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Editorial

Vital pulp therapy: Entering a new era of preservation

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Healing is a matter of time, but it is sometimes also a matter of opportunity — **Hippocrates**

Vital pulp therapy, a modality initiated to preserve and maintain pulp tissue that has been compromised by caries, trauma or restorative procedures in a healthy state, is directed towards preservation of pulpally involved permanent tooth based on the premise that pulp has an innate regeneration capacity for repair against microbial and mechanical stresses as suggested by Kakehashi et al, 1965.[1,2]

Even though it has been used since 18^{th} century in the clinical practice, it gained popularity with the concept of Minimally invasive endodontics by Gutmann that advocates to preserve healthy dentin as much as possible from the diagnosis of the teeth to the preparation of pulp holes and the enlargement and formation of root canals.[3] VPT is a broad term used for indirect pulp capping, direct pulp capping and pulpotomy procedures. With the advancements in materials and techniques there has been an increase in success rates of VPT cases in teeth with reversible as well as irreversible pulpitis. Li et al., 2019 has concluded VPT to have success rates comparable to that of Traditional Root Canal Treatment and can be considered as an alternative minimally invasive treatment approach.[4]

The European Society of Endodontology (ESE) (2006) states that indirect pulp capping is a procedure in which a protective cement or dressing is placed over a thin layer of remaining sound or slightly softened dentine which if removed, might expose the pulp whereas direct pulp capping is covering the pulp with a protective dressing or base at the site of exposure in order to protect the pulp from additional injuries, permitting healing and repair.[5]

Case selection depends on preoperative and intra-operative diagnosis. Literature has suggested that case selection for VPT is based on the signs and symptoms of reversible pulpitis, however presently the scope of this modality as expanded to irreversible pulpitis cases as well. Santos et al, 2021 in his systematic review reported radiographic success of VPT in cases of symptomatic irreversible pulpits to be 81-90%.[6] The driver for decision between different VPT is the visual appearance of pulp and ability to control haemorrhage

For successful regeneration of pulp dentin complex sterile principles should be followed at all the steps. Bleeding is either control using mechanical (sterile cotton pellet soaked in sterile water or saline) or chemical means (Sodium hypochlorite lavage). The amputed pulp should be sealed with a cement that creates a tight seal in order to prevent microleakage such as Calcium hydroxide (Herman, 1920), Resin modified Glass Ionomer Cements, Mineral Trioxide Aggregate (Torabinejad, 1993), Biodentine (Septodont, 2009), Bioceramics (IRoot BP Plus, Innovative Bioceramix, EndoSequence Root Repair Material Putty, Brasseler). The reparative potential of these materials is attributed to dental pulpal cell interaction as well as material induced release of bioactive dentin matrix

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components. Tziafas et al, 2000 has suggested the use of growth factor such TGF-Beta and BMP to induce reparative dnetin formation and they have shown successful results when used for VPT as per the results of Ranly et al., 2000.[7,8]

The use of calcium silicate-based cements has increased over the last two decades as these show higher clinical and histological success rate with dentin bridge formation of superior quality. Bjørndal et al., 2019 has recommended the use of hydrated calcium silicate based

material, antimicrobial lavage and magnification as a part of "enhanced Protocol" for conservative management of vital pulp.[9]

Various prospective, retrospective studies and clinical trials have shown high success rates with MTA and Biodentine as pulp capping agents. Eghbal et al., 2009 used MTA and demonstrated the samples to be free of bacteria and inflammation with dentine barrier formation two months after the treatment.[10]

Pulpal tissue preservation over traditional root canal therapy allows the tooth to retain its ability to sense environmental changes, maintain biomechanical integrity and deposit tertiary dentin. Following careful selection of cases, teeth receiving VPT with calcium silicate based cements have a good prognosis, equal to pulpectomy and root canal treatment which still remains an option in event of failure.

Conflict of Interest

None.

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