Regenerative Strategies In Endodontics

Dr. S. Sai Kalyan B.D.S, M.D.S (Conservative dentistry and Endodontics)

Workshop on revascularization and regenerative strategies in Endodontics
“I died as a mineral and became a plant, I died as a plant and rose to animal, I died as animal and I was man. Why should I fear? When was I less by dying

- Jalalu’d-din Rumi, Sufi Poet

We stand on the world of revolution in Endodontics: Understanding, Treating and Ultimately preventing the causes of Pulpal disease. But medical revolution only happens when there is paradigm shift in interventional strategies from replacement towards regeneration. We did it for cancer, we are doing it for Alzheimer’s….can we do it for the diseased Pulp?

Cell transplantation is the most established practice in regenerative medicine. It does not always obtain the good result because of the low survival rate of transplanted cells. In addition, the use of ex vivo manipulated cell products faces many translational hurdles in treating non-vital disease. Recently, the body cells are focused as a potential source for therapeutics. Some researchers have demonstrated that endogenous stem cells may be recruited to a desired anatomic site pharmacologically. This is spurring interest in developing new generation of biomaterials that incorporate and release selected powerful extracellular influences in
a near-physiological fashion, and subsequently capture endogenous cells and influence their fates for regeneration. The use of patient-derived products such as platelet-rich preparations that contain a multitude of endogenous growth factors and proteins is a clinically translatable biotechnology for this proposes. These simple and cost efficient procedures may have a potential impact in reducing the economic costs for standard medical treatments in Regenerative Endodontics.

**COURSE OBJECTIVES**

1. To understand the basic principles behind regenerative aspects in Endodontics and Periradicular surgeries
2. Deliver In depth knowledge of platelet derived regenerative modalities
3. To understand the importance of growth factors in regenerative dentistry
4. Provide applied knowledge about the preparation of first and second generation platelet derived modalities
5. To understand the role of scaffolds in revascularization/regeneration
6. Practical application of the various benchtop preparation techniques
7. Importance of coronal seal and methods of achieving it using MTA (including material aspects.)
8. To give an indepth understanding in the areas of
   - Stem cell treasure for Engineering Pulp-Dentine complex
   - Embryonic stem cells & Postnatal stem cells
   - DPSC(Dental pulp stem cells)
   - SHED (Stem cells from human exfoliated deciduous teeth)
   - Stem Cells from Apical Papilla
   - Stem cells from Periodontal ligament
   - Isolation of stem cells & Cryopreservation
   - Role of growth factors in activating tissue engineering
➢ Scaffold effect
➢ Bioroot formation a permanent replacement to implants

**COURSE OUTLINE**

**Lecture series**
1. Regeneration: Practical applications in Indian scenario
2. Pros and Cons in regenerative endodontics
3. Material aspects of platelet derived regenerative modalities
4. Preparation and placement techniques
5. Scaffolds, coronal seal- with special emphasis on MTA
6. Potential use of Post Natal Stem Cells
7. Future directives and scope for research

**Hands-on/workshop**
1. Preparation of I<sup>st</sup> generation Platelet derived modalities
2. Preparation of II<sup>nd</sup> generation Platelet derived factors
3. Use of MTA and collagen/sponges in coronal sealing
4. Placement procedure: Barriers (Apexification), Scaffolds, Pulpotomies in permanent tooth
5. Preparation of triple antibiotic paste
6. SCAP isolation
Audio-Visual aids required to deliver Lectures with laser pointer.

Material required

1. Centrifuges – 800g/5000rpm- 2 Nos
2. Test tubes 20 cc for centrifuges 20 nos
3. Mixing pads-for participants
4. Spatulas stainless steel - 40
5. Amalgam carriers – 40 Nos
6. Vacutainers (depends on no. of participants)
7. 10cc syringes-(depends on no. of participants)
8. Insulin syringes (depends on no. of participants)
9. Glass slab (depends on no. of participants)
10. Bovine Thombin - 3 Ampules
11. 10% calcium chloride
12. Anticoagulant
13. Scissors- 40 Nos
14. Plastic Boxes(12 inches X 6 InchesX 5 Inches)- 40
15. Maxillary Central, Laterals Or Canines- 50( Apex Trimmed by 3mm and prepared till no.6 paeso reamers, to simulate an Open apex
16. Hand pluggers no.120 – (depends on no. of participants)
17. Normal Saline – 5 nos
18. Tweezers -(depends on no. of participants)
19. Scissors
20. Writing pads and pens- (depends on no. of participants)
21. GIC (Any Make)- (depends on no. of participants)
22. MTA- 5 sachets (depends on no. of participants)
23. Lumbar puncture needles (2 nos per participant)
24. Mortar and pestle
25. Lab Micromotor with Diamond Disc
26. Collagen sponges/Gel foam
27. Propylene glycol
28. Polyethylene glycol
29. Drug dispensing spatulas
30. Tissue Paper
31. Cotton Roll
32. Guaze

All participants are encouraged to carry their laptops and Maxillary Anterior teeth prepared as above.
One Mandibular molar with class I access cavity preparation