Unit 13. Yantra evam Shastra - Instruments a. Types of Yantra (Blunt instruments) and utilization

Topic a. Types of Yantra (Blunt Instruments) and Their Utilization

Classical anchor (Suśruta Samhitā)

"यन्त्रशतमेकोत्तरमत्र हस्तमेव प्रधानतमं… तानि षट्प्रकाराणि — स्वस्तिकयन्त्राणि, सन्दंशयन्त्राणि, तालयन्त्राणि, नाडीयन्त्राणि, श्रलाकायन्त्राणि, उपयन्त्राणि च∏" (Su. Sū. 7/2-3)

"तत्र चतुर्विंशतिः स्वस्तिकयन्त्राणि... विंशतिर्नाडयः... अष्टाविंशतिः शलाकाः... पञ्चविंशतिरुपयन्त्राणि∏" (Su. Sū. 7/4)

Suśruta classifies **Yantra** (blunt, non-cutting appliances) into six archetypes—**Swastika, Sandanśa, Shalākā, Dvi-tāla** (**Tāla**), **Nāḍī** and **Upayantra**—forming the classical foundation for many modern obstetric and gynaecologic instruments used today. Below, each category is mapped to contemporary tools and their practical use in **Strīroga-Prasūtitantra** practice.

1) Sandanśa Yantra (Pincer-like / Dissecting Forceps)

Concept & build (Ayurvedic): "Sanigraha & Anigraha" types; ~16 aṅgula length; for grasping/removing foreign bodies from twak-māṃsa-sirā-snāyu (skin, muscle, vessel, ligament) planes (Su. Sū. 7/8).

Modern parallels & use in OBG:

Annigraha — Plain (non-toothed) dissecting forceps

Indications: Atraumatic tissue handling—e.g., perineal skin during episiotomy repair, grasping gauze, holding catheter tips.

Technique: Hold in pencil grip near hinge; avoid crushing tissue—use only to guide/sweep.

Precautions: Keep tips aligned; avoid grasping friable cervicovaginal mucosa with forceful pressure.

Sannigraha — Toothed forceps (e.g., toothed dissecting forceps)

Indications: Firm hold on tough structures—perineal fascia, skin edges in repair; picking cervical lips in cervical tears (only if vulsellum/Green-Armytage not available).

Technique: Engage minimal edge; release intermittently to prevent ischemic bite.

Contraindications: Edematous cervix, thin vaginal mucosa—prefer atraumatic clamps (Green-Armytage/Babcock).

Key safety: Always identify plane; use toothed instruments only for tough tissue; avoid in friable postpartum cervix.

2) Swastika Yantra (Cruciform-like Forceps)

Concept (Ayurvedic): Two-bladed, hinged with "masūra-like" bolt; 18 aṅgula length; animal-beak-like jaws for firm grasp (Su. Sū. 7/7).

Modern parallels & applications:

- Allis forceps (toothed, ring-handled): secure grasp on fibrous tissue—e.g., holding vaginal wall during anterior/posterior colporrhaphy; grasping tags in perineorrhaphy.
 - *Tip:* Count teeth alignment; avoid on cervix (traumatic).
- **Vulsellum (single-/double-toothed)**: firm hold on **cervical lip** during IUCD insertion in difficult cases, D&E, colposcopic biopsy positioning.
 - Pearl: Single-tooth vulsellum is less traumatic; apply at 12 o'clock unless pathology dictates otherwise.
- Sponge-holding forceps: holding swabs; vaginal preparation, mopping blood/clots, blunt curettage in incomplete abortion.

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Technique: Keep jaws closed while inserting; open only when over swab.

