

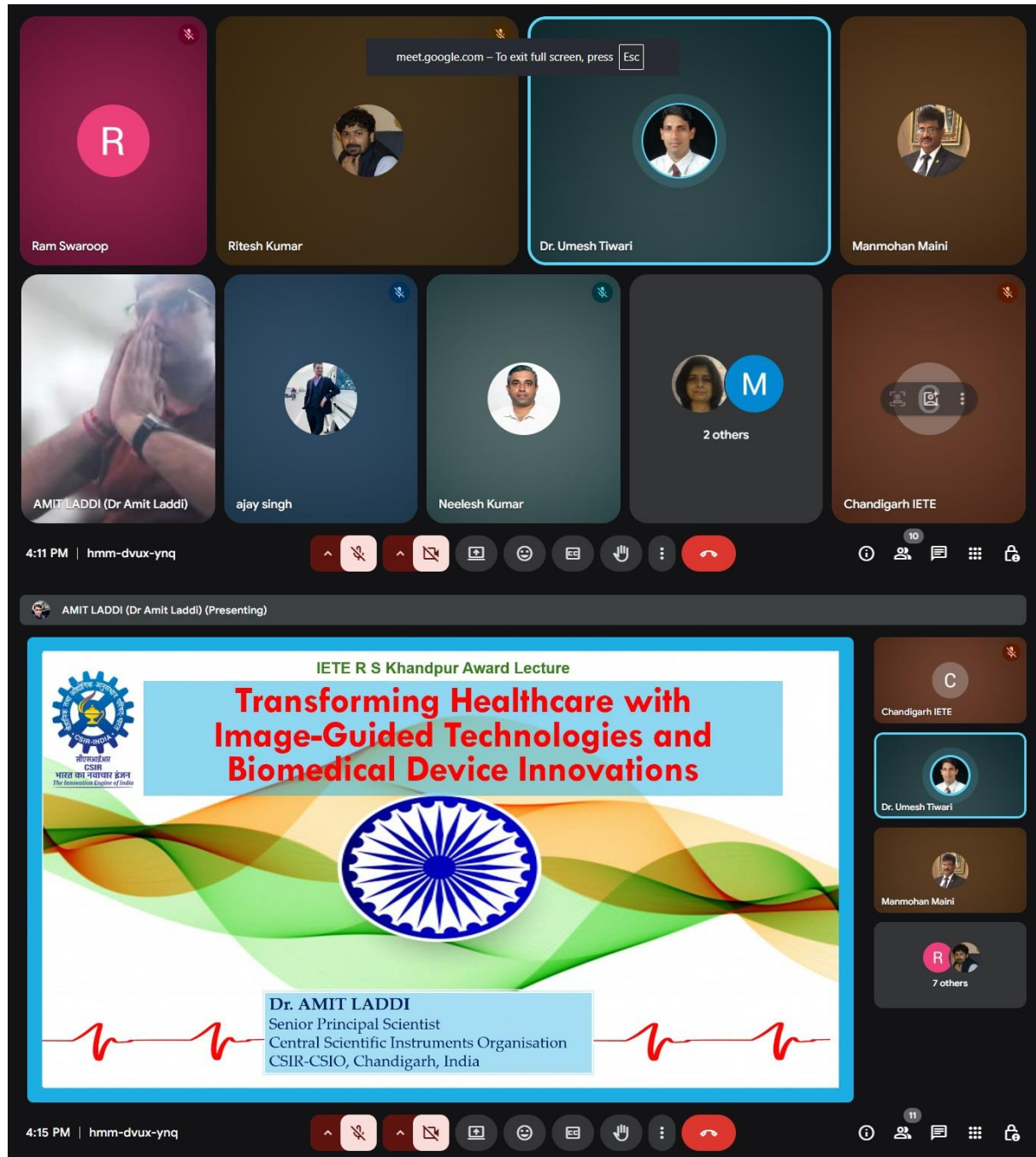
Report of Expert Talk on ‘Transforming Healthcare with Image-Guided Technologies and Biomedical Device Innovations’

