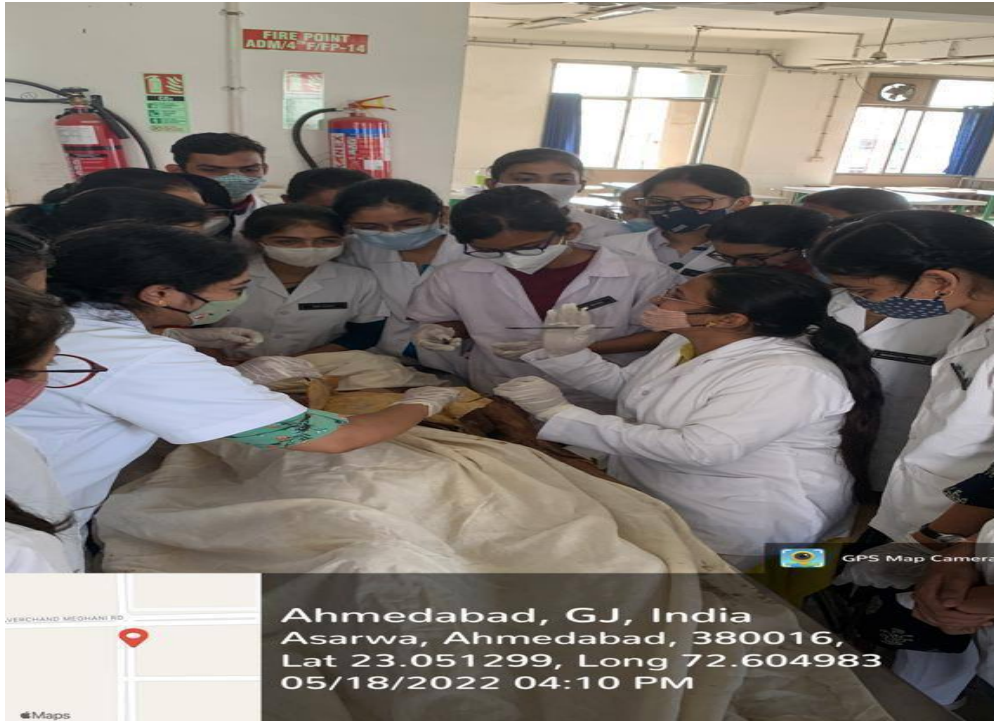




**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



**EXPERIENTIAL LEARNING:**





# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Latitude 23.049741° Longitude 72.604506°  
Local 10:22:53 AM Altitude -0.6 meters  
GMT 04:52:53 AM Friday, 07-01-2022



Unnamed Road, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Latitude 23.0497583° Longitude 72.6044788°  
Local 10:23:41 AM Altitude -0.6 meters  
GMT 04:53:41 AM Friday, 07-01-2022



Unnamed Road, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Latitude 23.0497591° Longitude 72.6044756°  
Local 10:25:50 AM Altitude -0.6 meters  
GMT 04:55:50 AM Friday, 07-01-2022



Ahmedabad, Gujarat, India  
Govt. Dental college and Hospital, Civil Hospital Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050094° Long 72.604852°  
10/01/22 09:43 AM



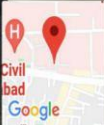
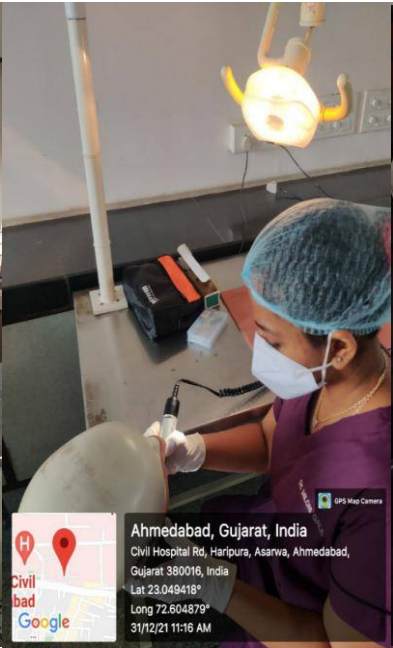
**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



Ahmedabad, Gujarat, India  
Govt. Dental college and Hospital, Civil Hospital Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050094°  
Long 72.604852°  
10/01/22 09:44 AM



Ahmedabad, Gujarat, India  
Civil Hospital Campus, Civil Hospital Campus, Ahmedabad, Civil Hospital Rd, Harijura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050396°  
Long 72.604742°  
14/05/22 11:13 AM



Ahmedabad, Gujarat, India  
Civil Hospital Rd, Harijura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.049418°  
Long 72.604879°  
31/12/21 11:16 AM



Ahmedabad, Gujarat, India  
Civil Hospital Campus, Civil Hospital Campus, Ahmedabad, Civil Hospital Rd, Harijura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050378°  
Long 72.604731°  
14/05/22 11:13 AM



**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



**Ahmedabad, Gujarat, India**  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.049383°  
Long 72.603474°  
12/01/22 11:03 AM

GPS Map Camera



**Ahmedabad, Gujarat, India**  
Civil Hospital Campus, Civil Hospital Campus, Ahmedabad, Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050288°  
Long 72.604744°  
14/05/22 10:29 AM

GPS Map Camera



**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**





## New Treatment Modalities

Dental treatment being performed under magnification (using Dental Loupes)





**GOVERNMENT DENTAL COLLEGE AND  
HOSPITAL, AHMEDABAD.**



Dental treatment being performed under magnification (using Dental Microscope)





