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Original Article

Cervical Restoration and the Amount of Soft Tissue Coverage Achieved by Coronally Advanced Flap

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***ABSTRACT*:**
Owing to the physical abrasion, chemical erosion and abfraction NCCL commence, which might also be an result of longstanding root exposure presented with dentinal hypersensitivity. The study aims to assess the root restorations done in non carious cervical lesion by Giomer,Composite, Glass Ionomer Cement by the use of coronally advanced flap for gingival recession .the experiment design constituted 15 patients of millers class 1 with cervical abrasion .each 5 patients were restored with Giomer,Glass Ionomer cement and composite with a recession coverage with coronally advanced flap. Giomer however because of high resistance to abrasion proved to be better biocompatible material for soft tissue recession coverage with coronally advanced flap.
Key words: Non carious cervical lesions, coronally advanced flap, giomer.

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INTRODUCTION:

Present era witnessing more of preventive dentistry (caries control) along with alterations in regular diet pattern, Non carious cervical lesions are more commonly observed these days. Chemical (erosion), physical (abrasion) or change in force distribution (abfraction) may lead to develop NCCL. Another important causative factor can be longer period of root exposure, generally presented and associated with dentinal hypersensitivity. The absence of the gingival tissue protecting the root surface may facilitate the occurrence of other problems, such as aesthetic complaints, dentin sensitivity, root caries and cervical wear.[1]

Gingival recession and a wedge-shaped defect in the cervical area often affect the same tooth.[2]

Treatment of such main concentrates or control of causative factor along with application of cavity varnish or use of de sensitizing material (in office or home care). Inability to completely control moisture contamination and lack of mechanical retention posses significant problem concerned with failure of the restoration.

Glass Ionomer Cement (GIC) and Composite closely compete with each other especially when bonding with cervical dentin is required. Recently, fluoride releasing pre reacted glass (PRG) resin material called GIOMER, has proved to be tissue compatible, esthetically pleasing. The fluoroalumina silicate glass reacts with polyalkenoic acid in water before being incorporated into the silica-filled urethane resin thus producing a stable phase of glass ionomer in restorative material which is unique of PRG

technology. Thus, the aim of this study was to clinically evaluate the treatment of gingival recession associated with root restoration in non carious cervical lesions by Giomer, Glass Ionomer Cement and Composite using a coronally advanced flap.

MATERIAL AND METHODS:

EXPERIMENTAL DESIGN

15 patients with Miller's Class I recession along with cervical abrasion were taken and randomly divided into 3 groups , each group of 5 patients being restored with Glass Ionomer Cement, Giomer, and composite respectively and recession coverage done with coronally advanced flap. After 24hours of cervical restoration root coverage with coronally advanced flap was done. After 1 month clinical parameters – Pocket depth, Relative gingival recession (RGR), Relative clinical attachment was recorded and results were compared.

INCLUSION CRITERIA

1. Presence of bilateral Class I Miller gingival recession associated with non-carious cervical lesion 1–2mm deep .
2. Non-smokers.
3. Systemically and periodontally healthy.
4. No contraindication for periodontal surgery.
5. Had not taken medications known to interfere with periodontal tissue health and healing.
6. Probing depth (PD) of 3mm without BOP.
7. Tooth vitality, absence of restoration on cervical area and absence of severe occlusal interferences in the area to be treated.
8. No previous periodontal surgery in the area.

EXCLUSION CRITERIA

1. Deep cavities which needed liners or bases for pulp protection excluded from the study.
2. The selected teeth had no carious lesion or restorations on other surfaces.

RESTORATIVE PROCEDURE

The same operator performed all the restorative procedures to avoid inter operative variability. In this study, cervical carious lesions were restricted mainly to the buccal surface of teeth without extension into the proximal surfaces.

Tooth preparation was done by Conventional cavity preparation design (with a 90°cavosurface angles; uniform depth of the axial line angles and retentive grooves) using a diamond bur - 010 Flat End Taper, SS White Burs. On gingiva axial line angles retentive grooves were placed. No liners or bases were applied.

RESTORATION

For Giomer and composite, the self-etch adhesive was used (FL-Bond, Shofu). The cavities were restored incrementally using a giomer (Beautifil II, A3 shade, Shofu) and cured for 40 s for every increment by a quartz halogen light-curing device. The restorations were then finished with diamond burs, polished with polishing discs.GIC was mixed and placed incrementally too.

