

# DYNAMIC NAVIGATION at VISHNU DENTAL COLLEGE

Dentistry is a subset of the healing arts where careful preparation and execution are crucial. Precision and excellence are requirements in our line of work rather than optional options. The improvements in oral health and quality of life for edentulous patients brought about by recent developments in the field of dental implantology have been tremendous. The result of the treatment will depend on how precisely the implants are placed in the suggested tooth position.



During the osteotomy preparation process, surgical guides can limit the drill's movement and enable us to position it accurately. Stent placement and stability can be inaccurate because the process is entirely blindfolded and lacks real-time control. Reduced mouth openings will limit the use of stents, and they also impede the flow of coolant to the osteotomy site. Real-time navigation is always sought after to steer the drill's path and install the implant without the addition of any new barriers.

Artificial intelligence and navigational technology breakthroughs have been incorporated into medical practice to enhance patient diagnosis and care. The use of surgical navigation systems has been more successful in orthopedics, neurosurgery, and otorhinolaryngology, among other specialties. Currently, real-time navigation can be quite helpful in many dental specialties.

In both endodontics and pediatric dentistry, it can help with access opening and guidance in tilted teeth, calcified canals, retreatment, and periapical surgery. It can be difficult for us as clinicians to treat angulated teeth, teeth with dental anomaly and pulp canal obliteration. Such patients are probably more prone to procedural mishaps during access



cavity preparation, cleaning, and shaping that could result in a significant loss of sound dentin structure and lower the long-term prognosis. Similarly Dynamic Navigation can guide us to minimal invasive surgical procedure with predictable corticotomy and root resection.

Additionally, it can help in enucleations, arthrocentesis, orthognathic surgery, harvesting bone grafts, impactions, and other maxillofacial surgery procedures. Arthrocentesis- simple, minimally invasive surgical procedure to lavage the TMJ without viewing the joint space using sterile needles and sterile irrigants to reduce the pain by removing inflammatory mediators from the joint.

In orthodontics, it is possible to accurately put subapical horizontal cuts and interdental cuts to speed up tooth movement. Anchorage preparation is most critical step in Orthodontics that determines the treatment outcome. With advancements, newer systems such as temporary anchorage devices have been developed to reinforce the

posterior anchor units. However, they have been associated with failures such as loosening of implants due to inadequate dept of penetration. Thus, dynamic navigation, allows real-time tracking of the mini implants, based on motion tracking technology. It also helps avoid close proximity to maxillary sinus, root structures and nerve endings especially during the placement of inter-radicular mini implants and extra alveolar bone screws.

It can move around conventional implants, zygomatic implants, pterygoid implants, and maxillofacial implants in the field of implantology.



There should be a CBCT and intraoral scanning/model scanning. For precise tracking, the DICOM (CBCT data) and STL (intraoral/lab scanner data) files will be superimposed in the NAVIDENT programme. The intended location will be filled with a simulated implant. A drill tag is fixed on the handpiece, and a jaw tracker or head tracker is fastened to the patient. A minimum of three



randomly selected sites on teeth that are dispersed along the arch will be traced. There will be calibration of the handpiece/airotor. A calibration procedure should be repeated for every drill. The



surgeon should focus on the BULL'S EYE shown in the virtual window while performing the surgery. Both angulation and depth of seating would be guided in real-time. Navigation is also possible for the final implant position. By superimposing postoperative CBCT over preoperative planned CBCT, the evaluation tool Evalunav allows users to compare the final implant position with the anticipated position. This allows the user to evaluate the degree of departure and serves as a manual for developing operator abilities.

In the sequencing of a digital workflow, dynamic navigation is another value chain. The path of dentistry will go in the future toward minimally invasive procedures. At the Vishnu Dental College in Bhimavaram, cutting-edge technology has been installed and is being employed. Complex cases

like treatment of calcified canals, Minimal Invasive Endodontic Surgeries, Arthrocentesis, placement of inter-radicular mini implants and accurate placement of Implants were successfully carried out in the Institute with DNS.

It has provided us the opportunity to manage complex cases with precision and high quality and gives our postgraduates a chance to get acquainted with the latest precise technology and incorporate it in the armamentarium. The expertise and comprehension of this technology would enable the deployment of robotic-guided surgical care in times ahead.

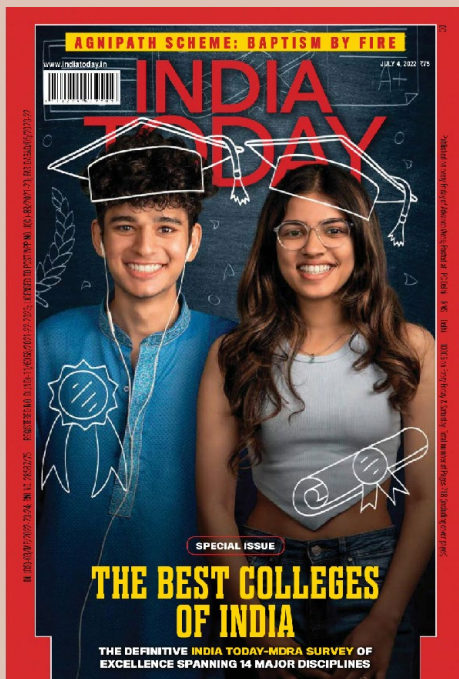


VDC Ranked 24<sup>th</sup> among the Best Dental Colleges of India Ranked by NIRF MHRD, Govt. of India



# RANKINGS

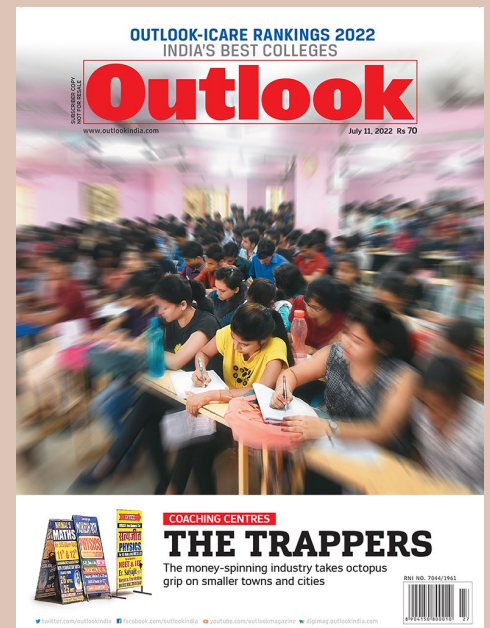
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Vishnu Dental College is ranked 38<sup>th</sup> amongst the Best Dental Colleges both Under Government & Private Dental Colleges at all India level in the survey conducted by India Today Magazine for the year 2022.



Vishnu Dental College is ranked 23<sup>rd</sup> amongst the Best Private Dental Colleges at all India level in the survey conducted by The Week – Hansa Research Survey for the year 2022.



Vishnu Dental College is ranked 18<sup>th</sup> amongst the Best Private Dental Colleges in India in the survey conducted by OUTLOOK Magazine Survey for the year 2022.