

Minimalno interventna stomatologija: Lezije treće grupe

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Minimal Intervention Dentistry: Site #3 Lesions

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Lezije 3. grupe

Smatra se da u cervikalnom delu zubne krune postaju dominantne i započinju sa cervikalnom preosjetljivošću prouzrokovanom erozijom a završavaju lezijom ispod postojećih ispuna odnosno lezijama površine korena. Lezije zuba koje nisu uzrokovane karijesom čest su uzrok problema u ovom području. Najčešće su to abrazije i erozije koje idu do pucanja, a konačni rezultat je preosjetljivost uz malo vidljivi gubitak zuba odnosno veliki gubitak zubnog tkiva koji ponekad dovodi do oštećenja pulpe.

Cervikalna preosjetljivost je sigurno rezultat demineralizacije izloženog dentina površine korena hemijskim putem. Napici niske pH vrednosti će demineralizovati površinu do dubine od 2 do 3 μm ostavljajući nepoduprta kolagena vlakna izloženim nadražajima. Ako se zubi nakon toga snažno čiste zubnom četkicom, površina kolagena će se ukloniti pre nego dodje do remineralizacije. Usled toga će dentinski kanalići ostati otvoreni, a promjene u osmotskom pritisku će stimulirati bol. Postoje brojne hemijske metode za zatvaranje dentinskih kanalića i rešavanje tog problema. Međutim, takva su lečenja obično prolazna, kao što je slučaj sa aktivnim karijesom, a najbolje lečenje je prepoznati uzrok i otkloniti ga.

Lezija zuba koja nije uzrokovana karijesom može i dalje biti prisutna u ovim područjima, kao rezultat abra-

Site 3 lesions

It is suggested that lesions around the circumference at the cervical of the crowns of teeth are becoming more prevalent and range from cervical hypersensitivity caused by erosion, to recurrent lesions beyond existing restorations and to interproximal root surface lesions. Non-carious tooth loss is a regular cause of problems in this region and is becoming far more common. The causes range from abrasion and erosion to abfraction and the end result will range from hypersensitivity with little obvious tooth loss to extreme loss of tooth structure all the way to pulp exposure.

Cervical hypersensitivity is almost certainly the result of demineralisation of exposed root surface dentine by chemical means. Low pH drinks in particular will demineralise the surface to a depth of 2 to 3 μm leaving unsupported collagen fibres exposed. If the teeth are then cleaned vigorously with a tooth brush the surface collagen will be removed before it has a chance to remineralise. This is then likely to leave the dentine tubules open and alterations in osmotic pressure will stimulate a pain response. There are a number of chemical methods available to close over tubules and overcome this problem. However, these treatments are generally transitory so, as is the case with active caries, the best treatment is to recognise the cause and remove it.

Non-carious tooth loss can continue in these regions, as a result of either tooth brush abrasion or abfraction without necessarily developing hypersensitivity. Abfraction is thought to be the result of flexure of the tooth arising from undue occlusal load. If the root of a tooth is

zije usled četkanja zuba ili loma bez nužnog razvoja preosetljivosti. Smatra se da je fraktura (abfrakcija) rezultat savitljivosti zuba koja proizlazi iz prevelikog okluzalnog opterećenja. Ako je koren zuba relativno tanak i ako je dobro retiniran u alveolarnoj kosti, on je savitljiv u određenoj meri. Ako je zatim izložen lateralnom opterećenju većem nego što može izdržati, verovatno će se saviti. To može uzrokovati kompresiju ili istežanje na mestu iznad vrha alveolarne kosti, što dovodi do pomeranja gledjnih prizmi ili delova mineraliziranog dentina koji se mogu odlomiti. Preveliko opterećenje se takođe može locirati na bukalnu ili lingvalnu kvržicu koja ostaje u kontaktu pri lateralnoj ekskurijskoj kretnji u položaju u kojem obično nije u kontaktu. Rezultirajuća lezija će se razlikovati od erozijske lezije u tolikoj meri da će biti duboka s oštrim uglom u bazi i često će se širiti subgingivno. Lečenje uvek započinje identifikacijom i otklanjanjem okluzijskog problema, a zatim ispunom od glas-ionomera koji se smatra dobrim materijalom koji može izdržati preostalo savijanje.

Karijes površine korena javlja se uglavnom aproksimalno na izloženim korenskim površinama, ali je moguće da se pojavi bilo gde duž celog opsega zubne krune. GV Black ga nije posebno definisao, pa se aproksimalna lezija smatrala "klasom 2" i pri izradi ispuna pristupalo joj se s okluzalne strane. To je vrlo destruktivan način za pristup, dok je pristup s bukalne ili lingvalne strane, iako ne jednostavan, mnogo štedljiviji za zubno tkivo.

Gledj je vrlo mineralizirano tkivo, pa karijesna lezija napreduje relativno sporo kroz usko područje gdje se nakuplja plak. S druge strane površina korena sastoji se samo od cementa i dentina koji su slabije mineralizovani. To znači da će isti atak kiseline zahvatiti mnogo veće područje zubne površine. Dijagnoza može biti otežana jer je lezija često široka površina razmekšana i demineralizovana bez diskoloracije. Dok nema kavitacija, relativno je jednostavno odstraniti karijes i remineralizirati područje. Međutim, ako se za dijagnozu koristi oštra sonda, površina se vrlo lako može i oštetiti, a to znači da se lezija treće grupe, veličine 0, koje se mogu rešiti jednostavnom remineralizacijom, odmah menja u veličinu 1 koja zahteva ispun koji će sprečiti dalje nakupljanje plaka.

