Dental

DANB-MDG

DANB's Maryland General Dental Assisting (MDG)

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Question: 1

A fifteen year old boy present for emergency services after being elbowed in the face during a basketball game. As a result of the blow, his maxillary right central incisor has be broken, nearly exposing the pulp. Nearly a third of the tooth is gone involving the distal, incisal, lingual and facial surfaces.
X-rays reveal that the root has not been damaged and clinical evaluation reveals that the tooth is stable and has not been displaced.
Because the pulp was nearly exposed, the dentist would place what kind of base under the restoration?

A. copal varnish to seal the dentinal tubules
B. calcium hydroxide to stimulate the formation of secondary dentin
C. zinc oxide eugenol to sooth the pulp
D. no base is needed

Answer: B

Explanation:
In the described case, where a fifteen-year-old boy has sustained a dental injury during a basketball game leading to his maxillary right central incisor being broken and nearly exposing the pulp, the treatment choice for the base under the restoration is crucial for the long-term vitality of the tooth. The injury involves loss of enamel and dentin but does not affect the root or the position of the tooth, according to the X-ray findings and clinical evaluation.
The primary concern in such dental trauma cases is the protection of the pulp, which is vital to the tooth's health and longevity. If the pulp is exposed or nearly exposed, steps must be taken to prevent infection and further complications like pulpitis or pulp necrosis. In scenarios where the pulp is nearly exposed, as in this case, the dentist would typically place a protective base under the restoration to shield the pulp and promote healing.
Among the various materials available for this purpose, calcium hydroxide is a preferred choice. Calcium hydroxide is renowned for its properties that favor the formation of secondary dentin. Secondary dentin is a dentin layer that forms as a biological response to stimuli, such as trauma or caries, providing a natural barrier between the affected area and the pulp. This barrier helps protect the pulp from further damage, bacterial invasion, and potential deterioration.
Calcium hydroxide serves dual roles when used as a base under restorations in such trauma cases. First, it protects the nearly exposed pulp by creating a barrier against microbial invasion and further chemical or mechanical insults. Secondly, it promotes the formation of secondary dentin, which enhances the protective barrier over time, thereby increasing the tooth's resilience to future injuries or infections.
Other materials, such as copal varnish, zinc oxide eugenol, or no base at all, might be considered depending on the specifics of the case, such as the extent of damage, the presence of symptoms, or specific patient allergies or sensitivities. However, given the nearly exposed pulp in this scenario, calcium hydroxide is most appropriate for its therapeutic properties in stimulating secondary dentin formation and ensuring long-term pulp vitality. Therefore, the dentist would likely choose calcium hydroxide as the base under the restoration for this dental trauma case.

Question: 2

A pediatric patient presents for a pulpotomy procedure, which includes the seating of a stainless steel crown. What type of equipment is MOST likely included as part of the basic set up?

A. A digital imaging sensor
B. A high-speed hand piece
C. An electronic transport system
D. A mechanical infiltrative scaler

Answer: B

Explanation:
When a pediatric patient undergoes a pulpotomy procedure, which involves the removal of a portion of the diseased dental pulp with an aim to maintain the vitality of the remaining pulp in the tooth, several specific types of dental equipment are essential to successfully carry out the procedure. The basic setup for such a treatment would typically include a variety of specialized tools and materials.
Firstly, administration of a local anesthetic is crucial to numb the area and ensure the comfort of the patient during the procedure. This is fundamental in any procedure that might cause discomfort or pain.
Among the equipment essential for a pulpotomy, a high-speed handpiece is commonly utilized. This tool is vital for efficiently removing decayed portions of the tooth and accessing the pulp chamber. High-speed handpieces are designed to work with various burs (drill bits), which come in different shapes and sizes appropriate for different types of dental work, including cutting through hard tooth enamel and dentin.
Another indispensable item in the setup is the dental dam. This small, flexible sheet is used to isolate the tooth being operated on. By doing so, it not only prevents contamination of the tooth with saliva or bacteria from the mouth but also improves visibility and access while keeping the work area clean and dry.
An additional critical component of the setup is a high-volume oral evacuator tip, which is used to suction away saliva, blood, and debris from the mouth during the procedure. This tool is essential for maintaining a clear view of the work area and for preventing the ingestion or inhalation of dental materials and biological fluids.
Lastly, while not mentioned in the question, other common items that might be included in the setup for a pulpotomy and placement of a stainless steel crown include various hand instruments like excavators and carvers, materials for temporary or permanent filling, and the stainless steel crown itself.
In summary, the basic setup for a pediatric pulpotomy procedure would prominently feature a high-speed handpiece, along with a local anesthetic, a dental dam, a high-volume oral evacuator, and various other tools and materials necessary for the specific dental treatment being performed. These elements together help ensure the procedure is conducted efficiently, safely, and with minimal discomfort to the patient.

