



GOVERNMENT DENTAL COLLEGE & HOSPITAL, MUMBAI

MAKE IN GDC

आत्मनिर्भर



Make in GDC

Atmanirbhar GDC

Dentistry is the one branch which utilizes not just instruments and equipments but also enormous amount of dental materials. Every step of dental practice has indulgence of dental materials; hence it may not be completely wrong to say we are dependent on these materials to deliver our treatment to the patients. Government Dental college and Hospital, Mumbai is a pioneering institute of dentistry in India. It caters to patients coming from all over Maharashtra. The institute also offers many courses for undergraduates, postgraduates, dental hygienist, dental mechanics, fellowship, and PhD. Availability of the dental material for all these courses can pose a challenge for an institute. During the era of 1960s many materials used in dentistry were imported as they were not fabricated in India and hence were very expensive.

GDC Mumbai is the only dental college in the country who sought the answer to this issue by starting with a research mandate managed by the department of Prosthodontics and Crown & Bridge for manufacturing the dental materials in 1963. It innovates high-quality indigenous materials and supports undergraduate, postgraduate, and doctoral students in various specialties of dentistry. The raw material is utilized to make various dental products which becomes cost effective and also provides opportunity for innovations in the dental material science.

AIM

To research, innovate and manufacture the materials required in our day to day dental practice and to encourage the students to inculcate in them the inquisitiveness to innovate, being *self reliant/atmanirbar* and thus making *atmanirbar GDC*.

OBJECTIVES



Contribution to research: The materials fabricated in this research section is routinely provided to the various departments. Any variations in the property of the material can easily be carried out by changing the proportions of the raw materials which can later be taken as research topics for both laboratory and clinical studies.





Oral Pathology

Carving wax blocks, Sodium Hypochlorite solution.

Pediatric Dentistry

ETDA gel, Etching Solution/gel, Fromocresol, CMCP, Calcium Hydroxide paste & Modelling wax.



Periodontics

Silicon rubber moulds and Modelling wax.

Oral and maxillofacial surgery

Sodium Hypochlorite solution.

List of materials Made in Atmanirbhar GDC

Sr.No	Name of the Materials
1.	Modelling wax
2.	Spacer wax
3.	Beading wax
4.	Boxing wax
5.	Alu wax/ Bite registration wax
6.	Carving wax
7.	Inlay wax
8.	RPD pattern wax
9.	Sprue wax
10.	Zinc oxide eugenol impression paste
11.	Tray material
12.	Separating medium
13.	Anti expansion solution
14.	Pressure indicating paste
15.	Investment material
16.	Tooth coloured acrylic resin
17.	Retraction cord
18.	Sodium Hypochlorite solution
19.	ETDA gel
20.	Etching Solution/gel
21.	Formocresol
22.	Calcium Hydroxide paste
23.	Cavity varnish
24.	Silicon rubber moulds
25.	Toluidine Blue Solution
26.	Camphor Mono Chloro Phenol
27.	Calcium Hydroxide paste

Applications of the material

Prosthodontics and crown & Bridge:

- The innovations began with the scarcity of certain materials for making complete denture impressions which had to be imported. These resulted in the fabrication of beading wax, boxing wax, spacer wax, tray material, separating media, Zinc oxide eugenol impression paste in this research department which was first used by the very fortunate postgraduate students of GDCH, Mumbai.
- Inlay wax along with Investment material and sprue wax made is used for fabricating crowns and fixed partial dentures.
- RPD pattern wax is used to make pattern for Cast partial dentures.
- Maxillofacial materials which were highly expensive and couldn't be purchased due to unavailability in India posed a major hurdle in 1980s. These materials were used to fabricate extraoral prosthesis such as ear, nose, finger, etc. It was for the very first time that a silicone material was exclusively fabricated for our institute. This silicone was also used for making moulds for duplication for dentulous casts, edentulous casts and also to make facial models for fabricating prosthesis and for students to practice in their preclinical work of many departments in our institute.

Conservative Dentistry and endodontics:

- ETDA gel, Fromocresol, CMCP, Calcium Hydroxide paste are used for Root canal therapy.
- Etching Solution/gel is used for restorations.
- Modelling wax is used for bite registration and also as cavity filling material in preclinicals.

Orthodontics and dentofacial Orthopedics:

- Bite registration wax is used as wafer for occluding the orthodontic models.
- Modelling wax is used to record the bite for functional appliances.
- Modelling wax is also used as relief from lip and cheek injury due to brackets of fixed orthodontic treatment.

Oral medicine & Radiology:

- Toluidine blue dye is used for staining the cellular nuclei for diagnosis of malignant tissues.
- Sodium hypochlorite is used for disinfection.

Oral pathology:

- Carving wax is used by the undergraduate and postgraduate students for their preclinical work.
- Sodium hypochlorite is used for disinfection.

Pediatric dentistry:

- ETDA gel, Fromocresol, CMCP, Calcium Hydroxide paste are used for Root canal therapy.
- Etching Solution/gel is used for restorations.
- Modelling wax is used for recording the bite of the patients and also for making the dentures for children having a few teeth or no teeth.

Periodontia:

- Modelling wax is used for bite registration and also used to depict the gingiva for scaling practice as a preclinical exercise by both undergraduate students and post graduate students.
- Silicone moulds are used for making the models for preclinical exercise by both undergraduate students and post graduate students.

Oral and maxillofacial surgery:

- Sodium hypochlorite is used for disinfection.

Problems Encountered and Resources Required:

- Need for more manpower – Manufacturing large quantities of materials require more man power The current availability of technicians and lab assistants limits the quantity of the material produced.
- Need for more advanced equipment – Newer and advanced equipment are required in the laboratory so that many more materials can be manufactured.

Services at other institutes and creating awareness:

‘Money saved is money earned’

Material	Manufacturing cost	Market cost	Amount saved	% amount saved	Saving of average 75 % in the cost of material required
Modelling wax	Rs 81/pkt	Rs 200/pkt	119	59.5	
Spacer wax upper	Rs 17/pkt	Rs 89/pkt	72	80.9	
Spacer wax lower	Rs 13/pkt	Rs 89/pkt	76	85.4	
Beading wax	Rs 41 /pkt	Rs 154 /pkt	93	73.4	
Boxing wax	Rs 33/pkt	Rs 174/pkt	143	81	
Sodium hypochlorite 5%	Rs 50/500ml	Rs 120/500ml	70	41.6	
EDTA gel	Rs 20 for 5ml syringe	Rs 295 for 5ml syringe	275	93.2	
Etching solution	Rs 20 for 5 ml	Rs 200 for 5 ml	180	90	
Separating medium	Rs 114 for 5 litres	Rs 1450 for 5 litres	1336	92.1	
Zinc oxide eugenol impression paste	Rs 184/box	Rs 450/box	266	59.1	

The dental institutes all over India should implement this policy of being Atmanirbhar by making their own dental materials that can reduce the cost of the materials and provide the avenue towards innovation.

Path Ahead:

With India paving a path of promoting Indian goods under 'Made in India' initiative, we are proud of our institute to create a history by producing our own dental materials since 1963. This initiative of 'Atmanirbhar/Made in GDC' will also nurture the young minds of our students to innovate.