Problematično područje za karijes površine korijena je aproksimalno, jer je ovde teže dijagnostikovanje i lečenje. Kontrola i uklanjanje karijesa, a zatim remineralizacija je metoda izbora. Međutim, starenjem pacijenta slabi njegovo opšte zdravlje i javljaju se problemi pri kontroli. No rutinska kontrola uz temeljan pregled je nužna jer može upućivati na najranije znakove gubitka pljuvačke. Pacijent neće uvek biti svestan toga, no uzimanje različitih lekova može brzo promeniti količinu i kvalitetu salive te će se karijesna aktivnost vrlo brzo ponovno uspostaviti.

reasonably slim and is well supported by alveolar bone it must be regarded as flexible, at least to a degree. If it is then subjected to considerable lateral load, beyond that which it was designed to sustain, it is likely to flex and bend. This can cause compression or tension at a point just above the crest of the alveolar bone leading to displacement of enamel rods or segments of mineralised dentine and these can then be lost. The undue load can often be traced to a buccal or lingual cusp that remains in contact in a lateral excursion beyond the position at which it is normally disarticulated. The resultant lesion will often be different from an erosion lesion inasmuch as it will be deep with a sharp angle at the base and will often extend subgingivally. Treatment will always begin with identification and elimination of the occlusal problem followed by restoration with glass-ionomer because this appears to be able to effectively withstand any remaining flexure.

Root surface caries will occur, mostly interproximally, on exposed root surfaces but it is possible for it to be found anywhere around the full circumference of the crown of a tooth. It was not recognised separately by GV Black so the interproximal lesion was generally regarded as a "Class 2" and approached from the occlusal for restoration. This is a very destructive way to gain access but an approach from either the buccal or lingual, though not necessarily easy, is far more conservative of tooth structure.

Enamel is a heavily mineralised material and the acid attack of caries will penetrate relatively slowly over a narrow area related to plaque accumulation. The root surface on the other hand is cementum and dentine only and these contain only one half of the mineral level. This means that the same acid attack will lead to a much larger area of involvement on the root surface. Diagnosis can be difficult because the early lesion is often just a broad surface softening through demineralisation without discolouration or any other indication of its presence. As long as there is no cavitation, it is relatively simple to eliminate the disease and remineralise the area. However, if during diagnosis, a sharp probe is used, the surface is very easily indented and damaged, and this means that a Site 3, Size 0 lesion, which may be healed by simple remineralisation, is immediately converted into a Size 1 which requires restoration to prevent further plaque accumulation.

The problem area for root surface caries is interproximally because it is more difficult to diagnose and to treat. Control and elimination of the disease followed by remineralisation is the method of choice. However, as the patient ages and their general health declines, the problems of control increase. Routine recall with careful observation is essential because this can be one of the earliest signs of loss of salivary flow. The patient will not necessarily be aware of this but polypharmacy can readily modify both the quantity and quality of the saliva and caries activity will re-establish rapidly.

When the exposed root surfaces become involved early treatment is imperative. The further the lesion has advanced the more difficult it is to restore. Visualisation is difficult and it is hard to define the outline of the lesion. If

Rano otkrivanje i lečenje obvezno je kod ekspaniranja površina korena. Što se lezija više proširila, to ju je teže lečiti. Teško je otkrivanje i teško je odrediti oblik lezije. Ako leziju treba ispuniti, nužno je očistiti celi rub, no treba paziti da aksijalni zid ostane nedirnut čak i ako je mekan i demineralizovan. Pulpa je relativno blizu površini u korenu zuba i teško je ne zahvatiti je pri izradi ispuna kod karijesa površine korena.

Sve lezije u ovoj kategoriji treba ispuniti glasjonomerom, samovezujućim ili smolom ojačanim. To su idealni materijali za ovu situaciju jer ispuni nisu pod okluzijskim opterećenjem i imaju sve prednosti trajne izmjene iona, s mogućnošću remineralizacije dna kaviteta. Pokazalo se da takvi ispuni imaju izuzetnu dugotrajnost nakon pažljive izrade i otklanjanja karijesa.

Grupa 3, veličina 0

Ove lezije ne zahtevaju izradu ispuna no potrebna im je pažljiva dijagnoza i planiranje lečenja kako bi sprečilo dalje širenje. Svi mogući uzroci su razmatrani, pa ne postoje teškoće za efikasno lečenje.

Edukacija pacijenta je najvažnija jer leziju uzrokuje pacijent. Preosetljivost se može lečiti rastvorima za mineralizaciju, no ako se uzrok ne otkloni, lezija će se neizbežno širiti i uspeh će biti samo privremen. Istovremeno je važno da stomatolog ispita okluziju, osobito lateralne ekskurijske kretnje, i da se otklone mogući uzroci frakture jednostavnim okluzijskim brušenjem. Konačno je potrebno i analizirati pljuvačku. Prisutnost kariogenih bakterija je vrlo važna te će količina i kvalitet pljuvačke uticati na taj problem. Karijes površine korena često je prvi znak smanjenog lučenja pljuvačke.

Grupa 3, veličina 1

Tipična lezija u ovoj kategoriji je rezultat uznapredovale erozije, abrazije ili loma. Važno je otkloniti uzrok i zatvoriti leziju pre nego postane preduboka. Lečenje treba sprovesti jednostavnim ispunom od glasjonomera koji će vrlo efikasno prijanjati za skleroziranu površinu korena mehanizmom izmene iona. To znači da je bilo koji oblik preparacije kaviteta, osim kondicioniranja, strogo kontraindikovano jer je glatka površina najbolja za svaki oblik hemijske adhezije [Slika 1. – 4.].

