NAADI YANTRAS W.S.R TO ADVANCED SCOPES & ENDOSCOPES

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ABSTRACT
We are all incredibly proud of such a bright man for creating our medical history. Sushruta¹ elevated surgery in India. As shown by the aforementioned justification, Ayurveda discusses the essential concepts of Naadiyantra (endoscopy), as well as the advantages and disadvantages of various instruments, as well as their ultimate quality and utility. The Sushruta Samhita¹ states that they offer a fundamental grasp of endoscopy even if they are not a typical exposition of the topic. The accurate comprehension of yantras, their names, and their purposes should be known to everyone in the ayurvedic field. The materials used to make yantras have undergone several improvements, but the instrument’s fundamental idea and structure remain the same. This material alteration can be manufactured, labelled, and adjusted in accordance with the Ayurvedic literature.

KEYWORD: Nadi Yantra, Naadi yantas, Endoscopes, Scopes in Ayurveda.

INTRODUCTION
Medical scopes are an illuminated rigid or flexible tubular instrument which may not contain fibreoptic lens and light; it is used to examine internal organs or sites for diagnosis and therapeutic purposes. Endoscopy is a procedure in which endoscopy instrument is introduced through natural orifices or incision with or without surfaces/local anaesthesia / anaesthetic jelly or general anaesthesia for examination, inspection, biopsies or foreign body retrieval from the interior of the body organs, joints or cavities etc for diagnostic/ therapeutic and further management purposes.
Susruthacharya described various types of Naadi yantras\(^1\) which are having multiple actions like ‘Sroto-gata- Shalya uddhara’ (removal of foreign body), ‘Roga Darshana’ (To visualize the internal condition), ‘Achushanartha’ (to do Suction), ‘Kriya soukaryartha’ (Minimally invasive).

Susruthacharya described 12 types of Naadi Yantras\(^1\) which all are 20 in numbers and Vagbhattacharya also described 6 extra types of Naadi yantras\(^3\) to make the Shalya karma (Surgical practice) minimally invasive and easy to operate, which instruments can be correlated to various scopes of advanced modern scopes.

**AIMS AND OBJECTIVES**

Susruthacharya\(^1\), Vagbhattacharya\(^2\) has described various types of Naadi yantras depending on the need in Surgical field. Endoscopes, laryngoscope, ophthalmoscope, proctoscope, cystoscope etc may have developed as a result of Susruthas Naadi yantra theory, Making it a modern Naadiyantra that has been improved by modern technologies, with regard to description of endoscopy, an effort is made to highlight the view point of Ayurveda Shalya sastra.

**MEASURMENTS**

Susruthacharya described the pramana / measurement of Naadi yantra will be according to the need of the access on variety of instrumentation, depending on Sroto pramana, i.e, depending on the size and structure of the entering routes.

**USAGES\(^1\)**

A. स्रोतोगतश्लयोद्धरणाथि

B. रोगदर्शनाधिकारं

C. आचूषणाथि

D. क्रियासौकर्याथि

**A] SROTOGATA SHALYA UDDHARAN**

To remove the SROTO-GATA-SHALYA I.e, removal of foreign body from various internal srotas/ Orifices either natural or incisional.
### AYURVEDA YANTRAS

<table>
<thead>
<tr>
<th>AYURVEDA YANTRAS</th>
<th>CORRELATED EQUIPMENTS</th>
</tr>
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<tbody>
<tr>
<td>1. Bhagandara Yantra</td>
<td>Slit Proctoscope, Butterfly Beak</td>
</tr>
<tr>
<td>2. Arsho Yantra</td>
<td>Proctoscope</td>
</tr>
<tr>
<td>3. Vrana Vasti</td>
<td>Syringe Irrigator</td>
</tr>
<tr>
<td>4. Vasti Netra</td>
<td>Vaginal Douch, Catheter</td>
</tr>
<tr>
<td>5. Uttar Vasti</td>
<td>Cannula, Catheter</td>
</tr>
<tr>
<td>6. Mutra Vruddhi Yantra</td>
<td>Cannula, Catheter</td>
</tr>
<tr>
<td>7. Dakodara Yantra</td>
<td>Cannula, Catheter</td>
</tr>
<tr>
<td>8. Dhumanetra</td>
<td>Inhaler</td>
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<td>9. Niruddha Prakasha</td>
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<td>10. Sanniruddha Guda Yantra</td>
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<td>11. Alabu Yantra</td>
<td>Cupping Glasses, Suction Balls</td>
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<tr>
<td>12. Sringa Yantra</td>
<td>Horns</td>
</tr>
</tbody>
</table>

### B) ROGA DARSHANAM

To visualize internal organs and internal structures. Susruthacharya has described *Arsho yantra*, *Bhagandara yantras* etc. Whereas Vagbhattacharya described *Kanthya shalya avalokini yantra*, *Ghranarvuda-arsha yantras* etc., In modern advances these yantras might be correlated with Proctoscope, Lower GI endoscope, Laryngoscope, Nasal Speculum, Otoscope etc.

