

# Clinical Outcomes of Partial Pulpotomies on Permanent Dentition: A One-Year Retrospective Chart Review



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## INTRODUCTION

Vital pulp therapy (VPT) in immature permanent teeth is intended to preserve pulpal vitality and support continued root formation (Apexogenesis). Cvek pulpotomy, a form of partial pulpotomy indicated for small pulp exposures, involves removal of approximately 1–3 mm of inflamed pulp tissue until healthy tissue is encountered. Hemostasis is achieved using bactericidal irrigants, such as sodium hypochlorite or chlorhexidine, in conjunction with gentle pressure from a cotton pellet. The exposed pulp is then covered with a biocompatible capping material, such as calcium silicate cement followed by placement of a liner and definitive restoration, typically consisting of a glass ionomer component and packable composite or full coverage restoration. This study aims to evaluate the success rate of Cvek pulpotomies, defined as retention of the tooth without need for further endodontic intervention or extraction and absence of clinical or radiographic signs of failure at the most recent follow-up, conducted at NYU Langone Brooklyn Hospital dental clinics between August 2024 and October 2025 for patients between 7-14 years of age.

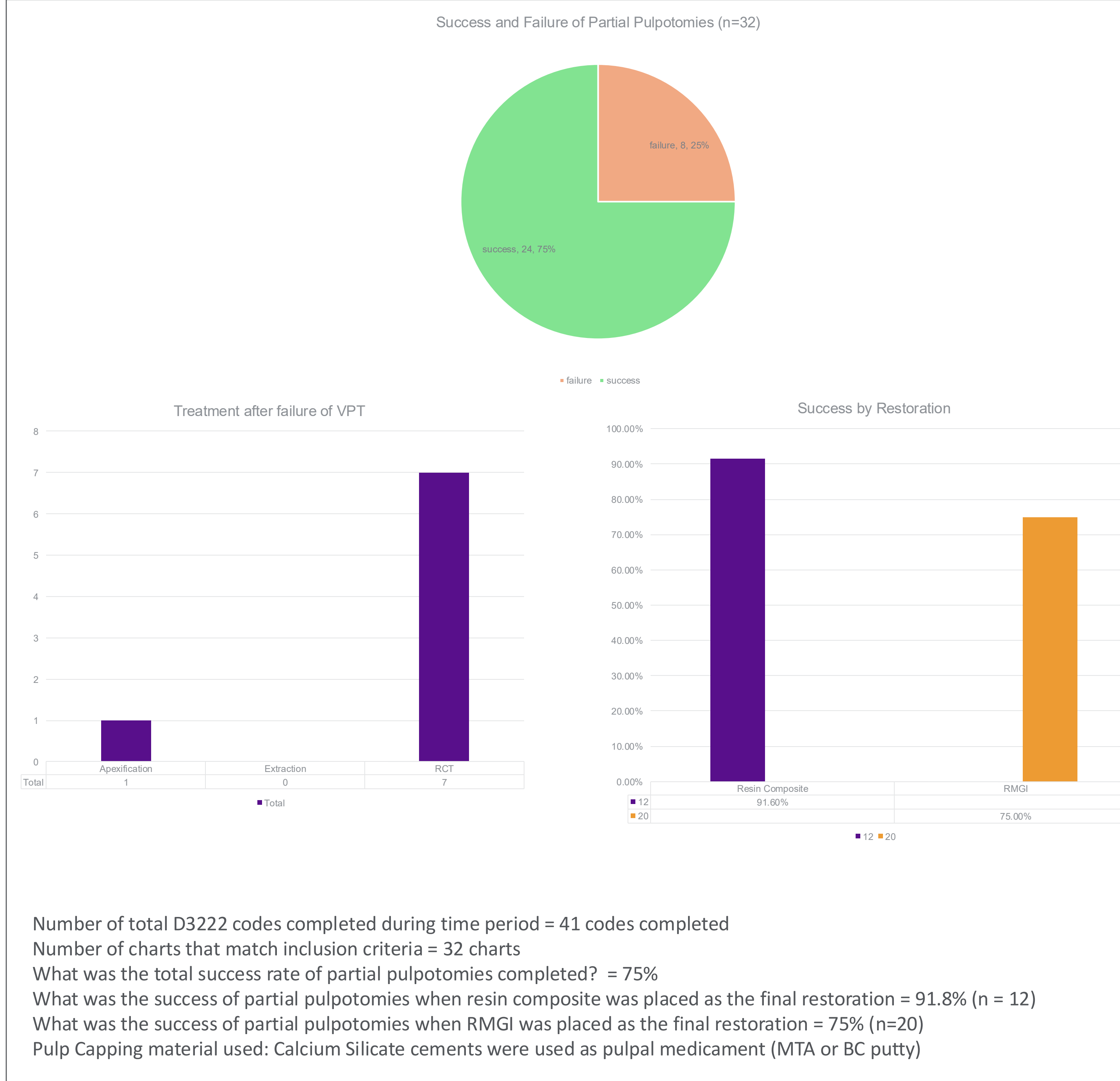
## PURPOSE

This study aims to assess the clinical and radiographic outcomes and success rate of partial (Cvek) pulpotomies performed on permanent molars on children ages 7-14 at NYU Langone–Brooklyn Hospital and its affiliated clinics over a one-year period.

## METHOD

A retrospective chart review of 40 patient charts was conducted for pediatric patients ages 7-14 who underwent partial pulpotomy (vital pulp therapy) on permanent molars between August 2024 and October 2025 at NYU Langone–Brooklyn and its affiliated clinics. Data collected included patient demographics (age at treatment), tooth type, presenting clinical signs and symptoms, radiographic interpretation of tooth condition prior to endodontic treatment, follow-up after endodontic treatment, and need for additional endodontic intervention or extraction. Clinical outcomes were assessed based on the presence of symptoms and signs such as pain, need for additional endodontic intervention, or need for extraction after partial pulpotomies. Radiographic evaluation included assessment of root development, apical status at the time of treatment, and presence of periapical or furcal pathology. Treatment success was defined as retention of the treated tooth without the need for further endodontic therapy or extraction, and absence of clinical and radiographic signs of failure at the most recent follow-up. Inclusion criteria included patients aged 7-14 years presenting with immature permanent teeth and pinpoint pulp exposures due to caries excavation