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## President's message

Seasonal greetings to each one of you!

SPIK as an organization is growing leaps and bounds – but I feel the growth is only in terms of membership increase. The actual growth of any organization depends on the participation of its members in all activities conducted. It is sad to say that the participation of our life members in our routine activities is dismal.

The new team must introspect to the reasons for this lack of interest and try to put on board activities that invoke interest among life members. Programs need to be conducted aimed at improving the skills and knowledge among life and associate members, at the same time building camaraderie in the fraternity. Spreading the importance of our specialty among our peers and the public is also our responsibility.

Hoping that the new team would work in tandem to achieve some of the above.

**Dr. Jose Paul**  
President, SPIK



## Secretary's Message

Warm greetings to all SPIK members!

The last SPIK year concluded with the 15th Annual Conference and Post-graduate Scientific Convention held at Kannur on April 29 and 30, which witnessed the representation of all post-graduate institutions across Kerala. On behalf of the organizing committee, I thank all the life members and post-graduate students who contributed to the success of SPIKCON 2023.

We are fortunate to work under the Presidentship of Dr. Jose Paul for the year 2023–24, who is a true academician, an excellent clinician, renowned speaker and a passionate cyclist. The current SPIK year started with an e-poster completion for the students on International Gum Health Day. Oral hygiene day was celebrated on August 1, 2023 at Kochuveli railway station premises in association with Southern Railways Medical Department Thiruvananthapuram division and Govt. Dental College, Thiruvananthapuram.

The upcoming programs include an essay competition, SPIK Scholarship examination for the under graduate students and a CDE program at Kochi.

I would like to thank the organizing committee of 15th Annual conference for successfully conducting the event.

I would like to thank all the SPIK Members for the wonderful participation and cooperation extended for the conduct of programs during the year 2022-23. I solicit the support and guidance from our esteemed members in all our activities.

**Dr Mohammed Feroz T P**  
Secretary, SPIK

# Management of Class III Gingival Recession Using Free Gingival Graft from Edentulous Site – A Case Report

Merin Joshi<sup>1</sup>, Jose Paul<sup>2</sup>, Johnson Prakash D'Lima<sup>3</sup>, Senny Thomas Parackal<sup>4</sup>, Sruthi K Nair<sup>5</sup>

## ABSTRACT

Gingival recession is defined as “the exposure of the root surface resulting from migration of the gingival margin apical to the cemento-enamel junction (CEJ)”. Inadequate width of attached gingiva is identified as a mucogingival problem, frequently associated with gingival recession and gingival inflammation. This case report is about a 40-year-old female with class III gingival recession (Miller's Classification) successfully treated with free gingival graft (FGG) harvested from edentulous area to augment gingiva apical to the recession.

**Keywords:** Gingival recession, Free gingival graft, Edentulous area, Gingival augmentation

## Introduction

In 1957, Friedman coined the term “mucogingival surgery” to describe surgical procedures for the correction of relationships between the gingiva and the oral mucous membrane with reference to three specific problem areas: attached gingiva, shallow vestibules, and a frenum interfering with the marginal gingiva.<sup>1</sup> Nevertheless, this term was often used to designate specific pocket-eliminating methods. Therefore, Miller introduced the term “periodontal plastic surgery” in 1993 and expanded it to include periodontal-prosthetic corrections, crown lengthening, ridge augmentation, esthetic surgical corrections, coverage of the denuded root surface, reconstruction of papillae, esthetic surgical correction around implants and surgical exposure of unerupted teeth for Orthodontics.<sup>2</sup> This term was then accepted by the international scientific community in 1996, which was defined as surgical procedures to prevent or correct anatomic, developmental, traumatic, or disease-induced defects of the gingiva, alveolar mucosa, or bone.<sup>3</sup>

A wider zone of attached gingiva is required around teeth that act as abutments for fixed or removable partial dentures as well as in ridge areas wearing a denture and it was reported that gingival inflammation scores were higher in teeth with subgingival restorations and narrow keratinized gingiva zones than in teeth with comparable restorations and wide attached gingiva zones.<sup>4,5</sup> Various techniques were introduced to widen the width of attached gingiva, out of which free gingival graft is a simple, predictable technique.<sup>6</sup>

The following four objectives are met by widening the attached gingiva:

1. Facilitates the clearance of plaque around the gingival margin.
2. Enhances aesthetics.
3. Decreases inflammation around restored teeth.
4. With wider attached gingiva, the gingival margin adheres tightly around teeth and implants.<sup>7</sup>

The purpose of this case report is to describe

<sup>1</sup>Postgraduate student, <sup>2</sup>Professor and Head, <sup>3</sup>Professor, <sup>4</sup>Professor, <sup>5</sup>Senior Lecturer, Department of Periodontics, Annor Dental College and Hospital, Muvattupuzha, Kerala, India. Corresponding Author: Dr. Merin Joshi, E-mail: saramerinjoshi@gmail.com



the technique of free gingival graft where a narrower recipient bed necessitates gingival augmentation. This case report aims to assess the clinical efficacy of a free gingival graft (taken from the edentulous area) in treating Miller's class III gingival recession.

