The posterior aesthetics health and social care essay

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Total no. of words

(excluding references)

2419

To answer this question you will first need to review the accompanying Clinical Case Scenario. ‘ This is a pdf document titled ‘ Unit 5 Clinical Case Scenario for Structured Essay Question’ which can be found in the resources section of your learning plan under ‘ Unit 5: Assessments’.

Question

Describe all of the equipment, materials and techniques you would select to optimise the operative management of the lesion in the lower left premolar with regard to: a. Cavity preparation 25 marksb. Prevention of iatrogenic damage to the adjacent proximal tooth surface

10 marks

c. Moisture control 20 marksd. Matrix system 20 markse. Restoration using direct composite 25 marks

Total: 100 marks

For each section describe your chosen equipment, materials and techniques in the order that they are employed providing reason(s) for each choice and details of how they are used. This should include each and every item utilised during the procedure. Maximum word count 2500 words• 10 % deduction for exceeding word limit

Answer

According the clinical photographs and radiograph this is a typical class II cavity. Theconcept of minimal intervention is based upon very early detection of a lesion withsurgical treatment undertaken only if surface cavitation is occurred. In view ofpotential remineralisation and the presence of adhesive restorative materials, asmuch as possible natural tooth should be retained, leading further to minimaldamage of the tooth. This is an extremely sensitive technique and the operativemanagement should have specific form on the location and the size of the lesion. Dentist is responsible to establish an absolute isolation of the site and all aspects ofpreparation should be accessible to the curing light. The preparation should be freeof foreign debris to allow an optimal bonding. Needs a careful operativemanagement – we have to preserve the maximum amount of tooth tissue Theprinciples that needs to be followed in order to design and prepare the cavity (for aconventional type of restoration) are: To obtain an outline , resistance, retentionand convenience form, then to remove any carious dentin, to finish the enamel walland finally to clean the cavity. However in minimal invasive dentistry for small cariogenic lesions, a saucer-shapedcavity preparation suggested by Nordbo (Nordbo, 1998), for posterior approximalresin composite restorations. No bevel used and the tooth substance saved byparallel walls and rounded internal angles. The study is valid and relevant to clinicalpractice, as it offers a preparation design for optimal restorations. The authors used10 years follow up which is acceptable and represents a viable treatment modalityfor small cavities. Prior to isolation of the area and outline the form of the cavity, itis necessary to mark the centric stop with articulator paper after registering the bitein centric

occlusion. Begin the occlusal segment of the tooth preparation by enteringthe deepest carious pit orienting the bur 90 degrees to the occlusal plane, handpiece parallel to the long axis of the tooth and tilted slightly laterally for ease ofpenetration. As the bur enters the pit, establish the initial outline form by extendingthe external walls to sound tooth structure. With intermittent pressure andcontinuous movement from one point to another following the DEJ. Beforedropping the box, the marginal ridge is thinned out as much as possible. Thisthinned enamel provides protection for the adjacent tooth and is also a guide fordropping the box later. Remove loose enamel and examine buccal and lingualproximal walls to ensure complete removal of cariesThe soft , wet , demineralised dentin should be removed. Stop drilling whenreasonable hard dentine, scratchy to probe, firm, leathery, moderate resistance togentle scraping Avoid heat, pressure, maintain the maximum amount of residualdentin thicknessGradually preparation until marginal ridge to avoid iatrogenic trauma to adjacenttooth. We remove peripheral caries using slow handpiece burs and a tactile feel tothe adjacent tooth which is protected by marginal ridgeUse of enamel hatchets for cervical margins and trimmers to finish the margins ofthe cavityThere are not burs that if we want to prepare that margin without damaging thesurface of the adjacent tooth. Hand instrument or specialised ultrasoundinstruments to approach cavityAfter preparation of the occlusal segment a thin layer of enamel at theproximal area is remaining to prevent accidental damage of the adjacent tooth. Wethin marginal ridge with a carbide bur and then hand instrument only to brake themarginal ridge. Following the complete removal of the caries lesion remove looseenamel (buccal and lingual proximal margin) using hatchets or chisels. The operative management regarding the

