Dental

DANB-RF

DANB's Restorative Functions (RF)

Latest Version: 6.0

Question: 1

Which of the following types of cements can be utilized for liners and bases?

A. Type I
B. Type II
C. Type III
D. Type IV

Answer: C

Explanation:
In dentistry, cements are critical materials used for various purposes such as luting (cementing two surfaces together), restorations, and as liners or bases in cavity preparations. Understanding the different types of dental cements and their specific applications is essential for effective clinical practice.
Type I cements are primarily used for luting. Luting agents are specialized cements used to adhere indirect restorations such as crowns, bridges, inlays, and onlays to tooth structures or to dental implants. These cements fill the microscopic gaps between the prosthesis and the tooth, providing both mechanical strength and sealing to prevent bacterial invasion.
Type II cements are designed for restorative purposes. They are typically used to fill cavities or repair damaged tooth structures. These cements need to have properties that mimic the natural characteristics of teeth, such as compressive strength, wear resistance, and a coefficient of thermal expansion similar to that of tooth enamel and dentin.
Type III cements are specifically formulated for use as liners and bases in cavity preparations. A liner or base serves several purposes: it provides thermal insulation, protecting the tooth pulp from temperature variations caused by hot or cold foods; it supports the restorative material structurally; and it may release fluoride to help protect the tooth against further decay. Type III cements are generally thinner than restorative cements and are capable of setting quickly under a restoration to provide support and protection to the dental pulp.
Given the descriptions and applications of the different types of cements, the correct answer to the question regarding which types of cements can be utilized for liners and bases is Type III. Type III cements are specifically designed for use in this capacity, offering the necessary properties to effectively protect the tooth while supporting the restoration placed above them.

Question: 2

A Class IV restoration

A. includes all pits and fissures
B. includes the incisive angle of an anterior tooth
C. includes the proximal surface of a posterior tooth
D. includes the gingival third of the facial or lingual surface

Answer: B

Explanation:
The question posed appears to involve identifying the correct description of a Class IV cavity classification in dentistry. To clarify, let's explore the specific characteristics and classifications of cavity preparations based on the standard system used in dental practice.
Cavity classifications were originally developed by G.V. Black, a pioneer in modern dentistry, to categorize the most common sites of tooth decay and thus guide dental treatments accordingly. Each class specifies the tooth type and the tooth surface involved, which helps in planning the appropriate dental procedure.
A **Class I Cavity Classification** involves all pits and fissures on the occlusal surfaces of molars and premolars, occlusal two-thirds of the buccal or lingual surfaces of molars, and the lingual surface of maxillary incisors. These areas are common sites for decay due to food particles and bacteria accumulating in the crevices.
A **Class II Cavity Classification** involves the proximal surfaces of posterior teeth (premolars and molars). These restorations typically require a dental matrix to properly form the interproximal surface of the tooth since the area is between two teeth.
A **Class III Cavity Classification** includes the proximal surfaces of anterior teeth without involving the incisal edge. This type of cavity is found between the front teeth and does not extend to the biting surface.
A **Class IV Cavity Classification** is similar to Class III but with an important distinction: it includes the proximal surfaces of anterior teeth and extends to involve the incisal edge. This classification addresses more extensive decay that affects both the side and the biting edge of the front teeth. This kind of restoration not only restores function but also focuses significantly on aesthetic appearance due to its visibility when smiling or talking.
A **Class V Cavity Classification** involves the smooth surface of any tooth near the gingival third, primarily on the facial or lingual surfaces. This type of cavity is often associated with gum recession and the exposure of the root surface.
Finally, a **Class VI Cavity Classification** involves the incisal edges of anterior teeth and the cusp tips of posterior teeth. This classification is less common and often results from abrasion or tooth wear rather than decay.
In summary, for a Class IV restoration described in the question, the key feature is the involvement of the proximal surface of an anterior tooth extending to include the incisal edge. This classification requires precise technique to restore both function and esthetic aspects due to the high visibility of the teeth involved. Understanding these classifications helps dental professionals diagnose, plan, and execute dental restorations effectively, ensuring both the longevity of the tooth and the aesthetic demands of the patient are met.

Question: 3

What is the percentage of mercury which should be used when mixing an amalgam alloy?