### C) AACHUSANARTHAM

To do suction, Acharya Susrutha described to do suction of *Dusitha Rakta, Puya Visha, stanya* etc, in modern advanced instrument it can be correlated to suction apparatus, ET Tube, various catheters, Meconium suction apparatus etc.

### D) KRIYA SOUKARYA-ARTHA

Susruthacharya described various instruments regarding easiness or minimally access of surgical field. For eg, *Arsho yantra, Bhagandar yantra* etc, for modern advancement like Endoscopes, Autoscopes etc.

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**ENDOSCOPES**

- **Bhagandara yantra** (Rectal speculum for fistula in ano)
- **Bhagandara yantra** (Rectal speculum for fistula in ano with side opening)
- **Yoni vraneekshanam** (vaginal speculum)
- **Arsho yantra** (Rectal speculum for piles)
TYPES OF NAADI YANTRA
Total types of naadi yantra by Susruthacharya- 12, total number 20.

Vagbhattacharya described: 6 yantras extra,[2]
1) Kanthya-Shalya-Avalokini naadi yantra.
2) Shalya Nirghatani naadi yantra
3) Anguli Tranak yantra
4) Shami Yantra
5) Ghrana-arbuda-arsho yantra
6) Yoni-vrana Anwekshana yantra


2. Shalya Nirghatani naadi yantra: Its height is about 12 Angula, used to grab the foreign body and removal of foreign body. In modern advancement we can correlate- Endoscopic forceps, Alligator forceps etc.

3. Anguli Tranak yantra: Anguli tranaka is made of ivory or wood, four angulas in length with two orifices similar in shape to the cow’s nipple, making it suitable to open the mouth. In recent advancement it can be correlated to surgical finger guard.
4. **Shami Yantra**: Similar to *arsoyantra* but without an orifice and is used for squeezing the arsa. The ostha above the slit should not be present in the instrument for fistula in ano. In recent advancement it can be correlated as anal dilator.

5. **Ghrana-arbuda-arsho yantra**: The tubular tool for usage in the lumps and polyps should be with a single aperture of two angulas in the length of the size of the index finger in the circumference resembling the instrument for fistula in ano. In modern advancement it can be correlated to Otoscope, Rhinoscope, nasal speculum etc.

6. **Yoni-vrana Anwekshana yantra**: It should be hollow within sixteen *angulas* in length with four petals linked together by a ring similar in form to a lotus blossom. Its four petals should open when the ring is retracted to the root. In recent advances it can be correlated to Cusco’s speculum, uterine curette, Sim’s speculum, D&C instruments.
TYPES OF ENDOSCOPY ACCORDING TO ENTRY THROUGH NATURAL ORIFICES[3]

<table>
<thead>
<tr>
<th>RESPIRATORY TRACT</th>
<th>UGI</th>
<th>LGI</th>
<th>URINARY TRACT</th>
<th>VAGINA</th>
<th>EYE</th>
<th>EAR</th>
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</thead>
<tbody>
<tr>
<td>Rhinoscopy</td>
<td>Gastroscopy</td>
<td>Proctoscopy</td>
<td>Cystoscopy</td>
<td>Hysteroscopy</td>
<td>Fundoscopy</td>
<td>Otoscopy</td>
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<tr>
<td>Laryngoscopy</td>
<td>OGD Scopy</td>
<td>Sigmoidoscopy</td>
<td>Urethroscopy</td>
<td>Colposcopy</td>
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<tr>
<td>Bronchoscopy</td>
<td>Capsule endoscopy</td>
<td>Colonoscopy</td>
<td>RIRS</td>
<td>Falloploscopy</td>
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<td></td>
<td>ERCP</td>
<td>Anoscopy</td>
<td>Vasoscopy</td>
<td>Rectoscopy</td>
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TYPES OF ENDOSCOPY ACCORDING TO ENTRY THROUGH SKIN INCISIONS[3]

<table>
<thead>
<tr>
<th>ABDOMEN</th>
<th>THORAX</th>
<th>KIDNEY</th>
<th>JOINT</th>
<th>EPIDURAL SPINE</th>
<th>SPINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laparoscopy</td>
<td>Thoracoscopy</td>
<td>Nephroscopy</td>
<td>Arthroscopy</td>
<td>Epiduroscopy</td>
<td>Endoscopic Spine Surgery</td>
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<td>Mediastinoscopy</td>
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<td>Mini-thoracoscopy</td>
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<td>Video Assisted</td>
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<tr>
<td>thoracoscopic surgery</td>
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VARIOUS TYPES OF ENDOSCOPES\[3\]

1. **SIGMOIDOSCOPY**: It refers to the examinations of rectum and sigmoid colon with use of instrumental or device known as sigmoidoscope and procedure known as sigmoidoscope.