## Laser Dental Procedure







**GOVERNMENT DENTAL COLLEGE AND  
HOSPITAL, AHMEDABAD.**

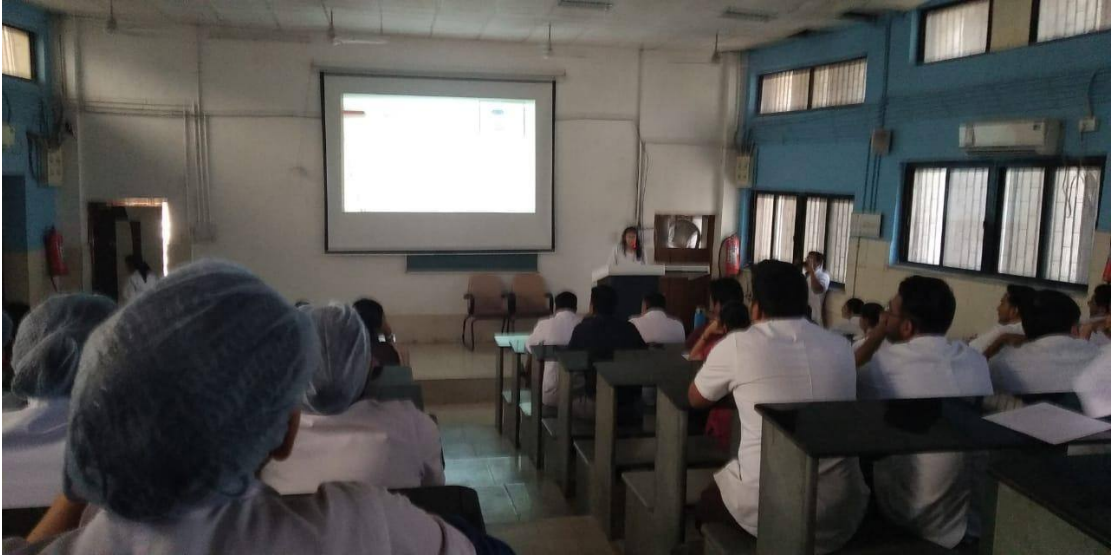


**INTEGRATED/ INTERDISCIPLINARY LEARNING:**





**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**





**GOVERNMENT DENTAL COLLEGE AND  
HOSPITAL, AHMEDABAD.**

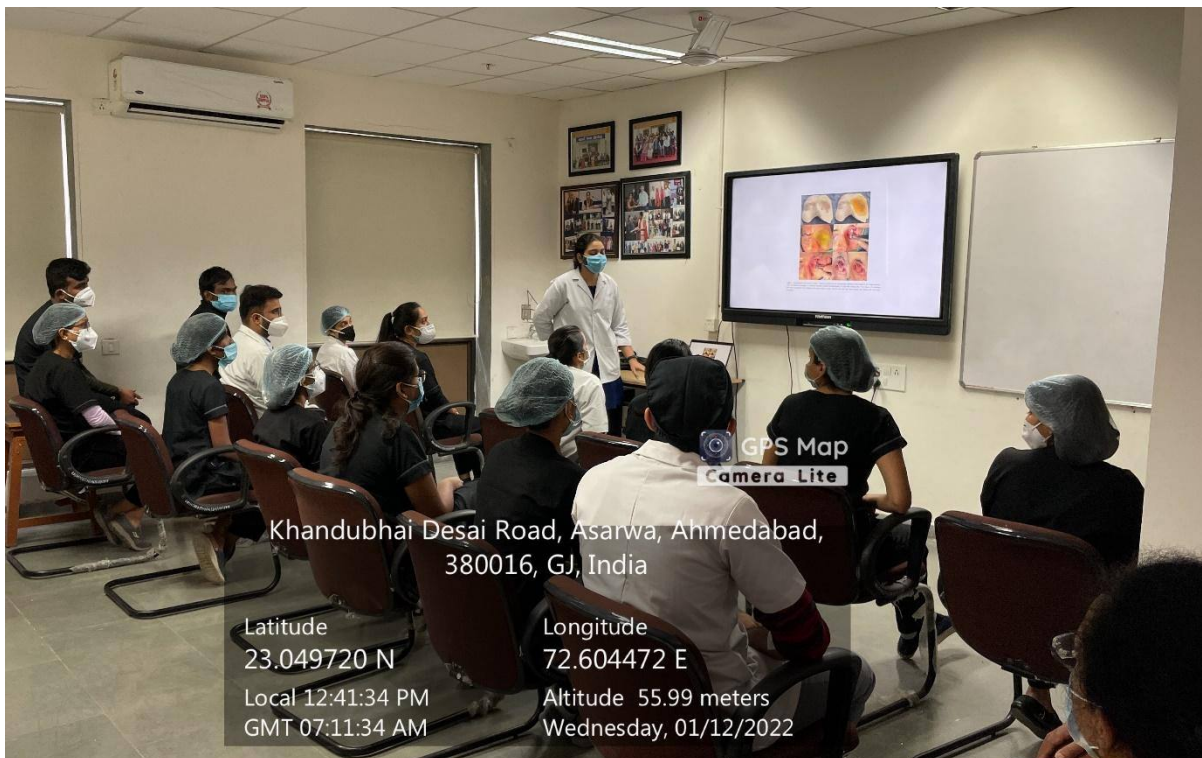




**GOVERNMENT DENTAL COLLEGE AND  
HOSPITAL, AHMEDABAD.**

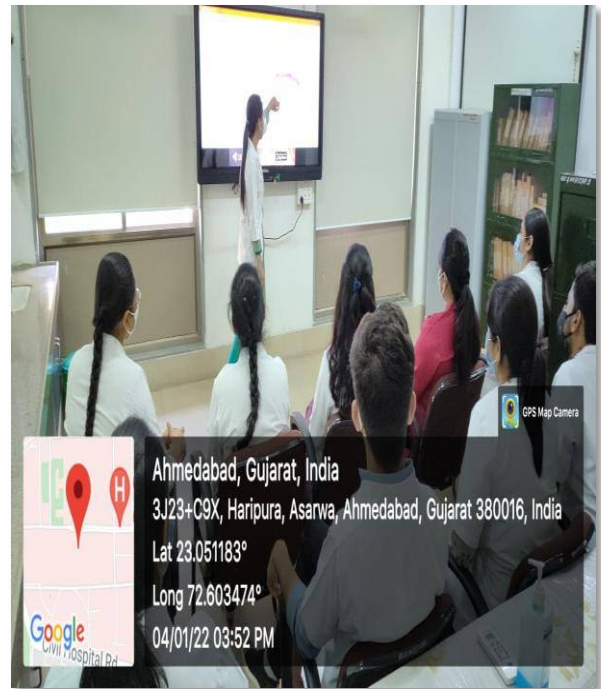


**PARTICIPATORY LEARNING:**





## GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



### PROBLEM SOLVING METHODOLOGIES:





**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



Ahmedabad, Gujarat, India  
2JW5+3FH, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.044609°  
Long 72.609018°  
11/01/22 12:43 PM



Ahmedabad, GJ, India  
Asarwa, Ahmedabad, 380016, GJ, India  
Lat 23.050028, Long 72.604355  
01/13/2022 03:42 PM

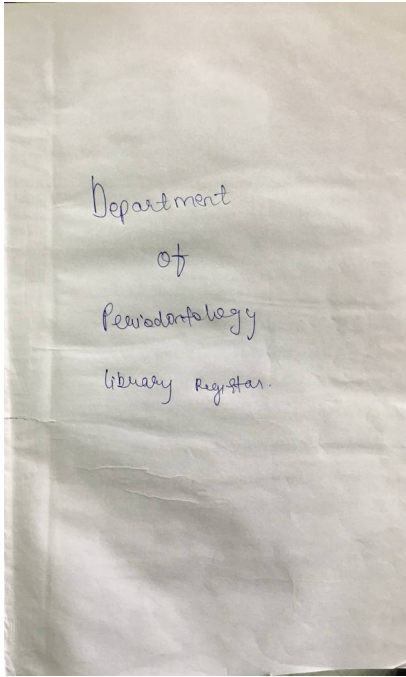


Ahmedabad, Gujarat, India  
Civil Hospital Campus, Civil Hospital Campus, Ahmedabad, Civil Hospital Rd,  
Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050177°  
Long 72.604888°  
04/01/22 12:38 PM



Mode of Self Learning

Department of Periodontology Library Register



Handwritten library register for Periodontology with columns for Date, Book Name, Topic, and Signature.

Handwritten library register for Periodontology with columns for No., Date of Issue, Book Name, Topic, and Signature.

Department of Oral Medicine & Radiology Library Register

Printed library list for Oral Medicine & Radiology Department, including titles like 'Differential Diagnosis of Oral & Maxillofacial Lesions'.

Handwritten library register for Oral Medicine & Radiology with columns for Book Name and other details.

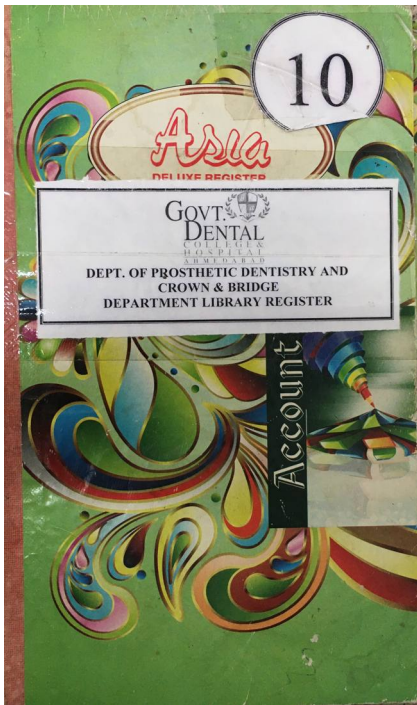
Handwritten library register for Oral Medicine & Radiology with columns for Name, Issue date, Sign, Return date, and Sign.



**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



**Department of Prosthodontics , Crown & Bridge**



(1) Complete denture Prosthetics (Neil / Nairn)

No.	Dr's Name	Date of issue	Date of sign	Signature	Signature
1.	Dr. Harshik Bapat	13/2/13	13/2/13	[Signature]	[Signature]
2.	Dr. Sreha	5/1/13	15/1/13	[Signature]	[Signature]
3.	Dr. Anandmayee	23/2/14	10/3/14	[Signature]	[Signature]
4.	Dr. Farheen Malik	1/1/14	1/1/14	[Signature]	[Signature]
5.	Dr. Vishal Chauhan	29/1/15	10/2/15	[Signature]	[Signature]
6.	Dr. Fatema	07/6/16	23/6/16	[Signature]	[Signature]
7.	Dr. Kabi	11/7/20	24/7/20	[Signature]	[Signature]
8.	Dr. Shant	4/8/20	29/8/20	[Signature]	[Signature]
9.	Dr. Bonera	7/7/21	30/7/21	[Signature]	[Signature]
10.	Dr. Reel	2/10/22	11/10/22	[Signature]	[Signature]

(2) Essentials of complete denture Prosthetics (Winkler)

No.	Dr's Name	Date of issue	Date of sign	Signature	Signature
1.	Dr. Sacha Vase	9/1/13	15/1/13	[Signature]	[Signature]
2.	Dr. Vishal Chauhan	18/3/13	26/3/13	[Signature]	[Signature]
3.	Dr. Vishal Chauhan	17/9/13	23/9/13	[Signature]	[Signature]
4.	Dr. Pinkite Anup	11/11/13	12/11/13	[Signature]	[Signature]
5.	Dr. Vishal Vena	14/1/15	8/6/15	[Signature]	[Signature]
6.	Dr. Bipin Satavge	4/6/16	22/6/16	[Signature]	[Signature]
7.	Dr. Meht Nodia	20/11/20	4/12/20	[Signature]	[Signature]
8.	Dr. Kabi	2/1/20	2/1/20	[Signature]	[Signature]
9.	Dr. Meht Nodia	28/7/21	27/8/21	[Signature]	[Signature]
10.	Dr. Manika	8/1/22	16/1/22	[Signature]	[Signature]

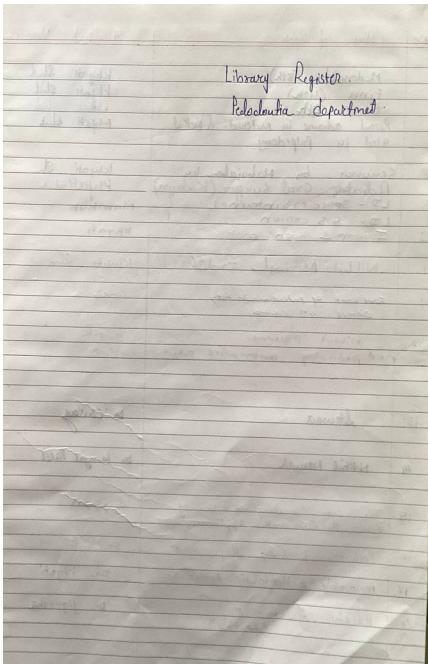
**Department of Orthodontics & dentofacial orthopedics Library Register**



