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PREFACE

It has been a labour of inspiration, hard work and perseverance in bringing out the Preclinical Manual of Paediatric Therapeutic Dentistry forming the backbone and foundation of clinical paediatric dentistry.

In the second year of study, the students are required to identify instruments and equipment, understand and manipulate the various dental materials, and perform certain preclinical typodont and extracted teeth exercises.

It is very difficult to comprehend this subject for next reasons: textbooks for students of the second year of study are mostly theoretically oriented and the students try to learn this from internet resources. Also known textbooks in operative dentistry don't have endodontic exercises.

Authors create a step-wise chairside manual from which a student can learn and refer to while performing the preclinical exercises. Child's age lasts till 18 years old, therefore, this book is focused on features of manipulations in primary teeth, as well as permanent immature and mature teeth.

Introduction of Objective Structured Clinical Examination in preclinical dentistry disciplines in Ukraine fastened appearing of this manual. Therefore, preclinical exercises are represented as algorithms of manipulations.

This textbook consists of 4 chapters.

I. INSTRUMENTS FOR OPERATIVE AND RESTORATIVE DENTISTRY

1.1. Exploring instruments

Mouth Mirror



- It is used as diagnostic instrument and to improve access to instrumentation
- It has handle, shank and a mirror attached to a round metal disk at one end
- It is used for direct vision, indirect vision, retraction, and transillumination.

Explorer (dental probe)



- Shank is curved with one or more angles
 - Working tip is pointed
 - Used to examine pit and fissure caries
- Interproximal explorer is used for examination of interproximal caries and assessing marginal fit of the restoration.

Tweezer



- Tweezer has angled end with inner serrations
- It has inner guide pin which provides stability
- Used to place and remove cotton rolls and other small materials to and from the mouth.

1.2. Cutting instruments

A. Hand instruments

Chisel



- Straight chisel has straight shank and blade with bevel only on one side
- Cutting edge is perpendicular to plane of instrument
- Used with straight thrust force and push motion for cutting enamel,

smoothen and sharpen the tooth preparations.

Enamel hatchet



- To cut, clean, and smooth walls in cavity preparation
- To remove enamel not supported by dentine
- Used with push motion
- Cutting edge on same plane as handle

Gingival marginal trimmer



- It is a modified hatchet which has working ends with opposite curvatures and bevels

- Used in lateral scraping motion
- Used for planning gingival cavosurface margin, removal of

unsupported enamel, to bevel axiopulpal line angle in the II class.

Excavator



- A double-ended instrument with a spoon, claw, or disk shaped blade, cutting edge of which is directed in the same plane as that of long axis of the handle.

- Used to remove soft caries in scooping motion.

B. Rotary instruments

High-speed diamond point



- Used with high-speed air rotor handpiece for tooth preparations and removal of old restorative materials
- Has head, neck and friction lock type shank.

Slow speed diamond bur



- Used with micromotor handpiece for finishing and polishing purposes
- Has head, neck and latch-type shank.

Tungsten carbide bur for air rotor



- Designed to withstand heavy stresses and increase life, work best beyond 300,000 rpm.
- Cut metal and dentine very well but can produce microcracks in the enamel so weaken the cavosurface margins.

Stainless steel bur



- Designed for slow speed <math>< 5000\text{ rpm}</math>
- Usually a bur has eight blades with positive rake angle, so they do not have a long life.

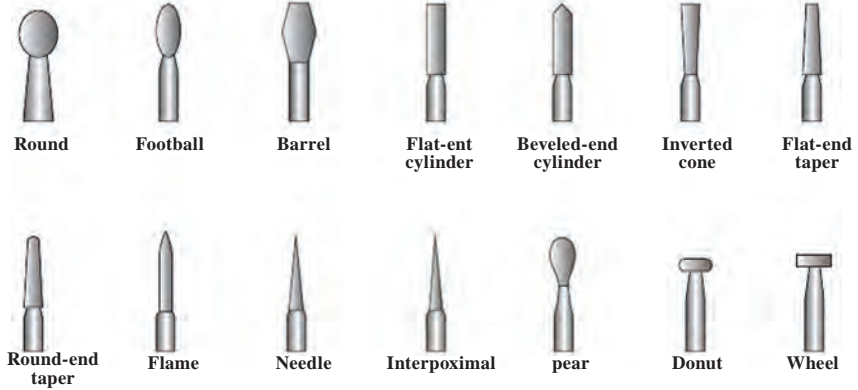
Used for cutting soft carious dentine and finishing procedures.

Slow-speed tungsten carbide burs



- Great for caries removal and keeping soft internal angles.

Indications for different burs



Round burs are used for: removal of caries, initial tooth penetration, placement of retentive grooves. Inverted-cone burs are used in cavity extensions to establish wall angulations and retention forms, to flatten the pulpal floors and for providing undercuts in tooth preparations. Tapered fissure bur is used for planing vertical axial surfaces and placement of grooves. Straight fissure bur is used for making parallel walls.

The *pear* shaped *bur* is used to create undercut for retention of filling materials.

Micromotor contra-angle handpiece



It gets power from electric micromotor, has high torque and low speed

Used for finishing and polishing procedures.

Micromotor straight handpiece



It gets power from electric micromotor, has high torque, low speed

Used for finishing and polishing with burs with straight shank.

Air rotor contra-angle handpiece



It gets speed 1,00,000-3,00,000 rpm from the compressed air, but low torque

Used for tooth preparation and removal of old restorations

Operates with friction grip burs and diamonds.

1.3. Instruments for filling

Cement spatula



For mixing of cements and pastes.

Carvers



Double-ended sharp instruments which are used to carve the tooth anatomy from a restoration and trim excess material.

Amalgam carrier



Used to deliver freshly triturated amalgam to the prepared tooth.

Flat plastic filling instrument



Used to carry and place cement or composite, to check the convenience form of tooth preparation. Can be combined with condenser.

Plastic filling plugger, condenser plugger



Used to condense restoration, they are shaped like round, triangular or parallelogram, which maybe smooth or serrated.

Composite teflon-coated instruments



For composite resin restorations, a wide range of double-ended instruments are used to transport and place resins. Working end of these instruments is coated with teflon that prevents discoloration and sticking of composite material to the instruments.

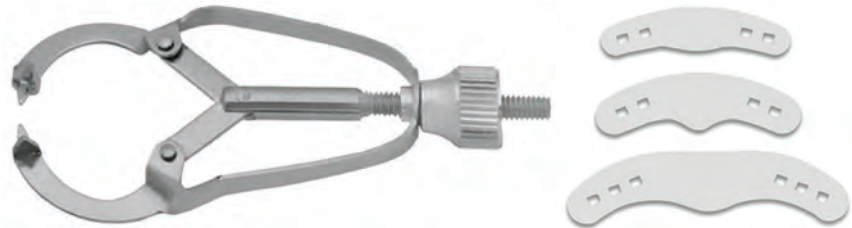
Burnisher



- A double ended-instrument which is used to smoothen and polish the restoration, for giving initial occlusal anatomy, for final condensation of amalgam, for burnishing margins of cast gold restoration, shaping matrix bands according to tooth anatomy.

1.4. Accessories

Ivory matrix retainer and matrix



Most commonly used matrix band holder for unilateral class II tooth preparations. There is a screw which is when rotate clockwise, brings ends of both claws closer to each other. Keeping the matrix band around the tooth, screw is tightened so as to fit the band snugly around the tooth. Projected margin of matrix is kept towards the gingiva on the side of tooth preparation. Used for restorations of unilateral class II tooth preparations, especially when the contact on the unprepared side is very tight.