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Technique for treating Periodontal Pockets without bone grafting or flap surgery using 3D Exosomes and Polypeptide 3D Exosome Media (PEM) Paste

When treating localized periodontal pockets, leveraging the regenerative potential of 3D exosomes and tissue regeneration techniques can significantly enhance healing.

Below is a suggested strategy based on the latest research and clinical practices:

1. Preparation of 3D Exosome-Functionalized Platforms

Materials

- **Exosome Source:** Use MSC-derived 3D exosomes, known for their osteogenic, regenerative soft tissue and angiogenic properties. Each mL contains 8 Billion Particles and 80 Million 3D Exosomes.
- **Polypeptide 3D Exosome Media (PEM) Paste:** 3D exosomes integrated into the 3D culture material which also includes additional regenerative and growth factors: Epithelial Growth Factor (EGF), Fibroblast Growth Factor (bFGF), Platelet Derived Growth Factor (PDGF), Hepatocyte Derived Growth Factor (HGF), Collagen type 1, Factor-11 (GDF-11) growth differentiation-rejuvenation factor and regenerative markers. This material provides structural support and is conducive to soft tissue regeneration.

2. Delivery Approach

Technique

- Curettage the periodontal pocket(s) removing any granulation tissue and calculus attached to the root cementum making sure to only remove the calculus and not aggressively root planing the cementum.

- Isolate the periodontal pocket(s) so that saliva cannot contaminate the sulcus (cotton rolls and a mouth prop with saliva reduction device).
- Place a dispenser tip on the 1 mL PEM Paste syringe.
- Gently extrude a small amount of PEM Paste into the periodontal pocket(s) so that it fills the pocket.
- Leave the PEM Paste in the isolated periodontal pocket(s) for 10-15 minutes.
- Remove the isolation devices (the sulcus will slowly purge the PEM Paste naturally over time).
- Using an insulin syringe (BD Insulin Syringe 31 gauge ultra fine 8 mm {5/16"} needle), inject 0.5 mL of 3D exosomes at the facial muco-gingival line adjacent to the area of the periodontal pocket(s).
- Check the patient's pocket depths in 4-6 weeks.
- The patient may require 2-3 procedures for pockets over 8 mm to reduce the pocket depths to acceptable levels.
- Some practitioners provide a maintenance dose of 0.5 mL of 3D exosomes injected at the facial muco-gingival line per quadrant every 6-12 months.

Advantages

- **Synergistic Effects:** Combining the layered 3D exosome-loaded PEM Paste leverages the strengths of this technique, providing a sustained release of 3D exosomes from the PEM Paste and the localized 3D exosome injection.
- **Enhanced Healing:** This combined approach can enhance early soft tissue/bone healing and promote long-term regeneration, improving the overall success of the procedure.

Clinical Considerations

Patient Selection

- **Assessment:** Evaluate the patient's overall health, compliance, soft tissue/bone quality, and the extent of the defect to determine the suitability of using exosome-functionalized platforms.

Post-Operative Care: Monitor the patient for signs of healing and provide appropriate post-operative care to ensure optimal outcomes.

Conclusion

Using 3D exosome-functionalized PEM Paste for localized periodontal pockets offers a non-invasive approach to enhance healing and soft tissue regeneration. By combining 3D exosome-functionalized PEM Paste and direct 3D exosome placement at the

mucogingival line clinicians can create a conducive and inductive environment for soft tissue/bone regeneration, improving the success rates of localized periodontal pockets.