### Case Presentation

The present case report is about a 40-year-old female patient who reported to the Department of Periodontology, Annoor Dental College and Hospital, Muvattupuzha, Kerala, with a chief complaint of mobile lower teeth, who was keen on saving the teeth. On examination, the patient was systemically healthy and had no history of any habits. On periodontal examination, the patient was found to have Miller's class III gingival recession with abundant deposits which may be due to the spacing between the teeth (Figure 1& 2), grade 1 mobility in relation to teeth 31, 41 and width of attached gingiva in relation to 31 and

41 was one millimeter (mm) and 1.5 mm respectively (Figure 3) with few missing posterior teeth.

### Presurgical Preparation

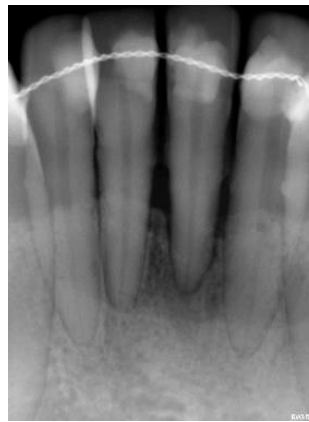
Following patient education and oral hygiene instructions, scaling and root planing was performed and the lower anteriors were splinted using extracoronary wire splint. The patient was recalled after two weeks to assess oral hygiene maintenance.

### Surgical Procedure

Following all aseptic precautions and under adequate local anesthesia, preparation of the recipient bed was done by de-epithelialization and vestibuloplasty to deepen the vestibule using the number 15 blade (Figure 4 & 5). Measurement of the recipient bed was taken using a periodontal probe. Greater palatine nerve block and posterior superior alveolar nerve block were given in relation to first quadrant. The donor site was



**Fig 1: Class III gingival recession in relation to 31,41**



**Fig 2: Pre-operative IOPA**



**Fig 3: Narrow band of keratinized gingiva in relation to 31,41**



**Fig 4: De-epithelialization of recipient bed**



**Fig 5: Prepared recipient bed**



**Fig 6: FGG harvestation from edentulous area in relation to 16**

prepared in relation to the edentulous area of tooth 16 with an incision of 1.5mm depth, width of 5mm, and length of 10 mm. Non-toothed tissue holder was used to lift the graft's edge and with the help of a vicryl suture the graft was lifted along the outline (Figure 6). The undersurface of the graft was trimmed to remove the overhanging tissues. The harvested graft was placed onto gauze soaked in normal saline solution. The graft was adapted to the recipient site (Figure 7). Anchoring sutures and periosteal sutures were placed to immobilize the graft using vicryl sutures (Figure 8). The donor site and the recipient site were covered with periodontal pack (Figure 9&10). The patient was put on analgesics and antibiotics for five days and chlorhexidine mouthwash 0.2% for two weeks. Postoperative instructions were given. The patient was monitored with recall appointments for 1 week (Figure 11 & Fig 12), 3 months (Figure 13), 6 months (Figure 14), 1.5 years (Figure 15) and 2 years (Figure 16).

## Discussion

In 1972, Lang and Loe in a study reported that even if tooth surfaces are kept free of clinically detectable plaque, areas of less than 2mm of keratinized gingiva remained inflamed with varying amounts of gingival exudate.<sup>8</sup> They suggested that an adequate width of keratinized gingiva is important for maintaining gingival health and advocated the use of various surgical procedures to increase the width of attached gingiva.

Mucogingival techniques such as free gingival grafts and free connective tissue grafts can be used to create vestibular depth and widen the zone of attached gingiva.<sup>7</sup>

Since the recipient site is entirely periosteal tissue, gingival augmentation apical to the area of recession provides a better blood supply than coronal augmentation and donor tissue obtains the maximum amount of blood supply. Root coverage procedures



**Fig 7: Graft placement at recipient site**



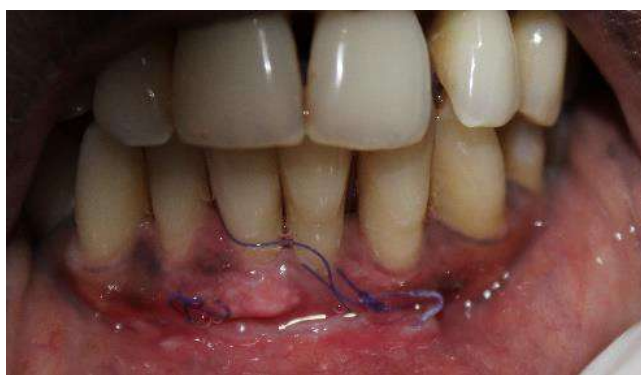
**Fig 8: Graft stabilization using vicryl sutures**



**Fig 9: Periodontal pack placement at recipient site**



**Fig 10: Periodontal pack placement at donor area**



**Fig 11: Recipient site, 1 week post-operatively**



**Fig 12: Donor site site, 1 week post-operatively**



present a portion of the recipient site (denuded root surface) without blood supply. Therefore, if esthetics is not a factor, gingival augmentation apical to the recession may be more predictable.