were included. To ensure appropriate case selection, a query for the Apexogenesis procedure code (D3222) was performed. Exclusion criteria included pulpotomies completed as interim or temporizing therapy rather than as vital pulp therapy, charts with incomplete or inconsistent documentation such as missing baseline clinical findings (e.g., vitality testing, symptom history), absence of preoperative or postoperative radiographs, and unclear diagnosis, and no further follow-up after initial treatment.

## FIGURES AND RESULTS



## DISCUSSION

Our study suggests that partial pulpotomies are an effective tool for management of deep carious lesions and traumatic pulpal exposures of immature permanent teeth without signs of irreversible pulpitis and periapical pathology. Current literature reports a 92% success rate for partial pulpotomies; the lower rate observed in our study may reflect the small sample size and its setting within a residency training program. Current guidelines for vital pulp therapy define success based on the absence of clinical symptoms and radiographic evidence of pathology. Given the retrospective design and variability in follow-up documentation, success was defined as retention of the tooth without need for additional endodontic treatment or extractions. This highlights the need for improvement in clinical and radiographic follow-up schedule after vital pulp treatment to ensure favorable outcomes and identify failures more effectively. The limitations of our study are an inconsistent follow-up schedule and variability in pulpal diagnosis techniques and radiographic assessment. This may be due to provider variability and the difficulties in pulpal diagnosis for immature permanent teeth and in pediatric patients. Provider calibration and consistent follow-up guidelines can be implemented into the clinical workflow to improve diagnosis, identify errors and manage symptoms more effectively.

## CONCLUSIONS

Vital Pulp Therapy has emerged as a crucial technique to maintain pulpal vitality and to allow continued apexogenesis in young, immature permanent teeth. The current guidelines for vital pulp therapy states for teeth with deep carious lesions approaching the pulp and diagnosed with NP/RP there is no difference in success between IPC, DPC, PP, or FP in success rates. This may suggest that less invasive pulpal treatment can also be effective in management of deep caries. Further chart reviews should assess the success rates of indirect pulp treatment to verify its effectiveness.

## REFERENCES

- Coll JA, Dhar V, Guelmann M, et al. Guideline for use of vital pulp therapy in permanent teeth. *Pediatr Dent* 2025;47(5):299-311.
- Camoni, Nicole et al. "Partial Pulpotomy in Young Permanent Teeth: A Systematic Review and Meta-Analysis." *Children (Basel, Switzerland)* vol. 10,9 1447. 24 Aug. 2023, doi:10.3390/children10091447