Sr. No.	BOOK No	Book name	Issued by	Issue date	Signature	Received Date	Remarks
153	747	Epikofish volume - 3	Dr. Hemant	19/11/2022	[Signature]	[Signature]	
154	48	The Invisalign System	Dr. Hemant	2/1/22	[Signature]	[Signature]	
155	60	Current therapy in Orthodontics - RAVINDER NANDA	Dr. Hemant	9/3/2022	[Signature]	[Signature]	not paid
156	140	Surgery - first orthodontic subsegment	Dr. Hemant Sr	20/2/2021	[Signature]	[Signature]	
157	117, 120	Epikofish volume 1, 2	Dr. Hemant Sr	20/2/2021	[Signature]	[Signature]	
158	149, 150, 151	Orthodontic Notes - Part I-III & IV	Dr. Hemant	28/2/2022	[Signature]	[Signature]	
159	60	Current therapy in Orthodontics - RAVINDER NANDA	Dr. Hemant	10/3/2022	[Signature]	[Signature]	
160	33	Textbook of orthodontics, GURJEET SINGH 2nd Edition	Dr. Hemant	9/03/2022	[Signature]	[Signature]	
161	51	History of Orthodontics	Dr. Faruq Masar	11/04/2022	[Signature]	[Signature]	
162	156	Advanced Edgewise fixed orthodontic Appliances	Dr. Faruq Masar	7/5/2022	[Signature]	[Signature]	
163	103, 101	Dentofacial deformities Integrated Orthodontic and Surgical Correction volume - II	Dr. Vishal	7/5/2022	[Signature]	[Signature]	

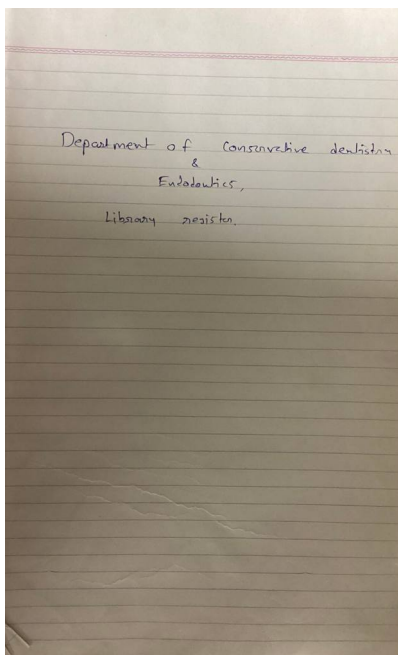


## Department of Pedodontia Library Register



Sr.No	Name of book	Student Name	Date of issue	Signature of student/Staff	Signature of Staff	Date of Return
1	Medanals (Orth)	Khyati Shuk	08th Aug/13	[Signature]	[Signature]	20/10/13
2	Finn (Orth)	Khyati Shuk	08th Aug/13	[Signature]	[Signature]	30/9/13
3	Boyle (Orth)	Khyati Shuk	11th Sept/13	[Signature]	[Signature]	30/9/13
4	Recent advances in material & method used in Pedodonty	parvati shuk	20/9/13	[Signature]	[Signature]	30/9/13
5	Session by Mahajabon km	Khyati Shuk	20/9/13	[Signature]	[Signature]	30/9/13
6	Pediatric Oral Surgery (Kakagon)	Khyati Shuk	10/10/13	[Signature]	[Signature]	30/9/13
7	LO - Space maintainers	Manthan	20/11/14	[Signature]	[Signature]	
8	LO - S.S crown	Manthan	20/11/14	[Signature]	[Signature]	
9	Jordan & Koch book	Khyati	20/11/14	[Signature]	[Signature]	
10	Nikhil Mevash sanchit	Khyati Shuk	19/11/14	[Signature]	[Signature]	
11	Text book of pediatric dentistry 2nd ed 4th edition	sonali	12/1/14	[Signature]	[Signature]	
12	Text - Manual and pediatric component print	sonali	12/1/14	[Signature]	[Signature]	
13	Atwasat	Dr. Chirag	15.9.16			
14	Nikhil Mevash	Dr. Kamal Patel	19.9.16			
15	The Design - Construction & Use of Removable Orthodontic Appliances	Deepinder	20.10.16	[Signature]		
16	Pediatric dentistry Ray Stewart	Dr. Smit	10.11.19	[Signature]		13 Aug 19
17	Removable orthodontic appliance	Dr. Khyati	16 Aug	[Signature]		23 Sep
18	Pediatric dentistry P (Khyati)	Dr. Jyotsna	16 Aug	[Signature]		

## Department of Conservative Dentistry & Endodontics Library Register



14	Problem Solving in Endodontics by James Ortman	Dr. Smit 16/10/2020	[Signature]
15	Restorative Dentistry A. Damien Waterbury	Dr. Smit 16/10/2020	[Signature]
16	Endodontic - Introduction Dr. Manish Kapadia	Dr. Kajal 16/10/2020	[Signature]
17	Regenerative endodontics Dr. Manish Kapadia	Dr. Kajal 16/10/2020	[Signature]
18	Past and Core in endodontics Dr. Jagdish Sankhara	Dr. Kajal 16/10/2020	[Signature]
19	Ultrasound in endodontics by Rekha Groh	Dr. Anshu 16/10/2020	[Signature]
20	Bioactive materials by Dr. Shweta Bhargava	Dr. Anshu 16/10/2020	[Signature]
21	Root reparative materials by Dr. Manjit Kaur	Dr. Anshu 16/10/2020	[Signature]
22	Cad-Cam in dentistry Dr. Anand Singh Rana	Dr. Anshu 16/10/2020	[Signature]
23	Working length Determination concepts & challenges by Dr. Kavitha Kothika Dhandhanis	Dr. Anshu 16/10/2020	[Signature]

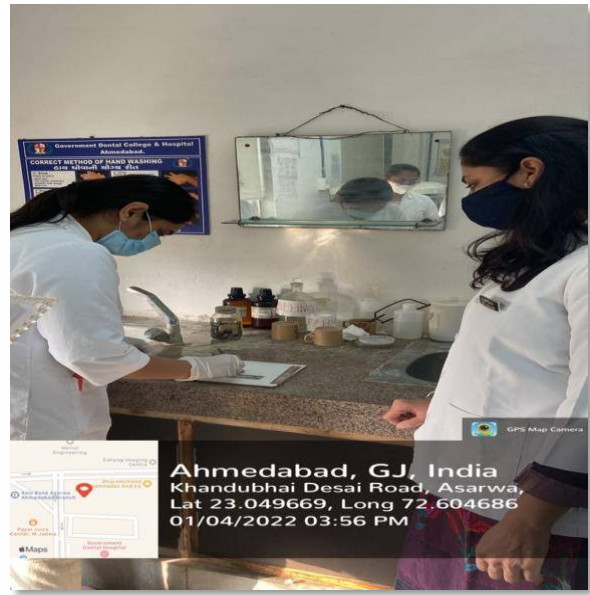
LIBRARY THESIS/DISSERTATION	
1) Comparative Evaluation of incidence of para Jan 2013 / Dissertation	Dr. Smit 16/10/2020
2. Use of Core in endodontics (Library Thesis)	Dr. Jagdish Sankhara 16/10/2020
3 Effect of cones on an ICM computerized	Dr. Manish Kapadia 16/10/2020
4 Odor Organism in Dentistry	Dr. Manish Kapadia 16/10/2020
5 Core fill - Dr. Virendra Jain - Dr. Kajal	Dr. Kajal 16/10/2020
6 Core fill - Dr. Rohit Kumar - Dr. Kajal	Dr. Kajal 16/10/2020
7 Core fill - Dr. Manish Kapadia - Dr. Kajal	Dr. Kajal 16/10/2020
8 Ultrasound in Endodontics Root Resorption Management	Dr. Anshu 16/10/2020
9 Evaluation of eff. .... Retrospective Study	Dr. Anshu 16/10/2020
10 Root reparation in root canal	Dr. Anshu 16/10/2020
11 Comparison of antibiogram efficiency of Biopure strips & that of 2% CHX on root canal irrigant	Dr. Anshu 16/10/2020
12 Textbook of Endodontics (5th Edition)	Dr. Anshu 16/10/2020



# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



Ahmedabad, G.J. India Civil Hospital Rd, Haripura  
Asarwa, Ahmedabad, 380016, GJ, India  
Lat 23.050074, Long 72.604300  
01/11/2022 03:41 PM



Ahmedabad, GJ, India  
Khandubhai Desai Road, Asarwa,  
Lat 23.049669, Long 72.604686  
01/04/2022 03:56 PM



