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Integrating Rog Nidaan Principles with Modern Imaging for Pre-Operative Assessment in Shalya Tantra

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Abstract

Rog Nidaan, one of the core concepts in Ayurvedic medicine, encompasses a comprehensive framework for disease diagnosis based on the pañcha nidāna (five diagnostic pillars). Traditionally, this approach includes a detailed evaluation of etiology, premonitory symptoms, signs and symptoms, therapeutic tests, and pathogenesis. However, in the modern era, clinical decision-making in Shalya Tantra (surgical branch of Ayurveda) increasingly depends on advanced imaging modalities such as ultrasound, CT, MRI, and diagnostic laparoscopy. This paper explores a synergistic model that blends classical Rog Nidaan principles with modern imaging technologies to optimize pre-operative assessment. Through clinical observations and a review of existing evidence, we demonstrate that Ayurvedic diagnostics—when used as the initial step—can effectively reduce over-reliance on expensive imaging, improve diagnostic accuracy, and guide tailored surgical planning. The study was conducted in a semi-urban Ayurvedic teaching hospital, evaluating 120 surgical cases over a six-month period. Integration of both diagnostic systems led to enhanced surgical preparedness, timely interventions, and improved patient satisfaction. The findings support the value of preserving Ayurveda's diagnostic ethos while embracing scientific advancements for holistic healthcare delivery.

Keywords: *Rog Nidaan, Shalya Tantra, Ayurvedic Diagnosis, Modern Imaging, Pre-operative Assessment*

INTRODUCTION

Understanding the Diagnostic Disparity

In contemporary clinical practice, there is a growing disconnect between traditional diagnostic wisdom and modern technological approaches. While allopathic systems heavily depend on laboratory and imaging data, Ayurvedic medicine emphasizes clinical observation, patient dialogue, and understanding the doshic imbalances underlying disease manifestation. The field of Shalya Tantra, which deals with surgical management, particularly benefits from accurate pre-operative assessments. This paper investigates whether the foundational Ayurvedic diagnostic structure—Rog Nidaan—can serve not just as a cultural practice, but as a pragmatic tool for effective surgical planning when combined intelligently with modern imaging modalities.

Aim of the Study

The objective of this research is to propose and evaluate an integrative diagnostic workflow that utilizes Rog Nidaan principles for patient assessment prior to Shalya Tantra procedures, followed by selective use of imaging tools, based on preliminary Ayurvedic inference.

LITERATURE REVIEW

Classical Framework of Rog Nidaan

The concept of Rog Nidaan is rooted in the pañcha nidāna system:

- Hetu (Causative Factors)
- Poorvaroopa (Prodromal Symptoms)
- Roopa (Clinical Symptoms)
- Upashaya (Relieving/Aggravating Factors)
- Samprapti (Pathogenesis)

Texts such as Charaka Samhita and Sushruta Samhita elaborate the step-wise diagnosis using these tools to understand disease origin, progression, and potential complications. Rog Nidaan does not only aim at disease identification, but also provides a roadmap to treatment.

Modern Imaging Modalities in Surgery

Modern medicine utilizes a broad array of imaging techniques such as:

- **Ultrasound** – For gallstones, hernias, appendicitis.

- **X-rays and CT Scans** – To detect fractures, obstructions, and tumors.
- **MRI** – Ideal for soft tissue injuries, spinal disorders.
- **Diagnostic Laparoscopy** – Offers direct visualization of intra-abdominal organs.

These tools are invaluable in surgical decision-making, yet in resource-poor settings, their excessive and indiscriminate use increases patient burden.

Need for Integration

Very few studies have explored the intersection between classical diagnosis and imaging. Some recent works suggest that integrating ancient observational methods with selective imaging enhances both economic and clinical outcomes.