A. less than 10%
B. More than 10% but less than 30%
C. approximately 50%
D. Enough to make the mix wet.

Answer: C

Explanation:
When mixing an amalgam alloy for dental restorations, the correct proportion of mercury to dental alloy powder is crucial for optimal performance of the filling. The general guideline for the ratio of mercury to alloy is most often 1:1, which translates to approximately 50% mercury by weight. This proportion is widely used because it ensures that the amalgam has suitable handling and physical properties once it sets.
Using a 50% mercury ratio allows the amalgam to be mixed easily, providing a consistency that can be effectively manipulated and compacted into the tooth cavity. This balance is important because it impacts the amalgam's durability, strength, and resistance to corrosion once it hardens. A mix with too much mercury can lead to excessive shrinkage and decreased strength, whereas too little mercury may not allow the amalgam to bind properly, resulting in a filling that does not adhere well or last long.
Therefore, keeping the mercury content around 50% ensures that the amalgam achieves a good balance between workability and physical properties, leading to a more reliable and effective dental restoration.

Question: 4

Which of the following materials is added to dental amalgam alloys to suppress oxidation?

A. tin
B. zinc
C. silver
D. copper

Answer: B

Explanation:
The correct answer to the question of which material is added to dental amalgam alloys to suppress oxidation is zinc.
Dental amalgam is a common material used in dentistry for filling cavities caused by tooth decay. It is composed of a mixture of metals, typically including silver, tin, copper, and mercury. The amalgam is created by mixing liquid mercury with a powder of the other metal alloys.
Zinc is specifically added to the alloy powder of dental amalgams for its beneficial properties. One of the main reasons for including zinc is its ability to suppress oxidation of the other metals in the amalgam. Oxidation is a chemical reaction that occurs when metals are exposed to oxygen and moisture, leading to corrosion and weakening of the amalgam.
The presence of zinc in dental amalgam helps in preventing the oxidation process by reacting with oxygen before it can affect the other metals. This protective role helps in maintaining the integrity and longevity of the dental fillings, ensuring they remain strong and durable over time.
Without zinc, other metals in the dental amalgam, such as silver and tin, might oxidize more quickly. This oxidation could compromise the structural integrity of the amalgam and decrease the lifespan of the filling. Therefore, zinc is a crucial component in dental amalgam alloys for maintaining the quality and durability of dental restorations.

Question: 5

Which of the following are added to composite resin materials for strength?

A. ceramics
B. fillers
C. zirconium
D. palladium

Answer: B

Explanation:
Composite resin materials are commonly used in dentistry for restorations, such as fillings and veneers, due to their aesthetic qualities and durability. To enhance these properties, certain additives are incorporated into the resin matrix. Among these, fillers play a crucial role in improving the strength and wear resistance of the composite resins.
Fillers are fine particles that are mixed into the resin to provide the composite material with enhanced mechanical properties. These particles are typically made from materials such as quartz, glass, silica, and sometimes ceramics. By adding these fillers, the composite resin becomes more resistant to fracture and wear, which is essential for the material to function effectively as a dental restoration.
The function of fillers extends beyond just strengthening the composite. They also contribute to the aesthetic quality of the dental restorations. Fillers can be used to modify the translucency, color, and brightness of the composite resin, making the final restoration appear more like natural tooth enamel. Additionally, fillers help in controlling the shrinkage of the resin during the curing process, which can minimize the risk of forming gaps between the restoration and the tooth, thereby preventing bacterial invasion and subsequent decay.
In summary, fillers are indispensable components of composite resins, providing not only strength but also enhancing the aesthetic and functional qualities of dental restorations. Their inclusion in the resin matrix makes it possible for the material to mimic the appearance of natural teeth while offering durability and resistance to the oral environment.

Question: 6

Which of the following is CORRECT for the application of etchant?

A. Etchant gel should cover the entire tooth
B. The tooth should have the smear layer intact.
C. Etchant is cured for 15 - 20 seconds
D. The tooth must be thoroughly dried.

Answer: D

Explanation:

