CHILDREN'S EDUCATION SOCIETY (Regd.)
THE OXFORD DENTAL COLLEGE
(Recognized by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka & Recognised by Dental Council of India, New Delhi)
Bommanahalli, Hosur Road, Bangalore – 560 068.
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Website: www.theoxford.edu

Institution has created an ecosystem for innovations including incubation centre and other initiatives for creation and transfer of knowledge

SL. No.	Department	No.
1.	Department of conservative dentistry and endodontics	2
2.	Department of orthodontics and dentofacial orthopaedics	1

INCUBATION CENTRE

TODC provides quality to students to establish themselves as successful providers of quality health care to society by providing a favourable ecosystem for research and technology-driven innovation to materialize their ideas. Our college established an incubation centre in 2010 with the tagline "Dream. Create. Inspire."

Department on the campus

The roles of the incubation centre are categorized into academic and research-related issues. The incubator centre has organized programmes such as "Introduction to Clinics," "Intellectual Property Rights," and "Research and Publication: The Importance of Academics." We are encouraging our very own students and alumni to take up research projects and make use of our incubation centre. Our incubation centre is regularly updated with the latest research equipment. Regular discussions are held with the concerned members to motivate various students and faculties from our sister concern to make use of the facilities provided at our incubation centre. Both our UG and PG students are encouraged to carry out various short studies under the able guidance of our staff members.

We are also looking forward to collaborating with other universities to gain more exposure.

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DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS
2021-2022

Guided Endodontics

Endodontic access to calcified root canals is a challenging task. It is prone to technical failures including alterations of the root canal geometry and substantial loss of dental hard tissue, which may weaken a tooth considerably or result in root perforation.

"Guided endodontics," a novel guided approach for the preparation of apically extended access cavities, was introduced to overcome such complications. Miniaturization of conventional instruments has made this technique implementable even for teeth with narrow roots such as mandibular incisors.

The 'Guided Endodontics' technique allows accurate access cavity preparation utilizing printed templates by superimposing the CBCT data with an intra-oral scan to help locate the canals with ease.

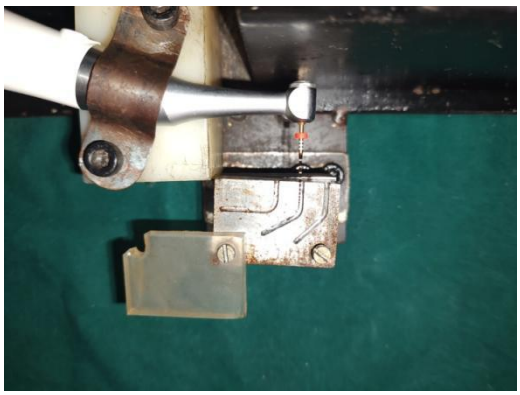
It helps to not only locate the canals in case of calcifications but can also be used to locate canals with minimal access to preserve maximum tooth structure and Peri Cervical Dentin hence improving the long-term success of the treatment.

A guided approach for locating canals in the case of teeth with fixed prostheses like crowns and bridges can also be undertaken with ease. There is no need to remove the prosthesis or no need to unnecessarily destroy much of the prosthesis for performing the Root Canal Treatment.

This technique is proved to be accurate, expeditious, and operator-independent in both in vitro and in vivo settings.

Outcome: many clinical cases have been done in the Department using this technique

Cyclic fatigue testing device



The cyclic fatigue testing device designed has been utilized in previous studies on cyclic fatigue resistance. The device consists of a main frame to which a mobile plastic support is connected for the electric handpiece, and a stainless steel block containing the artificial canals. The electric handpiece is mounted upon a mobile device to allow precise and reproductive placement of each instrument inside the artificial canal.

The artificial canal jig consists of a steel plate into which the artificial root canal is milled and covered with a transparent plexiglass plate, held in place with 4 screws. It provides the instrument with a suitable simulated root canal with a 60-degree and 30-degree angle of curvature and 5mm radius of curvature. Jig is designed such that the depth of each artificial canal is +0.2 mm allowing the instrument to rotate freely within the curvature. The centre of the curvature is 5mm from the tip of the instrument, and the curved segment of the canal is approximately 6mm in length. The artificial canal jig is covered with transparent glass to visualize the fracture of the instruments.

The platforms are moved using the grading rings until reaching a position that allows the file to remain curved and free to rotate between the cylinder and steel jig, thus simulating rotary instrumentation of a canal with 30-degree and 60-degree,5mm radius curvature. Care is taken to ensure that the instrument is well positioned in the cylinder groove to avoid file displacement. This ensures the three-dimensional alignment and positioning of the instruments to the same depth.

The entire frame allows the movement in a linear direction along the longitudinal axis of the root canal to simulate the pecking movement of the file towards the root canal apex, as it would in a clinical situation. The instruments are rotated at a constant speed of 300 rpm using a 16:1 reduction handpiece powered by a torque-controlled electric motor. Torque is set at 2 N/cm. To reduce the friction of the instruments in metal canal walls, lubricant oil is used.

With the file properly positioned, the main switch is turned on, the electric motor is powered. With that, the whole set of contra-angle handpieces/files is powered, reproducing the pecking motion, during which the file slides in the groove in the ring made of tempered steel. This movement takes place at a speed of 1 cycle per second. Testing time is registered with a digital

stopwatch, which is started at the moment the motor is turned on and stopped at fracture detection.

Outcome: many major and minor projects using these cyclic fatigue testing devices has been done in the department and has been published in Pubmed journals.

DEPARTMENT OF ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

2021- 2022

3D Printing

The Department of Orthodontics has started cost-effective in-house aligners treatment for various malocclusions. These aligners are less expensive compared to conventional 3D-printed company aligners. It was started in 2021 and it benefited 3 patients effectively till date. In this process, aligners are prepared by manually setting the teeth in an articulator. The company aligners cost around 1-2 lakhs, but these in-house aligners can be fabricated at 1/10th the price of company aligners.

Manual teeth set up

Biostar thermoforming machine

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Patients treated with in-house aligners

Sl.no	Patient Name	OP number	Age/gender
1	Achutha	D095727	22/Female
2	Madhvi	D009725	27/Female
3	Noor Mohammed	D011184	18/Male

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