Može naravno postojati mala karijesna lezija koja se razvija na gingivnom rubu. To je siguran znak prisutnosti aktivnog karijesa i prvo se moraju preduzeti sve mere za njegovo otklanjanje. Lečenje će zatim uključiti odstra-

the lesion is to be effectively sealed it is essential to clean the entire periphery but care must be taken to leave the axial wall untouched even though it is still soft and demineralised. The pulp is relatively close to the surface in the root of a tooth and it is difficult to avoid involving it when restoring root surface caries.

All lesions in this category should be restored with glass-ionomer, either auto cure or resin modified. These are ideal materials for this situation because the restorations will not be under occlusal load and they have all the advantages of the continuing ion exchange, with the potential for remineralising the floor of the cavity. These restorations have been shown to have exceptional longevity following careful placement and elimination of the disease.

Site 3, Size 0

These lesions do not require restoration but they do need careful diagnosis and treatment planning to ensure they will no longer progress. All the potential causes have been discussed above so effective treatment should not be difficult to achieve.

Patient education is of primary importance because the lesion will be patient caused. Hypersensitivity can be treated with one of a number of mineralising solutions but if the cause is not overcome the lesion will inevitably progress and success will be transitory only. At the same time it is important for the operator to examine the occlusal envelope, particularly lateral excursions, so that the possible causes of abfraction can be eliminated through a simple occlusal adjustment. Finally, it is essential to analyse the saliva. The presence of cariogenic bacteria is highly significant and both the quantity and the quality of the saliva will have a bearing on this problem. Root surface caries is often the first sign of a reduced flow.

Site 3, Size 1

A common lesion in this category will be the result of advancing erosion, abrasion or abfraction. It is important to both eliminate the cause and seal the lesion before it becomes too deep. Treatment should be kept very simple because a glass-ionomer will adhere very effectively to the burnished sclerotic surface of the root through the ion exchange mechanism. This means that any form of cavity preparation, apart from conditioning, is strictly contraindicated because a smooth surface is the best for any form of chemical adhesion [Figures 1 – 4].

There may, of course, be a small carious lesion developing at the gingival margin. This will be a sure sign of the presence of active disease and vigorous measures should be undertaken first to overcome this. Treatment will then

njivanje površine inficiranog dentina i izradu ispuna od glasjonomera, samostvrdnjavajućeg ili smolom ojačanog. Dostupne su različite nijanse svih glasjonomera, pa neće biti problem pronaći odgovarajuću boju.

involve removal of the surface infected dentine and placement of a glass-ionomer restoration, either auto cure or resin modified. There is a variety of shades available with all glass-ionomers so colour matching should not be a problem.



Slika 1. Postoje veće erozijske lezije na labijalnim površinama oba gornja središnja sjekutića koje zahtijevaju estetski ispun. Materijal izbora je estetski samostvrdnjavajući staklenoionomer tipa II.1.
Figure 1. There are serious erosion lesions on the labial surfaces of both upper central incisors that require aesthetic restoration. The material of choice is a Type II.1 restorative aesthetic auto cure glass-ionomer.



Slika 2. Pri postavljanju ispuna preporučivalo se da se lezije prvo očiste plovućcem i vodom. To se više ne smatra nužnim iako ne postoji razlog da se to ne napravi. Rizik je u mogućem oštećenju gingivnog tkiva koje će uzrokovati krvarenje i otežati izradu ispuna.
Figure 2. At the time the restorations were placed it was recommended that the lesions be cleaned first with a slurry of pumice and water. This is no longer regarded as essential although there is no reason for not doing so. The risk lies in doing some damage to the gingival tissue causing bleeding and making restoration more difficult.



Slika 3. Nakon čišćenja lezija se uvijek mora 10 sekundi kondicionirati 10%-tnom poliakrilnom kiselinom za odstranjivanje plaka, pelikule i ostataka tkiva. Zatim se treba temeljito oprati i lagano osušiti.
Figure 3. Following cleaning the lesion must always be conditioned with a 10 second application of 10% polyacrylic acid to remove plaque, pellicle and any remaining debris. It should then be washed thoroughly and dried lightly.



Slika 4. Odabrani staklenoionomer postaviti štrcaljkom i oblikovati pomoću matrice od mekog metala. Čim se cement stvrdne matrica se odstrani i cement pokrije jednokomponentnim, svjetlospolimeriziraj učim akrilatom bez punila za pečaćenje i stabilizaciju ravnoteže vode. Poliranje nije potrebno jer je površina izrađena pomoću matrice uvijek najbolja. Ova fotografija prikazuje ispun 5 godina nakon izrade.
Figure 4. The glass-ionomer of choice is then syringed to place and contoured using a soft tin matrix. Immediately the cement is set the matrix is removed and the cement is covered with a single component, light activated, unfilled resin to seal and stabilise the water balance. Polishing is not necessary generally because the surface from the matrix is the best available. This photograph records the restorations 5 years after placement.

Potrebni instrumenti

- Za erozijsku leziju nisu potrebni instrumenti jer se kavitet ne treba uopće preparirati.
- Za male karijesne lezije treba koristiti malo okruglo svrdlo samo za čišćenje zidova da se omogući adhezija izmenom jona.