In this case, the donor tissue was harvested from the edentulous area of tooth 16 rather than the palatal area, which helped to reduce post-operative discomfort due to interference with the tongue as well as the risk of injuring palatine vessels. Also, the adjacent teeth provided retention for the periodontal dressing and the wound healed by secondary intention. Increase in the width of keratinized gingiva could prevent further recession and loss of attached gingiva. Also, splinting helped to restrict minor movements during healing. There are certain advantages to having a free gingival graft such as i) it is reasonably simple and quick to carry out; ii) applicable to both single and multiple recessions; iii) independent of the neighbouring

sites for donor tissue sites iv) and helps to deepen the vestibule. In the present case report, individual's esthetics was less affected as the surgical site was lower anterior region.

The graft is initially maintained by diffusion of fluid from the host bed, adjacent gingiva and alveolar mucosa.<sup>9</sup> The fluid is a transudate from the host vessels and provides nutrition and hydration essential for the initial survival of the transplanted tissues. During the first day, the connective tissue becomes edematous and disorganized and undergoes degeneration and lysis of some of its elements.<sup>7</sup> As healing progresses, the edema is resolved and degenerated connective tissue is replaced by new granulation tissue. Revascularization of the graft starts by the second<sup>10</sup> or third day.<sup>11</sup> Capillaries from the recipient bed proliferate into the graft to form a network of new capillaries and anastomose with pre-existing vessels.<sup>12</sup> Many of the



**Fig 13: Six month post-surgery**



**Fig 14: One year post-surgery**



**Fig 15: 1.5 year post-surgery**



**Fig 16: Two year post-surgery**



graft vessels degenerate and are replaced by new ones and some of these participate in the new circulation. The central section of the surface is the last to vascularize and it gets completed by the tenth day. The epithelium undergoes degeneration and sloughing with complete necrosis occurring in some areas.<sup>13,14</sup> It is replaced by new epithelium from the borders of the recipient site. A thin layer of new epithelium is present by the fourth day with rete pegs developing by the seventh day.<sup>15</sup>

This technique is less invasive to the donor area causing minimum post-operative discomfort to the patient. The grafting procedure significantly increased the width of attached gingiva and was found to be stable even after two years with good patient maintenance. The success of this case report is attributed to the indication of the use of donor tissue from the edentulous area to increase the width of attached gingiva in Millers class III gingival recession.

## Conclusion

Careful patient evaluation and surgical management are the critical factors to achieve a successful clinical outcome. Harvesting free gingival graft from edentulous area helps to reduce post operative discomfort and reduces the risk of injuring greater palatine vessels. The grafting procedure significantly increased the width of attached gingiva and was found to be stable even after 1.5 years. So gingival augmentation apical to recession can be considered as a more predictable procedure for increasing the width of attached gingiva.

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# Minimally Invasive Non-Surgical Periodontal Therapy

Christine Abraham<sup>1</sup>, Lilly Priya R<sup>2</sup>, Harikumar K<sup>3</sup>, Smitha P S<sup>4</sup>, Sameera G Nath<sup>5</sup>, Sakeer Hussain<sup>6</sup>

## ABSTRACT

Earlier, surgical techniques were dictated by specific incisions and surgical designs. With the introduction of anaesthesia, complicated cases were managed but at the expense of tissues, causing tissue morbidities of several degrees. The innovations and recent advances in surgical techniques led to the development of the ideology that surgeries could be performed with minimal tissue trauma while achieving excellent post-operative results. The concept of ‘minimally invasive dentistry’ aimed to achieve satisfactory therapeutic results with the least tissue sacrifice. Applying this principle in the treatment of periodontitis, led to many developments which include conservative incisions, incision-free techniques, use of loupes and microscopes. The supreme goal of any treatment modality is the resolution of the disease and regeneration of lost tissues, if possible, with minimal trauma and morbidity. This review article covers the advent of minimally invasive non-surgical periodontal therapy.

**Keywords:** Minimally Invasive Non-surgical Periodontal Therapy, Periodontitis, Microsurgery, Perioscope

## Introduction

Due to the microbial nature of periodontitis, its treatment basically pivots on the root surface debridement and infection control in the periodontal pockets, permitting the re-establishment of subgingival microbial equilibrium.

In the 1970s, periodontal therapy consisted of scaling and root planing along with gingival curettage as it was believed that periodontitis was a soft tissue disease and has to be excised. Curettage involved the removal of the inner surface of the soft tissue wall of the pocket to permit new attachment and pocket reduction.<sup>1</sup> Root planing involved the removal of “contaminated” cementum and dentin. The rationale of the treatment was based on the concept that endotoxins and lipopolysaccharides penetrate the cementum.<sup>2</sup> In the 1980s, periodontal therapy often included surgical component. It was believed that microbial infection

spreads into the alveolar bone, and the affected tissues have to be removed to permit healing. Therefore, gingivectomy, flap surgeries<sup>3,4</sup> and resective therapy were implemented in the belief that those tissues were contaminated and should be removed to control the disease. Ramjford and Nissle<sup>5</sup> proposed the concept of root surface debridement associated with flap surgery, which was aimed to achieve pocket reduction or closure through tissue repair. Although this was an invasive approach, the idea was to make the root surface compatible with healing. The aim of this review article is to discover the rationale for minimally invasive non-surgical approaches and current evidence regarding the same.

