

Management of Deep Cervical Margins in Proximal Restorations for Long-term Success

An often encountered problem with the restoration of large proximal cavities is the presence of deep cervical margins. The typical problem associated with the restoration of these cavities is not only just difficulty in isolation but also achieving a well-adapted restoration with good marginal integrity. Hence, these deep gingival margins become double-edged swords, interfering with isolation on the one hand and compromising proper restoration adaptation on the other hand. Addressing these concerns additionally requires respecting the biological width and ensuring adequate polymerization in these deeper zones.^[1]

Given the unfavorable consequences of polymerization shrinkage and the challenges of placing a direct composite restoration in deep cervical margins, indirect restorations are considered better alternatives. Adhesively cemented indirect restorations are less impacted by polymerization shrinkage as the resin luting agent is of lesser thickness. However, the gingival seat of the proximal box placed below the gingiva often impedes both impression-making and adhesive-luting techniques.^[2]

Although surgical crown lengthening has been reported to have success in the retention of restored teeth, the deep margin elevation (DME) procedure has been shown to have a better prognosis at survival.^[3] Also named cervical margin relocation or proximal box elevation, the DME technique essentially is the placement of an adhesive material at the gingival seat to displace proximal margins coronally to be placed beneath indirect restorations. The procedure involves the placement of a curved matrix band adapted to the gingival seat following rubber dam isolation. The height of the band is reduced coronally by around 3 mm to allow a close adaptation to the cervical margin as wedging is usually not possible. A matrix-in-matrix technique has been advocated in case a curved matrix alone does not have a snug fit. For teeth with subgingival margins undergoing endodontic treatment, authors recommend DME before commencing root canal therapy for optimal pulp chamber isolation. Once adapted, the margin is cleaned again followed by bonding, and a thin layer of resin composite is placed to relocate the margin by 2 mm. It is advisable to perform immediate dentin sealing before placement of the restorative material to ensure good bonding in the cervical region. As the proximal box is deep, an extra 10 s of curing through a layer of glycerine gel is a good practice. The excess flash of the composite is to be removed and the enamel walls are reprepared to remove the surplus resin. A bitewing radiograph at this stage would verify the absence of gaps or overhangs.^[1]

The success of the entire procedure relies on hermetic rubber dam isolation and a well-contoured matrix.^[4] Therefore, the amount of supragingival displacement that can be achieved is around 2–3 mm. For margins extending deeper into the gingival margin, surgical exposure, surgical crown lengthening, or orthodontic extrusion are required for isolation of the field.^[5] Regarding the choice of material used for the procedure, resin composites as well as resin-modified glass ionomers have shown good results in terms of margin quality and fracture resistance when used under esthetic inlays and onlays.^[6,7] Long-term follow-up studies also show better survival rates when DME is coupled with indirect ceramic restorations than with indirect composite restorations.^[8]

To conclude, the DME technique is a more conservative alternative to surgical crown lengthening or orthodontic extrusion for selective cases in terms of biologic width, patient comfort, cost, and time. This technique also helps recording margins in impressions including optical impressions. The method is, however, technique sensitive as it requires hermetic isolation, close adaptation of the matrix, and ensuring adequate polymerization. Therefore, the success of DME relies largely on correct case selection and expertise of the clinician to achieve predictable long-term success of deep proximal restorations.

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