- Cheatle's forceps (sterile dressing forceps): transfer of sterile instruments/gauze from drums; do not touch nonsterile surfaces.
- **Kocher's forceps** (Ochsner; tooth with longitudinal serrations): haemostasis for tough pedicles (e.g., uterine artery pedicle in abdominal hysterectomy—though artery forceps or clamps are standard).
- Babcock's forceps (atraumatic, fenestrated): gentle hold of fallopian tubes, ovaries, bowel—prevents crushing.
- Needle holder (e.g., Mayo-Hegar): driving suture needles during episiotomy repair, perineorrhaphy, laparotomy closure.
 - *Grip:* **Thenar-eminence (palmar)** or **tripod** with 1/3-2/3 rule on needle.
- Artery forceps (Mosquito, Kelly, Crile): temporary haemostasis; identify transfixation vs clamp-cut-ligate strategies.
- Ovum forceps: atraumatic removal of retained products/membranes; for blunt curettage in incomplete abortion
 or postpartum clots.
- **Green-Armytage forceps**: flat triangular serrated jaws; designed to **grasp and hemostatically hold** cut edges of the **uterine cervix** during procedures (e.g., D&E, MTP).
- **Cervical punch biopsy forceps**: targeted cervical tissue bite under colposcopic guidance; ensure **hemostasis** (Monsel's/AgNO₃) post-biopsy.

General tips: Always check jaw integrity and ratchet; count instruments pre-/post-procedure; avoid unnecessary crushing.

3) Shalākā Yantra (Rod-like Instruments)

Concept (Ayurvedic): Probes/directors of varied ends—eṣaṇa (probing), vyūhana (lifting), āharaṇa (extraction); special tips for kṣāra/agnikarma (Su. Sū. 7/11).

Modern inclusions & use:

- **Uterine sound**: metal (≈25–30 cm), graduated (1 cm marks), with 6–8 cm typical uterine depth (nullipara) and 8–10 cm (multipara).
 - *Uses:* Assess uterine length and direction before IUCD, D&C/D&E, hysteroscopy; diagnose perforation risk if abnormal passage.
 - *Technique:* **Bimanual exam first** \rightarrow align with uterine axis \rightarrow gentle advancement; **never force** past resistance.
- **Hegar's dilators** (double-ended, numbered mm tips): **serial cervical dilatation** before curettage/hysteroscopy; treat cervical stenosis.
 - *Protocol:* Analgesia ± paracervical block; stabilize cervix (vulsellum), dilate steadily **in ascending sizes**, stop at planned gauge; monitor vagal response.
- Uterine curette (sharp) & Endometrial biopsy curette (e.g., Novak/Pipelle): obtain endometrial tissue; manage incomplete abortion (sharp curette used judiciously).
 - *Pearls:* In reproductive-age patients, rule out pregnancy; in postmenopausal bleeding, prefer **Pipelle** or hysteroscopy-directed biopsy.
- **Agnikarma Shalākā** (heated metal cautery): traditional **thermo-cautery**—today analogous to **electrocautery** for pinpoint hemostasis (small bleeders, superficial lesions).
 - Caution: Avoid intrauterine use; adhere to sterile, controlled settings.
- Anterior Vaginal Wall Retractor (AWR): metal retractor to depress anterior wall for exposure of cervix in cystocele or lax vagina; helpful in Pap smear, IUCD insertion.

Complications to prevent: Uterine perforation (sound/dilator), cervical tears (forceful dilation), endometritis (asepsis lapse); **stop at pain/resistance**.

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4) Dvi-tāla Yantra (Tāla) — Scoops / Spoon-shaped Instruments

Concept (Ayurvedic): Single or double "tāla" (fish-palate-like) for extracting foreign bodies from external passages (Su. Sū. 7/9).

Modern parallels:

- **Sim's speculum** (single-bladed, non-self-retaining): posterior vaginal wall retraction for cervical visualization; ideal in **procedural positions** (lithotomy/left lateral).
 - Technique: Insert with blade closed along posterior wall; use AWR to elevate anterior wall.
- Cusco's bivalve speculum (self-retaining): OPD visualization, Pap smear, IUCD insertion; not ideal in large cystocele (AWR + Sim's preferred).
- Doyen's retractor (broad-bladed): abdominal/vaginal surgery—deep retraction of bladder or vaginal walls.
- Endometrial curette (fits here as spoon-like sharp curette): for therapeutic evacuation/diagnostic sampling.
- Obstetric forceps (spoon-shaped blades): instrument-assisted vaginal delivery (outlet/mid-cavity) under strict
 indications and skilled hands; ensure full cervical dilatation, engaged head, known position, adequate
 pelvis, and informed consent.

