

OSCE

for Clinical

DENTAL SCIENCES



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Pediatric Dentistry

OSCE Station 3.1

Mrs Jane brings her six-year-old daughter to your dental clinic. She is worried about her daughter's thumb sucking habit and seeks your advice.

QUESTIONS

1. Is Mrs Jane's daughter's thumb sucking habit normal for her age and why?
2. List five changes that can be observed in the orofacial structures due to prolonged thumb sucking?
3. Outline the treatment modalities for the management of thumb sucking habit in children.

OSCE Station 3.2

On clinical examination of a five-year-old child you notice that upper left primary second molar is grossly decayed. The treatment plan decided is extraction followed by fabrication of space maintainer.

QUESTIONS

1. Explain in layman terms the role of space maintainers to child's mother.
2. Enumerate two indications and two contraindications of space maintainers.
3. Name two removable and fixed space maintainers.

OSCE Station 3.3

You receive a frantic phone call from a school about an 11-year-old boy who had a fall during play and avulsed his upper front tooth with minor bruises on knees and palms. The avulsed tooth has been found and wrapped in a paper towel. The incident occurred less than five minutes ago and the time to reach your clinic would be about 45 minutes.

QUESTION

What instructions will you give on the phone regarding transporting the avulsed tooth to your clinic?

OSCE Station 3.4

Anna is a seven-year-old girl. Her mother brought her to a dental clinic with a complaint of food lodgement and decay in the upper right second primary molar.

On clinical and radiographic examination the decay is deep and in close approximation to the pulp.

QUESTIONS

1. What is the rationale for performing pulpotomy procedure in primary tooth?
2. List three medicaments used for pulpotomy procedure.
3. List two indications for pulpotomy.
4. List two contraindications for pulpotomy.

OSCE Station 3.5

Simon is a 12-year-old school boy, who reports to your dental clinic complaining of pain and mobility with upper front teeth from one day. He had a fall 1 day ago while playing football at school.

Clinical examination revealed no fracture of teeth or alveolar bone but both the maxillary central incisors were tender to percussion and exhibited grade 1 mobility with no displacement. Intraoral periapical radiograph with 11 and 21 revealed no significant findings.

QUESTIONS

1. What is your clinical diagnosis?
2. Outline the management of the given case.

OSCE Station 3.6

EXERCISE

Trial fit a stainless steel crown restoration on the prepared tooth surface of primary left mandibular second molar mounted on the mannequin.

The mesiodistal dimension of the unprepared tooth is 10 mm.

MATERIALS PROVIDED

- Stainless steel crown kit
- Crown contouring pliers
- Crown crimping pliers
- Crown scissors
- Mouth mirror
- Explorer
- Periodontal probe and boley gauge
- Large spoon excavator
- Burlew wheel
- Heatless stone

OSCE Station 3.7

You are a dental officer working for the Ministry of Health (MOH). While performing vital pulpotomy on a young, immature permanent tooth (21) the hemorrhage after pulp amputation could not be controlled with cotton pellets even after several minutes.

QUESTIONS

1. What is the most possible cause of uncontrolled bleeding in this case?
2. What should be your next step?
3. Name any two agents that can be used to control pulpal bleeding before the site is covered with MTA (Mineral Trioxide Aggregate).
4. Would you use white MTA or grey MTA in this case and give reasons for your choice?

OSCE Station 3.8

An eight-year-old boy attends your dental office with his mother complaining of pus discharge from gums. On clinical examination you notice a sinus opening with pus discharge from a previously traumatized permanent maxillary central incisor. Vitality tests are negative.

QUESTIONS

1. What is the required treatment in this case and why?
2. If the tooth had fractured with a large pulp exposure and had a fully formed root, what would be your treatment of choice?

OSCE Station 3.9

Clinical examination of a 13-year-old boy reveals pearly white and opaque flecks on the surfaces of the teeth.

Clinical diagnosis is that of mild dental fluorosis.

QUESTION

Educate the patient and his accompanying guardian about dental fluorosis and how you are going to treat it.

OSCE Station 3.10

As a junior dental officer attached to a pediatric specialty clinic, you are asked to explain to the parents about the benefits and the procedure of pit and fissure sealants.