Ahmedabad, Gujarat, India  
O-Block, MRI Centre, Civil Hospital Campus, Asarwa, Haripura, Asarwa,  
Ahmedabad, Gujarat 380016, India  
Lat 23.05076°  
Long 72.604933°  
04/01/22 12:49 PM



Ahmedabad, Gujarat, India  
4, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India  
Lat 23.050398°  
Long 72.604808°  
19/01/22 11:27 AM

SELF DIR

## Study Models/Posters



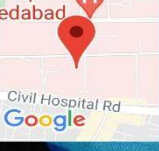
**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**



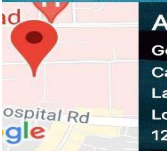
*[C.D./ R.P.D./ F.P.D./ Dental Implant/ Maxillofacial]*



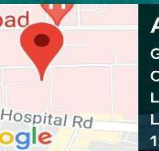
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 Govt. Dental college and Hospital, Civil Hospital  
 Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
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 Long 72.604852°  
 10/01/22 03:16 PM



**Ahmedabad, Gujarat, India**  
 Govt. Dental college and Hospital, Civil Hospital  
 Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
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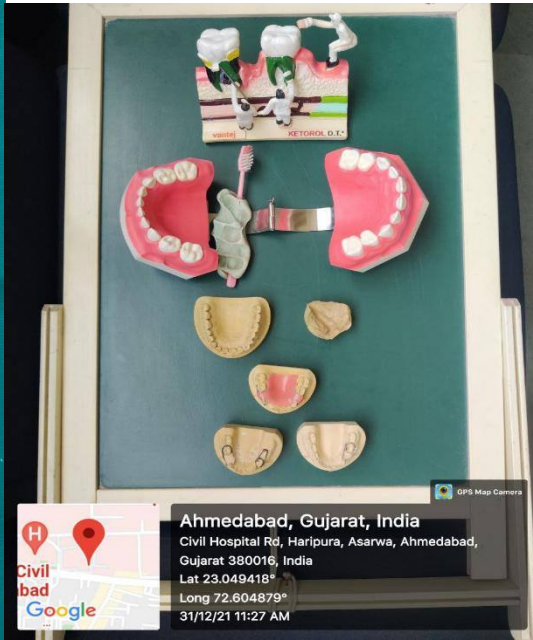
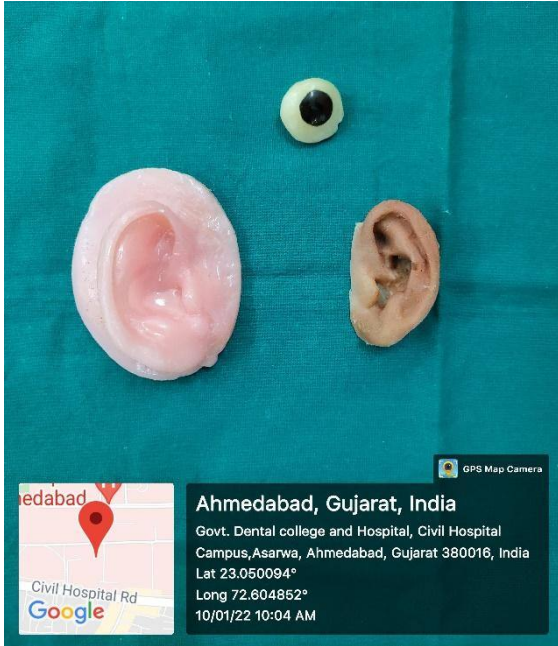
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 Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
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 Long 72.604852°  
 12/01/22 02:47 PM



**Ahmedabad, Gujarat, India**  
 Govt. Dental college and Hospital, Civil Hospital  
 Campus, Asarwa, Ahmedabad, Gujarat 380016, India  
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 Long 72.604852°  
 12/01/22 02:49 PM



# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.

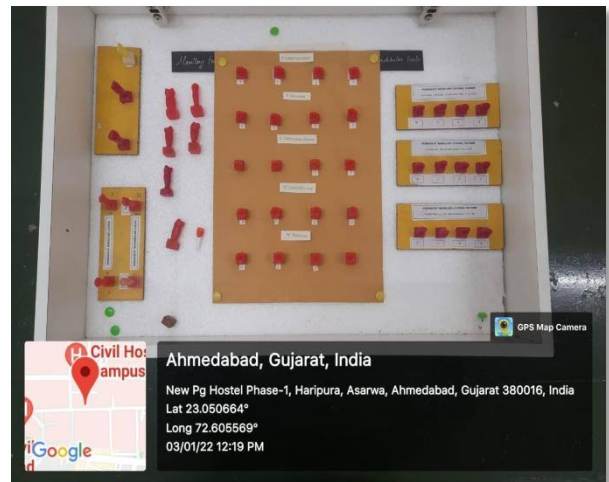


## MODEL FOR DENTAL ANATOMY & ORAL HISTOLOGY





# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



## MODEL FOR ORAL PATHOLOGY





# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



3J24+925, Haripura, Asarwa, Ahmedabad, Gujarat 380016, India

Ahmedabad  
Gujarat  
India



27°C

81°F

2022-01-18(Tue) 02:41(PM)



# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



Ahmedabad  
Gujarat  
India  
23°C  
73°F  
2022-01-19(Wed) 11:47(AM)

Ahmedabad  
Gujarat  
India  
23°C  
73°F  
2022-01-19(Wed) 11:48(AM)



Ahmedabad  
Gujarat  
India  
23°C  
73°F  
2022-01-19(Wed) 11:48(AM)

Ahmedabad  
Gujarat  
India  
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2022-01-19(Wed) 11:46(AM)

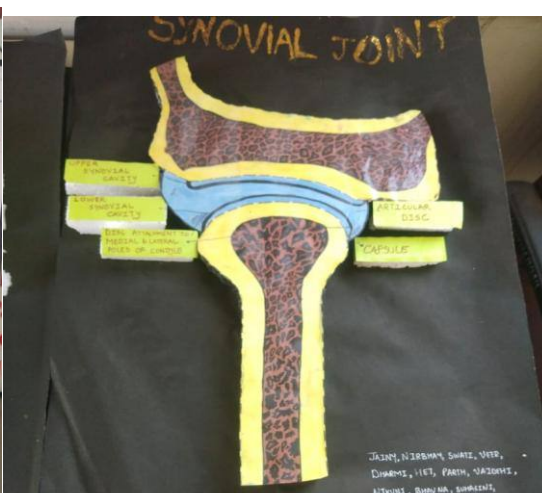
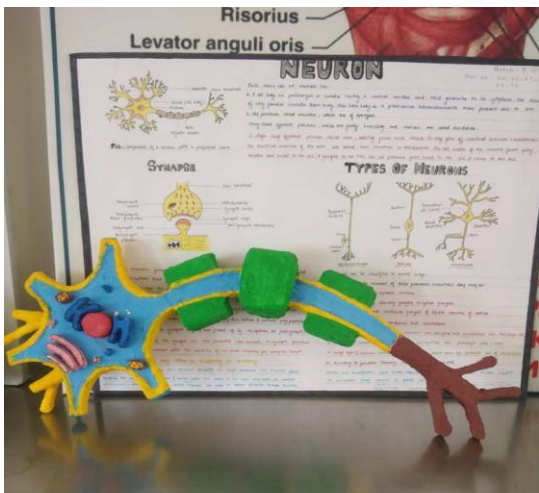


# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



Ahmedabad  
Gujarat  
India  
23°C  
73°F  
2022-01-19(Wed) 11:46(AM)

Ahmedabad  
Gujarat  
India  
23°C  
73°F  
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Ahmedabad  
Gujarat  
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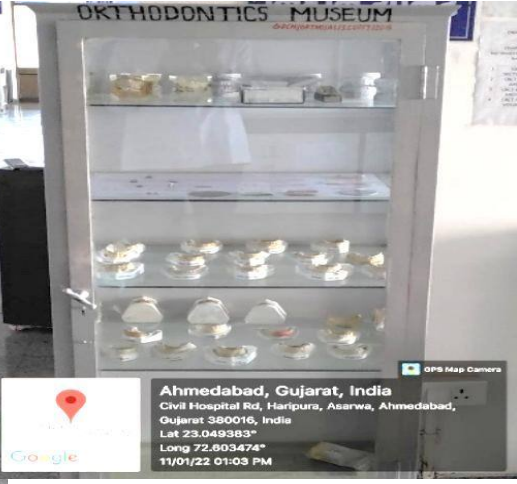
Ahmedabad  
Gujarat  
India  
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## ORTHODONTIC MUSEUM