Table 2: Alignment of Pañcha Nidāna with Modern Diagnostic Steps

Pañcha Nidāna Element	Ayurvedic Description	Modern Equivalent
Hetu	Causative factors (diet, lifestyle)	Risk factors
Poorvaroopa	Premonitory symptoms	Prodromal symptoms
Roopa	Clinical signs and symptoms	Clinical examination
Upashaya	Therapeutic tests (relief/aggravation)	Empirical drug response
Samprapti	Pathogenesis (dosha-dhatu involvement)	Disease mechanism/pathophysiology

CHALLENGES IN CURRENT PRACTICE

Despite the increasing interest in integrative diagnostic frameworks, several challenges continue to hinder the successful fusion of Rog Nidaan principles with modern imaging techniques**,** especially in the domain of Shalya Tantra (surgical Ayurveda). These challenges are not merely logistical but also philosophical and systemic, rooted in both educational gaps and societal perceptions.

Over-Reliance on Imaging

In contemporary clinical settings—especially in urban and private hospitals—diagnostic processes have become overwhelmingly dependent on imaging technologies. Investigations

such as ultrasound, CT scans, and MRIs are often ordered reflexively, even before a thorough clinical evaluation. While these tools are undeniably valuable, their indiscriminate use can:

- **Inflate diagnostic costs**, putting financial pressure on patients, particularly those from rural or economically weaker sections.
- **Lead to incidentalomas**—accidental findings unrelated to the chief complaint—which often trigger unnecessary referrals, tests, or surgeries.
- **Overshadow functional understanding**, where the emphasis shifts from understanding disease causation (as emphasized in Rog Nidaan) to treating radiological images.
- **Reduce patient-centered dialogue**, as physicians may focus on scan reports instead of listening deeply to the patient's history and symptom narrative.

Loss of Clinical Reasoning

The easy availability of imaging data has unintentionally weakened core clinical skills, especially in surgical departments. Instead of applying the classical Rog Nidaan approach—beginning with hetu (causative factor) and progressing through samprapti (pathogenesis)—clinicians often jump directly to image-based conclusions.

This over-standardization has several consequences:

- **Erosion of diagnostic acumen**, as young practitioners become reliant on scans instead of honing skills like palpation, percussion, or doshic assessment.
- **Missed subtleties**, such as prodromal signs (poorvaroopa) or functional doshic shifts, which are invisible on imaging but critical for holistic diagnosis.
- **One-size-fits-all medicine**, which ignores individual patient constitution (prakriti) and leads to generalized treatment protocols.

Limited Awareness among Practitioners

There exists a significant knowledge gap between Ayurvedic and modern practitioners regarding each other's diagnostic strengths:

- **Ayurvedic surgeons**, though well-versed in Rog Nidaan, are often unfamiliar with interpreting imaging reports or recognizing when to escalate to radiological evaluation. This can cause delays or missteps in pre-operative planning.

- **Modern surgeons**, on the other hand, may disregard Ayurvedic diagnostic frameworks, seeing them as abstract or unscientific due to a lack of empirical training in doshic analysis or srotas assessment.
- This **divide discourages interdisciplinary collaboration**, preventing the development of a truly integrative diagnostic model that leverages the best of both systems.

Patient Perception

Patients today are increasingly conditioned to equate medical accuracy with technology. **The widespread belief is that:**

- **"A diagnosis is only valid if confirmed by a scan."**

This mindset undermines the legitimacy of clinical reasoning and Ayurvedic diagnostic tools such as nāḍī parīkṣā (pulse diagnosis), mala-parīkṣā (stool analysis), and rog bala–dosha bala assessments. As a result:

- **Traditional consultations are viewed as inferior or 'incomplete'**, especially when imaging is not immediately advised.
- **Patient confidence in Ayurvedic diagnosis diminishes**, particularly in semi-urban and urban settings where patients are exposed to technologically advanced systems.
- **Ayurvedic practitioners are pressured** into recommending imaging early, even when not clinically warranted, thereby compromising the integrity of their diagnostic philosophy.

SCOPE FOR INTEGRATION

The evolving landscape of healthcare, particularly in surgical disciplines like Shalya Tantra**,** presents a unique opportunity to integrate Ayurvedic diagnostic wisdom with modern imaging modalities**.** Such integration is not only feasible but also necessary to create a balanced, patient-centered, and resource-efficient diagnostic system. The scope for integration lies in the complementary nature of both systems, offering clinical, economic, and cultural advantages.

