Primary Children's Hospital

Current Pediatric Dental Trends for Pulp Therapy

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Purpose

Identify whether Pediatric Dentists are adjusting their treatment planning of vital pulp therapy of primary teeth to align with updated guidelines set forth by the AAPD.

Background

Primary teeth with deep carious lesions have historically been treated with a pulpotomy and then restored with a stainless-steel crown (SSC). Recently, vital pulp therapy recommendations have evolved as evidence has proven the success of indirect pulp therapy (IPT). In 2024, Coll et. al. published an SRMA which determined that indirect pulp therapy or calcium silicate cement pulpotomies were the most likely vital pulp therapies to succeed. Reported success rates for IPT and calcium silicate cement pulpotomy over a 24-month follow-up were 97%.

Guelmann et. al. found in 2005 that SSCs were the most successful restoration placed over an emergency pulpotomy. Additionally, a 2015 review on the uses of SSCs by Seale et. al. outlined the validity of the newer Hall Crown technique that involved placing an SSC without caries removal or tooth preparation. Studies like these have proven the efficacy of full coverage crowns as the most suitable restoration following vital pulp therapy on primary teeth.

A 2011 study by Thikkurisy et. al. determined that a patient's ASA class and radiographic caries severity were predictors of pulpotomy completion. In this study, treatment was completed over a period of 6 months and resulted in a pulpotomy-to-crown ratio of 34%. As the evidence for vital pulp therapies has evolved, the question is whether practitioners are updating their practices to follow evolving guidelines. Assuming all teeth treated with vital pulp therapy are restored with a full coverage crown, we can compare multiple providers' yearly ratio of pulpotomies-to-crowns to determine if pediatric dentists are trending towards completing more indirect pulp therapies on primary teeth.

Methods

The study population included pediatric dentists nationwide. Registered members of the AAPD were emailed a survey link to report the number of pulp therapies and crowns they completed yearly from 2018 through 2023. The emailed survey included a consent cover letter with information regarding the survey. By completing the survey, providers consented to their responses being utilized in the study. Survey responses were kept confidential, and no identifiers were linked with their answers.

Providers were asked to submit the number of D-codes for pulpotomies, pulpectomies, stainless-steel crowns, and zirconia crowns completed each year between 2018 through 2023. Additionally, a survey regarding provider practices and their use of AAPD guidelines followed the data submission. Practitioners reported their method for IPT, whether they regularly billed for IPT or not, time since graduating residency and their current practice setting.

Data was analyzed to create yearly ratios of pulp therapy to crowns on primary teeth. These ratios were also compared to the provider's comfort level with leaving caries under restorations, use of the guidelines, and other factors relating to the provider's practice.

Results

Of the 7326 members of the AAPD who were sent the survey, 41 responded. Eight respondents only filled out the accompanying survey and did not submit data regarding billed codes. A comparison of the pulp-to-crown ratios revealed an initial increase from 2018 to 2020 and then a decrease over the following 3 years (Figure 1). These changes in ratios were not statistically significant.

The follow-up survey showed variation in the methods used to complete indirect pulp therapy. The most common methods of IPT are to remove some caries and either place a liner (45%) or just restore (22%). No caries removal was reported by 8% of respondents. One quarter of providers reported that they do not do IPT on primary teeth or they use another method not listed above.

There was no correlation between those who felt very comfortable leaving caries and time since residency, but it should be noted that those who reported 10 or less out of 100 have all been practicing for at least 10 years (Figure 2).

Lastly, 77% of respondents reported that they regularly read the updated Reference Manual produced by the AAPD. These individuals also reported that the guidelines generally created changes in their practice and treatment plans.

Conclusions

Since 2022, providers are completing fewer pulpotomies compared to crowns. These ratios have even decreased past levels studied in 2011 showing an overall trend towards IPT. More IPTs than pulpotomies being completed means insurance companies and Medicaid may be reimbursing less for vital pulp therapy. These savings could be allocated towards other areas of patient care, such as education, prevention and diet counseling. Subsequently, providers could potentially be reimbursed for time spent providing additional anticipatory guidance.

The downward trend in pulp-to-crown ratios began prior to AAPD published guidelines recommending IPT and calcium silicate cement pulpotomies over traditional methods of vital pulp therapy. Now that the AAPD has updated the recommendations, further research on trends within pediatric dentistry is needed to determine if providers are continuing to evolve their practices to match evidence-based guidelines. It may also be beneficial for our profession to determine a standardized method for documenting and billing IPT in primary teeth to facilitate tracking and success of these procedures.

Figure 1: Yearly Pulpotomy to Crown Ratio

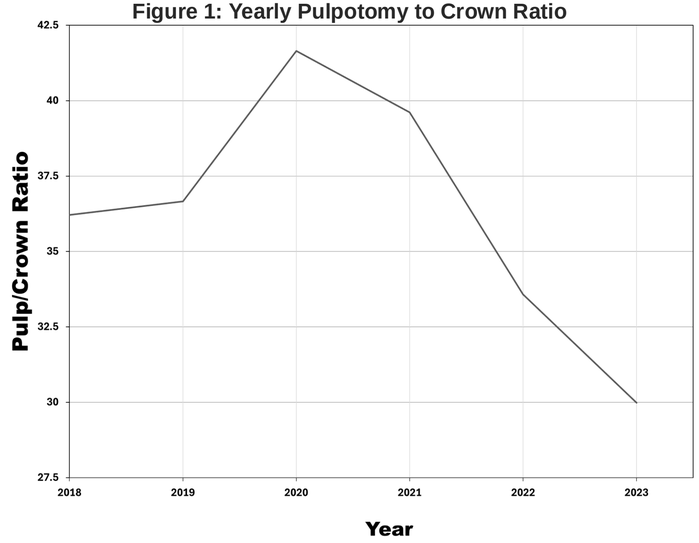

Figure 2: Comfort Leaving Caries Vs. Time Since Residency