



Introduction

Project

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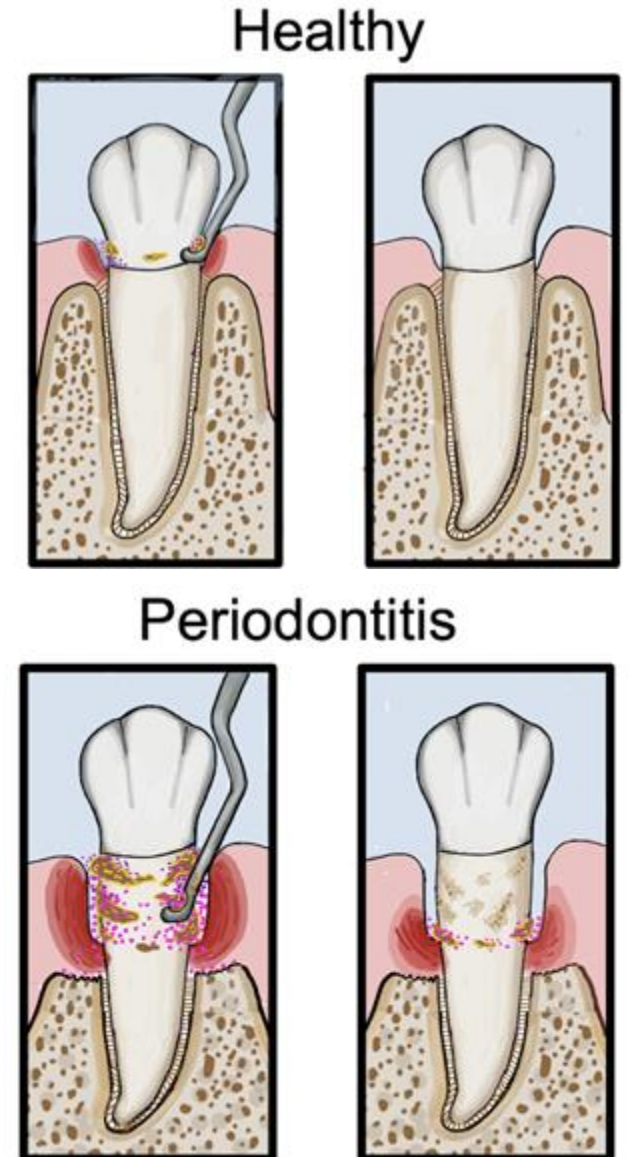
Conclusion

References

Laser Therapy as an Adjunct to SRP for the Treatment of Chronic Periodontitis Compared to SRP Alone

Introduction

- ❖ SRP is the gold standard for the treatment of periodontitis.
- ❖ Treatment goals include:
 - Arrest tissue destruction
 - Remove soft- and hard-deposits
 - Remove pathogenic bacteria
 - Reduce inflammation
 - Facilitate healing
- ❖ SRP has some limitations including:
 - Incomplete removal of bacteria and deposits in deep pockets and furcations
 - Potential for iatrogenic damage to tooth structure over time



Laser Therapy Background

- ❖ Laser therapy has been shown to have:
 - Antimicrobial effects
 - Anti-inflammatory effects
 - Wound healing properties.

- ❖ These properties align with the treatment goals in the management of chronic periodontitis.

- ❖ There are two ways laser therapy can be used to treat periodontitis:
 - Inside mode
 - Outside mode

- ❖ The laser parameters are important for efficacy and safety
 - Wavelength
 - Time
 - Wattage



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PICO Question

P: Patients with chronic periodontitis
I: Laser therapy as an adjunct to SRP
C: SRP alone
O: Better clinical outcomes



PICO Question:
For patients with chronic periodontitis, will laser therapy as an adjunct to SRP result in better clinical outcomes than SRP alone?

Research Process

Database Search:

- ❖ PubMed
- ❖ LWTech Library
- Learning Commons

MeSH Terms:

- ❖ “laser therapy”
- ❖ “chronic periodontitis”
- ❖ “root planing”
- ❖ “dental scaling”
- ❖ “periodontal diseases”

Filters:

- ❖ “Peer-reviewed articles”
- ❖ “2015 and newer”

