

TRI - IMMUNO PHASIC PERIODONTAL THERAPY (TIP) THERAPY MODERN NOTION OF HANDLING PERIODONTAL DISEASES

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Abstract

Periodontitis is a chronic inflammatory disease of multifactorial origin that reflects degradation of the periodontium due to upregulation of the immune response causing loss of attachment and loss of bone. William Hoisington has developed a new technique (TIP technique {**TRI IMMUNO PHASIC PERIODONTAL THERAPY**}) for the treatment of periodontal disease without invasive procedure. The human body has the capacity of healing and repair by itself after any injury. TIP technique predicts the same phenomenon in periodontal diseases healing and repair. Concluding TIP technique plays a role in altering the pathogenesis and disease progression by changing the defensive phase against bacteria and other microorganisms into a regeneration phase to achieve a new attachment.

Keyword: chronic inflammatory, pathogenesis, pathogenesis.

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Introduction

Periodontitis is a chronic inflammatory disease of multifactorial origin that reflects degradation of the periodontium due to upregulation of the immune response causing loss of attachment and loss of bone¹. In India, the prevalence of periodontal disease in rural communities is high compared to the urban.

Periodontal diseases are due to altered immune response, involvement of disease-responsible bacteria, damage to connective tissue attachment, or by the formation of the pocket. Sometimes, periodontal diseases that are marked by soft tissue swelling and bleeding, if not treated in early stages, can

worsen the condition and progress towards attachment and tooth loss². The process becomes more difficult as the periodontitis progresses into the underlined connective tissue and bone.

Indeed, there are many factors that affect the development of gum disease and tissues surrounding the tooth, including heredity. But there is one factor without which periodontitis cannot develop – is the presence of pathogens. Unfortunately, where there is a breeding ground for these organisms, they will definitely settle there. Starting from the first teeth erupting there are potential conditions for the development of the disease. None of us live under the hood in the laboratory; the microorganisms are quite easily transmitted by personal contacts. In case of poor hygiene (the concept is individual for each person); plaque accumulates on teeth, which consists of several types of microorganisms. With a certain amount of them (also individually for each person), the body begins to resist. The cells of the immune system of the mouth begin to attack foreign bacteria. This is how gum inflammation develops, which can be accompanied by bleeding and bad breath.

Unfortunately, it is impossible to cure periodontitis by yourself with home remedies, antibiotic therapy or mouthwash fluids. Of course, good hygiene and visits to a dental hygienist to remove dental plaque and deep cleaning (curettage) reduce the rate of disease, but cannot completely stop it. Yes, it is possible to reduce the number of microorganisms for some time, and to reduce the symptoms of the disease. But problematic deep periodontal pockets remain. Where oxygen will not be available, there will be the possibility of recurrent infection.

Over the past few years, developments in periodontal research and practise have improved the definition of periodontal diseases and opened up new opportunities for periodontal disease non-surgical and surgical treatment. In any periodontal care, the primary concern is management of the errant microorganisms and resolution of soft tissue inflammation and restoration of lost alveolar support. Standard therapies of care for periodontal disorders are non - surgical and surgical treatment approach. Non surgical procedure involves scaling, root planning, home oral hygiene procedures, and the invasive periodontal incision flap. The healing is sluggish and incomplete and furthermore both approaches are invasive and there is high repetition. Developments in Periodontics have provided new insights in periodontal non-surgical procedures. Hoisington³ developed a technique called tri - immunophasic periodontal (TIP) therapy, which is a non-invasive microscopic, periodontal therapy focused on manipulating risk factors released from immune systems.

TIP periodontal therapy methods are:

1. DNA Testing
2. Bone One Session Treatment (BOST)
3. Controlling occlusal Forces
4. Oral Hygiene reinforcement with adjuvant modalities
5. Life Style modification
6. Enhancing nutrition and Exercise.

Tri-Immuno-Phasic periodontal therapy, better known as TIP, helps dentist to ascend to the crest of the alveolar bone and kill anaerobic bacteria – destructive pathogens that not only cause alveolar bone and gingiva degeneration, but also infiltrate the circulation of the body and lead to systemic complications such as coronary heart disease,

osteoporosis, pre term low birth weight and infertility. The theory is that the periodontal regeneration of the bone is as natural as the healing of the fracture if in all three immune phases under all other circumstances, such as emphasis on personal or local causes, get together. Bone one session treatment (BOST) is a part of this TIP therapy that removes aerobic bacteria in the deepest pockets and supporting alveolar bone that cause periodontal disease⁴.

Immune system phases

1. Vigilant readiness
2. Defense phase
3. Repair and regeneration.

Indications

It is an alternative to extraction. If no other treatment options are available to save the teeth. Furthermore, if the patient is willing to retain natural teeth during the initial disease stage.

