



Incision less Suture less Procedure in the Treatment of Chronic Periodontitis: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author ND performed the procedure and wrote the draft of the manuscript. Authors SV, RSK and PG managed the literature searches and performed the corrections in the manuscript. All authors read and approved the final manuscript.

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Case Study

ABSTRACT

Introduction: Periodontitis is an immune inflammatory disease of the supporting structures of the teeth. The treatment for periodontitis is primarily aimed at limiting the periodontal infection. Conventional treatment plan includes non – surgical or surgical periodontal therapy that has been proven to produce good results throughout the years. The Laser Assisted New Attachment Procedure also known as LANAP conventionally employing the Nd:YAG (neodymium-doped yttrium aluminum garnet) laser is a less invasive periodontal surgical procedure. The main aim of the LANAP protocol was the removal of the diseased and the necrotic tissues that are present within the periodontal sulcus.

Case Report: In this article we present a case of a 40-year-old male patient who reported to the department of periodontics with chronic periodontitis. After assessing the periodontal parameters scaling and root planing was done followed by laser treatment according to the LANAP protocol using the diode laser.

Conclusion: At the end of 1 year there was significant reduction in the bleeding on probing. Also, there was a minimum of 2-3 mm reduction in the probing pocket depth and statistically significant improvement in the clinical attachment gain.

Keywords: *Chronic periodontitis; probing pocket depth; LANAP (Laser Assisted New Attachment Procedure); diode laser.*

1. INTRODUCTION

An immune – inflammatory disease [1] which occurs commonly in supporting structures of the teeth is known as periodontitis [2]. Periodontitis commonly presents as pockets, recessions or a combination of both [1]. Treatment for periodontitis is primarily aimed at limiting the periodontal infection. This can be done by removing the bacteria, their endotoxins that are accumulated in the supragingival and subgingival biofilms, smear layers along with the diseased root cementum. Conventional treatment plan includes non – surgical or surgical periodontal therapy that has been proven to produce good results throughout the years [3] a major drawback that was noted with non – surgical therapies was an inadequate disease resolution [4].

However at present the principle objective of the periodontal treatment not only focusses on limiting the disease progression but also on the regeneration of the periodontium that has been compromised [2]. The paradigm of any periodontal treatment has always been regeneration, which is the reconstruction of the tissue or any component that has been lost due to the disease. The prerequisites of regeneration are, formation of new bone, periodontal tissue along with cementum formation. The term true regeneration can be given when they exhibit connective tissue fibres, which originates from the principle fibers of periodontal ligaments, stretching from the alveolar walls, and finally inserting into the root cementum [5].

With the developing trend, lasers have been used for the conventional non – surgical, surgical as well as anti – microbial therapies. The advantage of laser is its ability to bring down the inflammation in the periodontal pocket as it exhibits bactericidal effect [1]. The different types of lasers like the CO₂ diode laser, Nd:YAG and the erbium:YAG lasers have tissue penetrations of varying levels which depends upon various factors like the reflection, scattering and absorption capacities [6]. Also various studies have shown that the use of low – level laser therapy (LLLT) has the capacity of synthesis of collagen, promote angiogenesis, release of essential growth factors which all help in the acceleration of the healing process [3].

The laser assisted new attachment procedure also known as LANAP conventionally employing the Nd:YAG (neodymium-doped yttrium aluminum garnet) laser is a less invasive periodontal surgical procedure [6]. Dr. Robert Greggll and Dr. Del McCarthy first familiarized the concept of LANAP in the year 1989. LANAP can be defined as the “new attachment to the root surface of the tooth which is mediated by the cementum without the presence of long junctional epithelium”. The main of the LANAP protocol was the removal of the diseased and the necrotic tissues that are present within the periodontal sulcus [2].

LANAP procedure has also shown to produce the desired results both clinically as well as radiographically in patients with severe periodontic lesions. On histological evaluation, the results produced were similar to ideal regeneration with new periodontal attachment apparatus that was functionally oriented, consisting of new cementum, alveolar bone which were all well identified in the apices of the periodontal lesions [6].

Hence. In this case report we present a case of treatment of long standing periodontitis with LANAP protocol. In this case we have used diode laser instead of Nd: YAG laser. This can be substantiated by the fact that they exhibit similar properties because the Nd: YAG laser radiation falls within the infrared range at almost a similar wavelength.

2. CASE REPORT

A 40-year-old male patient reported to the outpatient department of Periodontics, Sri Siddhartha Dental College and Hospital, with a chief complaint of bleeding gums for the past 3-4 months while tooth brushing. On eliciting the history, it was noted that the patient had undergone flap surgery 5-6 years ago. The patient’s medical history was non – contributory.

Clinical examination revealed significant bleeding on probing which accounted for 70% of bleeding sites according to the gingival bleeding index given by Ainamo and Bay in 1975. The patient also presented with generalized periodontal pockets ranging from 5 – 7mm as measured using the Williams periodontal probe with grade I mobility in the upper and lower anteriors. With

these findings a diagnosis of chronic generalized periodontitis was established.