isolation of the site could beundertaken with optidam. Initially we select a posterior OptiDam because is suitedperfectly to restorations of sectors from the first pre-molar to the second molar. Then install the rubber dam with an autoclavable plastic frame and with a pair ofscissors, cut the nipples off the teeth to be restored. . It is necessary to produceminimum three holes. The first is for the clamp distal of the site (to LL6). Apply theautoclavable plastic SoftClamp at the level of the most distal perforation of therubber dam. The dam is stretched in place above the lateral wings of the clamp. With the use of any generic forceps, the combination dam and clamp /frame isplaced directly on the most distal tooth- lower left first molar. The 3-diamensiotnalshape of optidam, in addition to anatomical design of the support frame, follows thecontour of patient’s face and allows placing the rubber dam without the help of theassistant. Also the design frame facilitates increased patients comfort and allows forthem to breath with no pressure around the nose. At the clamp level, the dam ispositioned under the wings to ensure complete water-tightness of the operatingfield. The second hole is for the second premolar and the third for the firstpremolar. For the placement of rubber dam could be used more holes but there isalways greater risk of moisture contamination of the site. We do not want to placethe rubber dam in the tooth the we are working otherwise will get on the way of thematrix. The interdental area is encapsulated and sealed by the rubber dam (theimportance of thickness). . The third hole is necessary not only for placing thewedges (preferable flexible wedges) or dam stabilizing cord but because we need tosee the adjacent tooth in order to visualise and produce higher and greater contactpoint/surface. Some operators prefer to add floss around the tooth that restorationis planned but there is always a risk that the

rubber dam could flick into the sulcusand cause additional problems to soft tissues. The flexibility of Optidam allowsimmediate set up of the operating filed before the use of any rotary instrumentsand also the neutral taste is appreciated by the patients. In conclusion thecombination of Optidam-SoftClamp facilitates, improves and secures the placementof the operating field, providing a stress free and time efficient workingenvironment. The effect of the use of rubber dam on the marginal adaptation ofcomposite resin fillings to acid-etched enamel (van Dijken, 1987) is remarkable. However it is difficult to prove that only the rubber dam and not the entire protocolensure it. There are a lot of different matrix systems in the market today. The executionof such a class II restoration would benefit from a sectional matrix system. A clinicalstudy by Loomans confirmed that sectional matrix systems, combined withseparation rings, resulted in tighter contacts, while other systems resulted in looserinterproximal contacts.(Loomans, 2007). The study is valid and relevant to clinicalpractice as it provides vital information for restoring posterior teeth, but could becriticized for the small amount of sample. The sectional matrix fits around theproximal box and the curve is towards the occlusal surface. Garrison matrix with anultra-thin metal matrix would be the ideal choice. The sequence that should befollowed for this particular matrix system is matrix- wedge- separation ring. Asalready mentioned metal matrix needs to be thin in order to be able to adjust ifnecessary. The separation ring, separate the teeth and provide a sort of lateral seal. Flexi wedges have the advantage that they can contour. However they concave onthe gingival side and fit over the papilla, not like wooden wedges, that positioned inbetween teeth and may deform matrix and furthermore affect the emergenceprofile of the restoration. At the

completion of the restoration first remove wedgeand then the matrix with special matrix removal forceps. Garrison system gives thecervical seal, teeth separation (Inside dentistry, 2009). In addition improves thecontact tightness and minimizes the finish of the restoration.. It is stable systemmatrix, has optimal retention on the tooth and finally it is easy to use (easy insertionand removal). In order to execute a predictable and optimal composite restoration each ofthe following steps should be followed:- Selective etch to enamel only with 35% phosphoric acid for 15sThen we wash and dry the cavity. It is important not to over dry the cavity becausewe will not have good bonding results (we will not have proper penetration andhybridisation of the dentine)Cavity should be visibly moist but with no obvious pooling. After the adhesiveapplication, if the entire cavity should appear glossy and shiny then is ready forrestoration with composite. It is proven than high bond strength to dentin can beobtained under dry condition when adhesive system is vigorously rubbed on dentinesurfaces. On wet surfaces, light rubbing may suffice. Self-adhesive systems do notyet produce bond strengths as high as etch&rinse systems. In order to ensure and improve marginal adaptation flowable composite could beapplied. It is usually applied a thin layer maximum of 0. 5mm flowable resin just toseal the cavity. A study revealed that it is feasible if certain clinical protocol wouldbe followed then better marginal adaptation could be achieved(Cunningham, 1990). However this needs further investigation and the most contemporary resinmaterials have different physical properties.- Composite shrinkage may lead to stress on the restoration. Incrementalplacement could reduce the stress on the composite. The composite of choice forthis case is Filtek Silorane. This low shrink posterior