Precautions: Warm speculum; check screws (Cusco); avoid pressure necrosis with prolonged retraction; obstetric forceps only with full competence and fetal-maternal safety protocols.

5) Nādī Yantra (Tubular Instruments)

Concept (Ayurvedic): Tubes open at one or both ends for **suction**, **instillation**, **inspection**, or **tract clearance**—customized to target **srotas** (Su. Sū. 7/10).

Modern equivalents & OBG use:

- Yoni-vranekṣaṇa yantra (inspection tube): tubular vaginal speculum/proctoscope-type tube for focused inspection of vaginal ulcers/lesions; today, insulated vaginoscopy/hysteroscopy sheaths serve similar purpose.
- Leech-Wilkinson HSG cannula: screw-tip cannula that seals cervical os to inject contrast for Hysterosalpingography; ensure no pregnancy/PID prior; antibiotic cover per protocol.
- Rubin's cannula: for tubal insufflation (CO₂ patency test) where applicable; modern practice favors HSG or laparoscopy chromopertubation.
- Suction cannula (Karman): flexible plastic cannula for vacuum aspiration in MTP (up to recommended gestational age) and evacuation of retained products.
 - Steps: Bimanual exam \rightarrow asepsis \rightarrow paracervical block \rightarrow dilatation as required \rightarrow attach to MVA/EVA \rightarrow **360° sweep** until gritty feel; monitor bleeding.
- **Uttarabasti cannula**: Ayurvedic intrauterine instillation (medicated oils/decoctions) traditionally for gynec disorders; **if practiced**, adhere to strict asepsis, exclude pregnancy, active infection, and structural anomalies.
- Vaginal douching syringe: historically for irrigation; not recommended routinely (risk of ascending infection, BV alteration). Restrict to specific indications under supervision.
- Basti yantra (enema set): therapeutic enemas (classical basti); in gynaec contexts used cautiously per institutional protocols.

Safety checklist: Confirm **non-pregnant** status (where relevant), screen/ treat **STIs/PID**, maintain **sterility**, control pressure/flow (HSG/insufflation/irrigation), and monitor for **vasovagal** responses.

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6) Quick Reference Table — Instruments & Uses