Answers

OSCE STATION 3.1

1. No. Thumb sucking habit beyond the age of 3 years is abnormal and clinically significant. It is necessary to correct the habit at this age.
2. Changes that can be observed in the orofacial structures due to prolonged thumb sucking are as follows:
 - a. Proclination of maxillary anterior teeth.
 - b. Lingual collapse of mandibular anterior teeth.
 - c. Increased overjet.
 - d. Anterior open bite.
 - e. Hypotonic upper lip and hyperactive lower lip.
 - f. Constriction of maxillary arch.
 - g. Posterior cross bite.
 - h. Simple tongue thrust may be seen which is an adaptive response to open bite.
3. Management of thumb sucking habit:
 - a. **Child counseling:**
 - Make the child understand that the thumb sucking habit is harmful and it needs to be stopped.
 - Show photographs, videos of other children before and after treatment.
 - **Dunlop beta hypothesis:** Dunlop put forward a theory called beta hypothesis that states that the best way to break a **thumb sucking** habit is by its conscious, purposeful repetition. Dunlop suggested that the child should be asked to sit in front of a large mirror and asked to thumb suck observing self as he/she indulges in the **thumb sucking** habit. This procedure is very effective if the child is asked to do the same at a time when he/she is involved in an enjoyable activity.
 - b. **Parent counseling:**
 - Most often thumb sucking habit is seen in children who feel insecure or have some kind of anxiety. So parents should focus on reducing the anxiety by giving the child lots of love and attention.
 - Praise and reward the child when not sucking the thumb rather than shaming or punishing them when child resorts to thumb sucking.
 - c. **Habit reminders:** Remind the child about the habit whenever the child puts thumb or fingers inside the mouth. This treatment modality can be used in children who understand the harmful effects of thumb sucking and are ready to quit the habit but are not able to do so as the habit has entered subconscious level.
 - Application of distasteful or foul smelling agents over thumb or fingers, e.g. Cayenne pepper, Asafetida.
 - Thumb guard made of gauze bandage or acrylic can be applied to child's thumb. It will act as a habit reminder and the child does not derive any pleasure by sucking the thumb guard.
 - Use of removable appliances like palatal cribs, hay rakes and palatal arch.

- Use of fixed appliance like upper lingual tongue screen. If the child shows appreciable reduction in thumb sucking habit within three months the appliance can be discontinued.

OSCE STATION 3.2

1. Greet and introduce yourself politely to the child and mother.

Explain to the child's mother about space maintainer in the following manner:

- Space maintainer is an appliance placed in your child's mouth when there is a premature loss of baby teeth. It is very vital for your child's dental health.
- Baby teeth are not only useful in chewing but also act as guide for eruption of permanent tooth that replace it. If a baby tooth is lost early, the permanent tooth will lose its guide and can erupt in a wrong position. Neighboring teeth could shift and begin to fill the vacant space created. This can result in crooked or crowded teeth and difficulties in chewing or speaking.
- To prevent this, we can insert a space maintainer to hold the space left by the lost tooth until the permanent tooth emerges.
- The space maintainer might be a band or a temporary crown attached to one side of the vacant space. It can be removable or fixed type.
- Initially the child may feel unusual but after a few days will get used to it.
- We will take radiographs to follow the progress of erupting permanent successor. Later when permanent tooth emerges the appliance is removed.
- If you have any questions, do not hesitate to ask.

2. Indications

- a. Premature loss of primary teeth and when signs of closure are seen.
- b. To prevent supra-eruption of a tooth from the opposing arch.
- c. To aid in chewing and speech.

Contraindications

- a. If the radiograph reveals the following:
 - Space required by the succedaneous permanent tooth is less than the space left by the prematurely lost primary tooth.
 - One third of root of permanent successor is already calcified.
 - Permanent successor is congenitally absent.
- b. Uncooperative child.

3. Removable space maintainers:

- Removable partial denture
- Removable distal shoe space maintainer

Fixed space maintainers:

- Band and loop
- Crown and loop
- Nance palatal holding arch space maintainer
- Lingual arch space maintainer
- Fiber reinforced composite
- Distal shoe space maintainer

OSCE STATION 3.3

1. Instructions to the school teacher over the phone:
 - Reassure the school teacher and ask her not to panic.
 - Confirm the child's general health and ask whether the tooth is complete or broken into pieces.
 - **Clean off visible contamination:** Advise her to hold the crown portion of the tooth and rinse it gently under cold running water. Under no circumstances should the root surface be scrubbed or scraped. Debris that does not rinse off may be carefully dabbed off with a clean, sterile cotton. Soap or cleansing agent should not be used.
 - Ask the teacher to insert the tooth back into the socket with the smooth convex surface facing outwardly and ask the child to gently bite on gauze or handkerchief for stability.
 - If the tooth cannot be reinserted, then it should be kept in a suitable storage medium like milk or placed in the child's mouth between the cheek and gums or under the tongue. The child must be instructed to be careful not to swallow the tooth. Instead, he can spit out into a container and place the tooth in his own saliva. The tooth must not be allowed to dry.
 - The child should be brought to the dental clinic as soon as possible.

Note:

Storage media for avulsed permanent tooth – Saliva, Milk, Hank's balanced salt solution [HBSS], blood, contact lens solution, cell culture medium.