Event Name	Talk on ‘ Transforming Healthcare with Image-Guided Technologies and Biomedical Device Innovations’
Centre (name)	IETE Chandigarh Centre
Venue (College/Institute)	Virtually
Date & Time	August 28, 2025 at 4.00 PM
Chief Guest	--
Topic of Chief Guest Speech & Highlights (Max. 25 words)	--
Important dignitaries attended	<p>Dr. Umesh Kumar Tiwari, Chairman, IETE Chandigarh Centre Dr. Amit Laddi, Expert Speaker & Awardee- IETE- R S Khandpur Award Sh Manmohan Singh Maini, EC Member IETE Chandigarh Centre Dr. Neelesh Kumar, Vice Chairman IETE Chandigarh Centre Dr. Garima Saini, EC Member IETE Chandigarh Centre Dr. Ritesh Kumar, EC Member IETE Chandigarh Centre Dr. Mala Kalra, EC Member IETE Chandigarh Centre Dr. Tarun Kumar Rawat, Chairman, IETE Delhi Centre Sh. Vinay Kumar, Member IETE Chandigarh Centre</p>
Brief Report including above information	<p>The Institution of Electronics & Telecommunication Engineers (IETE), Chandigarh Centre, successfully organized a virtual talk titled “Transforming Healthcare with Image-Guided Technologies and Biomedical Device Innovations” delivered by Dr. Amit Laddi, IETE-R S Khandpur Awardee (2024) and Senior Principal Scientist at CSIR-CSIO, Chandigarh, on August 28, 2025.</p> <p>The programme began with a welcome address by Dr. Umesh Kumar Tiwari, Chairman of IETE Chandigarh Centre. He extended a warm welcome to Dr. Amit Laddi, the expert speaker and awardee; senior and EC (Executive Committee) members of the Chandigarh Centre; distinguished corporate members; staff; and student participants.</p> <p>Dr. Laddi’s talk focused on technological innovations and biomedical devices for transforming healthcare through image-guided solutions. It generated lot of interest among the audience which was visible from a long question-answer session.</p> <p>Participation was strong, with over 15 IETE corporate members, along with students and staff from both IETE and NIELIT</p>

Chandigarh, attending the session.

The event concluded with a **formal vote of thanks** delivered by **Dr. Ritesh Kumar**, EC member of IETE Chandigarh Centre.

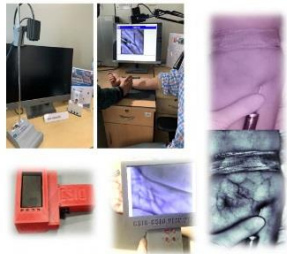
Photographs



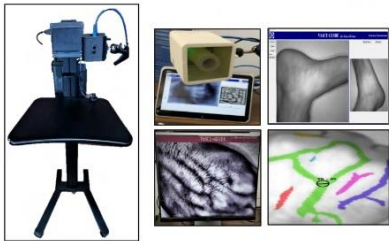
AMIT LADDI (Dr Amit Laddi) (Presenting)

IMAGING & MACHINE INTELLIGENCE BASED TECHNOLOGIES DEVELOPED

IMAGE-GUIDED VASCULAR VEIN VISUALIZER - VEIN-VIZ



VASCU-GUIDE: VASCULAR SCLEROTHERAPY GUIDANCE AND ASSISTANCE TOOLS



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AMIT LADDI (Dr Amit Laddi)
Manmohan Maini
9 others

AMIT LADDI (Dr Amit Laddi) (Presenting)

CONVENTIONAL TREATMENT: SCLEROTHERAPY



Both hands busy

Markers required

Complex Image

- Visual assistance of radiography or ultrasound used by surgeon
- Vessel contract and collapse after Sclerotherapy

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Dr. Umesh Tiwari
AMIT LADDI (D...
Manmohan Maini
Neelesh Kumar
6 others
Chandigarh IETE

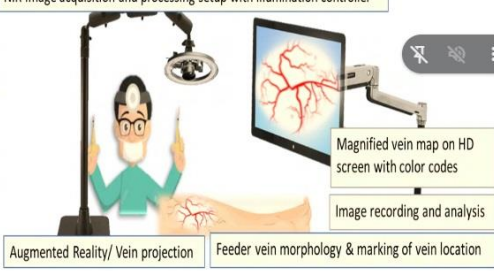
AMIT LADDI (Dr Amit Laddi) (Presenting)

VASCULAR SCLEROTHERAPY GUIDANCE AND ASSISTANCE TOOLS FOR CLINICAL DIAGNOSTICS & TREATMENT OF VENOUS MALFORMATIONS

NIR Image guided Sclerotherapy

- Determine vein size and tortuosity
- Visualize deep and superficial veins that are not easily accessible
- Track blood flow and assess venous insufficiency

NIR image acquisition and processing setup with illumination controller



Magnified vein map on HD screen with color codes

Image recording and analysis

Augmented Reality/ Vein projection

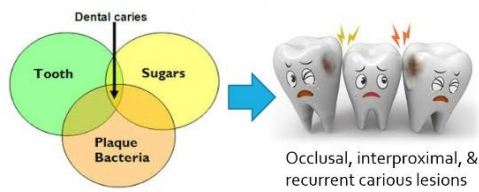
Feeder vein morphology & marking of vein location

- Real-time Stereoscopic NIR image to show the depth of vein during puncture procedure
- Projection of vein-map in color back on to the skin surface in real-time
- Visualize clearly the miniature feeder/reticular/spider/varicose veins : Magnified view of vein map on HD/ 2K monitor
- Classify and track microscopic veins in terms of color codes based upon its morphology information
- Option to mark the best spot for puncture (treatment planning) through software tools