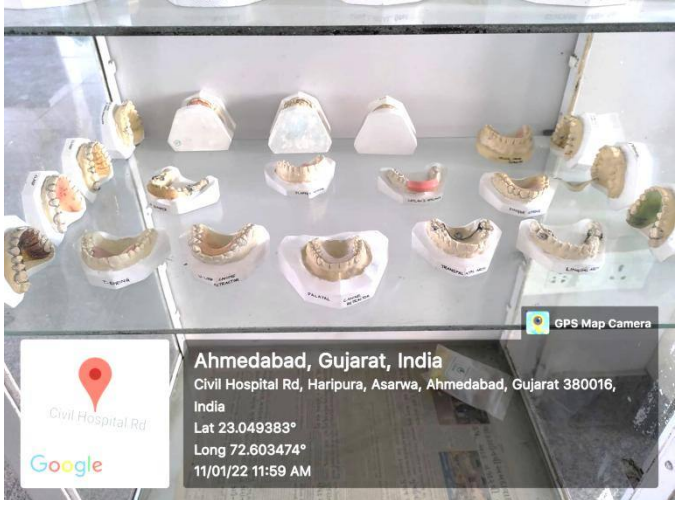


# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



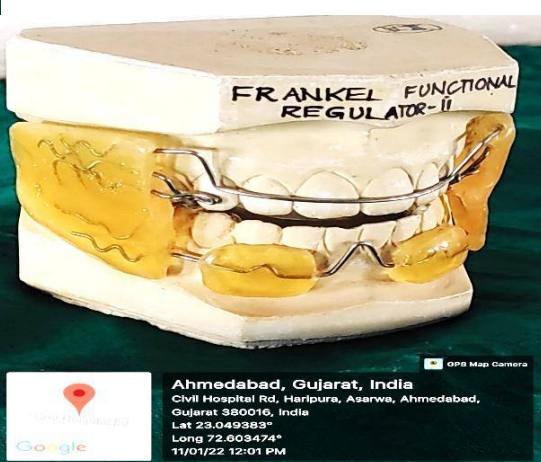
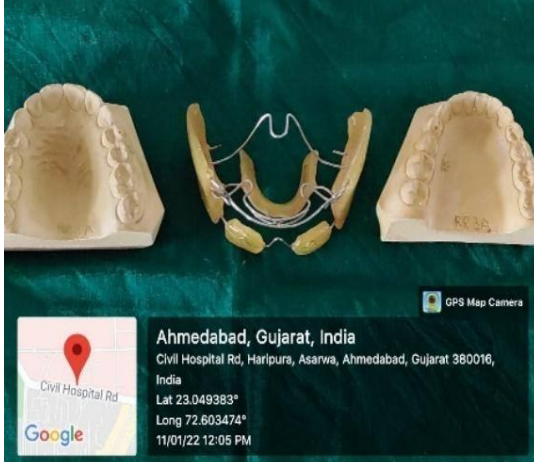
Ahmedabad, Gujarat, India  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016,  
India  
Lat 23.049383°  
Long 72.603474°  
11/01/22 11:58 AM

Ahmedabad, Gujarat, India  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad,  
Gujarat 380016, India  
Lat 23.049383°  
Long 72.603474°  
11/01/22 01:03 PM



Ahmedabad, Gujarat, India  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016,  
India  
Lat 23.049383°  
Long 72.603474°  
11/01/22 11:59 AM

## REMOVABLE FUNCTIONAL APPLIANCE

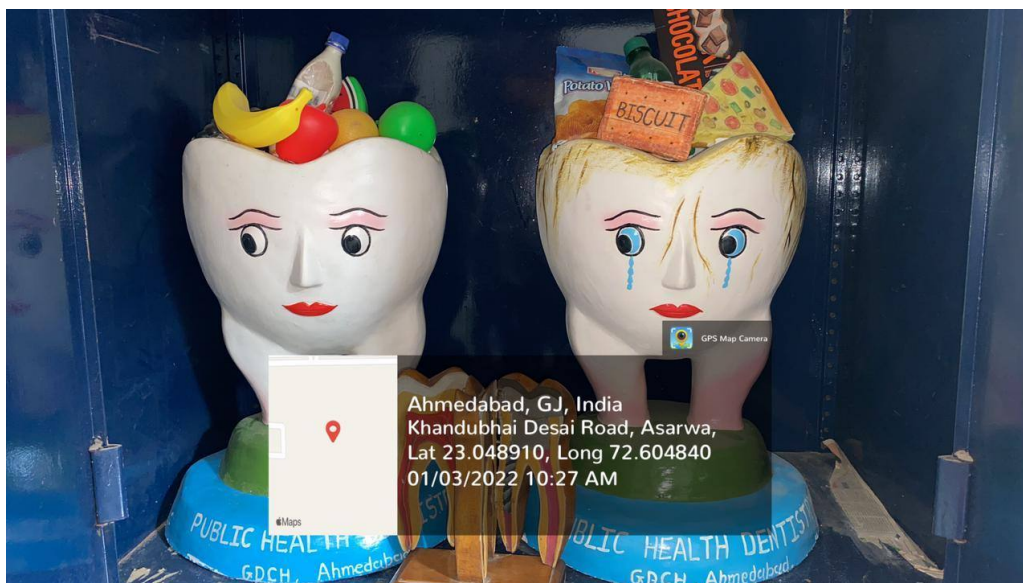
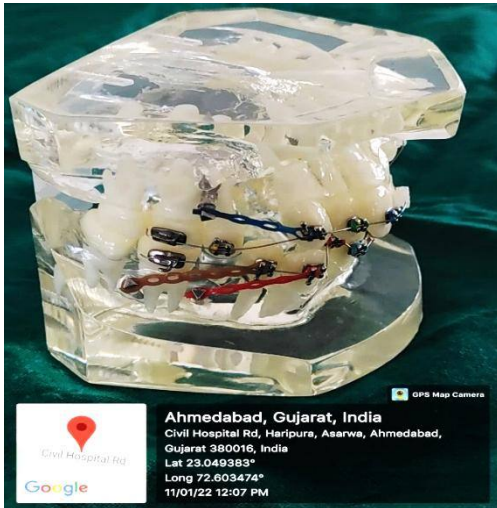


Ahmedabad, Gujarat, India  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad, Gujarat 380016,  
India  
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Long 72.603474°  
11/01/22 12:05 PM

Ahmedabad, Gujarat, India  
Civil Hospital Rd, Haripura, Asarwa, Ahmedabad,  
Gujarat 380016, India  
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11/01/22 12:01 PM

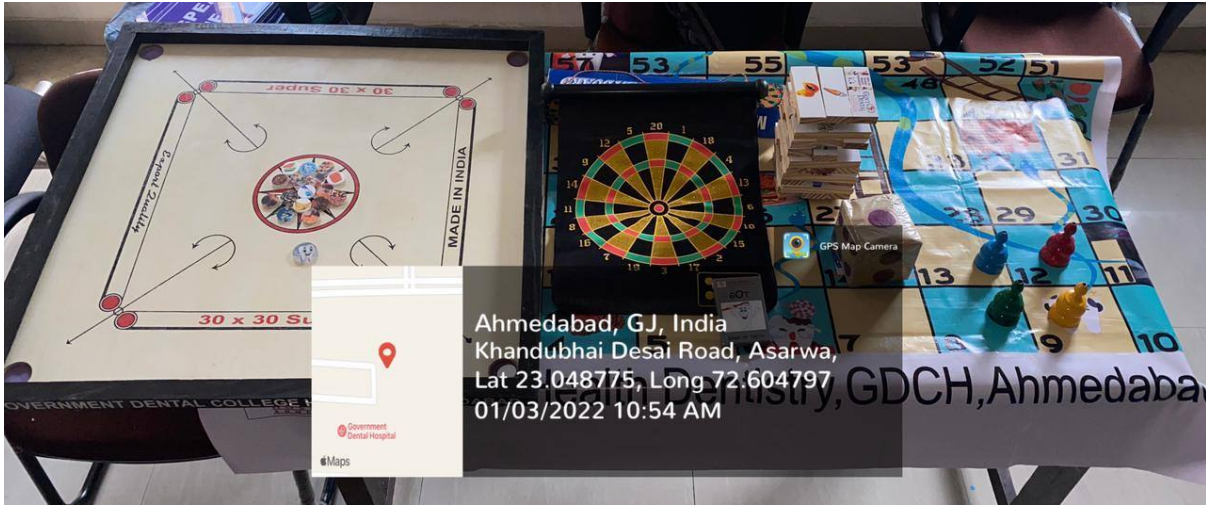


# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.





**GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.**





# GOVERNMENT DENTAL COLLEGE AND HOSPITAL, AHMEDABAD.



## RADIATION PROTOCOLS

**Definition of radiation:**  
Radiation is defined as the emission and propagation of energy through space or substance in the form of waves or particles.

**Regulatory bodies:**  
International: ICRP-International Commission for radiation Protection  
India: AERB- Atomic Energy Regulatory Board

**Act & Rules:**  
Atomic energy act 1962, Head radiological safety division Bhabha Atomic Research Centre Mumbai was notified as competent authority government of India to regulate & control the possession of radioactive sources in the country now Atomic Energy Regulatory Board has been notified as competent authority.  
In these radiation protection rules-2004 is clearly mentioned that all medical diagnostic x-ray machines must be registered with the atomic energy regulatory board, Mumbai & they published diagnostic radiology

**Objectives:**

1. The safety code is intended to govern radiation safety in design, ensure that radiation workers and members of public are not exposed to radiation in excess of dose limit prescribed by the competent authority
2. Dose should be as low as reasonably achievable (ALARA PRINCIPLE)
3. Ensure that radiation exposure by patients undergoing diagnosis are optimized
4. Factors to control radiation for x-ray machines.
  - \* X-ray tube housing
  - \* X-ray beam filtration
  - \* X-ray tube positioning
  - \* Exposure switch
  - \* Beam limiting device/collimator
  - \* Identification, marking and X-ray caution symbol
  - \* Control console, Anti-scatter grid
  - \* Intensifying Screen
  - \* X-ray equipment and X-ray tubes
  - \* Type approval certificate
  - \* Conditions of Licence

**Regulatory Requirements for manufacturers and suppliers of X-ray equipment:**

- \* Should possess licence
- \* Fulfill responsibilities

**The employer and licensee shall:**

- \* Manufacture on commercial scale only those X-ray equipment which are AERB type approved.
- \* Supply only type approved x-ray equipment to AERB authorized supplies.
- \* Make premises available for inspection to inspector authorised by the competent authority.