Strongly encourage all parents and coaches to educate student athletes about the benefits of wearing mouth guards during contact sports like basketball, football, cricket, hockey, boxing, and wrestling. A mouth guard can prevent loss of tooth structure, loss of teeth, and concussion of oral soft tissue.

OSCE STATION 3.4

1. Rationale of pulpotomy procedure is to maintain the vitality of radicular pulp tissue by amputation of coronal pulp tissue followed by placement of a suitable medicament.
2. Medicaments used for pulpotomy procedure:
 - a. Formocresol
 - b. Ferric sulfate
 - c. Glutaraldehyde
 - d. Mineral Trioxide Aggregate [MTA]
 - e. Enamel matrix derivatives
3. Indications:
 - a. Carious or mechanical exposure of vital coronal pulp tissue.
 - b. No or minimal history of pain, no evidence of mobility or periradicular pathology.
 - c. Bleeding of pulp stumps can be easily controlled.
 - d. In conditions like hemophilia where extraction is contraindicated.
4. Contraindications:
 - a. Clinical or radiographic evidence of
 - Fistula or abscess

- Furcal lesions
- Dystrophic calcifications (pulp stones)
- Internal resorption
- Mobility
- Primary tooth close to natural exfoliation

Pulpotomy is contraindicated in patients with congenital heart disease or history of heart surgery due to the risk of precipitating bacterial endocarditis

Note:

- Formocresol is not a preferred medicament these days as there is growing concern among the dental practitioners regarding its toxicity, both locally and systemically.
- Ferric sulfate is only a hemostatic agent but is not bactericidal. It is used as medicament only in teeth with reversible pulpitis.
- Glutaraldehyde has been suggested as an alternative to formocresol because of its superior fixative properties, low antigenicity and low toxicity.
- Mineral Trioxide Aggregate [MTA] is a preferred material for pulpotomy procedure. It has demonstrated superior sealing ability, biocompatibility and promotes regeneration of original tissue when in contact with dental pulp.

OSCE STATION 3.5

1. Subluxation with 11 and 21.
2. Management:
 - a. Provide relief from occlusion.
 - b. Splinting is generally not indicated in subluxation cases. But splinting may be considered if the affected teeth are severely tender to percussion. Splinting can be removed after 2 weeks.
 - c. Patient is advised to take soft food for the next 2 weeks.
 - d. Prescribe antibacterial mouth rinse like 0.12% Chlorhexidine twice daily.
 - e. Prescribe analgesics (NSAIDs) for one to two days for pain relief. Antibiotics are seldom prescribed for subluxation cases.
 - f. Review patient periodically at intervals of two weeks, one month, three months, six months and then yearly until four to five years. These recall visits should include clinical examination to check color changes, mobility, pulpal sensibility and radiographic assessment of pulp chamber size, periapical status.
 - g. Long-term prognosis of subluxated tooth is favorable with 95% chances of survival without pulpal necrosis. If pulpal necrosis takes place, root canal treatment has to be performed.

OSCE STATION 3.6

Steps for trial fitting the stainless steel crown:

1. Select a stainless steel crown from the given kit which matches the 10 mm mesiodistal measurement given. You can also obtain crown dimensions by measuring the corresponding tooth from the contralateral arch using a periodontal probe or boley gauge.

2. Take the selected stainless steel crown and seat the lingual surface first, with firm finger pressure and seat the crown over the prepared tooth. The crown should roll over the height of contour with a snap, indicating the retention we are looking for.
3. Check crown height in occlusion. Crown margins should extend 1.0 mm below gingival crest. If crown is too long, score a line on the crown at the level of free margin of gingival tissue using a sharp spoon excavator on both buccal and lingual aspects. Remove the crown and determine how much additional metal needs to be trimmed. Trim the gingival extent of crown using crown scissors or a heatless stone. Proximal reduction is a line that connects the buccal line and lingual line and rises up in the proximal space.
4. Reseat the crown on the preparation and check for occlusion. The crown should be in occlusion and gingival length should be 1 mm below gingiva. If required further correction may be done.
5. Using an explorer, check the marginal fit of the crown. If you can lift the crown easily with explorer then marginal fit is not tight enough. Remove the crown from the preparation and using a contouring pliers with ball and socket design contour the cervical third of buccal and lingual surfaces (if loosely fitting, start at the middle third) to help adapt margins of the crown. Place the rounded end of contouring pliers inside and in an overlapping fashion; go around the margins of the crown, squeezing the pliers. After contouring the crown using crimping pliers, crimp the margin all the way round in overlapping crimps.
6. Reseat the crown on the prepared tooth in a lingual to buccal roll with firm finger pressure. You should be able to hear a snap as the crown rolls over the height of contour. Trimming, contouring and crimping should be done until the crown snugly fits the preparation and extends under the free margin of gingival tissue.