Question: 3

Which of the following is a landmark for a tooth that has a pointed mound on the tooth's crown?

A. Phonetics
B. Apical foramen
C. Developmental groove
D. Cusp

Answer: D

Explanation:
The anatomical structures of the tooth can serve as landmarks in order to identify a specific part of the tooth. For instance, the cusp is a pointed mound or a mound that has a rounded area on the tooth that is located on the tooth's crown. A cusp has four ridges and an apex. A cusp is typically found on the canines and the posterior teeth.
The answer choices, developmental groove and apical foramen, are also tooth landmarks but they do not have a pointed mound. Instead, the apical foramen is an opening located at the end of the tooth. The apical foramen has nerve endings and blood vessels that enters this opening. The developmental groove is created when lobes are joined as the tooth's crown develops.
Additional tooth landmarks are: apex, bifurcated, buccal groove, cingulum, cusp of Carabelli, fissure, fossa, furcation, lobes, mamelons, marginal ridges, oblique ridge, pit, ridge, supplemental groove, transverse ridge and triangular ridge.
Phonetics is not a tooth landmark. Instead, phonetics is a term that represents the execution of sound.

Question: 4

Sealants are contraindicated in patients who are allergic to:

A. Resin.
B. Alginate.
C. Polyethers.
D. Glass ionomer.

Answer: A

Explanation:
Dental sealants are a preventive treatment used to protect teeth from cavities by sealing the grooves and depressions on the surfaces of teeth, particularly the molars and premolars. These sealants are typically made from materials like resin-based composites.
It is crucial to understand the composition of dental sealants because some patients may have allergies to specific components used in these sealants. The primary material of concern is resin. Resins are used in many dental sealants due to their effective sealing properties and durability. However, some individuals may be allergic to components in the resin, such as bisphenol-A-glycidyl methacrylate (Bis-GMA) or other methacrylate compounds.
For patients who are allergic to resin, using a sealant that contains this material is contraindicated. This means that these individuals should avoid resin-based sealants to prevent allergic reactions, which could include symptoms ranging from mild irritation to more severe allergic responses.
In search of alternatives for such patients, materials like glass ionomer have been explored for use as dental sealants. Glass ionomer cements are known for their chemical bond to dental tissue and release

of fluoride, which can help in preventing decay. However, despite these benefits, glass ionomer has not proven as effective as resin-based materials in sealing properties and longevity when used as a sealant. Other materials mentioned such as alginate and polyethers are generally not used as sealants. Alginate is primarily utilized for dental impressions due to its ability to capture fine details, whereas polyethers, also used in impression materials, are not suitable for sealants.
Therefore, when considering dental sealants, it is critical for dental professionals to inquire about any allergies to resin in patients and consider alternative materials or treatments if necessary. However, finding an equally effective substitute as resin-based sealants remains a challenge in such cases.

Question: 5

A complex cavity refers to:

A. A cavity located on more than two surfaces
B. A cavity located on one surface of a tooth
C. A cavity located on the side of a tooth's surface
D. A cavity located on the inner layer of a tooth's surface

Answer: A

Explanation:
A complex cavity, in dental terms, refers to a type of tooth decay that affects more than two surfaces of a tooth. To understand this better, it's important to first grasp the basic anatomy of a tooth and the classification of cavities based on their location.
Each tooth has five primary surfaces: the occlusal (top surface), mesial (the surface towards the front of the mouth), distal (the surface towards the back of the mouth), buccal (the cheek side), and lingual (the tongue side). Cavities, or caries, are areas of tooth decay caused by bacteria in the mouth that produce acids from sugar. The more surfaces a cavity involves, the more complex the treatment typically is.
In dentistry, cavities are classified not only by their severity but also by their location on the tooth. A simple cavity might affect only one surface, such as the occlusal. A complex cavity, on the other hand, extends to at least three different surfaces. For example, a cavity might start on the occlusal surface and spread to both the mesial and distal surfaces, making it a complex cavity.
The complexity of a cavity impacts the approach to treatment. Simple cavities might be addressed with a straightforward filling, but complex cavities could require more extensive procedures, such as a crown, because of the larger amount of tooth structure involved. The dentist must remove all decayed material and prepare the tooth for restoration, ensuring that the final restoration can withstand the forces of chewing and effectively seal the tooth from further decay.
Understanding the classification of cavities, including what makes a cavity "complex," is crucial for both dental professionals and patients. It helps in diagnosing the extent of decay, planning the appropriate treatment, and educating patients about the importance of oral hygiene and regular dental check-ups to prevent complex cavities and preserve oral health.