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8 others

Dental Decay and Diagnostics



Early detection of Caries, Cavities and Interproximal Decay in Children is key

Conventional methods are time consuming, expensive, & inaccurate to detect dental faults or cracks

Conventional radiographic methods are Unsafe for Children due to exposure of harmful radiations i.e. X-Rays

Unavailability of visualisation info for patient education & monitoring the progress

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Stages of Dental decay



The International Caries Detection and Assessment System (ICDAS) provides a standardized way to detect and assess dental caries severity and activity

ICDAS II CRITERIA	DEFINITION
ICDAS 0	Sound enamel surface (After drying the enamel surface for 2 seconds, there is no evidence of caries.)
ICDAS 1	The first visual changes in the enamel (There is no sign in the enamel when the tooth surface is wet. There are opacity or color changes that can be observed after the surface has been dried with air for 2 seconds.)
ICDAS 2	Significant visual changes in enamel (Opacity or color changes are observed when the tooth is both wet and dry.)
ICDAS 3	Regional enamel destruction (When the tooth is dried, visible loss is observed, but it does not constitute dentin loss.)
ICDAS 4	Dent shade reflected Dens dentine (The structure, integrity of the enamel (outer layer) or dentin can be compromised.)
ICDAS 5	Visible extensive destruction including dentine
ICDAS 6	Large carious cavity with dentine

- **Plaque** is a soft, sticky film that builds up on teeth and is easily removed with brushing and flossing
- **Appearance:** Often clear or yellowish
- **Calculus** is hardened plaque, which is more difficult to remove and requires professional cleaning
- **Appearance:** Typically yellowish or brownish, and can be more noticeable along the gumline
- **Pre-caries** refers to the early stages of tooth decay, where the tooth enamel is starting to weaken and soften due to the acids produced by bacteria in plaque.
- **Appearance:** May appear as white or chalky spots on the tooth surface.
- **Pre-caries** can lead to tiny holes or openings in the enamel, which can eventually progress into larger cavities if not addressed

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Chandigarh IETE

AMIT LADDI (Dr Amit Laddi)

Manmohan Maini

9 others

People

Add people

Dr. Umesh Tiwari

garima saini

Mala Kalra

Manmohan Maini

Neelesh Kumar

Ram Swaroop

Ritesh Kumar

Tarun Rawat

AI-augmented instrumentation of Taila Bindu Pariksha: an Ancient Ayurvedic Technique for the prognosis of diseases

The oil drop test (ODT) is one of the most significant diagnostic and prognostic test methods used by the Siddha system as well as Ayurveda.

Traditional Diagnostic Practice: The Oil Drop Test, part of Ayurvedic diagnostics, involves observing the behavior of an oil drop on a urine surface.

Health Assessment: Patterns of oil spread, shape, and direction provide insights into the individual's health condition.

Challenges: Traditional methods rely on subjective human observation, leading to variability and limited repeatability.

Objective: Modernize the Oil Drop Test using a camera-based setup, image processing, and AI for objective and automated analysis.

Disease (curable or incurable)

If oil drop spreads fast over the urine surface

Sadhya (curable)

If oil drop spreads very slowly over the urine surface

Kasthasadhyā (difficult to treat)

If oil drop settles down at the bottom of petri dish

Asadhyā (incurable)

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Meet - hmm-dvux-ynq

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AMIT LADDI (Dr Amit Laddi) (Presenting)

AMIT LADDI (Dr Amit Laddi)

11 others

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People

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Neelesh Kumar

Ram Swaroop

Ritesh Kumar

Tarun Rawat

VINAY SHUKLA

Why Is Ayurveda Often Met with Doubt?

Lack of Standardization

Problem: The same Ayurvedic herbs can vary in strength and composition due to differences in:

- Region where it's grown
- Harvest time
- Preparation method

Result: Hard to conduct reproducible clinical trials.

Subjective Diagnostics

Diagnosis in Ayurveda (e.g., Nadi Pariksha, Prakriti analysis) is often:

- Practioner-dependent
- Lacks quantification

Modern medicine relies on measurable tests (blood reports, scans).

Integration Gap with Modern Science

Ayurveda operates with unique concepts like doshas, dhatus, agni, ojas—most of which have no direct equivalents in biomedicine.

This makes it difficult to map or validate ideas using Western scientific tools, unless a multidisciplinary approach is adopted.

Commercialization Without Regulation

Some products labeled "Ayurvedic" contain heavy metals, are adulterated, or make unverified claims.

This undermines trust—even though traditional Ayurveda discourages such practices.

Mismatch with Fast-Paced Expectations

People want quick fixes (painkillers, antibiotics), which Ayurveda doesn't always provide.

Ayurvedic healing is gradual, lifestyle-based, and preventive—it doesn't fit the "take a pill and feel better" model.

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ajay singh

Ram Swaroop

Ritesh Kumar

4 others

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