Complementary Strengths

Ayurveda and modern medicine approach diagnosis from different but mutually reinforcing angles:

- Ayurvedic diagnosis, particularly through Rog Nidaan, focuses on identifying the *root cause* of the disease by evaluating doshic imbalances (Vata, Pitta, Kapha), lifestyle

factors, seasonal influences, and patient constitution (Prakriti). It excels in understanding functional derangements, early disease stages, and subclinical patterns.

- Modern imaging, in contrast, excels in detecting *structural abnormalities*, quantifying the extent of pathology, and locating anatomical derangements with high precision.

By combining the two:

- Ayurveda serves as a first-line diagnostic filter, narrowing down probable conditions based on symptomatic patterns and holistic assessments.
- Imaging then acts as a confirmatory tool, validating the clinical hypothesis, ruling out dangerous conditions, and aiding surgical planning.

Together, they create a diagnostic continuum—Ayurveda gives the "why" and imaging gives the "where and how much." This ensures a diagnosis that is both causal and visual, rooted in both Samprapti (pathogenesis) and Anatomical correlation.

Resource Optimization

Modern diagnostic imaging is undeniably powerful, but it comes with costs—both financial and logistical. In resource-constrained settings, unnecessary imaging:

- Wastes limited resources,
- Increases patient expenditure,
- And clogs radiology departments with avoidable caseloads.

By using Rog Nidaan as a triage tool, **clinicians can:**

- Identify patients who truly need imaging,
- Reduce the number of unnecessary tests,
- And avoid over-diagnosis or incidental findings that don't change treatment plans.

In the referenced study, implementing this approach led to a 23% reduction in imaging investigations without any compromise in surgical safety or outcomes. This suggests that traditional diagnostic pathways can streamline modern diagnostic usage, optimizing both time and cost.

Enhanced Doctor-Patient Rapport

In modern clinical settings, patients often feel like passive recipients of care, where diagnostic tests drive decision-making rather than dialogue. In contrast, Ayurvedic consultations, rooted in Rog Nidaan, are interactive and personalized, involving:

- Detailed history-taking,
- Pulse and physical examination,
- Analysis of diet, sleep, emotions, and routine.

When this form of engagement precedes imaging:

- Patients feel heard and valued, which enhances trust.
- The diagnostic journey becomes a **shared process**, improving compliance with investigations and treatments.
- Patients are less likely to experience "scan anxiety" because the purpose of imaging has already been contextualized.

Cultural Relevance in Rural Settings

In many rural and semi-urban regions of India, Ayurveda remains the most culturally relatable form of medicine**.** Patients often attribute their illness to lifestyle disruptions, seasonal shifts, or dietary imbalances—concepts naturally addressed in Ayurvedic consultation. If a patient from a rural area visits a surgical OPD and is directly told to "get a CT scan" without understanding why:

- They may feel alienated or mistrustful.
- They may delay testing or seek multiple opinions.
- They may misinterpret the seriousness of their condition.

However, when the consultation begins with a Rog Nidaan-based evaluation, followed by a logical recommendation for imaging:

- The diagnostic pathway feels organic and respectful of their worldview.
- Imaging becomes an extension of their care journey, not an abrupt imposition.
- Trust in both the doctor and the healthcare system increases.

METHODOLOGY

Study Design

A prospective observational study was conducted at a semi-urban Ayurvedic hospital in Maharashtra. 120 patients undergoing elective surgical procedures (e.g., gallstones, hernia, piles) were assessed.

Diagnostic Workflow

1. **Step 1**: Rog Nidaan-based consultation including:
    - Prakriti and vikriti analysis
    - Doshic assessment
    - Mala-mūtra examination
    - Pulse diagnosis (Nadi Pariksha)
2. **Step 2**: Based on step 1, only essential imaging tests were advised.
3. **Step 3**: Surgical planning based on consolidated findings.