DNA testing

The key primary goal of treatment of periodontal disease begins with the identification of the type and number of bacteria present in the pockets. Entirely sure growing bacteria which cause periodontal infection can be detected using a bacterial DNA test. Such prior identification will impede excessive antibiotic use. However, some species such as *Porphyromonas gingivalis* and *Aggregatibacter actinomycetemcomitans* cannot be controlled by only treatment.

Bone one session treatment

Bone one session treatment (BOST) is an aerobic procedure that prevents periodontal disease in the deepest pockets and

supporting alveolar bone. A standard full mouth BOST treatment takes 4 to 5 hours over a span of one day. During therapy, BOST minimises damage to the gingiva, bone, and periodontal apparatus. It uses Stretch Flap technique. This stretch flap technique allows access to the deepest areas of the roots and bone surface, without making an incision, all the way down.

Stretch flap technique

First Step: In this phase, 4R-4L universal curette is inserted inside the sulcus, where the working end faces the tooth surface and the blunt non-working end facing tissue. To begin stretching, a mild pressure is applied to the tissue when removing the superficial plaque and calculus (Fig. 1).

Second Step: The trajectory changed to a circumferential motion beginning at the corner to mobilise the tissue and stop pulling the papilla free and ultimately to create an incisional flap.

Third Step: With the tip of the curette advancing first, the bone surface may begin to be instrumented in removing the attached granulation tissue and revealing and plasticizing the bone porosities that physically help extract microorganisms and toxins in the pockets through the fresh bleeding phase (Fig. 1).

The procedure makes certain that the periodontium is left in a condition capable of effectively healing. There will be no scar tissue left behind by stretching out the tissue. Scarred tissue impedes connection to the surface of the tooth. This means that after the conventional periodontal treatment the connection between the tissue and the bone will remain weak and this will allow bacteria to re infect the tissue. A strong attachment can

be established using the "stretch flap" method in which healthy tissue can flourish. Using BOST it is likely that the attachment after therapy between the periodontium and the tooth would be as solid as a safe attachment.

Healing after bost

The clot which is tightly attached to the clean bone acts as a plinth (Fig. 2) after bone one session treatment. The stem cells will travel along and up the root surfaces for eight days at a pace of 0.05 mm per day, and thicken the

clot layer. As the repair time increases, the pockets gradually fill in very thick, partly mineralized connective tissue from the bottom over a time span of 4 to 6 weeks and eventually it becomes acellular. If the new mineralized attachment of the acellular connective tissue is in place in around a month, the bone recovers naturally under it. In about eight months more, a new thick layer of cortical bone forms over the cured inner (cancellous) bone.

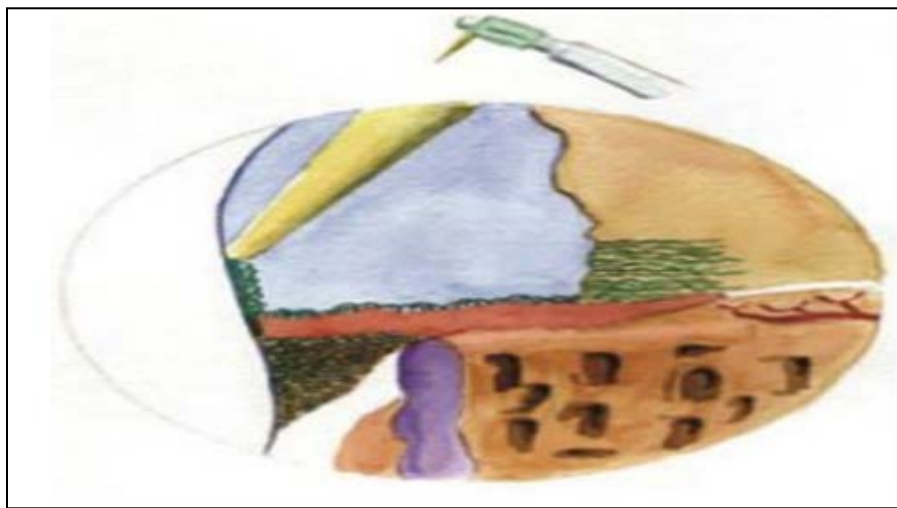


Figure 1: Clot serves as a scaffold

Controlling occlusal forces

It is done to prevent the tooth mobility and further tissue damage. With weekend periodontium regular occlusal forces get traumatic and trigger bite change. Therapy involves enameloplasty, coronoplasty, and occlusal splint which redistribute the forces across all the teeth.

Oral hygiene regimen

BOST progress often depends on patients following a consistent daily hygiene regimen which is painless. This process allows for

oxygen to penetrate below the gums and prevents bacterial growth directly. Bacteria can survive only in the absence of Oxygen. Brushing, flossing, and other traditional dental hygiene techniques used to improve oral hygiene. Aerobic oral hygiene kit (Perio-aid) (Fig. 3) specifically designed to clean the gingiva region and remove the disease that causes anaerobic bacteria in deep pockets and in root concavities where brush and floss cannot penetrate.