## Metamorphosis of Non-Surgical Periodontal Therapy

The 1980s witnessed the fundamental changes in non-surgical periodontal therapy, after Philstrom et

<sup>1,2</sup>Postgraduate student, <sup>3</sup>Professor and Head, <sup>4</sup>Associate Professor, <sup>5</sup>Assistant Professor, <sup>6</sup>Lecturer, Department of Periodontics, Government Dental College, Kozhikode, Kerala, India. Corresponding Author: Dr.Christine Abraham, E-mail: christineabraham1995@gmail.com

al<sup>6,7</sup> demonstrated in a clinical trial comparing modified Widman flap and scaling and root planning, that non-surgical therapy presented comparable outcomes with surgical treatment in terms of probing pocket depth (PPD) reduction and clinical attachment level (CAL) gain following long term evaluation. Several other studies also revealed that scaling and root planing encouraged a reduction in probing depth and CAL, one month after therapy.<sup>8,9</sup> Thus, root decontamination was considered the prerequisite for any successful periodontal therapy as it aids in proper periodontal healing and reduction in the severity and progression of the disease.<sup>8</sup> For decades, achieving a clean and smooth root surface was considered a vital factor for successful treatment. Microscopy studies in extracted teeth previously subjected to subgingival instrumentation revealed that neither hand nor ultrasonic instrumentation was successful in completely removing the calculus and biofilm from the root surface.<sup>9,10</sup> But the clinical improvement was attained in both cases,<sup>11-14</sup> because of the removal and disruption of biofilm mass that permitted the biocompatibility and periodontal healing. Therefore, the need for intense root surface debridement was questioned.

National Library of Medicine's Medical Subject Headings describe 'Periodontal debridement' as – 'Removal or disruption of dental deposits and plaque retentive dental calculus from tooth surfaces and within the periodontal pocket without deliberate removal of cementum as done in scaling and root planing'. Thus, the focus is to conserve the cementum by maintaining or re-establishing a healthy periodontal environment, using light instrumentation strokes or surgical techniques. Hand instrumentation with curettes produced smoother root surfaces and a higher degree of calculus removal,<sup>15</sup> ultrasonic instrumentation produced a rougher root surface, with lesser removal to the tooth structure, minimal soft tissue trauma and less chair side time.<sup>10,16,17</sup> Deas et al<sup>18</sup> demonstrated that the cementum-bound endotoxin affects gingival fibroblast attachment and proliferation. A systematic review by Heitz-Mayfield and Lang<sup>19</sup> concluded that the removal of contaminated cementum is not necessary to obtain periodontal health. However, calculus being plaque retentive area, need to be removed. Considering all this, it can be concluded that the cementum and soft tissue removal and root surface smoothness were insignificant

in achieving the clinical endpoint. Thus, adapting to more conservative approaches that reduce intentional removal of tooth and periodontal structures, can be embraced to achieve therapeutic efficiency.

### How to achieve Minimal Invasiveness?

Innovations in the medical field primarily aimed at reducing patient morbidity have led to the development of minimally invasive techniques for periodontal treatment which includes

- Microsurgical instruments
- Mini curettes
- Slimline ultrasonic tips
- Periodontal endoscopes

### Minimally invasive Non-Surgical Therapy (MINST)

Minimal invasiveness is a concept borrowed from medicine and described as "the ability to miniaturize our eyes and extend our hands to perform microscopic and macroscopic operations in places that could previously only be reached by large incisions".<sup>20</sup> Magnification, itself (microscopes, loupes, endoscopes) does not necessarily define a minimally invasive procedure. Still, minimally invasive approaches are primarily concentrating on minimizing clinical procedures by introducing techniques and instruments that cause less tissue trauma and maintain tissue framework, facilitate the healing process, improve clinical outcome, increase visibility and reduce treatment duration. Harrel and Rees,<sup>21</sup> first explained minimally invasive approaches in our speciality, they applied those concepts in surgical therapy (minimally invasive surgery) to reduce tissue sacrifice caused by flap reflection and manipulation, thus encouraging clot stabilization. These minimally invasive principles have also been implemented in non-surgical therapy using an endoscope to allow visualization of the subgingival environment and using the minimally invasive non-surgical technique (MINST). MINST achieves magnification through microscopes or loupes and delicate devices, to perform scaling and root planing with less soft tissue trauma, and resulting in an improved aesthetic outcome.

MINST has also been suggested as a developing treatment modality, especially for sites affected by intra-bony defects. The fundamentals of MINST are driven by that of minimally invasive surgery (MIST).

MINST focuses to improve the prognosis of intra-bony defects by reducing tissue trauma, and facilitating wound healing while avoiding surgical incisions and suturing. It is achieved by careful insertion of mini curettes and ultrasonic instruments into the periodontal pocket while taking extreme care not to harm the associated soft tissues. Intentional “smoothing” of root surfaces and gingival curettage are avoided.<sup>22</sup> The modified protocol<sup>23</sup> consists of administering non-adrenaline-containing local anaesthetic and avoiding intrasulcular injections to reduce vasoconstriction at the site. Subpapillary access to the defect is performed to reduce tissue trauma, especially to the papillae, with the help of magnification loupes. Thorough debridement of the root surfaces to the base of the pocket is conducted with piezo-electric devices with specific non-diamond thin and delicate tips. After debridement, attempts are made to facilitate blood flow and optimize the formation of the stable clot by natural filling of the intra-bony defect with the blood.<sup>23</sup>