SURGICAL PROCEDURE

Single operator performed all root coverage surgeries Firstly, the root surfaces of tooth were planed thoroughly with manual periodontal Curettes. A sulcular incision was given. Full thickness flap was raised and extended partial thickness beyond MGJ under local anesthesia. The flap was moved coronally to cover the exposed root. Periodontal dressing was applied.

Amoxicillin 500 mg thrice a day was prescribed, ibuprofen twice a day and 0.12% chlorhexidine digluconate mouth rinses were prescribed for the first postoperative week. Sutures were removed after 15 days. Oral hygiene instructions were thoroughly given. A month after initial therapy, the following parameters were recorded: Pocket depth, Relative gingival recession (RGR), Relative clinical attachment was recorded and results were compared.

CASES TREATED WITH GLASS IONOMER CEMENT RESTORATION AND SURGICAL TREATMENT

Pre operative view 24

After 24 hrs of restoration, surgical coverage with coronally advanced flap.

6 months post operative

CASES TREATED WITH GIOMER RESTORATION AND SURGICAL TREATMENT

Pre operative view of 24, 25

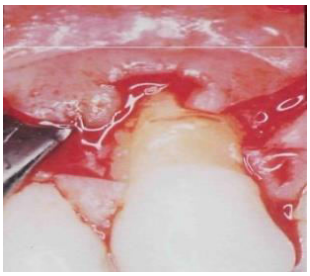
After 24 hrs of restoration, surgical coverage with coronally advanced flap.

6 months post operative

CASES TREATED WITH COMPOSITE RESTORATION AND SURGICAL TREATMENT

Pre operative 13

After 24 hrs of restoration, surgical coverage with coronally advanced flap.



Coronally advanced flap 13

Post surgery

6 months post operative

POST OPERATIVE CARE:

Patients were prescribed 500 mg of Amoxicillin thrice a day, 50 mg diclofenac sodium twice a day, Becasule once a day for 5 days and were instructed to avoid tooth brushing around the surgical sites during the initial 15 days after surgery. During this period, plaque control was achieved with a 0.12% chlorhexidine solution rinse used twice a day. Post this period, gentle toothbrushing with a soft-bristle toothbrush was allowed. Sutures were removed after 15 days, patients were recalled weekly till 1 month followed by once a month depending on the oral hygiene status.

RESULT:

All three groups showed statistically significant gain in clinical attachment level and soft tissue coverage. However, the difference between groups were not statistically significant for pocket depth, relative gingival recession after 1 month follow up.

The estimated root coverage for

Giomer was : 96.2% +/- 8.9%

Glass Ionomer Cement was : 89.8% +/- 15.2%

Composite was : 76.3% +/- 18.2%

Observing the results giomer has proved to be better biocompatible material followed by GIC than composite in soft tissue recession coverage by coronally advanced flap.

DISCUSSION:

The combined approach to manage the cervical lesion on the crown with restorative and associated gingival recession with periodontal surgical therapy better deals with the gingival recession associated with cervical lesions. Periodontal procedures include free autologous mucosal grafts, sub-epithelial connective tissue grafts, the coronal advanced flap technique, laterally advanced flap, guided periodontal tissue regeneration, and enamel matrix derivative grafts. Results showed incomplete root coverage even with sufficient interproximal attachment, therefore use of restorative material was suggested along with for better emergence profile. The CAF proves predictable root coverage for intact root Miller Class I gingival recessions.[3] However, the long-term success of the CAF to treat gingival recession, associated with a non-carious cervical lesion, combined with a cervical restoration do not witness enough evidence.[4] IN a 2-year follow-up study corroborate previous findings suggesting that after coronally advancing the flap on the restored root with GIC, gingival margin stability may be obtained.[5]

