Stopping the Progression of Periodontal Disease With Laser Therapy

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Research Question

Can laser therapy stop the progression of periodontal disease?

Abstract

A thorough execution of bacteria is not necessarily achieved by non-surgical periodontal instrumentation alone, so it is likely that optimal healing may not take place. Numerous studies have reported on the uses of laser therapy in conjunction with nonsurgical instrumentation.[1] In periodontal laser therapy, the fiber optic tip is placed at the top of the periodontal pocket to remove the diseased tissue that lines the pocket.[2] This is done with a laser specific for dental hygiene such as; neodymium-doped yttrium aluminum garnet laser (ND:YAG) laser.[3]

When reviewing the literature, it is evident that periodontal pocketing, inflammation, and bacteria cannot be controlled with instrumentation alone. In each study, it was found that there was improved bleeding on probing (BOP), Periodontal Pocket Depth (PPD), and Suppuration (PUS), and improved healing compared to scaling and root planning (SRP) alone. It can be difficult to get every microbe by SRP alone, with laser therapy clinicians can thoroughly debride and decontaminate diseased tissue.[1-5]

Introduction

- Periodontal disease is an immune response from the body, where bacteria under the gumline are constantly under attack. Without proper biofilm removal continuous destruction of bone and connective tissue persists.[4]
- Periodontal disease is prevalent in about 50% or more people worldwide.[4]
- Laser therapy in hygiene dentistry is a non-surgical method that cleans the teeth and root surfaces. Photo biomodulation; low level laser therapy stimulates the tissues and cells without producing irreversible changes that promote periodontal would healing.[1]
- Lasers can also be used for soft tissue procedures: frenectomy, gingival troughing for crown impressions, gingivectomy and gingivoplasty, incision, and drainage of abscess, fibromas, herpetic lesion, treatment for canker sores, and implant recovery.[1]

Review of Literature

- There has been improved evidence of laser therapy being effective in treating periodontitis in conjunction with conventional therapy, but more research is needed to say that it stops the progression alone.[3]
- Interleukin-1 and Matrix metalloproteinase (MMPs) in gingival crevicular fluid were reduced considerably after a 20-month period and upon radiographic examination there was a significant amount of less marginalized bone loss in patients.[1]
- Studies show that there is a reduction in PPD, BOP, and PUS when laser therapy is used in conjunction with SRP. [3]
- It has been proven that red complex bacteria can be greatly reduced in periodontal patients when laser therapy is used in combination with scaling.[3]

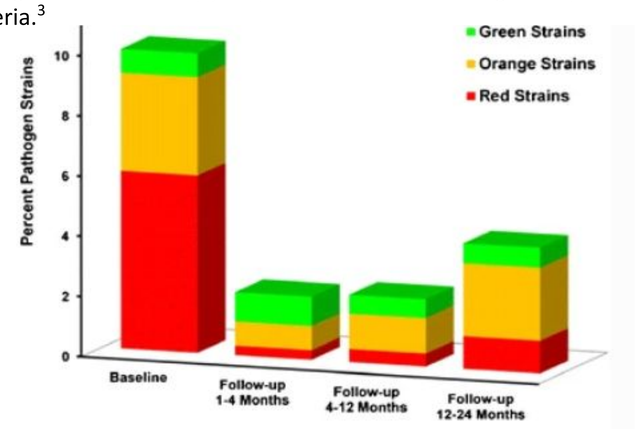
Fig. 1 & Fig. 2

Above, Preoperative photo of patient probe depths before SRP and laser therapy.[5]

Below, Postoperative photo of patient probe depths after SRP and laser therapy.[5]

Discussion

Laser therapy in addition to SRP can significantly reduce PPD, BOP and PUS when used correctly. It significantly reduces inflammation and healing time for the patient making dental appointments less painful.[1-5] Long term laser therapy helps reduce red and orange complex bacteria.[3]



- Limitations of the research include that there is only a 1 time use of laser therapy.
- Suggestions for future research include the long-term use of laser therapy in addition to SRP on PPD reduction.

Conclusion

These studies confirm when lasers are used properly in conjunction with SRP there can be improved healing but more research still needs to be done. Laser therapy has been shown in studies to improve PPD, BOP, and PUS when used correctly. Laser therapy is emerging as an advanced method of treating periodontal disease. Laser therapy is less invasive and reduces the amount of bacteria in the periodontal pockets with improved clinical results in patients with systemic disorders.[1-5]

References

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