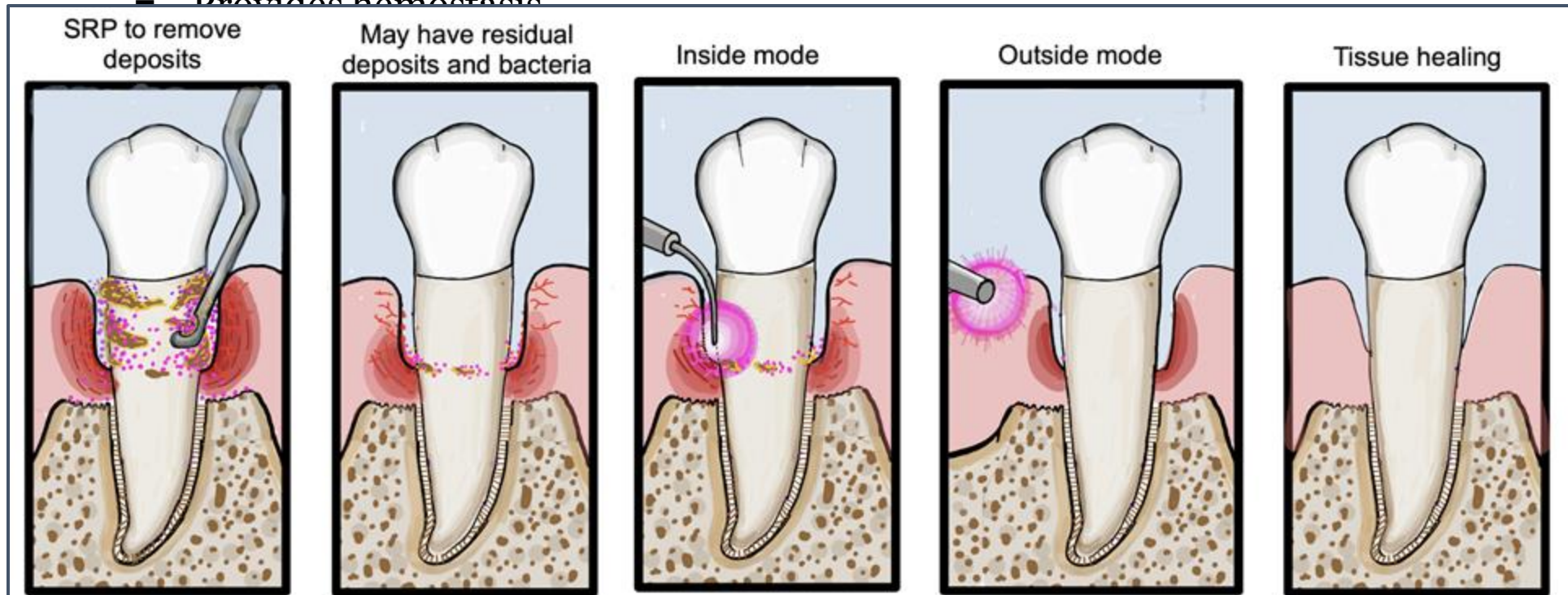


Article Selection:

15 articles were included in this literature review

Mechanism of Action

- ❖ The effectiveness of laser therapy may depend on the mode of delivery.
 - Inside mode:
 - Ablates pathologic tissues and biofilm
 - Kills pathogenic bacteria
 - Provides hemostasis
 - Outside mode:
 - Promote fibroblasts
 - Growth factor release
 - Stimulate mitochondria



Mechanism of Action

- ❖ Stimulates mitochondria
 - More ATP is available to fight infection and for healing
- ❖ Increases the redox state of unhealthy cells
 - Healthy cells are unaffected
- ❖ Inhibits the inflammatory response caused by LPS
- ❖ Reduces pathogenic bacteria
 - *Porphyromonas gingivalis*
 - *Aggregatibacter actinomycetemcomitans*
- ❖ Efficacy depends on laser wavelength
 - Wavelength: 808nm, 904nm
- ❖ Safety depends on time and wattage

Results

- ❖ Clinical outcomes assessed were:
 - Periodontal probing depth (PPD)
 - Clinical attachment loss (CAL)
 - Bleeding on probing (BOP)
 - Pathogenic bacteria counts
- ❖ There are mixed results among the literature regarding the clinical outcomes of laser therapy as adjunct to SRP versus SRP alone.
- ❖ 11 articles concluded that laser therapy as an adjunct to SRP results in better clinical outcomes for patients with periodontitis.
- ❖ In contrast, 4 studies were not able to find statistically significant improvement in the treatment group compared to SRP alone.

Conclusion

- ❖ Laser therapy requires further study
 - Determine optimal treatment protocols
 - Determine most effective and safe power settings
 - Obtain reproducible results
 - Increase follow-up periods to determine long-term clinical outcomes

- ❖ Laser therapy has promising outcomes in some studies, reinforcing its continued study
 - Cappuyns et al. concluded that “in the context of maintenance care, a procedure that is well tolerated and has minimal side-effects even when repeated multiple times, has a potential”

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