Question: 6

Which of the following describes the action of the coupling agent in a composite resin compound?

A. coats the filler particles
B. etches the enamel surface
C. creates a chemical bond
D. provides radiopacity

Answer: A

Explanation:
The coupling agent in a composite resin compound primarily serves as a mediator that enhances the bond between the filler particles and the resin matrix. The primary role of the coupling agent is to coat the filler particles. This coating helps to improve the mechanical properties of the composite by facilitating a stronger bond between the inorganic filler particles and the organic resin matrix.
Typically, the coupling agent used in dental composites is an organosilane compound, such as silane. Silane acts on the surface of the filler particles by forming a layer that can chemically bond with both the filler and the resin. This dual affinity is crucial because it bridges the gap between the two different materials, promoting adhesion and reducing the likelihood of component separation or failure under stress.
The use of a coupling agent does not involve etching the enamel surface; rather, etching is a separate process in restorative dentistry primarily used to prepare the tooth surface for bonding with the resin material. Additionally, the coupling agent does not inherently provide radiopacity to the composite. Radiopacity is usually achieved by incorporating specific types of filler particles that are visible under X-ray imaging.
In summary, the action of the coupling agent in a composite resin is to coat the filler particles with an organosilane compound that creates a chemical bond between the filler particles and the resin matrix. This ensures a strong, durable bond within the composite, leading to improved mechanical properties and longevity of the dental restoration.

Question: 7

A tooth is prepared and an impression is required. A gingival retraction cord is placed during tooth preparation. Which of the following steps happens before the impression is taken?

A. The implant is inserted
B. The substrate is mixed
C. The cementum is restored
D. The retraction cord is removed

Answer: D

Explanation:
When preparing a tooth for a cast restoration such as an inlay, onlay, crown, or bridge, several critical steps must be followed to ensure the accuracy and success of the final restoration. One of these steps involves the use of a gingival retraction cord. This cord is temporarily placed into the gingival sulcus, the natural space between the tooth and the surrounding gum tissue, to gently push the gum away from the tooth. This displacement allows better access and visibility for both tooth preparation and impression

taking. The cord also helps control bleeding and provides a clearer boundary for the impression material.
The sequence of steps leading up to the taking of the dental impression is crucial for achieving a precise mold of the tooth's structure. After the tooth is shaped and finished by the dentist, the next step before taking the impression involves the removal of the gingival retraction cord. This is necessary because the impression material needs to record the exact margin where the tooth meets the gum without any obstruction. Leaving the cord in place during impression taking could lead to inaccuracies in the mold, which in turn could affect the fit and function of the final restoration.
Therefore, before the dentist or dental technician proceeds with filling the impression tray with the selected impression material (like silicone, polyether, or another suitable compound), the retraction cord must be carefully removed. This ensures that the impression will accurately capture the prepared margins and the detailed anatomy of the tooth and surrounding area. If the cord were left in place, it could distort the margins in the impression, leading to a poorly fitting restoration that might compromise the health of the tooth and surrounding tissues or necessitate costly adjustments.
To summarize, the correct sequence in the preparation of a tooth for a cast restoration involves first placing the retraction cord to displace the gingival tissue and ensure clear visibility and access. Once the tooth preparation is complete, the retraction cord is removed right before taking the impression. This step ensures that the impression accurately captures the necessary details for creating a well-fitting and functional dental restoration. Hence, the removal of the retraction cord is a critical pre-impression step that precedes other actions such as mixing impression material or restoring other parts of the tooth structure.

Question: 8

Which of the following is a type of periodontal disease that is reversible?

A. Acute gingivitis
B. Postexposure planktonic
C. Glycocalyx
D. Transient flora

Answer: A

Explanation:
Acute gingivitis is the correct answer to the question of which type of periodontal disease is reversible. Acute gingivitis, also known as simple gingivitis, is a common and mild form of gum disease (periodontal disease) that causes irritation, redness, and swelling (inflammation) of your gingiva, the part of your gum around the base of your teeth. It's important to take gingivitis seriously and treat it promptly because it can lead to much more severe gum disease called periodontitis and tooth loss.
The primary cause of gingivitis is poor oral hygiene that encourages plaque to form on teeth, causing inflammation of the surrounding gum tissues. Here's how it happens: plaque is a sticky, invisible film composed mainly of bacteria that forms on your teeth when starches and sugars in food interact with bacteria normally found in your mouth. Plaque requires daily removal because it re-forms quickly.
When plaque is not removed by daily brushing and flossing, it produces toxins (poisons) that can irritate the gum tissue, causing gingivitis. At this stage, the gums might become red, swollen, and can bleed easily. Additionally, slight plaque might also harden into tartar (calculus) at the base of your teeth,