**Radiation Protection actions**

- \* Comprises triad Fig. 1.

**X-Ray Rooms:**  
Location: away from area of high occupancy.

**Layout:**  
Size: not less than 18m<sup>2</sup>, 150sq feet  
Walls made of 3" of concrete, 3" x 16" of steel or 1mm of lead.  
Doors and window: 23cm thick or 1.7 mm lead in front.  
Operator should be 6ft away or 90 degrees to the source.

**Dark Room:**  
4'5feet(1.2\*1.5m) size, Light proof, safe light 1.2m away from work surface, 15wolt bulb  
Manual processing tank: temp :60degree F & 75degree F, size:20\*25cm  
Thermometer, Timer, Drying racks  
**Radiation Protection safety devices:** Thyroid collar, Lead apron, Eye shields, Scatter drapes, Protective glasses, Lead Mask, Lead Goggles.  
**X-ray monitoring Devices:** Pocket dosimeter, TLD badge, film badge, Digital Electronic Dosimeter, ionising chamber.

time  
distance    shielding

Fig. 1.

Guided by: Dr. Jigna Shah mam

**Govt. Dental College, Civil Hospital, Ahmedabad.**  
**Oral Medicine and Radiology Department**



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## PRINCIPLE OF RADIOLOGY TECHNIQUES

**INTRAOURAL RADIOGRAPHY:**

**A. BISECTING ANGLE TECHNIQUE:**  
It is based on the simple geometrical principle known as "the rule of isometry or "congruency" rule of isometry which states that two triangles are equal if they have two equal angles and share a common side. In this technique the film is placed along the lingual surface of the tooth and the plane of the film contacts the tooth, the plane of the film and long axis of the tooth form an angle.

**B. PARALLELING TECHNIQUE:**  
To achieve parallelism between the film and the tooth, the film just be placed away from the tooth and towards the middle of the oral cavity. Because of the anatomic configuration of the oral cavity the object film distance must be increase to keep the film parallel with the long axis of tooth.

**BITEWING RADIOGRAPHY:**  
The film is placed in mouth parallel to the crowns of upper & lower teeth and film is stabilized when the patient bites on bitewing tab of bitewing holder. The central ray of the x-ray beam is directed through the contacts of teeth using +10° vertical angulation.

**OCCUSAL RADIOGRAPHY (SANDWICH RADIOGRAPHY)**  
Occlusal film is placed in mouth between the occlusal surfaces of upper and lower teeth by asking the patient to bite over it and the jaw which is to be examined is positioned parallel to the floor and white side of the film should be facing towards the area to be examined.

**EXTRAORAL RADIOGRAPHY: PANORAMIC RADIOGRAPHY:**  
This is a coronal view of conventional tomography and is the result of the principle of reciprocal movement of an x-ray source and image receptor around a fulcrum in front of or behind this imaged layer are not equally compressed or there movement relative to the center of rotation of the receptor and x-ray source.

**PANORAMIC RADIOGRAPHY:**

**SINGLE CENTER OF ROTATION:**

- \* This technique used stationary vertical movement of the beam, placed at one side of the jaws.
- \* The rotation center is then almost symmetrically by moving the patient.
- \* This projection technique produced the sagittal image. e.g. The Rotograph Machine.

**TWO CENTER OF ROTATION:**

- \* The individual left and right sides of the arc formed by the teeth and jaw closely form a part of circle.
- \* center of rotation was positioned anteriorly in the location of the third molar opposite the side being examined.

**R & L: Panorax Machine.**

**THREE CENTER OF ROTATION:**  
This system divided the arc of jaw into three areas.

- \* A condyle to first premolar posterior segment.
- \* A condyle to canine anterior segment.
- \* A central lateral opposite segment.
- \* The x-ray beam can be shifted from one corner to other without any interruptions and a continuous image can be made from condyle to condyle. e.g. Orthodontograph.

Prepared By: Alpha Khari, Ashwini Kalola, Pooja Manjappa, Shikha Nema & Nisha Khatke 20/12/21

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## PARTS OF X-RAY TUBE

**X-ray Machine**  
 It was invented by william coolidge in 1913. Thus it is also called as a coolidge's tube.  
**Components:** 1. X-ray tube 2. power supply.  
 • X-ray tube is positioned with in the tube head, along with some components of the power supply.  
 • The tube head is supported by an arm that known as an extension arm.  
 • A control panel allows the operator to adjust the time of exposure, the energy & exposure rate of x-ray • beam.  
 • Dental X-ray machines usually working on: 55 to 70 Kvp and 8 to 10 mA.  
 • Wave length of X-ray: 1 to 0.01 Å

**Tube Housing with Glass envelope**

- Made of cast steel & is usually lead-lined.
- Provides for absorption of most off focus radiation
- Surrounds entire cathode & anode assemblies
- Insulating oil between the Glass envelope and the housing of the tube head carries heat away from the copper stem

**Anode with Copper Stem**

- Due to voltage difference accelerated electrons travel from the cathode to positively charged anode and that is targeted to focal spot produces x-rays by Bremsstrahlung and characteristic radiation.
- Copper stem helps to dissipated the heat.

Two types  
 1. Stationary Anode  
 2. Rotatory Anode

**Cathode**

- The cathode is a negative end of x-ray tube.
- Made up of the filaments and a focusing cup.

**Tungsten filament**

- By thermoionic emission produces electrons with great amount of heat.

**Focusing Cup**

- Made up of molybdenum, negative charge forms the electron cloud at cathode end

PREPARED BY: INTERN (2011-12)  
 PRATIK PATEL, SAGAR RABADIA, GIRISH PRAJAPATI, DEVRSHI BHAVSAR, PRITI LEUVA



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## INTRA-ORAL RADIOGRAPHIC TECHNIQUES

**Intra-oral Periapical (IOPA) View:**  
 mA : 10, kVp :55-70, Exposure Time : 0.4-0.8 sec

**Paralleling Technique:**  
 The film should be parallel to the long axis of the tooth & the central ray of beam should be perpendicular to both.

**Bisecting Technique:**  
 The film should be as close as possible to the tooth and central ray of beam should be perpendicular to the bisector plane between long axis of tooth & long axis of film.

Projection	Maxilla	Mandible
Incusor	+40	-15
Canine	+45	-20
Premolar	+30	-10
Molar	+20	-5

**Occlusal View:**  
 mA : 10, kVp : 65-70, Exposure Time : 1-1.2 sec

**Technique:**  
 Film should be placed in the plane of the occlusal surface of teeth. Instruct patient to bite on the film gently. Beam is directed through the jaw to film.

Angulations for:	Vertical
Anterior maxillary	+45
Cross sectional(Max)	+65
Lateral maxillary	+60
Anterior mandibular	55
Cross sectional(Mand)	90 to plane of film
Lateral mandibular	

**Bitewing Technique:**  
 mA : 10, kVp :55-70, Exposure Time : 0.6-0.8 sec

**Technique:**

- Film is placed parallel with the long axis of tooth.
- Central ray of the x-ray beam is right angle to both film & tooth.
- Point of entry at the contact area between the teeth.

