



Lesion Stabilization and Tooth Preservation (Lstop) Reflection on Pulp-Therapy-Lstr when Resources are Undersupplied: A Technical Note



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Abstract

The World Health Organization Global Oral Health 2022 report estimated oral disease to be affecting around 3.5 billion people worldwide, where untreated dental caries represents 71% of this estimate. If left untreated, the inevitable pulpal sequelae occur. At our Pediatric dental department, many children attend with extensive carious teeth. This technical note aims to reflect on this realistic demand of pulp therapy needs, for children with extensive carious 2nd primary molars and no 1st permanent molars erupted yet and introduce an innovative modified pulp therapy technique: Lesion Stabilization and Tooth Preservation (LSToP) that aims to stabilize and preserve those teeth, as a natural space maintainer. This technique, if proven beneficial, would add to the dental literature and clinicians another option to preserve teeth as a natural space maintainer, and delay/avoid premature extractions, particularly when supply and resources (dental materials/laboratory and pharmacy) are insufficient.

Keywords: LSTR; Dental caries; LSToP; Space maintenance; Primary teeth/tooth premature loss; Pulp therapy

Abbreviations: LSToP: Lesion Stabilization and Tooth Preservation; WHO: World Health Organization; LSTR: Lesion sterilization and tissue repair; GDP: General Dental Practitioners

Introduction

The World Health Organization Global Oral Health 2022 report estimated oral disease to be affecting around 3.5 billion people worldwide [1]. Dental caries is an epidemic chronic disease and the most common disease in children, and anyone can be at risk of dental caries over their lifetime. The World Health Organization (WHO) estimate dental caries prevalence between 60–90% of Pre-school children, with many of them still in their primary dentition. This disease when left untreated can progress to dental pulpitis and its sequelae [2-7]. This pulpal inflammation burden sequelae of dental caries negatively impact children on several aspects [8-12]. On the pain and well-being domain, children with pulpitis pain weigh less compared to their control peers and their growth rate will be jeopardized due to poor nutrition [11]. This impaired appetite, as a result of pain, not only affects their physiological childhood but also their well-being and quality of life [8-11]. Moreover, the impact on parents/guardian of those children by

home-sitting or difficulties of managing pain and leaving work to seek emergency or dental appointments [9,12]. Children and their parents/guardians usually when they encounter such agony may lean to the side of “get rid of this deciduous tooth” causing them this disturbing experience and opt to extract a strategic primary tooth prematurely [13].

Clinicians would also, incline toward extracting those teeth when they are faced with resources challenges. Such as, lack of needed pulp-therapy dental materials, or substandard logistical and technical support, leading to improper clinical settings and preparedness to provide the needed restorative dentistry attempting to preserve the inflamed teeth rather than extractions [13-14]. Premature loss of primary teeth and its consequences also impact’s both the child and their parents/guardian’s quality of life. On the long-term orthodontically, this is further important when it is a strategic tooth, especially when a child in their primary

dentition with no 1st permanent molars erupted yet [13-16]. Consequently, leading to preventable occlusion problems or even further burden on Quality of life due to orthodontics appointments for mixed dentition ectopic eruptions and malocclusion [11,17]. At present, there are two recommended non-vital pulp therapies for primary teeth for the aforementioned cases; One is conventional pulpectomy, but when roots are resorbed and the 1st permanent molars are not erupted, second recommended therapy would be lesion sterilization and tissue repair (LSTR) [18]. According to the American Academy of Pediatric Dentistry LSTR is recommended to be chosen over pulpectomy in teeth of irreversibly inflamed or necrotic pulp or teeth, when there are roots resorption and not suitable for pulpectomy, to retain teeth for up to 12 months, which would otherwise be indicated for extraction [18]. This technique involves sterilizing the pulp chamber and canals by using a mixture of triple antibiotic paste with no mechanical instrumentation [18-22].