further irritating your gums. Tartar makes plaque more difficult to remove, create a protective shield for bacteria and cause more irritation along the gumline.
However, the good news is that this damage is reversible. Acute gingivitis can usually be treated with good oral hygiene practices, including thorough tooth brushing and flossing, and regular professional cleaning. This will help to prevent the plaque from building up and eliminate the existing plaque and reduce inflammation. If good oral hygiene is maintained, the symptoms of gingivitis usually clear up within a few days or weeks.
In contrast, options like "Postexposure planktonic," "Glycocalyx," and "Transient flora" do not describe types of periodontal disease. Postexposure planktonic and Glycocalyx relate to microbial structures and behaviors, while transient flora refers to the temporary bacteria present on the skin or other body surfaces. None of these terms are relevant to reversible types of periodontal disease like acute gingivitis.

Question: 9

All neurons include a:

A. Nucleus
B. Tubule
C. Single unit fiber
D. Visceral muscle

Answer: A

Explanation:
Nucleus The nucleus is a fundamental component of all neurons. Neurons, the basic cells of the nervous system, are specialized for the fast transmission and processing of information throughout the body. Each neuron comprises a cell body (soma), which is the central part of the neuron containing the nucleus and most cellular organelles. The nucleus serves as the control center of the neuron, housing the cell's DNA and being responsible for maintaining the cell's integrity and regulating gene expression necessary for the cell's functions and survival.
Tubule While tubules are important components within many cell types, including neurons, for processes like transport and structural integrity, they are not as universally essential as the nucleus in the context of neuronal identity. Neurons characteristically must have a nucleus to function and survive, whereas tubules, part of the cell's cytoskeleton and involved in intracellular transport, do not define the cell’s fundamental structure or function in the same critical way the nucleus does.
Single unit fiber The term "single unit fiber" commonly relates to muscle cells rather than neurons. Neurons can connect to muscle fibers but they themselves are not fibers. They do have axons, which are long, thin projections that transmit electrical impulses to other cells, including muscle fibers. However, the presence of a nucleus within the neuron is mandatory for its basic functions, including the synthesis of proteins and other molecules essential for neuron health and function, unlike the specific arrangement of fibers.
Visceral muscle Visceral muscle, or smooth muscle, is found in various internal organs and is controlled involuntarily. Unlike neurons, visceral muscle cells have a different primary function, mainly involving the contraction and relaxation to facilitate bodily functions such as digestion and blood flow. Although both visceral muscles and neurons contain nuclei, the inclusion of a nucleus in neurons is particularly critical for their neuro-specific functions, such as the processing and sending of neurotransmitters, which are not tasks performed by visceral muscle cells.

In conclusion, while other components like tubules or specific types of fibers play roles in the structure and function of various cell types, the nucleus remains the only component universally included and essential in all neurons. It is central to the neuron's operational and genetic activities, which distinguishes it from other cellular structures that might be absent or vary significantly in function or presence across different cell types or even different types of neurons.

Question: 10

The tongue has mucous membrane, small projections and:

A. Several muscles
B. Tympanic oral lining
C. Transparent enzymes
D. Enlongated posterior dentition

Answer: A

Explanation:
The tongue, an essential component of the oral cavity, is primarily made up of several muscles. These muscles are not only responsible for various movements that facilitate speech and food manipulation but also contribute to the structural integrity and shape of the tongue. The correct answer to the question about what else, besides a mucous membrane and small projections, the tongue has, is "several muscles." This highlights the muscular composition of the tongue, which is crucial for its functions.
In addition to several muscles, the tongue has a mucous membrane that covers its surface. This membrane is thick and moist, providing a protective layer that helps in the processes of tasting, swallowing, and speaking. It also serves as a barrier against pathogens and mechanical injuries. The mucous membrane's health is vital for the overall well-being of the oral cavity.
Furthermore, the tongue features small projections known as papillae. These are located on the top surface of the tongue and vary in shape and size. Papillae are significant because they house taste buds and sensory organs crucial for the sensations of taste and touch. The nerves within the papillae transmit taste signals to the brain, enabling the perception of different flavors.
The color and appearance of the papillae and the mucous membrane can also indicate health status. A healthy tongue typically has a pink to white color and a smooth texture. Any deviation from this—such as discoloration, swelling, or a coating—can signal health issues that may need medical attention.
Each of the other options provided in the question—tympanic oral lining, transparent enzymes, and elongated posterior dentition—does not correctly describe the components of the tongue. The tongue does not have a tympanic element as it is not involved in hearing. Transparent enzymes, while present in saliva, are not a structural component of the tongue itself. Lastly, elongated posterior dentition relates to teeth, not the tongue. Thus, "several muscles" is the correct and relevant answer to the question about the tongue's composition alongside a mucous membrane and small projections.

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