

Pediatric Endodontics

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The primary dentition is frequently subjected to caries. Although significant achievements have been made in the reduction of caries using preventive methods, it has still proved to be a major public health problem. In addition to this, traumatic injuries, developmental disturbances, or other causes can act as a stimulus to upset the pulp-dentin complex which can lead to the inflammation of the pulp of primary

or young permanent teeth with immature apex. If appropriate action is not undertaken at the earliest, it can have deleterious effects like premature loss of primary teeth, loss of arch length, malocclusion, or cause esthetic, phonetic, functional, and psychological problems. The foundation of the whole treatment is to maintain a healthy pulpal status. According to AAPD, pulpal status can be classified as normal pulp, that is, pulp-free from any symptoms with normal vitality characteristics; reversible pulpitis, that is, inflamed pulp which has a capability of healing; symptomatic, or asymptomatic irreversible pulpitis, vital inflamed pulp which isn't capable of healing; or necrotic pulp.¹ Comprehensive history taking along with thorough clinical examination with radiographic assessment may provide the pediatric dentist all necessary information regarding the status of the pulp of the particular tooth or teeth in question.² Integration of these factors has a huge influence on sound clinical judgment which eventually has an impact on the long-term prognosis of the treatment plan.

Management of a pulpally involved tooth has proven to be one of the most challenging clinical scenarios due to varied behavioral presentation of the child, dimensionally small oral cavity, differentiating anatomical characteristics of primary and permanent teeth with a possible tendency toward traumatizing the succedaneous tooth bud.³ The ultimate goal is focused on the retention of the primary teeth till their natural exfoliation and protection and preservation of young permanent teeth till their normal root development and maturation.

The treatment of choice for ideal management of the necrotic pulp in deciduous teeth is the endodontic treatment. The exclusive

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advancement of NiTi rotary files for primary teeth over existing files has proved to be a boon in pediatric endodontics as it has helped in the reduction of manual dexterity hence, increasing the efficiency of the operator. Rotary instruments help in adequate root canal debridement, uniform preparation with a good taper, and decreased duration of time. Hence, aiding in a better quality of obturation.⁴

The procedures for preservation of pulp vitality can be done with pulp capping, partial pulpotomy, and apexogenesis which enable the continued root development, apical closure, and formation of secondary dentin in the radicular region of the immature tooth. These procedures essentially utilize calcium hydroxide or advanced biocompatible dental materials, for example, mineral trioxide aggregate and other bio-ceramic materials which have significantly contributed to managing teeth that have not completed root development. Newer biocompatible materials have proven to offer excellent odontoblastic potential and ensure a more predictable dentin bridge formation and pulpal health. Also, the adjuncts such as platelet-rich plasma and platelet-rich fibrin have also been used for regeneration purposes. In the case of apexification of nonvital pulp of immature permanent teeth, calcium hydroxide is most commonly used but, it involves multiple appointments, depending on the stage of root development. However, recently advanced alternatives like mineral trioxide aggregate or biodentine are available to form an apical barrier, as it provides the advantage of fewer appointments, reduced chair time, and better results.

A clinician must also be well versed as well as versatile in the application of techniques like indirect pulp therapy, direct pulp therapy, pulpotomy, restoration of the pulpally treated teeth, preservation of health or induction of biological approaches for root development in young permanent teeth or using compensatory methods which increase the sustenance of the immature root.

Thorough knowledge of “which, when, and where” about an endodontic procedure makes the clinician a master of his skills and helps to provide optimum oral health.

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