Coronally positioned flap plus resin-modified glass ionomer restoration for the treatment of gingival recession associated with non-carious cervical lesion. A randomized controlled clinical trial.[6] On comparing with conventional and resin-modified GIC, giomers proved significantly significantly better surface finish, and fairly good esthetics comparable to those of resin composite.[7] Nevertheless, marginal seal and long term retention need further clinical testing to confirm any other advantage they might have over resin-modified GIC or resin composites. Selection of the giomer as the restorative material was based on a previous report fluoride release, biocompatibility and smooth surface finish.[8] Surface finish of a new hybrid aesthetic
restorative material.[9] A three year clinical evaluation of two dentin bonding agents.[10] In vitro assessment of cytotoxicity of giomer on human gingival fibroblasts.[11] The first clinical trial aimed to evaluate the coverage achieved on restored roots was performed by Thanik & Bissada
(1999).[12] They concluded that similar coverage could be obtained regardless of the presence of the restoration. Due to their chemical bonding leading to high retention of the restoration, GIC was one of the restorative material of choice proved to show significant results. Ability to release fluoride was another advantage. less than optimal esthetics, inconvenient setting characteristics and low resistance to abrasion probably made Giomer win over GIC.[13,14,15,16]

Esthetic properties, increased mechanical properties, improved adhesive capacity due to modern dentin adhesives; resin composites compete closely with GIC, in most of the clinical evaluations.

Surface texture, marginal integrity, anatomical form and color match proved by far to be superior. Marginal sealing deficiency and especially adhesion degradation over time i.e polymerization shrinkage makes this otherwise suitable material to take a back step. Polymerization shrinkage is considered the primary issue responsible for contraction gaps at the tooth/restoration interface that leads to microleakage. The presence of bacteria, mineralized bacterial matrices, hypermineralized surfaces and mineral occluded tubules make sclerotic cervical dentin a unique multi- layered bonding substrate. The main reason for the weaker retention rates of restorative materials is sclerotic dentin which represents a typical finding in NCCL.14,121,122 These thick hypermineralized layers serve as obstacles to diffusion and prevent the penetration of conditioning acids. Areas devoid of hybrid layer formation which are potential weak links that may be responsible for the lower bond strengths were observed when bonding to sclerotic dentin.[17]

It was suggested that removal of the superficial hypermineralized layer with a bur or the use of intensive acid preconditioning prior to the application of self etch primers may be necessary to achieve a better adhesion to sclerotic dentin. Because the bond strength to enamel exceeds the bond strength to dentin, shrinkage in cervical restorations will be directed toward the enamel cavity wall, leaving a gap cervically retention loss due to ongoing cervical stress, adhesive charecterstics and materials physical properties are few more drawback that could probably be responsible for least of the root coverage seen comparatively.[18,19,20,21]

2-year follow-up success of the treatment of gingival recession associated with non-carious cervical lesions by a coronally advanced flap alone or in combination with a resin-modified glass
ionomer restoration. It can be concluded that both procedures provide acceptable soft tissue coverage after 2 years, with no significant differences between the two approaches. Although in vitro studies proved lower bond strength of GIC but higher long term retention.[22,23] GIC bonds chemically to the Ca of the tooth structure avoiding unnecessary removal to create beveled margin.

Composites now adays suit esthetically better but GIC and RMGI exhibit better translucency and colour because of their chemical stability. Secondly, due to loss of enamel in NCCL, beveled enamel margins mandatory for composite retention is contraindicated. GIC bonds chemically to the Ca of the tooth structure avoiding unnecessary removal to create beveled margin.[1] Non-carious tooth substance loss represents an increasing concern in today's dental practice, and the more recent topic-related literature offers no evidence-based clinical guidelines regarding their prevention and restoration. Previous reviews focused

mainly on etiology and prevalence, presenting no update for the restorative protocol.

Gingival recessions associated with non-carious cervical lesions can be successfully treated by glass ionomer restoration combined with the coronally advanced flap (CAF), with or without connective tissue graft.[4]After the healing period, good aesthetic outcome and gingival health with no signs of inflammation, such as redness and bleeding on probing (BOP), were observed despite the subgingival location of part of the restoration. These and other reports[24] showed successful outcomes when root coverage surgery was performed on the restored root surface.

CONCLUSION:

The combined approach to manage the cervical lesion on the crown with restorative and associated gingival recession with periodontal surgical therapy better deals with the gingival recession associated with cervical lesions. The aim of this study was to clinically evaluate the treatment of gingival recession associated with root restoration in non carious cervical lesions by Giomer, Glass Ionomer Cement and Composite using a coronally advanced flap. The estimated root coverage for Giomer was greatest, followed by GIC and composite later.

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