### Periodontal Endoscope (Perioscope)

The non-surgical approach of an intra-bony defect is primarily compromised by the lack of visibility, even with the aid of magnification and additional lighting. Periodontal endoscope comes into significance in these situations as it allows subgingival visualization without any surgical intervention. It also decreases the risk of over-instrumentation.<sup>24</sup> The lens of the glass fibre is introduced into the pockets and displays the image of the root surfaces on an external monitor, allowing the operator to locate the extent and nature of deposits. Till date, it is the only device that provides access to the subgingival environment without surgical intervention. Still, it is not widely used because of increased cost and decreased quality of image caused by the degradation of the optical glass fibres and debris suspended in the irrigation liquid.

### Clinical and Radiographic Outcomes of MINST Approaches- Evidence

Promising clinical and patient-reported outcomes have been disclosed in the literature so far. Ribeiro et al,<sup>22</sup> the first to describe MINST<sup>32</sup>, used MINST to treat intra-bony defects non-surgically and with minimal trauma. In this study, MINST was compared with MIST (described by Cortellini and Tonetti) in a randomized controlled trial with parallel design with

follow-up at three and six months. Interestingly, no difference was demonstrated between the groups, for the evaluated clinical outcomes post-therapy: PPD, CAL, and gingival recession (GR). One of the important factors in favour of MINST over MIST was reduced chair side time. The same study population was followed up for another 12 months,<sup>25</sup> confirming that both treatment modalities revealed similar results. Moreover, this study revealed that MINST could also generate similar clinical outcomes as a surgical approach.

Several studies were conducted to assess the effectiveness of adjuncts along with MINST and their impact on clinical outcomes. Aimetti et al<sup>26</sup> assessed the treatment of intra-bony defects using MINST plus Enamel matrix derivative (EMD) and MIST plus EMD. Thirty patients were treated in both groups (15 each) and followed up for 12 and 24 months. PPD and CAL were evaluated during the follow-up period and demonstrated no significant differences among the two groups but this study reported higher radiographic bone gain for the MIST group at 24 months. In another study conducted by Lorio- Siciliano et al,<sup>27</sup> they tested MINST efficacy in a full mouth debridement. This study compared MINST and MINST plus amino acid buffered sodium hypochlorite (NaOCl) gel, aimed to check the impact of an adjunct in improving the clinical outcome. Results demonstrated significant statistical significance among the groups, favouring MINST plus NaOCl gel for PPD reduction and CAL gain. In a short-term, retrospective study, Ghezzi et al<sup>28</sup> demonstrated that MINST produced remarkable outcomes in a full mouth subgingival debridement, especially in deep defects ( $\geq 7$  millimetres) and a single rooted tooth. It was demonstrated that single-rooted teeth and with an initial PPD of  $\geq 7$ mm experienced a more remarkable improvement in PPD and CAL.

### Wound Healing following Minimally Invasive Non-Surgical Therapy

The healing process in minimally invasive non-surgical therapy differs from traditional non-surgical treatment. MINST hinges on minimising surgical trauma and increasing wound stability. MINST drives the healing process in a regenerative manner rather than reparative manner. To achieve a successful regenerative response, the formation and stability of blood clot play a vital role. Haney et al<sup>29</sup> and Wickesjo et al<sup>30</sup> demonstrated that, for regeneration of periodontal



tissue to occur, first, there should be space for clot formation and secondly there should be the stability of clot. This prevents the formation of long junctional epithelium by preventing apical migration of gingival connective tissue and periodontal ligament cells are allowed to proliferate. And these cells have the ability to form different structures of periodontal supporting apparatus.<sup>31</sup> The superior healing outcome of MINST is significantly contributed by the improved blood flow. It has proved to be minimally invasive, minimally traumatizing flaps leading to faster recovery of the gingival blood flow postoperatively.

## Conclusion

The current evidence favours less invasive approaches as it has proven to be more patient-friendly. The main advantages of MINST over traditional scaling and root planing are a significant reduction in post-operative trauma, increasing stability of tissues, improved aesthetic benefits because of reduced gingival recession, potentially reduced post-operative hypersensitivity, reduced chair side time and healing time, comparable average PPD reduction and CAL gain.

## Conflict of Interest

The authors report no conflict of interest.

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# Non-Surgical Approaches for Restoring Lost Interdental Papilla: A Brief Review

Dinu Ann Dominic<sup>1</sup>, Divya Alexander<sup>2</sup>, Nethra Narayanan<sup>3</sup>, Majo Ambooken<sup>4</sup>, Jayan Jacob Mathew<sup>5</sup>

## ABSTRACT

The interdental papilla composed of dense connective tissue covered by oral epithelium is the most sensitive area of periodontium. It is affected by both physiological and iatrogenic factors resulting in black triangles. Although many surgical and non-surgical methods have been administered for the management of black triangles, non-surgical methods are gaining more acceptance due to its cost effectiveness and ease of application. Several studies are being conducted to improve the interdental papillary regeneration through non-surgical methods and has shown promising results.

