improves the operative field**.

C. LAQs / Essays

1. **Yantra in Śalyatantra:** Define (with Su. 7/4), classify (Su. 7/5-6), detail Guṇa (use Su. 7/8 as exemplar), elaborate 12 doṣa (Su. 7/19), and conclude with an applied case (foreign-body extraction or abscess drainage).
2. **Instrument safety doctrine:** Discuss how correct **dimensions, finish, maintenance and sterile processing** prevent Yantra-doṣa, integrating examples from **Saṃdamśa (Su. 7/8)** and the **doṣa list (Su. 7/19)**.

12) Scriptural quotations to insert verbatim in your answers

- परिभाषा—उद्देशःः
‘तत्र, मनःशरीराबाधकराणि शत्त्वानि ; तेषामाहरणोपायो यन्त्राणि ॥’ — सु. सं., सू. 7/4
- वर्गीकरण—षट् प्रकाराःः
‘तानि षट्प्रकाराणि ; तद्यथा— स्वस्तिक्यन्त्राणि, सन्दशयन्त्राणि, तालयन्त्राणि, नाडीयन्त्राणि, शलाकायन्त्राणि, उपयन्त्राणि चेति ॥’ — सु. सं., सू. 7/5
- संरूपा—उपर्युक्ताणाः
‘तत्र चतुर्विंशतिः स्वस्तिक्यन्त्राणि, द्वे सन्दशयन्त्रे, द्वे एव तालयन्त्रे, विशितिनाड्यः, अष्टाविंशतिः शलाकाः, पञ्चविंशतिरूपयन्त्राणि ॥’ — सु. सं., सू. 7/6
- निर्दर्शना—सन्दंश उपयोग/भावाः
‘सनियहोऽनियहश्च सन्दंशौ षोडशाङ्गुलौ भवतः, तौ त्वङ्-मांस-शिरा-स्नायु-गत-शल्योद्धरणार्थम् उपदिश्येते ॥’ — सु. सं., सू. 7/8
- दोषाः—द्वादशः
‘तत्र, अतिस्थूलम्, असारम्, अतिदीर्घम्, अतिहङ्स्वम्, अग्राहि, विषमग्राहि, वक्रं, शिथिलम्, अत्युन्नतम्, मृदुकीलं, मृदुमुखं, मृदुपाशम्, इति द्वादश यन्त्रदोषाः ॥’ — सु. सं., सू. 7/19