Yantra type	Modern instrument(s)	Primary OBG uses	Key precautions
Sandanśa	Non-toothed & toothed dissecting forceps	Atraumatic handling; grasping skin/fascia; assis repairs	Avoid crushing mucosa; use toothed only on tough tissue
Swastika	Allis, Vulsellum, Sponge holder, Cheatle's, Kocher, Babcock, Needle holder, Artery forceps, Ovum forceps, Green-Armytage, Cervical punch biopsy	Tissue holding, haemosta: cervical traction, specime handling	
Shalākā	Uterine sound, Hegar's dilators, Curettes, Pipelle/Novak, Agnikarma shalākā, AWR	Uterine assessment, cervi dilatation, sampling, caute exposure	
Dvi-tāla (Tāla)	Sim's, Cusco's specula; Doyen's retractor; Obstetric forceps	Visualisation; retraction; assisted delivery	Warm blades; avoid prolonged pressure; obstetric forceps only with skill
Nāḍī	Yoni inspection tube, Leech-Wilkinson HSG cannula, Rubin's cannula, Karman cannula, Uttarabasti cannula, Douching syringe, Basti set	Contrast studies, tubal tes suction evacuation, intrauterine instillation	Exclude pregnancy/PID; pressure control; strict asepsis
Yantra type	e Shloka	Utilization (plain English)	Modern analogues / examples
Saṃdaṃśa Yantra (forcep: — subtypes: Anigraha (plain, no catc & Sanigraha	"सनियहोऽनियहश्च सन्दंशौ षोडशाङ्गुलौ भवतः, तौ त्वङ्-मांस-शिरा-स्नायु-गत-शल्योद्धरणार्थम् h) उपटिष्योते ॥त्य"	Length ~16 angula; grasp & remove foreign bodies lodged in skin, muscle, vessels, or tendons.	Dissecting forceps (toothed & non-toothed).
(with catch) Svastika Yantr. (cruciform forceps)	स्वास्तकयन्त्राणि अष्टादशाङ्गुलप्रमाणाने	Length ~18 aṅgula; used to extract foreign bodies embedded in bone.	Allies/Allis tissue, Vulsellum, Sponge- holding, Cheatle's, Kocher's, Babcock's, Needle holder, Artery/haemostat, Ovum, Green- Armytage, Cervical punch biopsy forceps (as cruciform/forceps analogues in OBG kits).
Śalākā Yantra (rod-like)	"शलाकायन्त्राण्यपि नानाप्रकाराणि, नानाप्रयोजनानि … एषण–व्यूहन–चालन–हरणार्थम् उपदिश्येते ॥११ ॥"	Probes/rods for exploring, levering, moving, and extracting; several tipforms (hooks, hooded, fish-hook, etc.); includes agnikarma-śalākā sets.	Uterine sound, Hegar's dilators, Uterine/Endometrial curette, Endometrial biopsy curette, Agnikarma śalākā, Anterior vaginal wall retractor (rod/retractor/probe family).
Dvi-Tāla Yantra (scoops / "double-tala")	े "तालयन्त्रे द्वादशाङ्गुले कर्ण–नासा–नाडी–शल्य–आहरणार्थम् ॥९ ॥"	Length ~12 aṅgula; single-tāla & double-tāla forms; used to scoop/extract FBs from ear, nose & external channels.	Sim's speculum, Cusco's speculum, Doyen's retractor, Obstetric forceps, Endometrial curette (grouped in teaching as scoop/double-blade analogues).
Nāḍī Yantra (tubular)	"नाडीयन्त्राण्यप्यनेकप्रकाराण्यनेकप्रयोजनानि … स्रोतोगत-शल्योद्धरणार्थं, रोग-दर्शनार्थम्, आचूषणार्थं, क्रिया-सौकर्यार्थं च ॥१०॥"	Tubes (single- or double- lumen) sized to the passage; for extracting FBs, visualizing lesions, suction, instillation/irrigation (e.g., basti/uttarabasti).	Yonivraṇekṣaṇa yantra, Leech- Wilkinson HSG cannula, Rubin's cannula, Suction cannula, Uttarabasti cannula, Vaginal douching syringe, Basti yantra; pharyngoscope/proctoscope as related nāḍī-yantra analogues.

The quoted verses are from **Suśruta Saṃhitā, Sūtrasthāna 7 (Yantravidhi)**.

Modern-instrument analogues & mappings are summarized from recent reviews comparing Yantras with contemporary tools (WJPR 2023).

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Asepsis, Accountability, and Patient Safety (Must-know)

- 1. Sterilization & handling: Use Cheatle's for sterile transfer; verify indicator tapes; avoid "flash contamination".
- 2. WHO Surgical Safety Checklist (adapted): patient ID, consent, allergy, pregnancy status, infection risk, instrument counts before & after.
- 3. Tissue respect: Prefer atraumatic jaws (Babcock/Green-Armytage) for delicate tissues; minimize crush/ischemia.
- 4. Anatomical alignment: Always re-check uterine axis by bimanual exam before sound/dilator/cannula.
- 5. Complication readiness: Manage vasovagal syncope, cervical laceration, uterine perforation, hemorrhage, infection with predefined algorithms.

Classical-Modern Integration

- Numbers & classes: 101 Yantras; six groups; counts per group (24 Swastika, 2 Sandanśa, 2 Tāla, 20 Nāḍī, 28 Shalākā, 25 Upayantra).
- Hands as pradhāna yantra: every instrument depends on the surgeon's hand control.

Self-check (2-minute recap)

- Can you **name** the six Yantra groups and **one** OBG instrument under each?
- Before inserting a uterine sound, what three checks do you perform?
- Which instrument would you choose to grasp the cervix atraumatically during D&E—and why?