Preparacija i izrada ispuna

- Erozijske lezije lagano očistiti plovućcem i vodom pomoću male gumene kapice kako bi se odstranio plak s površine lezije i osigurala potpuna veza glajsonomera za zub.
- Kod aktivnog karijesa očistiti zidove duž celog opsega ali ostaviti aksijalni zid da se remineralizuje ispod glajsonomera.
- Kondicionirati površinu kaviteta 10%-tnom poliakrilnom kiselinom samo 10 sekundi, dobro isprati i lagano osušiti.
- Odabrati odgovarajuću matricu
- Zamešati odgovarajući materijal, po mogućnosti u kapsuli.
- Glajsonomer naneti na zubnu površinu i potom matricu za dobru adaptaciju materijala na zubnu površinu.
- Polimerizovati svetlom ili ostaviti glajsonomer da se stvrdne. Višak na rubu matrice služi kao kontrola stvrdnjavanja.
- Odstraniti matricu i odmah naneti debeli sloj nisko viskozne skmole kao sredstva za zalivanje ivica. To je nužno kod samostvrdnjavanja, a kod smolom ojačanog materijala još uvek preporučljivo.
- Koristiti oštri instrument za minimalno ukalanjanje samostvrdnutog materijala pre nego se sredstvo za zalivanje polimerizuje svetlom. Koristiti fino dijamantno svrdlo pod vazdušno/vodenim mlazom za oblikovanje smolom ojačanog materijala i zatim ga ponovno zaliti akrilatnim sredstvom

Instruments required

- for the erosion lesion there will be no instruments required because the cavity should not be prepared at all.
- for the small carious lesion use a small round bur only to clean the walls sufficient to allow ion exchange adhesion.

Preparation and restoration

- for the erosion lesion clean lightly with a slurry of pumice and water on a small rubber cup to remove any plaque on the surface of the lesion and ensure complete adaptation of the glass-ionomer to the tooth.
- in the presence of active caries clean the walls around the full circumference but leave the axial wall to remineralise under the glass-ionomer.
- condition the surface of the cavity with 10% polyacrylic acid for 10 seconds only, wash well and dry lightly.
- select a suitable matrix and pre-form as required
- mix the appropriate material, in a capsule for preference.
- syringe the glass-ionomer on to the tooth surface and apply the matrix to adapt the material well and positively to the surface of the tooth.
- light activate or allow the glass-ionomer to set. Check the excess around the periphery of the matrix to see that it is properly set.
- remove the matrix and immediately apply a generous coating of a low viscosity resin as a sealant. This is essential for the auto cure but still a good idea for the resin modified material.
- use a sharp blade to minimally trim an auto cure material before light activating the resin seal. Use fine diamonds under air/water spray to contour a resin modified material and then seal it again with the low viscosity resin seal.

- Polirati ispun nakon stvrdnjavanja glasjonomera samo ako je potrebno. Ako je matrica pravilno korišćena, naknadno poliranje često nije potrebno.
- polish the restorations after the glass-ionomer has matured only if it is essential. If the matrix was properly applied subsequent polishing is often not required.

Grupa 3, veličina 2

Ove lezije su uzrokovane aktivnim karijesom. Biće sličan lezijama veličine 1 samo će zahtevati izradu ispuna. Uobičajeni instrumenti biće potrebni za odstranjivanje demineralizovanog inficiranog dentina s površine pre izrade ispuna. Valja očistiti samo zidove duž ruba iako će gotovo sigurno biti zahvaćenog dentina na dnu kaviteta. Međutim, dok je rub zaliven i zaštićen od mikropropuštanja, ispun će biti efikasan i zahvaćeni dentin će se remineralizovati [Slika 5. – 8.].

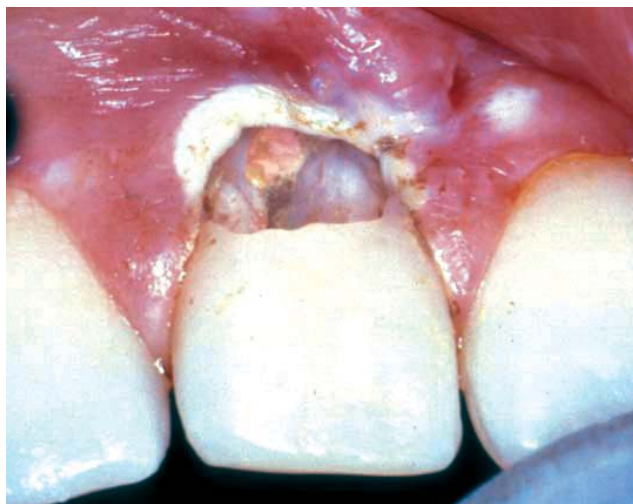


Site 3, Size 2

These lesions will generally be cavities resulting from active caries. They will vary from the Size 1 lesion only in relation to their size and they will be more of a challenge to restore. The usual instrumentation will be required to remove the demineralised infected dentine on the surface before restoring. Clean the walls around the periphery only although, almost certainly, there will be affected dentine remaining on the floor of the cavity. However, as long as the margin is sealed against microleakage, the restoration will be effective and the affected dentine will heal [Figure 5 – 8].