OSCE STATION 3.7

1. Failure to amputate the pulp until the depth of healthy pulpal tissue is reached results in presence of inflamed pulp which can bleed profusely.
2. Amputate the pulp to a more apical extent.
3. Sodium hypochlorite or chlorhexidine.
4. White, rather than grey, MTA is recommended in anterior teeth to reduce the risk of discoloration.

OSCE STATION 3.8

1. Apexification: This procedure should induce root end closure (apexification) at the apices of immature roots or result in an apical barrier as confirmed by clinical and radiographic evaluation.
2. Root canal treatment.

OSCE STATION 3.9

1. Greet the patient and his mother and introduce yourself politely.
2. Consumption of excessive fluoride during the development of teeth will lead to a condition called fluorosis. This condition causes white or brown

discoloration or spots on the tooth surface. The effects can range from minor color changes to surface irregularities of the teeth.

3. Fluorosis does not develop after teeth have erupted into the mouth. Often, it is so mild that only a dental professional can detect it.
4. Most cases of fluorosis result from young children taking fluoride supplements or swallowing fluoride toothpaste when the water they drink is already fluoridated.
5. Your child's teeth and gums will be examined and radiographs will be taken if necessary to make sure the teeth have no other defects or cavities. Other conditions which affect bones and skull may cause lesions which look like fluorosis.
6. Remember that fluorosis affects only the appearance of teeth and it does not result in cavities. As a result, most of the treatment for fluorosis consists of masking the stain. Many cases of fluorosis are minor which may not need treatment unless patient has cosmetic concerns. Sometimes fluorosis occurs only on the back teeth, where it can't be seen. More severe cases involving the front teeth can be treated by removing the surface-stained areas through tooth whitening and veneers or other procedures to cover the discoloration.
7. If you have any questions do not hesitate to ask.

OSCE STATION 3.10

As a junior dental officer attached to a pediatric specialty clinic, you are asked to explain to the parents about the benefits and the procedure of pit and fissure sealants.

- Greet and introduce yourself politely to the parents and the child.
- Develop rapport with child.
- Explain to the parents about pit and fissure sealants in the following manner: The chewing surface of the back teeth is not smooth and flat. They have elevations and depressions called pits and fissures. These pits and fissures are sometimes very narrow making it difficult for tooth brush bristles and other cleaning aids to reach. This may lead to accumulation of food, attract germs causing tooth decay.
- One method of preventing cavities from developing in the pits and fissures is to seal them off with a special varnish called a pit and fissure sealant.
- Pit and fissure sealants are thin resin coating that are applied to deep grooves on the chewing surface of back teeth to protect them from tooth decay.
- Permanent molars are the most likely to benefit from sealants. The first molars usually come into the mouth when a child is about 6 years old. Second molars appear at about age 12. It is best if the sealant is applied soon after the teeth have erupted, before they have a chance to decay.
- Applying sealants does not require drilling or removing tooth structure. The process is short and easy. After the tooth is cleaned, a special gel is placed on the chewing surface for a few seconds. The tooth is then washed off and dried. Then, the sealant is painted on the tooth. Then a light is shined onto the tooth to help harden the sealant. It takes about a minute for the sealant to form a protective shield.

- Sealants can only be seen up close. Sealants can be clear, white, or slightly tinted, and usually are not seen when a child talks or smiles.
- As with anything new that is placed in the mouth, a child may feel the sealant with the tongue. Sealants, however, are very thin and only fill the pits and grooves of molar teeth.
- A sealant can last for as long as 5 to 10 years. It should be checked at each regular dental appointment and can be reapplied if they are no longer in place.
- If you have any questions do not hesitate to ask.

OSCE *for* Clinical DENTAL SCIENCES

This book will help dental students prepare for OSCEs at various levels, by providing them a wide variety of OSCE examples with answers from experts who have training and experience from different parts of the world. We believe this is the strength of our book as it brings together expert opinion, different styles and experiences in OSCE design, which is not restricted to any particular country. Our book will help the student prepare for competitive exams and contribute towards integrated learning and assessment in Clinical Dentistry. It is, however, neither a textbook nor a guide to teach clinical skills, but will help build on the sound knowledge of the relevant topics. We have followed a subject-wise layout of the OSCEs in order to help the student categorize the learning topics for ease in referring standard textbooks. The cases are designed to test skills such as diagnosis, rationale for treatment, communication skills, problem-solving and critical thinking skills. The book also aims at giving constructive ideas to academicians, who look forward to innovate, redesign, and implement OSCEs as a system of assessment.

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