Initially full mouth scaling and root planing was carried out. Following this the patient was recalled after 1 week for LANAP treatment. Under minimal local anesthesia the treatment was carried out. The setting that was used for LANAP was 0.75 W continuous wave mode for

30 seconds on all sides of the tooth in a contact mode.

Post-operative instructions were given to the patient. The patient was scheduled for monthly recall and evaluation for the first 6 months. In every recall visits the oral hygiene instructions were reinforced.

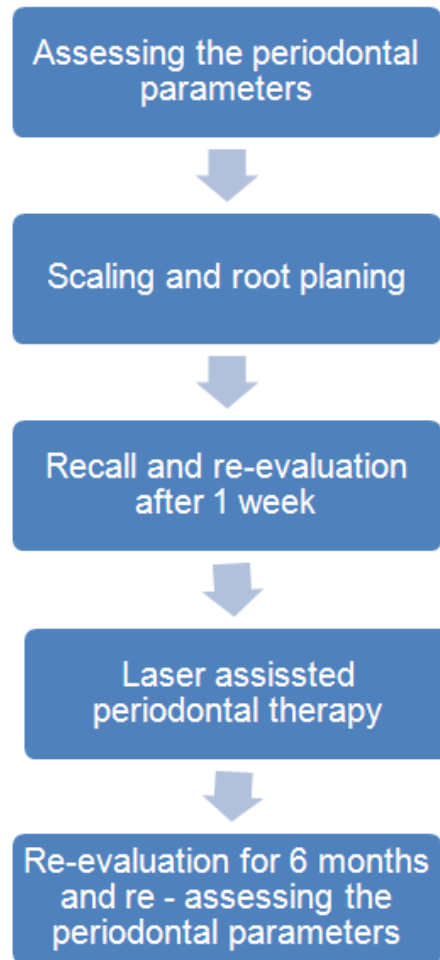


Fig. 1. Treatment protocol



Fig. 2. Pre – operative probing pocket depth



Fig. 3. 6 months post-operative probing pocket depth



Fig. 4. 1-year post-operative probing pocket depth

At the end of 6 months and 1 year the patient was again evaluated for probing pocket depth and bleeding on probing. There was significant reduction in the bleeding on probing from 70% to almost 10% at the end of 1 year. Also, the probing pocket depth in the maxillary and mandibular anteriors had reduced from 6-7mm to about 3-4mm.

3. DISCUSSION

In the treatment of chronic periodontitis, performing another conventional scalpel surgical technique might result in further attachment loss, craters in the gingiva or even lead to gingival recession. Also, from the patient's perception, the other disadvantages of the surgical technique like the pain and discomfort also might add up [2].

Periodontal therapy with the help of lasers in the recent years has proven to have considerable benefits like curettage of subgingival soft tissues and reduction of bacterial loads [3]. Lasers have proven to be effective when used as an adjunct to conventional non – surgical periodontal treatment [7]. Similarly, a recent advancement of laser is the LANAP procedure which has a histological substantiation from human trials and has shown promising initial and long-term results [5].

Hence in this present case report, we have used LANAP for the treatment of long-standing periodontitis. At the end of 1 year there was significant reduction in the bleeding on probing.

This is in accordance with a case report by Borse H et al, in which they reported a complete reduction in the bleeding on probing at 3 months post operatively [2]. Also there was a minimum of 2-3 mm reduction in the probing pocket depth which was also noted in a prospective 9-month human clinical evaluation study by Nevins M et al in which, there was a statistically significant improvement in the clinical attachment gain and also in the reduction of the probing pocket depth [4]. Similar results were obtained in a study conducted by Caccianiga G who compared the effects of and LANAP to nonsurgical debridement of periodontal pockets. At the end of the 9 months study period, they showed significant reduction in the bleeding on probing and probing pocket depth [8].

LANAP is emerging as a treatment option which is safe and has no notable adverse effects and damage to the root surfaces [3]. This procedure has also shown to be effective against red and orange complex periodontopathogens which plays a crucial role in the disease progression [6].

Some of the limitations of the LANAP technique are the cost of the treatment and the risks that can occur with the use of laser in dentistry [9].

Also, in this case report we have used soft tissue diode laser which does not interact with the hard tissues [2] and does not have any negative effects on the root surface [10]. The use of diode laser can be substantiated by the fact that it helps in eliminating the bacteria from the periodontal pocket [11].

4. CONCLUSION

LANAP is emerging as a successful treatment option for patients with long standing periodontitis. It is not technique sensitive, and from the patient's perception it is an acceptable procedure with very less discomfort. More research to identify the possible benefits of the LANAP as a treatment option for the periodontal disease will pave new ways from which the patients can be benefitted.

CONSENT

The authors certify that they have obtained appropriate patient consent and the patient has given written consent for the images.

ETHICAL APPROVAL

Institutional ethical committee had approved the treatment protocol.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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