restorative is designed tominimize shrinkage and polymerization stress. (Burke, 2011) Filtek in combinationwith the excellent bond strength, leads to excellent marginal integrity of therestoration . A high compressive and a flexural strength of the restoration materialprotects from fractures and stabilizes the tooth at the same time, especially whenused in posterior restorations. the study is valid and relevant to clinical practice butcould be criticized from the size of the sample used and definitely require furtherinvestigation. The application of Silorane Adhesive system is simple. The application of the etch-primer with a microbrush, followed by gentle air dispersion and 10 seconds of lightcuring. In addition, the application of Silorane System Adhesive Bond withmicrobrush, followed by gentle air, dispersion and 10 seconds of light curing as well. Finally the incremental placement (2. 5mm) and shaping of Filtek Silorane Low ShrinkPosterior Restorative is undertaken under full operatory light conditions andfollower by 20 seconds light curing.-. The most important in the posterior composites are the tight contact point andthe nice contour. Open contacts leads to immediate failure as the food debris can betrapped. In high risk patients the contour should be clear, easy to clean andaccessible during cleaning, otherwise the surface will demineralise and causesecondary caries. A good approach restoring the cavity with hybrid composite is theincremental technique. The increment placement could be performed with horizontal or oblique layers butto touch one wall at time. The final increment could be applied with Garrisoninstrument. For the marginal fissures, the pointed tip- acron tip- need to stick to themarginal fossa and then we can produce the marginal ridge. TriMax contact forming instrument can be used for the filling of the proximal box. We put a block of composite into the proximal box, hold

tight against the adjacenttooth and then light cure it. This instrument sets the composite tight and forces thematrix the adjacent tooth. TriMax can guarantee nice and tight contact-. Coltene instruments could be used in order to fill the rest of the occlusal cavityand seal the fissures.-. Then we remove the separation ring with special forceps-. Reflect the matrix in order to give more space for the light cure from the sides. Initially light cure from occlusal surface and then lateral surfaces. The main objective of polymerisation is to achieve adequate curing of thematerial . The steps that would help to ensure better light curing are: Wear orange safety glassesRe-position the patient so that you can see the restoration and access it with the lightDentist should be positioned so that can stabilise the light directly over the preparationStabilise the light so that the beam is perpendicular to the surface of the resinBegin curing no closer than 1mm from the resin, then move as close as possible after 1sAdjust the light guide so that you can operate the light comfortableEnsure that the tip is free of damage and debrisDon’t look directly to curing light as there is a risk of retina burnRemove the flexi wedge and finally the matrix (with Pi tweezers, Triodent)The finishing of the definitive composite restoration could be with variousinstruments (Morgan, 2004) such as: Minimal invasive finishing discs to finish marginal ridgeThe occlusal and lateral surfaces could be finished with Mikron , Compo shape even with Sofu carbide burs. Kerr composite finishing system is found to be useful as wellDiamond polishing pastesThe finishing of the embrasures could be performed with disks or composite stripsExcess of composite could be removed easily with a hand instrument – scalper blade or ultrasound scaler- if area is not etched. On the other hand if the surface is over etched, the composite material sticks outside of the

cavity. So after occlusal adjustments should re-light cure (it hardens the surfaces) and add a shiny layer on it. Various material on the market offer such a sealing of microscopic defects (BisCover, G-coat) and gives shiny surfaces