**Keywords:** Interdental papilla, Black triangles, Non-surgical methods

## Introduction

Esthetic dentistry in present scenario aims at achieving harmony of both white and pink esthetics to enhance a person's teeth and overall oral appearance. Black triangle especially in the anterior region has become a major esthetic concern on par with caries and crown margins. The loss of interdental papilla not only results in an unpleasant smile but also affects the phonetics and may lead to food lodgement.<sup>1</sup>

There are several factors resulting in black triangles. The increased distance from the contact point to the bone crest, excess inter-radicular distance, gingival biotype, size and appearance of teeth, tooth position and size of the interproximal contact point are the physiological factors influencing the interdental papilla. Black triangles can occur due to periodontal diseases, traumatic brushing or interdental cleaning, and iatrogenic factors like periodontal surgical therapy, improper crown or restorations, and orthodontic alignment.<sup>2</sup> Many surgical and non-surgical methods are been implemented for regeneration of lost interdental papilla. Among them non-surgical methods have become more popular due

to their easy administration, patient acceptance, cost effectiveness compared to surgical techniques.<sup>3</sup> The black triangles are obliterated either by increasing the width of proximal contact to achieve papillary fill by orthodontic alignment of teeth or by placing crown, veneers and composite restorations; or by promoting soft tissue coverage through repeated curettage, pink restorations (mimicking papilla), tissue volumizing and low-level laser therapy.

## Classification of Loss of Interdental Papilla

Nordland and Tarnow<sup>4</sup> classified papillary recession into the following classes :

1. Normal- Interdental papilla fills embrasure space to the apical extent of the interdental contact point/area.
2. Class I- The tip of the interdental papilla lies between the interdental contact point and the most coronal extent of the interproximal cemento-enamel junction (CEJ).
3. Class II- The tip of the interdental papilla lies at or apical to the interproximal CEJ but coronal to the apical extent of the facial CEJ.

<sup>1,2,3</sup>Postgraduate student, <sup>4</sup>Professor and Head, <sup>5</sup>Professor, Department of Periodontics and Implantology, Mar Baselios Dental College, Kothamangalam, Kerala, India. Corresponding Author: Dr. Dinu Ann Dominic, E-mail: drdinuann@gmail.com

4. Class III- The tip of the interdental papilla lies level with or apical to the facial CEJ.

A modified index namely Papilla Presence Index was proposed by Cardaropoli and Corrente<sup>5</sup> with the following scores:

Papilla Presence Index score- 1 (PPI-1): Papilla is completely present and coronally extends to the contact point to fill the inter proximal embrasure and is at the same level as adjacent papillae.

PPI- 2: Papilla that is no longer completely present and lies apical to the contact point. It is not at the same level of adjacent papillae.

PPI- 3: Papilla moves more apical and interdental CEJ becomes more visible.

PPI- 4: Papilla lies more apical to interdental CEJ and buccal CEJ.

Jemt<sup>6</sup> introduced the following classification system for papillae adjacent to single implants:

1. Index score 0: No papilla is present and there is no indication of a curvature of the soft tissue contour adjacent to the single-implant restoration

2. Index score 1: Less than half of the height of the papilla is present, A convex curvature of the soft tissue contour adjacent to the single implant crown and the adjacent tooth is observed.

3. Index score 2: At least half of the height of the papilla is present, but not all the way up to the contact point between the teeth.

4. Index score 3: The papilla fills up the entire proximal space and is in good harmony with the adjacent papillae.

5. Index score 4: The papillae are hyperplastic and cover too much of the single implant restoration and/or the adjacent tooth. The soft tissue contour is more or less irregular.

### Non-Surgical Management of Black Triangles

#### Proper Oral Hygiene Maintenance

If oral hygiene is not maintained properly it can lead to periodontal lesions subsequently resulting in interdental papillary loss. However, faulty or vigorous brushing<sup>7</sup> and improper use of interdental aids can also lead to traumatization of papilla gradually resulting



**Figure 1: Tissue volumizing using Vitamin C injection into the deficient interdental papilla**



in black triangles. Discontinuation of traumatic oral hygiene practices or modification can promote re-epithelisation of traumatic lesions thus restoring the lost papilla.

### Restorations

Nanohybrid wear-resistant resin composites in several shades have been used to reduce interproximal spaces, reshape contours of the teeth and achieve adequate interproximal contact. Kim and Clark<sup>8</sup>, reported a method using Bioclear™ system, which provided smooth contour of the restoration sub-gingivally, adequate surface finish surface and minimal calculus accumulation.

Gingival restorations- The prosthetic restoration of the gingiva with pink coloured composite, pink auto-cure and heat-cured acrylics, resins and thermoplastic acrylics or soft silicone materials offers a reliable and consistent alternative to patients with uncertain surgical outcome or to those who do not want to undergo surgical procedures.<sup>9</sup> Pink restorations can mimic the gingiva and be customised with perfect marginal coverage of interdental space. Furhauser et al.<sup>10</sup> introduced the pink aesthetic score, which helps to evaluate the seven variables to assess the soft tissue esthetics in the region of implant placement.

### Prosthetic Approaches

The contact point when placed coronally can lead to large interdental space which will not be completely filled with the papilla. Prosthetic or restorative methods with porcelain laminate veneers<sup>11</sup> and crowns can lengthen the contact point or relocate it more apically thus reducing the embrasure space ensuring complete fill of the interdental papilla. It should be avoided in patients with poor oral hygiene maintenance and high caries prevalence.