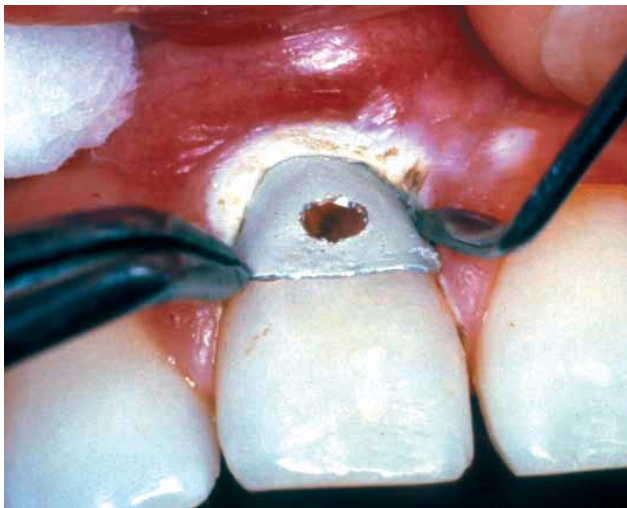
Slika 5. Ovdje prikazana lezija rezultat je idiopatske vanjske resorpcije i stoga je prilično duboka i proširena. Materijal izbora za ispun je staklenoionomer za estetske ispune tipa II.1 jer je bioaktivan i veže se za dentin i caklimu.

Figure 5. The lesion shown here is the result of idiopathic external resorption and is therefore rather deep and extensive. The material of choice for restoration is a Type II.1 restorative aesthetic glass-ionomer because it is bioactive and will adhere to both dentine and enamel.



Slika 6. Prethodno oblikovati matricu od mekog materijala kao pomoć za postizanje optimalnog oblika i estetike. Nakon nanošenja cementa u kapsuli izraditi malu rupu u matrici toliko veliku da omogući ulaz vrha kapsule/štrcaljke.

Figure 6. A soft tin matrix is preformed to aid in achieving optimum contour and aesthetics. As the cement is capsulated a small hole is cut into the matrix just large enough to admit the tip of the capsule/syringe.



Slika 7. Kavitet kondicionirati, matricu postaviti i držati na mjestu vrhom oštrog instrumenta. Staklenoionomer zatim uštrcati kroz rupu i držati matricu dok se cement ne stvrdne. Čim se odstrani matrica, ispun prekriti slojem jednokomponentnog, svjetlosnopolimerizirajućeg akrilata bez punila za održavanje ravnoteže vode sljedećih 24 sata.

Figure 7. The cavity is conditioned and the matrix placed and held with the tip of a sharp instrument to maintain its position. The glass-ionomer is then syringed to place through the hole and the matrix retained until the cement is set. Immediately it is removed the restoration is covered with a layer of a single component, light activated, unfilled resin to maintain the water balance for the next 24 hours.



Slika 8. Ovdje je prikazan završeni ispun otprilike 2 godine nakon izrade. Estetski rezultat je zadovoljavajući i nema mogućnosti mikropropuštanja.

Figure 8. The final restoration is shown here approximately 2 years after placement. Note the aesthetic result is satisfactory and there is no potential for microleakage.

Potrebni instrumenti

- Kod ove karijesne lezije je nekad potrebno malo proširiti rubove pomoću malog konusnog dijamantnog svrdla (206).
- Koristiti malo okruglo svrdlo za čišćenje zidova da se omogući adhezija izmenom jona.

Preparacija i izrada ispuna

- Kod aktivnog karijesa očistiti zidove duž celog opsega ali ostaviti aksijalni zid da se remineralizira.
- Kondicionirati površinu kaviteta 10%-tnom poliakrilnom kiselinom samo 10 sekundi, dobro isprati i lagano osušiti.
- Odabrati odgovarajuću matricu.

Instruments required

- for this larger carious lesion it may be necessary to extend the margins a little using a small tapered diamond bur (#206).
- use a small round bur to clean the walls sufficient to allow ion exchange adhesion.

Preparation and restoration

- in the presence of active caries clean the walls around the full circumference but leave the axial wall to remineralise under the glass-ionomer.
- condition the surface of the cavity with 10% polyacrylic acid for 10 seconds only, wash well and dry lightly.
- select a suitable matrix and pre-form as required

- Zamešati odgovarajući materijal, po mogućnosti u kapsuli.
- Glasjonomer naneti na zubnu površinu i naneti matricu za dobru adaptaciju materijala na zubnu površinu.
- Polimerizirati svjetlom ili ostaviti glasjonomer da se stvrdne. Višak na rubu matrice služi kao kontrola stvrdnjavanja.
- Odstraniti matricu i odmah naneti debeli sloj smole niske viskoznosti kao sredstva za zalivanje. To je nužno kod samostvrdnjavanja, a kod smolom ojačanog materijala još uvek preporučljivo.
- Koristiti oštri instrument za minimalno ukaljanje samostvrdnutog materijala pre nego se sredstvo za zalivanje polimerizuje svetlom. Koristiti fino dijamantno svrdlo pod vazdušno/vodenim mlazom za oblikovanje smolom ojačanog materijala i zatim ga ponovno zaliti akrilatnim sredstvom.
- Polirati ispun nakon stvrdnjavanja glasjonomera samo ako je potrebno. Ako je matrica pravilno korišćena, naknadno poliranje često nije potrebno.
- mix the appropriate material, in a capsule for preference.
- syringe the glass-ionomer on to the tooth surface and apply the matrix to adapt the material well and positively to the surface of the tooth.
- light activate or allow the glass-ionomer to set. Check the excess around the periphery of the matrix to see that it is properly set.
- remove the matrix and immediately apply a layer of low viscosity resin as a sealant. This is essential for the auto cure but still a good idea for the resin modified material.
- use a sharp blade to minimally trim an auto cure material before light activating the resin seal. Use fine diamonds under air/water spray to contour a resin modified material and then seal it again with the low viscosity resin seal.
- polish the restorations after the glass-ionomer has matured only if it is essential. If the matrix was properly applied subsequent polishing is often not required.