Figure 2: Periodoid assisting in a new attachment formation

Life style, nutrition and exercise

Eat a healthy diet by eating regular meals, avoiding unnecessary sugar, avoiding unhealthy snacks, avoiding nuts, seeds, chips, whole grain breads, and so on. Increase your vitamin and mineral intake. Perhaps essential of all are vitamin c and zinc. Stop smoking, smoking decreases digestion, and certain immune cells are weakened by smoke. Exercise should be routine, as it promotes

circulation to bring in the tissues building blocks and oxygen, as well as the vitamins and minerals that allow for proper synthesis.

Normal healing process occurs in four types of attachments:

1. Connective tissue attachment
2. Epithelial attachment
3. Scar tissue attachment
4. Mineralized acellular connective tissue (MAC) attachment. (Fig 4.)

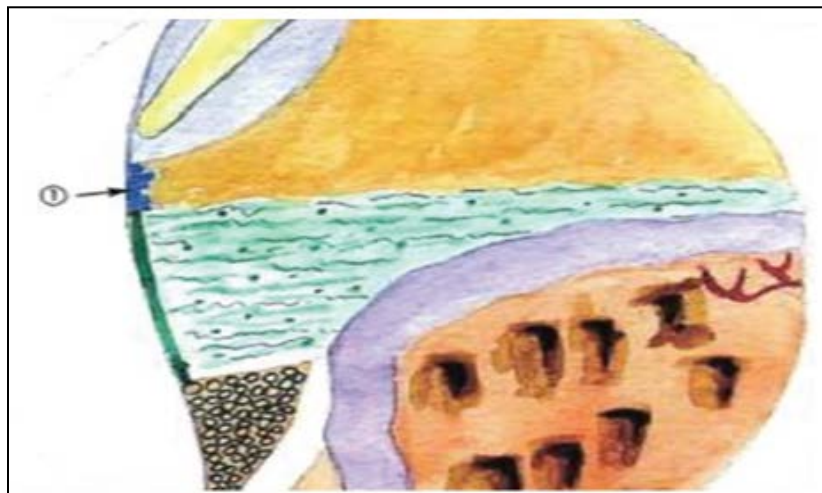


Figure 3: Mineralized a cellular connective tissue attachment.

Recovery process

- DAY 1: BOST TREATMENT
- DAY 2: PATIENT RESTART ORAL HYGIENE
- DAY 3: BLEEDING STOP
- DAY 4: POCKETS START TO FILL IN
- DAY 5: INFLAMMATION CONTINUES TO RECEED
- DAY8: POCKET SEALING UP
- DAY 14: RESUME NORMAL CHEWING
- DAY 15: CHECK UP
- DAY 30: POCKETS HAVE FILLED IN
- DAY 35: ESTHETICS RESTORATION CAN START.
- DAY45: BONE IS BEGINNING TO HEAL
- BY 9 MONTHS, BONE COMPLETELY HEALS.

Advantages

1. No incisions or sutures mean less discomfort.
2. Hygiene restarts the next day.
3. Circulation is cut off to the bone surface with incisional flaps and is exposed to air, so surface bone cells die and a millimetre more bone is lost. The bone surface stays covered with blood, is preserved and maintains its circulation when the tissue is just stretched. No more bone is damaged, and another source of pain is removed.
4. The gingival tissue appears to remain close to its original height, maintaining the aesthetics and reducing sensitivity.
5. No wound from cutting and death of the bone surface means the immune reaction is rapid regeneration healing, rather than slow wound healing with scarring and bacterial colonisation of dead tissue (by spirochetes). With recovery from regeneration, inflammation leaves rapidly. Swelling,

pressure and pain are gradually reducing.

6. Teeth with severe bone loss, considered hopeless or too late for flap surgery, often are saved because they tighten up after BOST as actual gain in bone height and density (with reappearance of the dense cortical bone layer) occurs.
7. Stretching tissue is faster and not traumatic, the whole mouth treatment is over in one appointment and reinfection is reduced.
8. Since the procedure is not traumatic, just long, no disagreeable pain medications are needed, usually only a pain killer the night of the procedure. No work need be lost. Sensitivity is much reduced also, so it is easy to keep a positive attitude toward the process, aiding the healing.
9. There is less need for follow-up frequent cleaning.
10. The elimination of inflammation also seems to greatly reduce clenching and grinding of teeth that is like an 'itching' or effort to force out excess stagnant blood. Often niteguards can be eliminated³.

The BOST technique has some parallels with curettage although the latter is dissonant. Curettage is used to treat osseous defects, without extending the flap, to remove the granulation tissue and pocket lining. However, the flap has been slowly stretched in the BOST procedure to further needs to get rid of granulation tissue to give stem cell stimulation.

Conclusion

Tri immune phasic Periodontal therapy has resulted in new developments in the treatment of periodontal disease. It overcomes the

inconveniences of conventional periodontal therapy approaches.

TIP periodontal therapy develops all the conditions under which the body can get out of the protective process against bacteria and other microorganisms and into a healing period to repair a new connexion.

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