### Orthodontic Approaches

Kokich<sup>12</sup> suggested that bodily movement of adjacent teeth to establish the contact point at a position less than 5 millimeter from alveolar crest resulted in interdental papilla formation. Orthodontic therapy is also used for space closure and bringing adjacent teeth in contact. In case of divergent roots due to tipping or inclinations leading to coronally located contact point can also be up righted by this method.

### Repeated Curettage

Shapiro<sup>13</sup> performed repeated scaling, root planing, and curettage of the papillary tissue every 15 days for three months to induce a proliferative hyperplastic inflammatory reaction of the papilla in order to reconstruct papillae destroyed by acute necrotizing ulcerative gingivitis.

### Tissue Volumizing

Injecting the interdental papillae with agents like hyaluronic acid gel, injectable platelet rich fibrin, vitamin C and physiological saline have shown favourable results.

### Hyaluronic Acid Gel

Injectable hyaluronic acid gel is safe and has shown promising result in interdental papillary regeneration.<sup>14</sup> Hyaluronic acid is a naturally occurring linear polysaccharide seen in the periodontal tissues. Its clinical effect lasts from 6 to 12 months. The hygroscopic nature of Hyaluronic acid helps in filling of the black triangle area. Hyaluronic acid has cell proliferative, angiogenic and anti-inflammatory effects.<sup>15</sup>

### Injectable Platelet Rich Fibrin

Choukroun et al<sup>16</sup> found that Injectable Platelet Rich Fibrin (I-PRF) produced by low relative centrifugation force had large concentration of leukocytes, platelets and growth factors such as Vascular Endothelial Growth Factor (VEGF) and Transforming Growth Factor Beta-1 (TGF-β1). Puri et al<sup>17</sup> used I-PRF for treating black triangle and they achieved soft tissue fill of papilla and change in gingival contour.

### Vitamin C

Ascorbic acid promotes the collagen biosynthesis by increasing the levels of functional messenger ribonucleic acid (mRNA) for procollagen synthesis.<sup>18</sup> For tissue volumizing, Vitamin C injection (150 mg/1.5 ml) is injected into the receded interdental papilla using an insulin needle until blanching is observed. (Figure 1). Vitamin C injection along with micro needling on the intrapapillary region for five consecutive weeks by Ahuja et al<sup>19</sup> showed interdental papillary regeneration along with improvement in gingival biotype.

## Physiological Saline

Jing Ni et al<sup>20</sup> compared the effect of hyaluronic acid and physiological saline to increase the papillary height and found that they had similar results. They suggested that the local tissue pressure induced by physiological saline resulted in natural creeping and regeneration of gingival papilla.

## Low Level Laser Therapy

Zanin et al<sup>21</sup> applied photobiomodulation therapy before and after initiating a bleeding on the gingiva of receded papilla to regenerate the interdental papilla. They found that the blood clot was rich in mesenchymal stem cells and the laser therapy favoured preservation, differentiation and stimulation of the stem cells thus enabling papillary regeneration.

Chen et al<sup>22</sup> applied liquid phase concentrated growth factor and low-level laser to achieve complete regeneration of papilla in those with thick gingival phenotype which was retained for 12 months.

## Conclusion

Interdental papilla has a significant role in creating esthetically pleasing smile. With increasing esthetic concerns the restoration of lost interdental papilla has led to multidisciplinary involvement. Even though there are several surgical and non-surgical methods minimally invasive techniques have gained more acceptance among patients who are reluctant to surgical approaches. We can ensure better and sustainable results through non-surgical management following proper diagnosis of the etiology.

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# Association between Periodontitis and Pancreatic Cancer – A Review

Lilly Priya R<sup>1</sup>, Christine Abraham<sup>2</sup>, Harikumar K<sup>3</sup>, Smitha P S<sup>4</sup>, Sanara P P<sup>5</sup>, Tintu Madona Joy<sup>6</sup>

## ABSTRACT

Pancreatic cancer is considered as one of the deadliest cancers with a very minimal five-year survival rate. It is a matter of concern, since it has varied etiology, risk factors and no definitive treatment. Periodontitis is a chronic multifactorial immuno-inflammatory disease associated with dysbiotic oral bacteria, characterized by progressive destruction of tooth supporting structures. These periodontal pathogens and inflammation play a critical role in the development of various types of cancers, including pancreatic cancer. So, this article is aimed to review the association between periodontitis and pancreatic cancer.

**Keywords:** Periodontitis, Pancreatic cancer, Periodontal pathogens, Inflammation

## Introduction

In the recent era, even-though indisputable changes have occurred in the area of cancer medicine, there is only limited evidence in its diversified etiology, risk factors and there is no definite treatment. This is one of the reasons why ‘cancer’ is considered as the most dreadful word. One of the deadliest cancers in the world is pancreatic cancer, a malignant neoplasm originating from transformed cells arising in the pancreatic tissue. The most common type is pancreatic ductal adenocarcinoma (PDAC), which is aggressively fatal with a prediction of second leading cause of cancer death in United States by 2023.<sup>1</sup> The clinical presentations are fatigue, weight loss, anorexia, abdominal or back pain, jaundice, steatorrhea, pancreatitis etc. Its known etiology and risk factors include inherited deoxyribonucleic acid (DNA) mutations, smoking, alcohol consumption, diabetes mellitus, obesity and chronic pancreatitis.<sup>1</sup>

On the other hand, periodontitis is a chronic multifactorial immuno-inflammatory disease

associated with dysbiotic oral bacteria, characterized by progressive destruction of tooth supporting structures such as gingiva, periodontal ligament, alveolar bone and cementum.<sup>2</sup> Since inflammation being a common factor in both periodontitis and pancreatic cancer, there might be an association between them.