Presented by:-

Aditya Mehta  
 Shrinil Mankiwala  
 Parth Gorawala

Yagnesh Sardhara  
 Divyesh Modi  
 (Intern 2010-11)



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TECHNIQUE	PA SKULL	PA MANDIBLE	PARAMASAL SINUS (WATER'S)	REVERSE TOWNE	SUBMENTOVERTERX	JUG HANDLE
<b>Indications</b>	• Fractures of skull base • Displacement of frontal sinuses • Ethmoidal emphysema • Condylar affecting skull (Paget's disease, multiple myeloma)	• Fractures of posterior body or symphysis, angle, ramus and lower mandibular necks • Mandibular expansion of posterior body of ramus • Mandibular deformities • Mandibular hypoplasia or hyperplasia	• Inflow of dental infection • Anterior ethmoidal sinuses • Sphenoidal sinuses	• Inflow of dental infection • Thickening of lamina of cribra • Quality of articular surfaces • Condylar hypoplasia or hyperplasia	• To show structures / measure tissues affected by radiation therapy • Paranasal sinuses • Base of skull (sphenoidal sinus)	• To show structures / measure tissues affected by radiation therapy • Paranasal sinuses • Base of skull (sphenoidal sinus)
<b>Substrate Diagram</b>						
<b>Patient Position</b>	The Craniohorizontal line (orbital plane) is perpendicular to the image receptor	The Craniohorizontal line (orbital plane) is perpendicular to the image receptor	The patient's head is tilted so that the head is tilted backward and the craniohorizontal line is perpendicular to the image receptor. The patient's mouth is open.	The patient's head is tilted downward. The craniohorizontal line is perpendicular to the image receptor. The patient's mouth is open.	The patient's head is extended as far as backward as possible. The craniohorizontal line is perpendicular to the image receptor.	The patient's neck is extended as far as backward as possible. The craniohorizontal line is perpendicular to the image receptor.
<b>Film Position</b>	In front of patient perpendicular to the midsagittal plane & parallel to the coronal plane.	In front of patient perpendicular to midsagittal plane. Perpendicular to the coronal plane.	At right angle to sagittal plane of skull. They be placed either in vertical or horizontal position.	In front of the patient. Perpendicular to the midsagittal plane. Parallel to the coronal plane.	Parallel to patient's transverse plane. Perpendicular to the midsagittal & coronal plane.	Parallel to patient's transverse plane. Perpendicular to the midsagittal & coronal plane.
<b>Central X-ray Beam</b>	Directed through the sagittal plane parallel with orbital plane at level of bridge of nose. In the beam coverage must include entire skull.	Is directed perpendicular to the film horizontally & vertically through sagittal plane at level of mandible. A ray beam collimated to lower must be only mandible.	Is directed perpendicular to this perpendicular to this horizontally & vertically through sagittal plane at level of middle of maxillary sinus.	Perpendicular to the image receptor. Parallel to patient's midsagittal plane. Centered at the level of the condyles.	Perpendicular to image receptor. Parallel to patient's transverse plane. Centered on the midsagittal plane. Anterior to 1 cm, contacting the right & left condyles.	The cone is brought close as possible to the patient.
<b>Field Size for Film Dimension</b>	38"	38"	24"	24"	24"	18"
<b>Exposure</b>	kVp: 65-70 mA: 8-12 Seconds: 1.2-1.5	kVp: 65-70 mA: 8-12 Seconds: 0.25-1	kVp: 70-80 mA: 8-12 Seconds: 1-1.5	kVp: 70-80 mA: 8-12 Seconds: 1-1.5	kVp: 65-70 mA: 8-12 Seconds: 1-1.2	kVp: 55-60 mA: 8-12 Seconds: 0.25-0.5
<b>RESULTANT IMAGE</b>						

PREPARED BY : PALAK PRAJAPATI, PIYUSH PATEL, PRIYANKA PATEL, PAVAL PURDHIT



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Anatomical Landmarks - Extraoral Radiographic Views		
<b>General Cephalogram</b> Radiopaque: Frontal sinuses, Maxillary sinuses, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>Submentovertex view</b> Radiopaque: Frontal sinuses, Maxillary sinuses, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>PA Skull</b> Radiopaque: Frontal sinuses, Maxillary sinuses, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.
<b>General Oblique View of Mandible (Ramus)</b> Radiopaque: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>Paramasal Sinus View</b> Radiopaque: Frontal sinuses, Maxillary sinuses, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>Orthopantomogram</b> Radiopaque: Frontal sinuses, Maxillary sinuses, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.
<b>Lateral Oblique view of Mandible (Body)</b> Radiopaque: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>Jug handle view</b> Radiopaque: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.	<b>Reverse Towne</b> Radiopaque: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.
<b>THL Views</b> Radiopaque: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa. Radiolucent: Maxillary sinus, Ethmoidal sinuses, Sphenoidal sinuses, Mandibular body, Mandibular ramus, Mandibular angle, Condylar head, Articular eminence, Articular surface, Articular notch, Articular fossa.		

Prepared by : Priya, Nupur D., Nupur R., Nilam, Radha, Viral. Interns (2013-14)




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	Anterior Body of Mandible	Posterior Body of Mandible	Ramus of Mandible	Lateral Cephalogram	True Lateral
Indications	To examine anterior body of mandible & position of teeth in this area. Evaluation of impacted teeth fractures & lesions involving anterior mandible.	To examine posterior body of mandible and position of teeth in this area. Evaluation of impacted teeth, fractures & lesions of posterior part of body of mandible.	Examination of fractured and broken, large lesions, fractures including step deformity. To examine a view of ramus from angle of mandible to condyle.	For Evaluation of skeletal growth, its development, transverse, developmental abnormalities & treatment. For dental surgery, orthodontics & orthognathic surgery. To assess the progress of orthodontic treatment. It is subject to pre- & post-treatment records.	To survey skull & facial bones for evidence of trauma, developmental abnormalities & disease. To record morphological soft tissue, paranasal sinus & nasal cavity.
Schematic Diagram					
Patient Position	Patient is seated in upright position with film in occlusal plane parallel to floor.	Patient is seated in upright position. Patient is directed to project chin as forward as comfortable. Tilting the patient's head away from x-ray machine towards the site of interest.	Patient is seated in upright position. Patient is directed to project chin as forward as comfortable. Tilting the patient's head away from x-ray machine towards the site of interest.	Left side of patient's head positioned against cassette. Patient is asked to keep teeth in occlusion.	Sagittal plane should be vertical & parallel to film.
Film Position	Film in contact with cheek opening centre. None made in horizontal stabilization of film.	Film in contact with cheek at ocular area. Cyclostatic arch assists in horizontal stabilization of film.	Film in contact with cheek at ramus area.	Film parallel to mid-sagittal plane.	Film is positioned perpendicular with sagittal plane of skull.
Projection of Central Ray (Tube Position)	Beam directed upward towards the occlusal plane of teeth at point just anterior to axis of interest. Beam is centred on anterior body.	Beam directed upward and aimed at apex of upper second premolar.	Beam directed at point just medial to ramus and about 1/2 inch above the angle of mandible.	Beam is directed perpendicular to film through portion.	Beam aims approximately 1 inch above the external auditory meatus.
Focal Spot to film distance	12 inch	12 inch	12 inch	60 inch	36 inch
Exposure Parameter	KVP -> 65-70 mA -> 7-10 Sec -> 2	KVP -> 65-70 mA -> 7-10 Sec -> 0.8-1.25	KVP -> 65-70 mA -> 7-10 Sec -> 0.8-1	KVP -> 84 mA -> 13 Sec -> 3-6	KVP -> 65 mA -> 10 Sec -> 0.5-2
Resultant Radiograph					



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### PRINCIPLES OF RADIOGRAPHIC INTERPRETATION

Definition:- It is a step by step analysis of all the radiographic characteristics of the abnormality and production of radiographic interpretation based on these findings

**Step 1: Localize the Abnormality**

**Localized or Generalized:-**

- Radiolar Cyst
- Radiolar cyst
- Well-defined or ill-defined:-
- Some Density - Radiolucent, Radiopaque, Mixed pointing to change in the presentation of bone

**Position in Jaw:-**

- Fibro-ossous lesion
- Multiple Myeloma
- Malignancy
- Parosteal Osteoma
- Teeth:-
- Submandibular Pathosis

**Step 2: Assess the pathology**

- Size:-
- Multiple Myeloma
- Malignancy
- Parosteal Osteoma
- Teeth:-
- Submandibular Pathosis

**Step 3: Analyze the lesion structure**


- Shape:-
- Multilocular (Anablastic)
- Parosteal Osteoma
- Teeth:-
- Submandibular Pathosis

**Step 4: Effect on Surrounding Structure**

- Lesion Cure
- Teeth Displacement
- Submandibular Pathosis

**Step 5: Effect on Surrounding Structure**

- PDL Space
- Alveolar Bone
- Parosteal Osteoma
- Teeth:-
- Submandibular Pathosis