In the application of etchant during dental procedures, several critical steps must be followed to ensure the effectiveness and safety of the treatment. Here, we will discuss the correct procedure and address the points listed in the question.
Firstly, "The tooth must be thoroughly dried." This is a crucial step and is indeed correct. Prior to the application of the etchant, the tooth surface must be dried thoroughly after initial cleaning. The presence of moisture can prevent the acid etchant from properly interacting with the enamel or dentin surfaces, thereby reducing the efficacy of the etching process. Drying the tooth surface ensures that the etchant can properly penetrate the microscopic spaces in the enamel or dentin, which is essential for creating a strong bond between the tooth structure and the restorative materials that will be applied later, such as composites or sealants.
Secondly, "The etchant gel is placed only where needed." This statement is also correct. It is important to apply the etching gel selectively to the area where the restorative material will be applied. Over-etching areas that do not require treatment can lead to unnecessary demineralization of the tooth surface, which can weaken the tooth structure and increase sensitivity. By applying the etchant only where needed, the dentist minimizes damage to healthy tooth areas and focuses the treatment precisely where it is intended.
Thirdly, "The etchant gel is completely rinsed off." This is a vital step in the etching process and must be performed correctly. After the etchant has been left on the tooth for the recommended amount of time—typically about 15-20 seconds—it must be completely rinsed off with water. This stops the etching process by removing all traces of the acid. Failure to thoroughly rinse off the etchant can result in continued etching, which can damage the tooth structure or lead to post-operative sensitivity.
Thus, the correct statements for the application of etchant in dental procedures include ensuring the tooth is thoroughly dried, applying the etchant gel only where necessary, and completely rinsing off the gel after application. These steps help achieve the desired outcome of a well-prepared tooth surface that is optimal for bonding with restorative materials, resulting in a successful dental restoration.

Question: 7

A stainless steel crown should be finished to proper form. An undercontoured stainless steel crown will _____.

A. allow for food to be forcibly driven into the gingiva
B. trap plaque during the chewing process
C. prevent self cleansing
D. prevent gingival stimulation

Answer: A

Explanation:
The proper contouring of a stainless steel crown is critical for maintaining oral health and function. A crown should ideally mimic the natural contour of the tooth it replaces. This ensures that the crown fits well within the arch and interacts correctly with adjacent and opposing teeth. Proper contouring facilitates effective chewing and aids in the self-cleansing of teeth during mastication. It also plays a role in stimulating the surrounding gingival tissue, which helps keep the gums healthy.
An undercontoured stainless steel crown, however, can present several problems. Such a crown does not protrude sufficiently to contact adjacent or opposing teeth effectively. This inadequate spatial filling results in gaps between the crown and neighboring teeth. When chewing, food particles can be forcibly

driven into these gaps. Since the gaps are near the gingiva, the food particles can become trapped against or even pushed beneath the gumline. This can lead to discomfort or irritation and may contribute to the development of gum disease as the trapped food can harbor bacteria.
Furthermore, an undercontoured crown fails to provide the necessary stimulation to the gingiva. Natural teeth, through their contours, help in massaging the gums during chewing, which promotes blood circulation and health in the gingival tissues. An undercontoured crown lacks this effect, potentially leading to reduced gingival health over time.
In contrast, an overcontoured stainless steel crown can also be problematic. Such a crown is too bulky and can trap plaque against the tooth and gum, hindering the natural self-cleansing mechanisms that occur during chewing. This can increase the risk of both decay and gum disease. Moreover, an overcontoured crown may impinge on the gum tissue, leading to irritation or inflammation.
In summary, the correct contouring of a stainless steel crown is essential for ensuring that food is effectively processed during chewing without being driven into the gingiva, for stimulating the gingival tissues to maintain their health, and for preventing the trapping of plaque and food particles that can lead to dental and periodontal issues.

Question: 8

When assisting on a pediatric patient, the behavior management technique called _____ consists of telling the child the name of the instrument and then showing the child how the instrument is used.

A. tell, show, do
B. modeling
C. positive reinforcement
D. distraction

Answer: A

Explanation:
The correct answer to the question is "tell, show, do." This behavior management technique is widely used in pediatric dentistry and pediatric healthcare to help alleviate a child's anxiety about dental or medical procedures. The method involves three simple steps: telling, showing, and doing, which helps familiarize the child with what to expect during the procedure, thus reducing fear and increasing cooperation.
In the "tell" phase, the healthcare provider explains to the child the name of the instrument or the procedure in simple, age-appropriate language. This step is crucial because it helps build the child's understanding and trust. By knowing what to expect, the child can mentally prepare for the next steps, which can significantly reduce anxiety.
Next, in the "show" phase, the provider demonstrates how the instrument is going to be used. This might involve demonstrating on a doll, on the provider's own hand, or simply showing the instrument and explaining its function. This visual demonstration helps the child visualize what will happen, making the procedure less intimidating.
Finally, the "do" phase involves the actual application of the procedure. By this stage, the child has been informed and shown what will happen, which helps in gaining their cooperation. The predictability of the procedure, as informed by the previous steps, aids in a smoother execution with potentially less resistance from the child.