Technical Note

At our Pediatric dental department, many children attend with extensive carious teeth (120 new patient monthly) with the majority of them in their primary dentition with non-vital second primary molars (Figure 1). Therefore, an action needs to be taken with such circumstances in order to preserve those teeth and avoid premature extractions by utilizing available supplied endodontic antimicrobial intracanal medicaments [23]. The available dental material is, the well-known and performed world widely, non-setting Calcium Hydroxide [22,23]. Hence, a suggestion based on modifying both, documented and evidence-based, pulpal therapy techniques of pulpectomy and LSTR to allow a technique that aims to do Lesion Stabilization and Tooth Preservation (LSToP). The benefit of this innovation, once successful, will delay if not avoid the need for extraction and premature loss of strategic teeth at least for few months; With monitoring and follow up such cases to keep the tooth as a natural space maintainer should act in the best interest of the patients.

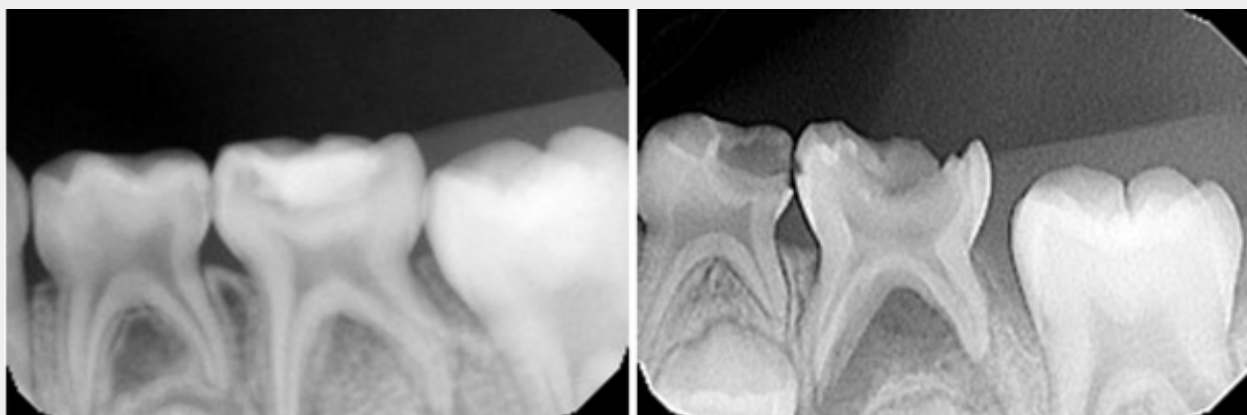


Figure 1

Discussion

Dental caries with its sequelae of pain and pulpal infection when left untreated will lead to premature loss of primary teeth leading to eruption and occlusion problems. Preserving the primary tooth is the best space maintainer for its succedaneous tooth [24]. This is clinically important when first permanent molars are not erupted yet. Although this LSToP technique, neither sterilize the lesion nor repair the tissue when compared to LSTR, it could provide however, a reservoir of time-buying modalities or a room to delay the need for premature loss and dental extraction until at least the eruption of 6's or the potential availability of dental laboratory advancements and/or tertiary prosthesis appointment (to provide space maintainers). Moreover, at our community dental centre, North of Riyadh dental centre, a pediatric dentistry department receives around 120 new patients monthly referred

by certain criteria from General Dental Practitioners (GDPs) for Paediatric specialist level dental care. The majority of cases are due to dental caries with significant percentage of them still in their primary dentition with caries reaching to the point where they need pulp therapy. Furthermore, significant number of those teeth are with some form of internal or external root resorption making it not suitable for conventional pulpectomies (Figure 1). Adding on this challenge are the lack of feasible pharmacy access to legitimise the provision of triple antibiotic paste to perform LSTR in attempt to preserve those teeth rather than extracting them before the eruption of the 1st permanent molars. Finally, this technique If proven beneficial, dental clinicians around the globe facing such circumstance could find it helpful to preserve, or at least delay the need to extract, primary teeth as a natural space maintainer.

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