

CHAPTER 2

INTENTIONAL REPLANTATION IN ENDODONTICS

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1. INTRODUCTION

The main purpose of endodontic treatment is to completely remove infected or necrotic pulp tissue in the root canal system by chemomechanical instrumentation, to hermetically fill the root canals using biocompatible filling materials (1). Despite the generally high success rates reported for root canal treatment and non-surgical retreatment, clinical challenges including complex root canal anatomy, vertical root fractures, and persistent apical periodontitis can adversely influence treatment outcomes (2-6). Furthermore, treatment failure may result from microbial infection or reinfection of the root canal system due to technical deficiencies, including inadequate cleaning and obturation, suboptimal coronal restoration quality leading to leakage, improper obturation length, iatrogenic errors such as perforation during post placement, procedural complications during instrumentation, and retained fractured instruments within the canal system (7-9). A recent cross-sectional study (10) reported a 31.7% prevalence of apical periodontitis (AP) in endodontically treated teeth, while a separate meta-analysis (11) estimated the prevalence of AP in root canal-treated teeth at 41%.

When root canal patency cannot be established through orthograde or retrograde (root-end resection) approaches, intentional replantation (IR) offers a viable treatment option that preserves the tooth's functional and aesthetic integrity and may be associated with fewer complications. Moreover, financial limitations precluding implant therapy may render IR a more cost-effective alternative (12).

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agement of IR to increase its long-term success and function. While significant increases in success rates have been reported in recent years with advances in surgical techniques, the use of biocompatible materials, and the integration of imaging technologies, existing data are largely based on retrospective studies and case series. Therefore, prospective, randomized, and large-sample clinical studies are needed to evaluate the long-term success, complication profile, and patient satisfaction of IR.

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