Grupa 3, veličina 3

Ovo su obično lezije površine korena na aproksimalnim površinama prednjih ili bočnih zubi. U tim je uslovi- ma često potrebno pristupiti leziji s bukalne ili lingvalne a ne s okluzalne strane. Odluka o pristupu zavisi u prvom redu od položaja lezije, a zatim o potrebi pristupa i praktičnosti. Kod mladog pacijent je moguće pristupiti početnoj leziji odmah ispod kontaktnog područja. Međutim, što je kavitet bliži ivičnom grebenu, verovatnije je da će greben kasnije stradati. Lezija će se kod starijeg pacijenta nalaziti iza spoja cementa i gledji i stoga dosta ispod kontaktnog područja, pa je manje verovatno da će preostalo zubno tkivo kasnije propasti [Slika 9. – 13.].



Site 3, Size 3

These lesions are generally root surface lesions on the interproximal surfaces of anterior or posterior teeth. Under these circumstances it will often be prudent and conservative to enter the lesion from either the buccal or the lingual rather than from the occlusal. The decision concerning the side of entry will be dictated primarily by the position of the lesion and secondarily by the need for access and convenience. It is, of course, possible in a young patient, to approach an initial lesion that lies immediately under the contact area with this design. However, the closer the cavity is to the marginal ridge, the more likely it is that the ridge will fail at a later date. The lesion in the older patient will be beyond the cemento-enamel junction and therefore well below the contact area, so remaining tooth structure is less likely to fail subsequently [Figures 9 – 13].

Slika 9. Lezija veličine 3 obično predstavlja karijes površine korijena na aproksimalnoj površini zuba, prednjeg ili stražnjeg. Dijagnoza i pristup su otežani i često je problem odrediti oblik kaviteta.

Figure 9. The Size 3 lesion is generally root surface caries on the interproximal surface of a tooth, either anterior or posterior. Both diagnosis and access is a little more difficult and defining the cavity outline is often a problem.



Slika 10. Određen je rub kaviteta i dentin je očišćen kako bi se omogućila adhezija izmjenom iona. Aksijalni zid je zadržan koliko je moguće jer to je mjesto gdje može doći do izlaganja pulpe i mora se paziti. Očekuje se da će pod uticajem glasionomera doći do remineralizacije i zaceljenja.
Figure 10. The periphery of the cavity has been defined and the dentine cleaned to the extent that there will be an ion exchange adhesion. The axial wall is left alone as far as possible because this is where a pulp exposure is a distinct possibility and care must be exercised. It is expected that under the influence of glass-ionomer there will be remineralisation and healing.



Slika 11. Isečena je kratka poliesterska traka za oblikovanje i lagano učvršćena malim drvenim klinom. Sada se štrcaljkom može postaviti svjetlosnopolimerizirajući glasionomer za izradu ispuna.
Figure 11. A short length of a mylar strip has been cut to shape and lightly wedged to place with a small wooden wedge. A light activated glass-ionomer can now be syringed to place to restore the cavity.



Slika 12. Matrica je pažljivo omotana za oblikovanje cementa dok se svjetlosno polimerizira s labijalne i lingvalne strane kako bi se osigurala potpuna polimerizacija.
Figure 12. The matrix is carefully wrapped around to contour the cement while it is light activated from both the labial and the lingual to ensure full polymerisation.



Slika 13. Završeni ispun prikazan odmah nakon skidanja koferdama. Ovaj materijal nije potrebno prekriti akrilatnim sredstvom za zalivanje, no neće štetiti, a ako se koristi može popuniti manju poroznost površine.
Figure 13. The completed restoration shown immediately after removal of the rubber dam. There is no need to cover this material with a resin seal but it will do no harm and, if used, it may fill in minor porosities in the surface.

Problem se obično veže uz karijes površine korena ili za otvoreni rub na zubnoj kruni ili zlatnom inleju. To može biti povratni karijes s obzirom na preveliki rub starog ispuna. Valja pažljivo uzeti anamnezu, jer se takve lezije često povezuju s kserostomijom ili funkcijski otvorenim kontaktom. U svakom slučaju prvo se mora rešiti uzrok, a zatim sprovesti lečenje.

Kod funkcijski otvorenog zagrižaja treba pažljivo oceniti stanje prethodnog ispuna. Kod starog amalgama, na primjer, pitanje može biti treba li zameniti celi ispun ili lečiti leziju tunelskom preparacijom sa pristupom bukalno ili lingvalno. Ako su okluzija, aproksimalni oblik i kontakt i rubovi originalnog ispuna zdravi, minimalni zahvat u obliku tunelske preparacije može biti dovoljan. Kod izrade ispuna ispod potpune krunice, tunelska preparacija je opravdana samo ako su preostali rubovi potpuni i bez karijesa.

Kako je teško kontrolisati ispun bez rendgena, preporučuje se postavljanje rendgenski kontrastnog materijala. Ako je prostor za tačno aplikovanje polimerizacijskog svetla dovoljan, smolom ojačani materijal može se koristiti posebno kod prednjih zuba.