2. **PROCTOSCOPY**: This Procedure by which the anal canal is examined to detect the pathology in the anal canal e.g, internal pile, ulcer, growth to take biopsies and band ligations.

3. **RHINOSCOPY**: It is Used to Examination of Nasal Cavity. Anterior rhinoscopy- Used to examine anterior nasal cavity, Posterior- Nasopharynx and posterior part of nasal cavity.

4. **OTOSCOPY**: Examination and visualization of the external auditory canal, tympanic membrane and the middle ear.

5. **INDIRECT LARYNGOSCOPY**: Its an OPD based procedure, where the image of the larynx is reflected on an indirect laryngoscopic mirror.

6. **FUNDOSCOPY**: It meant to examine the ‘fundus’ which consist of retina, choroid and optic nerve. Most common indications are HTN, DM, head injury, etc.

7. **OESOPHAGOSCOPY**: Endoscopic visualization of the oesophagus, two types, rigid & fibreoptic oesophagoscopies, used in Peptic oesophagitis, dysphagia, odynophagia, hematemesis, strictures, hiatus hernia etc.

8. **FIBREOPTIC OESOPHAGOGASTRODUODENOSCOPY**: Endoscopic visualization of the interior oesophagus, stomach and first part of the duodenum for diagnostic and therapeutic purposes.

9. **COLONOSCOPY**: Visualization of the colon by fibreoptic instruments. Used for abnormal barium enema, diverticular diseases, fresh bleeding per rectum, IBD, Intraoperative, Postoperative etc.

10. **CYSTOSCOPY**: It’s a procedure in which cystoscope is introduced per urethra to diagnose and treat problems or pathology related to urethra and urinary bladder performed under local/spinal/ general anaesthesia.

11. **RIRS OR, FLEXIBLE URS** [RETROGRADE INTRA RENAL SURGERY OR URETEROSCOPY]: Surgery with in renal pelvicalycal system and parenchyma performed by using instruments introduced in retrograde fashion through the ureter and lower urinary tract.

12. **CAPSULE ENDOSCOPY**: It is a capsule endoscopy system that is useful for visualization of small intestine, contains several key parts like that capsule it self, a
portable image receiver/ recorder unit with battery unit and specially modified computer workstations.

13. BRONCHOSCOPY: A procedure performed under anaesthesia for visualization of inside airway for diagnosing and therapeutic purposes with use of a bronchoscope.

14. THORACOSCOPY: It is a minimally invasive procedure performed under local or general anaesthesia to access the pleural space using one or two port entry, endoscope, camera video monitoring system to perform basic diagnostic and therapeutic procedures safely.

DISCUSSION

In the period between 1000 and 1500 B.C., Sushruta possibly provided the earliest description of endoscopic surgery in the form of the Naadi Yantra. An example of a yantra is a blunt tool, a tubular instrument, or a scope. Naadiyantras have hollowed interiors, which implies they have a hollow tube construction with one or more sides open. There are two sorts of Naadiyantra: one for examination purposes (scopes) and the other for therapeutic purposes. Twenty Naadiyantra in all are detailed in Ayurveda, each for a specific use and a specific illness. Their breadth and diameter should be in accordance with the circumference of the concerned passage's orifice, and their length varies depending on requirement.

The right comprehension of yantras, their names, and their purposes should be known to everyone in the Ayurvedic field. Despite several improvements in the materials used to make yantras, the instrument's fundamental idea and structure remain the same. It is possible to modify, prepare, and designate that alteration in the material in accordance with the Ayurvedic literature.

The ancient instruments and contemporary instruments vary primarily in four ways. The development of physics has led to the development of magnifying lenses, better light sources thanks to electricity, flexible rubber and plastic instrument bodies that reduce the risk of injury, and better steel (stainless) that doesn't rust. Therefore, it may be claimed that the creation of the endoscopic method may have been influenced by Sushruta's conception of the Naadiyantra; as such, it may be seen as an advanced Naadiyantra that has been altered by science and technology.
CONCLUSION

Sushruta led surgery in India to great heights, and we are all immensely proud of such a brilliant man for founding our surgical history. The aforementioned explanation demonstrates that Ayurveda mentions the fundamental ideas of Naadiyantra (endoscopy), as well as the benefits and drawbacks of various instruments, as well as their final quality and usefulness. They provide a fundamental understanding of endoscopy, even if they are not a common explanation of the subject, according to the Sushruta Samhita. The Naadiyantra described by ancient Ayurveda would resemble modern laparoscopic and endoscopic devices if additional tools like a light source, fibre optic connection, camera, and video monitor were added.

REFERENCES