Introduction
Coronectomy is performed to avoid injury to the inferior alveolar nerve (IAN) when mandibular third molars (M3s) in close proximity to the IAN are indicated for extraction. Concern has been raised regarding the fate of submerged roots with exposed pulp tissue and whether this will serve as a nidus for infection.

Purpose
The study purpose was to answer the following clinical question: Among patients undergoing coronectomy, do patients treated with concurrent root canal treatment (RCT), when compared to those not treated with RCT, have a decreased frequency of postoperative infections?

The specific aims of the paper were to: 1) perform a comprehensive review to compare postoperative infection rates in M3 coronectomies with and without concurrent RCT; and 2) review relevant animal and human studies pertaining to pulp physiology as it relates to coronectomy.

Materials and Methods
The study was designed as a comprehensive review to identify controlled studies that compared outcomes of M3 coronectomies with and without concurrent RCT published through January 2020. Studies included in the sample needed to meet the following criteria: 1) studies published in English; 2) human studies, and 3) studies that reported the postoperative infection outcomes. The predictor variable was concurrent RCT at time of coronectomy. The outcome variable was postoperative infection.

Results
The database search identified 107 publications for initial review. After application of the inclusion and exclusion criteria, the final sample included only 1 publication. The frequency of postoperative infection with and without concurrent RCT were 87.5% and 12.5% respectively.

Discussion
Coronectomy is surgical removal of the crown that involves enamel, dentin, and pulp. Our understanding of the pulpal response to traumatic exposure has evolved from the axiom “the exposed pulp is a doomed pulp” to viewing the pulp as a complex and highly specialized connective tissue milieu with inherent reparative and regenerative potential.

Exposure and laceration of the pulp during coronectomy trigger a cascade of overlapping stages of hemostasis, inflammation, proliferation and remodeling within the pulp, the goal of which is to maintain pulp vitality and generate a calcified hard tissue barrier. Coronectomy can be considered a modality of vital pulp therapy as the goals of treatment related to the pulp—to maintain pulp vitality and induce reparative hard tissue formation—and the healing responses within the pulp are analogous.

To ensure maintenance of pulp vitality after coronectomy, the following key principles and procedural steps should be followed: 1) absence of caries or pulpal pathology before coronectomy, 2) avoidance of luxation at the time of coronectomy, 3) submergence of the coronal root surface 3 to 4 mm below the alveolar crest, and 4) primary wound closure over the submerged roots.

Recommendations To Ensure Maintenance Of Pulp Vitality After Coronectomy
1. Absence of caries/pulpal pathology/infection prior to coronectomy
2. Avoidance of luxation at time of coronectomy
3. Submergence of coronal root surface 3-4 mm below alveolar crest
4. Primary wound closure over submerged roots

Conclusion
The one study identified for detailed review showed that RCT at the time of coronectomy does not decrease the frequency of postoperative infections. This result supports the recommendation that it is unnecessary to perform concurrent RCT on M3 roots that are retained. The finding that intentional submersion of roots does not require RCT also is supported by multiple animal and human studies. On the basis of these findings, it appears unwise to perform RCT in conjunction with M3 coronectomy.

The ideal root canal filling material is normal healthy pulp tissue, and maintaining this tissue is less invasive, less technically demanding and more biologically based than RCT.

References