Potrebni instrumenti

- Malo konusno dijamantno svrdlo (#206) pri srednjoj brzini (40.000 okretaja u minuti) uz vazdušno/vodeni mlaz.
- Mala okrugla svrdla, veličine 1/011-016, za odstranjivanje karijesa.
- Okrugla svrdla s dugim drškom za duboki pristup.
- Pristup za ručne instrumente je ograničen.

The problem will usually be related to root surface caries or to an open margin on a crown or gold inlay. It may be recurrent caries in relation to an overhanging margin on an old restoration. A careful history should be elicited, because such lesions are often related to xerostomia or alternatively to a functionally opening contact. Either way the cause should be dealt with first with treatment to follow.

In the case of a functionally opening contact the condition of the previous restoration will need to be carefully assessed. With an old amalgam, for example, the question may be whether to replace the entire restoration or restore the lesion through a tunnel type cavity design entering from either the buccal or the lingual. If the occlusion, proximal contour and contact and the margins of the original restoration are sound, it may be sufficient to provide minimal treatment in the form of a tunnel. For restoration of a lesion under a full crown the tunnel is only justified when the remaining margins are entirely acceptable and caries-free.

As it may well be difficult to monitor the restoration in the future without radiographs, it is recommended that a radiopaque material be placed. Providing there is sufficient access for the correct positioning of an activator light, a resin modified material may be preferred particularly in anterior teeth.

Instruments required

- Small, tapered diamond bur (#206) at intermediate high speed (40,000 revs/min) under air/water spray.
- Small round burs, sizes 1/011-016, for caries removal.
- Long-shank round burs may be required for deep access.
- Access for hand instruments is limited.

Preparacija i izrada ispuna

- Leziji pristupiti s bukalne ili lingvalne strane, kako nalaže položaj karijesne lezije, koristeći malo konusno dijamantno svrdlo pri srednjoj brzini pod vazdušno/vodenim mlazom.
- Koristiti kratku metalnu matricu za zaštitu susjednog zuba tokom rada. Pažljivo postaviti košić uz matricu pri postavljanju cementa.
- Okluzijski se polako približiti leziji, zatim krenuti aproksimalno i gingivno dok se lezija jasno ne vidi. Skinuti dovoljno zubnog tkiva ili starog ispuna da se omogući pristup i praktično oblikovanje bez nepotrebnog slabljenja ivičnog grebena.
- Koristiti mala okrugla svrdla pri maloj brzini za odstranjivanje inficiranog dentina i očistiti zidove duž cijelog opsega. Zadržati aksijalni zid, čak i ako je demineralizovan.
- Po mogućnosti zadržati zid na suprotnoj strani od pristupa za osiguranje pozitivne završne linije za ispun.
- Ispun izraditi rendgen kontrastnim glasjonomerom. Ako ima dovoljno prostora za tačno postavljanje svetla za polimerizaciju, koristiti smolom ojačani materijal.
- Materijal pažljivo oblikovati nakon postavljanja kako ne bi bio prevelik ili preoblikovan.
- Zaliti svetlosnopolimerizujućim sredstvom za zalivanje vrlo niske viskoznosti.

Grupa 3, veličina 4

Kada cervikalna lezija uključuje dve ili više površina klasifikuje se kao veličina 4. Osnovna načela su ista kao i kod lezija veličine 3, samo će pristup, oblik kaviteta i postavljanje ispuna biti nešto složeniji.

Najveći problem je izrada odgovarajuće matrice. Ako se postavlja samostvrđnjavajući materijal, moguće je preoblikovati matricu. Matrica mora obihvatiti zub i mora se postaviti košić. Pre postavljanja treba izrezati otvor na odgovarajućem mestu koristeći okruglo svrdlo broj 8 koji je dovoljan za prihvatanje vrha kapsule. Naneti tanki sloj sredstva za separaciju na unutrašnju površinu metalne matrice da se glasjonomer ne lijepi na nju. Kad je matrica čvrsto na mjestu, postaviti cement i pričekati da se stvrdne, a zatim odstraniti matricu [Slika 14. – 18.].

Ako se koristi smolom ojačani materijal može se postaviti u slojevima i svaki se sloj polimerizuje svetlom dok se cjeli ispun ne stvrdne. Translucentna matrica od poliesterske trake poboljšaće adaptaciju, a materijal mora stalno biti izložen izvoru svetla.

Preparation and restoration

- Enter the lesion from the buccal or the lingual as the position of the carious lesion dictates, using the small tapered diamond stone at intermediate high speed under air/water spray.
- Use a short length of a metal matrix to protect the adjacent tooth while working. Wedge the matrix carefully when placing the cement.
- Begin slightly occlusal to the lesion, and move interproximally and gingivally until the lesion is clearly visible. Sacrifice sufficient tooth structure or old restoration to allow access and convenience form without unduly weakening the marginal ridge.
- Use small round burs at slow speed to remove all infected dentine and develop clean walls around the entire circumference. Leave the axial wall, even though it is demineralised.
- If possible, retain the wall at the opposite side from the entry, to provide a positive finishing line for the restoration.
- Restore using a radiopaque glass-ionomer. If access is available for correct placement of the activator light, use a resin modified material.
- Trim and contour carefully after placement to ensure there is no overhang or overcontour.
- Seal with a very low viscosity light activated resin enamel seal.

Site 3, Size 4

In a situation where a cervical lesion involves two or more surfaces it will be classified as a Size 4. The basic principles will remain the same as for the Size 3 lesion but access, cavity design and restoration placement will be somewhat more complex.