This method is effective because it engages the child in the process, respects their ability to understand, and addresses their natural curiosity. It also provides a sense of control to the child, which is often lacking in unfamiliar and potentially scary situations. The "tell, show, do" technique not only helps in managing the child's behavior during medical or dental visits but also contributes positively to their overall healthcare experience, encouraging better cooperation in future encounters.

Question: 9

A patient has just had a gold crown cemented into place on tooth #3. An existing amalgam is present on tooth #30. The patient experiences "electrical like" pain stimuli on their right side. What condition most likely exists?

A. The amalgam in tooth #30 needs to be replaced with a ZOE base.
B. The occlusion on tooth #3 needs to be adjusted
C. Both tooth #3 and tooth #30 need to be replaced with a calcium hydroxide base
D. The patient is experiencing a galvanic response

Answer: D

Explanation:
The patient is likely experiencing a galvanic response, which is an electrical-like pain caused by the presence of dissimilar metals in the oral cavity that come into contact with each other. In this case, the metals involved are the gold from the newly cemented crown on tooth #3 and the amalgam in tooth #30.
Galvanic response, or galvanism, occurs when two different metals create an electrical current in the presence of an electrolyte, such as saliva. This electrical current can lead to discomfort or sharp pain, often described as a shock or jolt, similar to the sensation of an electric shock. The gold crown and the amalgam filling act as electrodes, and the saliva serves as the conductive medium that closes the circuit between them.
The typical solution to alleviate the symptoms of galvanic response involves adjusting the dental restorations to minimize direct contact between the dissimilar metals. This could include replacing one of the metals with a more compatible material. In some cases, the use of an insulating base under the restorations can also help. Options for bases include materials such as zinc oxide eugenol (ZOE) or calcium hydroxide, which provide insulation and reduce the likelihood of electrical current formation.
However, before proceeding with any treatment, it is crucial for a dentist to thoroughly examine the occlusion (the contact between teeth) of the affected teeth. Sometimes, simply adjusting the way the teeth meet can reduce the symptoms by minimizing the physical contact between the different metals.
It is essential for patients experiencing symptoms of a galvanic response to consult with their dentist. The dentist can provide a proper diagnosis and treatment plan tailored to the specific dental materials and the patient's individual needs.

Question: 10

Which of the following agencies requires employers to protect their employees from exposure to blood and saliva?

A. Food and Drug Administration
B. OSHA
C. Environmental Protection Agency
D. Centers for Disease Control

Answer: B

Explanation:
The question asks about which agency mandates that employers shield their employees from exposure to blood and saliva. Among the choices provided (Food and Drug Administration, OSHA, Environmental Protection Agency, Centers for Disease Control), the correct answer is OSHA, which stands for the Occupational Safety and Health Administration.
OSHA is a federal agency under the United States Department of Labor. It was established by the Occupational Safety and Health Act of 1970. OSHA's mission is to ensure safe and healthful working conditions by setting and enforcing standards, and by providing training, outreach, education, and assistance. OSHA's regulations and standards are designed to mitigate health risks to workers faced with various occupational hazards.
A key component of OSHA's mandate involves the protection of workers from biological hazards, including exposure to blood and saliva, particularly in workplaces like healthcare facilities, laboratories, and any other environments where such exposure is likely. OSHA's Bloodborne Pathogens Standard (29 CFR 1910.1030) is specifically designed to protect workers from the risk of exposure to bloodborne pathogens, including HIV, hepatitis B, and hepatitis C.
The standard requires employers to implement an exposure control plan, which includes the use of personal protective equipment (PPE), proper training for employees on the dangers of bloodborne pathogens, vaccination opportunities (such as for hepatitis B), and procedures for incident reporting and follow-up. Employers must also ensure that proper methods are followed for the handling and disposal of items or materials that may be contaminated with blood or saliva.
The other agencies listed—Food and Drug Administration, Environmental Protection Agency, and Centers for Disease Control—also play vital roles in public health and safety. However, their mandates do not specifically include requiring employers to protect their employees from exposure to blood and saliva in the way that OSHA does. The FDA oversees food and drug safety, the EPA manages environmental protection, and the CDC conducts disease control and prevention research and policy making. Each of these agencies has its own specific focus and does not overlap significantly with OSHA's role in workplace health and safety regulations concerning blood and saliva exposure.
Therefore, when considering which agency requires employers to protect their employees from exposure to blood and saliva, OSHA is the correct and relevant choice. Understanding OSHA's specific requirements and standards can help employers effectively manage risks and ensure compliance with federal health and safety regulations, thereby protecting their employees from potential health hazards in the workplace.

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