Assessment

A. MCQs (Choose one best answer)

- 1. According to Suśruta, the pradhāna yantra is:
 - A. Swastika B. Sandanśa C. Hasta (hand) D. Shalākā
- 2. Green-Armytage forceps are primarily used for:
 - A. Tubal grasp B. Hemostatic grasp of cervical edges C. Vaginal packing D. Suturing
- 3. Hegar's dilators are indicated for:
 - A. Colposcopy B. **Serial cervical dilatation** C. Tubal insufflation D. Ovum retrieval
- 4. Leech-Wilkinson cannula is used in:
 - A. Hysteroscopy B. **Hysterosalpingography** C. Chromopertubation D. IUCD insertion
- 5. **Babcock's** forceps are preferred for:
 - A. Skin edges B. **Fallopian tube** C. Cervical lip D. Artery pedicle
- 6. **Sim's** speculum is:
 - A. Self-retaining B. Single-bladed, non-self-retaining C. Double-valved D. For rectum only
- 7. **Ovum forceps** are **not** suitable for:
 - A. Removing placental bits B. Blunt curettage C. Sharp endometrial sampling D. Clot evacuation
- 8. Cervical punch biopsy requires immediate:
 - A. Suture closure B. Chemical cautery (e.g., Monsel's) C. Ligation D. No hemostasis
- 9. Before uterine sounding, which is least important?
 - A. Bimanual assessment B. Asepsis C. Specimen labeling D. Gentle technique

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10. **Uttarabasti** is contraindicated in:

A. Dysmenorrhea B. **Pregnancy** C. Chronic cervicitis (treated) D. Infertility workup

Answer Key: 1-C, 2-B, 3-B, 4-B, 5-B, 6-B, 7-C, 8-B, 9-C, 10-B.

B. Short Answer Questions (3-5 lines each)

- 1. Enumerate Suśruta's six Yantra classes with one modern OBG example each.
- 2. List **three critical steps** to prevent uterine perforation during dilatation & curettage.
- 3. Differentiate **Allis vs Babcock** forceps—design and tissue application.
- 4. Outline the indications and contraindications for HSG cannulation.
- 5. Describe the **technique** of using **Sim's speculum** with AWR for optimal cervical exposure.

C. Long Answer Questions

- 1. "Swastika Yantra in modern gynaecology." Discuss design principles, instrument variants (Allis, Vulsellum, Green-Armytage, sponge holder, Kocher, Babcock, artery forceps, needle holder), indications, stepwise techniques, and complication prevention with case vignettes.
- 2. "Nāḍī Yantra applications." Compare HSG cannula, Rubin's cannula, suction (Karman) cannula, Uttarabasti cannula, and douching syringe with respect to purpose, setup, procedure steps, contraindications, and complications.

D. OSCE-style Stations (Structured responses)

- **Station 1:** Identify instrument (picture of **Green-Armytage**) and state two uses + one precaution. *Expected points:* Cervical edge hemostasis; hold cervix during evacuation; **avoid over-crushing**.
- Station 2: Demonstrate uterine sounding on model.
 Checklist: Bimanual assessment → asepsis → align to axis → gentle insertion → note length/direction → withdraw.
- **Station 3:** Set up for **HSG** with Leech-Wilkinson cannula.

 Checklist: Exclude pregnancy/PID → consent → NSAID ± antibiotic policy → sterile setup → cannula fixation → slow contrast injection under imaging → observe for pain/vagal response.
- **Station 4:** Choose appropriate forceps for **grasping fallopian tube** during lap-assisted procedure. *Expected:* **Babcock** (atraumatic), rationale.

Viva Prompts (Rapid fire)

- Why is **hand** called "pradhāna yantra"?
- When would you prefer vulsellum over Green-Armytage?
- One scenario where Cusco is inferior to Sim's + AWR.
- Immediate steps after **excessive resistance** during dilatation.

Further Classical Note

Counts & clustering and qualities/defects (12 yantra-doșa) are described in Suśruta Samhitā Sutrasthāna,
 Adhyāya 7 (Yantra-vidhi).

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