

SMART-Section: A Radiographic Sectioning Method Algorithm For Surgical Removal Of Impacted Mandibular Third Molars

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Abstract

Background: Surgical removal of impacted mandibular third molars frequently requires tooth sectioning to facilitate controlled extraction while minimizing unnecessary bone removal and reducing the risk of intraoperative complications. Although several sectioning techniques have been described, the selection of a specific method is largely based on individual surgeon preference rather than a standardized, radiographic decision-making process.

Technical Note: This article introduces SMART-Section, A Radiographic Decision-Making Algorithm for Tooth Sectioning in Surgical Removal of Impacted Mandibular Third Molars, a structured preoperative planning tool designed to assist surgeons in selecting the most appropriate tooth sectioning technique based on radiographic characteristics. The algorithm integrates established predictors of surgical difficulty, including Winter's angulation, Pell and Gregory classification, root morphology, and the relationship of the roots to the inferior alveolar canal. Based on these parameters, four difficulty-adapted sectioning patterns are proposed, each corresponding to increasing surgical complexity. A stepwise decision algorithm and original schematic illustrations are provided to facilitate reproducible application in clinical practice and postgraduate training.

Conclusion: The SMART – Section Algorithm offers a practical and systematic framework for selecting tooth sectioning techniques during mandibular third molar surgery. By standardizing preoperative decision-making, it may improve operative efficiency, reduce unnecessary bone removal, and enhance surgical education. As this is a conceptual technical note, prospective clinical studies are required to validate its effectiveness and compare its outcomes with conventional surgeon-directed technique selection.

Keywords: Impacted mandibular third molar; Tooth sectioning; Technical note; Surgical algorithm; Winter's classification; Pell and Gregory classification; Oral and maxillofacial surgery.

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