The greatest problem is likely to be the construction of a suitable matrix. If an auto cure material is to be placed then it may be possible to preform a matrix in soft tin or similar. Wrap this around the tooth and support it with greenstick compound. Before it is positioned cut a hole at a convenient site with a round 8 bur sufficiently large to admit the tip of the mixing capsule or disposable syringe. Apply a thin coat of a separating medium to the inner surface of the metal matrix so the glass-ionomer does not stick to it. Once the matrix is firmly retained in position the cement can be syringed in to place and allowed to set then the matrix removed [Figure 14 – 18].

If a resin modified material is to be used it can be placed incrementally and each increment light activated until the entire restoration is fully cured. A translucent matrix made from a mylar strip will enhance adaptation but the material must be available to the light source at all times.



Slika 14. Serija snimaka prikazuje proširenu karijesnu leziju koja uključuje tri površine donjeg očnjaka. Postojeći kompozit pokazuje jasne znakove rubnog propuštanja i bilo je dodatnih problema na distalnim i lingvalnim površinama.

Figure 14. A series showing an extensive cervical lesion involving three surfaces of the lower canine. The existing composite resin shows distinct signs of marginal leakage and there were further problems on the distal and lingual surfaces.



Slika 15. Završeni kavitetski dizajn s labijalne strane. Zidovi duž cijelog ruba su očišćeni za osiguranje potpune adhezije izmjenom iona, no aksijalni zid je zadržan sa zahvaćenim dentinom kako bi se maksimalno smanjio rizik za pulpu.

Figure 15. The completed cavity design seen from the labial only. The walls around the complete periphery have been cleaned to ensure a full ion exchange adhesion but the axial wall has been left with affected dentine to minimise the risk to the pulp.



Slika 16. Cijeli ispun s labijalne strane odmah nakon izrade. Materijal izbora bio je svjetlosopolimerizirajući staklenoionomer koji je postavljen pomoću složene izrade matrice u tri sloja.

Figure 16. The completed restoration viewed from the labial immediately after placement. The material of choice was a light activated glass-ionomer and this was placed with a complex matrix design in three increments.



Slika 17. Ispun s labijalne strane dvije godine nakon izrade. Cjelovit je, bez znakova istrošenosti ili rubnog propuštanja.

Figure 17. The restoration viewed from the labial two years after placement. It appears to be complete with no signs of wear or marginal leakage.



Slika 18. Isti ispun s lingvalne strane dvije godine nakon izrade. Završni rezultat je potpuno zadovoljavajući.

Figure 18. The same restoration viewed from the lingual two years after placement. The end result appears to be completely satisfactory.

Potrebni instrumenti

- Malo konusno dijamantno svrdlo (206) ili dijamantsko cilindrično svrdlo (214) pri srednjoj brzini (40.000 okretaja u minuti) uz vazdušno/vodeni mlaz za otvaranje lezije.
- Mala okrugla svrdla, veličine 1/011-016, za odstranjivanje karijesa.
- Okrugla svrdla s dugim drškom za duboki pristup.

Preparacija i izrada ispuna

- Leziji pristupiti s bukalne ili lingvalne strane, kako određuje položaj karijesne lezije, koristeći malo konusno dijamantno svrdlo pri srednjoj brzini pod vazdušno/vodenim mlazom.
- Koristiti kratku metalnu matricu za zaštitu susjednog zuba tokom rada. Pažljivo postaviti kočić u matricu pri postavljanju cementa.
- Okluzijski se polako približiti leziji, zatim krenuti aproksimalno i gingivno dok se lezija jasno ne vidi. Skinuti dovoljno zubnog tkiva ili starog ispuna da se omogući pristup i praktično oblikovanje bez nepotrebnog slabljenja rubnog grebena.
- Koristiti mala okrugla svrdla pri maloj brzini za odstranjivanje inficiranog dentina i očistiti zidove duž celog obima. Zadržati aksijalni zid, čak i ako je demineralizovan.
- Složenost kaviteta zahtijevaće izradu složene matrice.
- Ispun izraditi rendgen kontrastnim glasjonomerom. Ako ima dovoljno prostora za tačno postavljanje svetla za polimerizaciju, koristiti smolom ojačani materijal.
- Materijal pažljivo oblikovati nakon postavljanja kako ne bi bio prevelik ili preoblikovan.
- Zaliti svetlosnopolimerizirajućim sredstvom za zalivanje vrlo niske viskoznosti.

Instruments required

- Small, tapered diamond bur (#206) or a diamond cylinder (#214) at intermediate high speed (40,000 revs/min) with air/water spray, to open into the lesion.
- Small round burs, sizes 1/011-016, for caries removal.
- Long-shank round burs may be required for difficult access.

Preparation and restoration

- Enter the lesion from the buccal or the lingual as the position of the carious lesion dictates, using the small tapered diamond stone at intermediate high speed under air/water spray.
- Use a short length of a metal matrix to protect the adjacent tooth while working. Wedge the matrix carefully when placing the cement.
- Begin slightly occlusal to the lesion, and move interproximally and gingivally until the extent of the lesion is clearly visible. Sacrifice sufficient tooth structure and/or old restoration to allow access and convenience form.
- Use small round burs at slow speed to remove all infected dentine and develop clean walls around the entire circumference. Leave the axial wall, even though it is demineralised.
- The complexity of the cavity will require the construction of a complex matrix.
- Restore using a radiopaque cement. If access is available for correct placement of the activator light, use a resin modified material.
- Trim and contour carefully after placement to ensure there is no overhang or overcontour.
- Seal with a very low viscosity light activated resin enamel seal.

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