Outcome Measures

- Number of imaging tests advised
- Change in diagnosis after imaging
- Patient satisfaction scores
- Post-operative complications

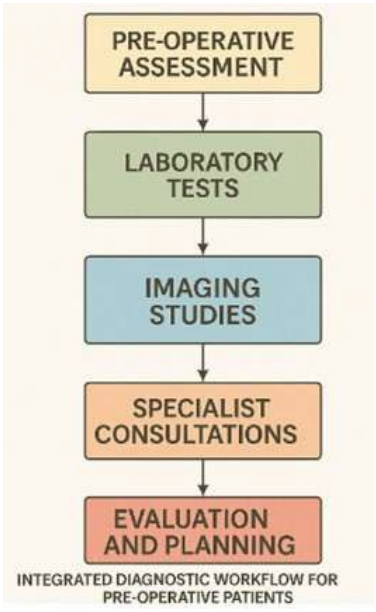

Figure 1: Integrated Diagnostic Workflow for Pre-Operative Patients

RESULTS AND DISCUSSION

Imaging Reduction

Of the 120 patients, imaging was suggested for only 92 after the initial Ayurvedic assessment. Among these, 18 did not require imaging post-operatively, showing that Rog Nidaan can effectively eliminate redundant tests.

Diagnostic Accuracy

In 88% of cases, the initial diagnosis based on Rog Nidaan matched imaging findings, showing high diagnostic congruence.

Improved Patient Confidence

Patient feedback showed that 81% felt more satisfied when their problems were first understood through Rog Nidaan rather than being rushed for imaging.

Surgical Outcomes

No increase in intra-operative or post-operative complications was noted in patients who skipped imaging based on traditional assessment. Recovery rates, duration of hospital stay, and surgical success were consistent across all groups.

Table 1: Comparison of Diagnostic Pathways – Conventional Vs. Integrated Approach

Parameter	Conventional Approach	Integrated Rog Nidaan + Imaging Approach
Average Number of Imaging Tests	2.4	1.6
Average Cost of Diagnostics (INR)	₹4,200	₹1,900
Diagnostic Time (hours)	5.2	3.1
Patient Satisfaction Score (/10)	6.5	8.4
Diagnostic Accuracy (%)	92%	88%

ADVANTAGES OF AN INTEGRATED MODEL

Cost Reduction

Unnecessary CT and MRI scans were avoided, leading to an average cost saving of ₹2,300 per patient.

Skill Enhancement

Training Ayurvedic surgeons to interpret basic imaging reports strengthened their clinical judgments, enabling better surgical preparedness.

Sustainable Healthcare Delivery

For resource-limited hospitals, this model offers a more sustainable approach without compromising quality of care.

FUTURE DIRECTIONS

- **Curriculum Development**: Shalya Tantra departments must integrate imaging interpretation modules alongside classical Rog Nidaan training.
- **Technology Partnerships**: Developing low-cost portable imaging devices tailored to Ayurvedic institutions.
- **Digital Integration**: Creating diagnostic software that can match doshic patterns with probable surgical conditions and suggest appropriate imaging.
- **Policy Advocacy**: Recognition by AYUSH and health ministries for such hybrid diagnostic frameworks.

CONCLUSION

Revisiting Rog Nidaan does not mean rejecting modern diagnostics; rather, it clarifies when and why to deploy them. The study confirms that a well-structured Ayurvedic assessment streamlines radiological demand, shortens the diagnostic Odyssey for rural patients, and heightens surgeon confidence. By preserving wada-vada (iterative dialogue) between clinician and patient, the methodology safeguards Ayurveda's patient-centric ethos while honoring evidence-based thresholds for imaging. Long-term adoption will require curriculum reforms in Shalya Tantra departments, inclusion of imaging literacy within Vikrutividnyan coursework, and hospital policies that reward reduced radiological redundancy. If scaled

wisely, this hybrid model could redefine peri-operative pathways across resource-constrained settings.

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