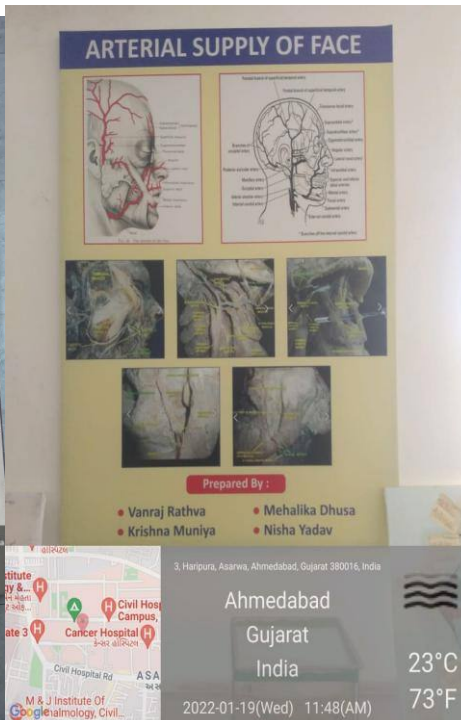
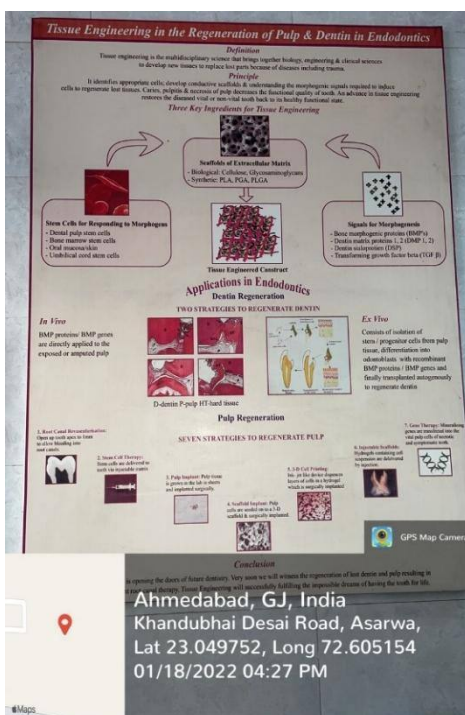
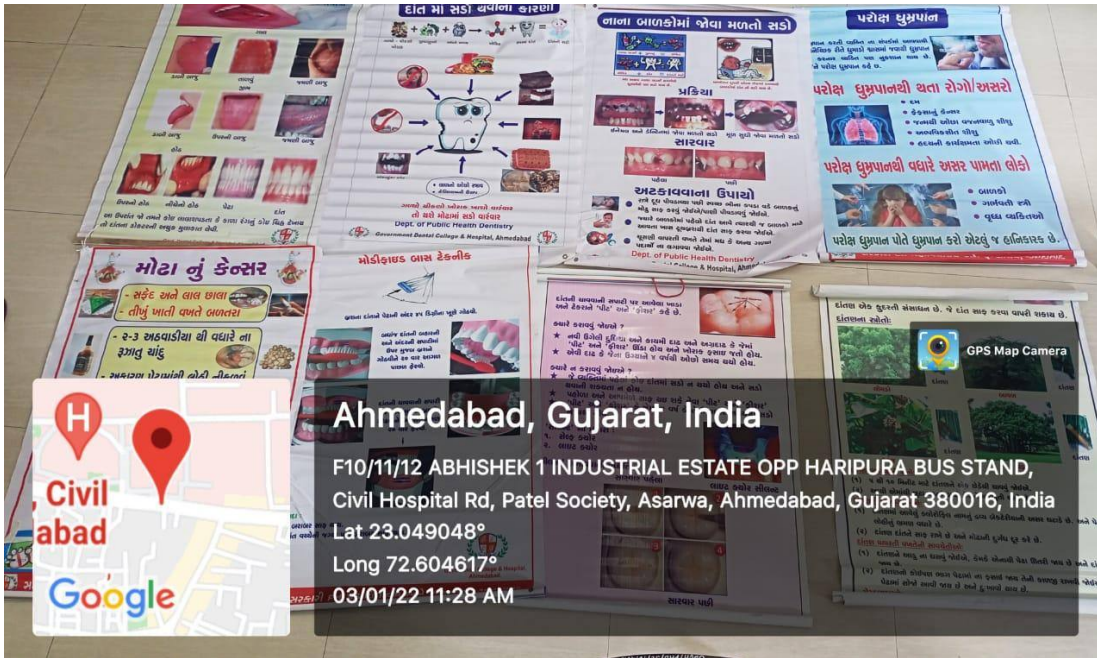
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### DISORDERS RELATED TO FACIAL NERVE

- BELL'S PALSY**  
Sudden paralysis of facial nerve at stylomastoid foramen. Results in asymmetry of mouth and inability to close eyes.
- FACIAL NERVE PARALYSIS IN NEWBORNS**  
The involved process is absent in newborns and stylomastoid foramen is superficial.
- FREY'S SYNDROME**  
Whenever a person chews there is increased sweating in the area of skin supplied by the auriculotemporal nerve. Also known as auriculotemporal syndrome.
- RAMSAY-HUNT SYNDROME**  
Infection of genicular ganglion by herpes zoster virus results in this syndrome.
- CROCODILE TEARS SYNDROME**  
Lacrimation during eating occurs due to aberrant regeneration after trauma.
- TRACHEAR-COLLINS SYNDROME**  
An inherited condition in which some bones and tissues in the face aren't developed.

### FACIAL NERVE

**RETRODUCTORIAL**  
with central nerve  
affected nerve density and moved right  
Knowledge from 2<sup>nd</sup> pharyngeal arch

**ROOTS OF NERVE**

- Motor: 7
- Sensory: 2
- Parasympathetic: 3

**COURSE**

**SOULACROCAL**

- MAXILLARY NERVE AND MANDIBULAR NERVE
- POSTERIOR AURICULAR NERVE
- SPINAL NERVE TRIGEMINAL
- BRANCH OF FACIAL NERVE
- BRANCH OF FACIAL NERVE
- MAXILLARY NERVE
- MANDIBULAR NERVE

**ARTERIAL SUPPLY**

- Maxillary Artery
- Mandibular Artery
- Submental Artery
- Sublingual Artery
- Sublingual Artery
- Sublingual Artery

**BLOOD SUPPLY FACIAL NERVE**

- Maxillary Artery
- Mandibular Artery
- Submental Artery
- Sublingual Artery
- Sublingual Artery

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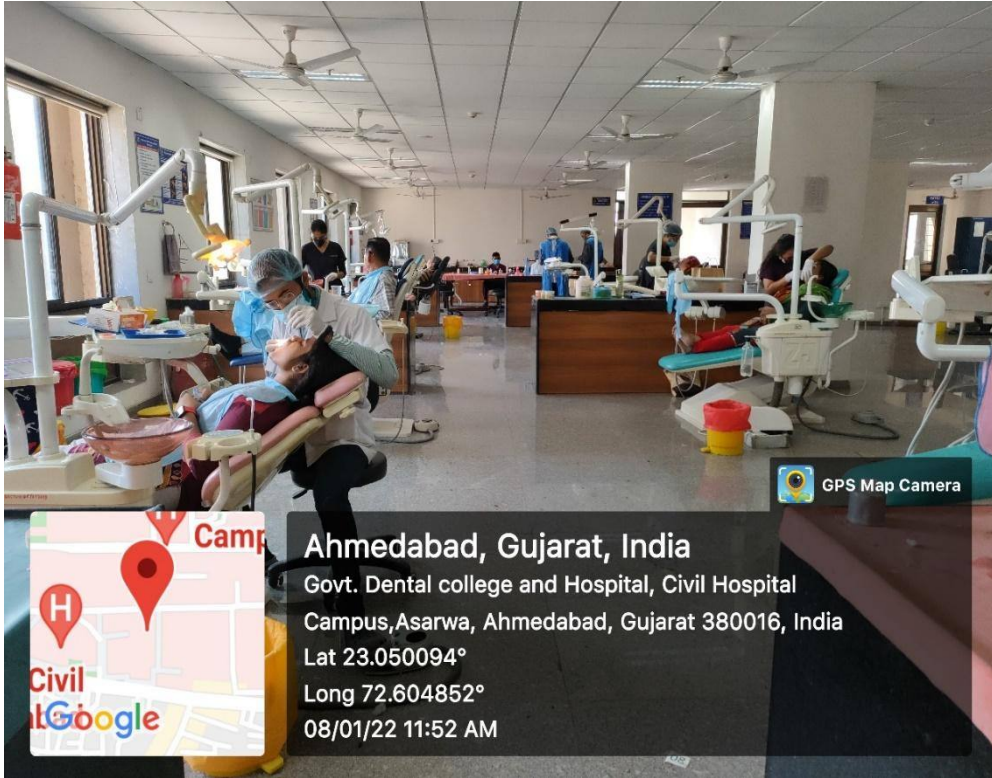
## PATIENT-CENTRIC & EVIDENCE BASED LEARNING:

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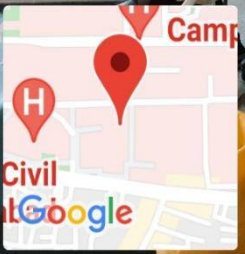
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GPS Map Camera



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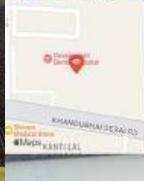
GPS Map Camera



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GPS Map Camera



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## Role Plays/Community Services



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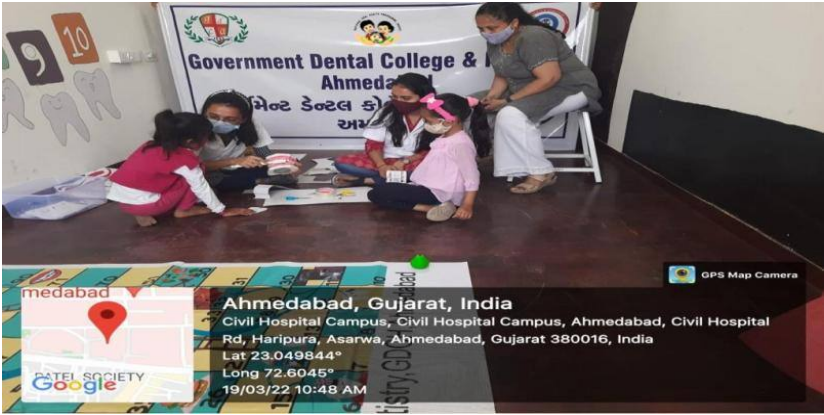


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