## Literature Review

According to Hujoel et al in 2003, there is an increased risk for pancreatic cancer deaths in 11,328 individuals with periodontitis<sup>3</sup> and Michaurd et al in 2008, expressed that periodontal disease is associated with small but, significant increase in overall cancer incidence and mortality.<sup>4</sup> Appertaining to the risk, Ahn et al in 2012, demonstrated that there is a four-fold increase in risk of pancreatic cancer among those with severe periodontitis<sup>5</sup> and Michaurd et al in 2013, demonstrated that the individuals with high levels of antibodies against *Porphyromonas gingivalis* (*P.gingivalis*) had a two-fold higher risk of pancreatic cancer,<sup>6</sup> suggesting the association between them.

<sup>1,2</sup>Postgraduate student, <sup>3</sup>Professor and Head, <sup>4</sup>Associate Professor, <sup>5</sup>Assistant Professor, <sup>6</sup>Assistant Professor, Department of Periodontics, Government Dental College, Kozhikode, Kerala, India. Corresponding Author: Dr Lilly Priya R., E-mail: lillypriyaravikumar@gmail.com



Heikkilä et al in 2018, has shown a clear positive association between periodontitis and pancreatic cancer mortality<sup>7</sup> and in 2018, Corbella et al concluded that there is a positive association between periodontitis and cancers, and identified periodontitis as a risk factor for pancreatic cancer.<sup>8</sup>

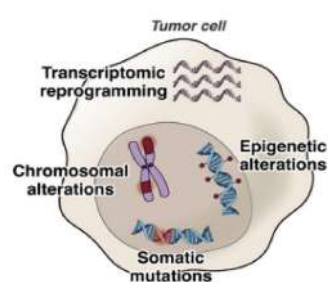
### Pathogenesis of Pancreatic Cancer:

Pancreatic cancer pathogenic mechanisms include molecular (Figure 1a) and cellular contributions (Figure 1b).

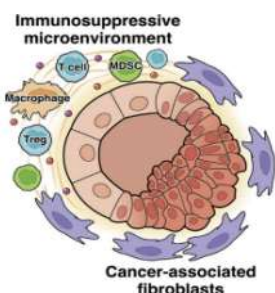
### Mechanisms Linking Periodontitis and Pancreatic Cancer

There are two pathways that link periodontitis and pancreatic cancer, direct and indirect. Periodontal pathogens like *P. gingivalis*, *Aggregatibacter*, *Neisseria*, *Leptotrichia*<sup>9</sup> have a direct link with pancreatic cancer.<sup>10,11</sup> Microbes reach the pancreas through the blood stream, bile duct, small bowel, and reflux into pancreatic duct. (Figure 2)

Chronic inflammation plays an indirect role in pancreatic cancer. Studies have shown that the by-products of chronic periodontitis lead to chronic systemic inflammation,<sup>13</sup> even at distant sites.<sup>14</sup> This leads to the alterations in the cellular morphology and further cancer development.



**Figure 1a. Molecular alterations in neoplastic cells**



**Figure 1b. Cellular alterations to tumor microenvironment**

Figure 1: Adapted from: Laura D. Wood, Marcia Irene Canto, Elizabeth M. Jaffee, Diane M. Simeone. Pancreatic Cancer: Pathogenesis, Screening, Diagnosis, and Treatment. *Gastroenterology*. 2022; 163:386–402.

### Pathogen-associated carcinogenesis

After colonization and survival, the microbiota leads to the development of carcinoma by various processes,<sup>9</sup> which include:

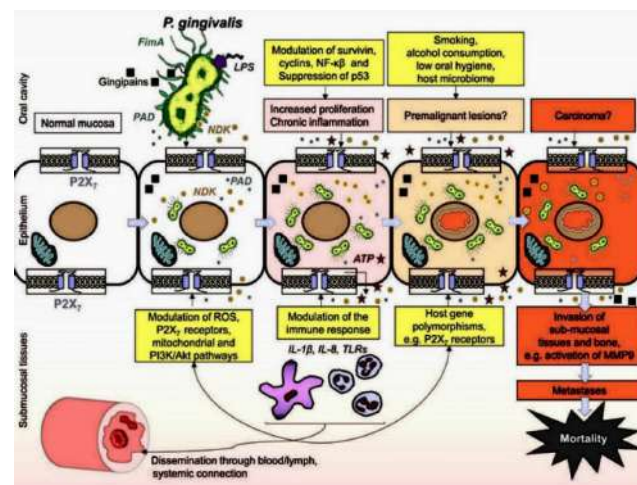
1. Increased inflammation: It also plays an indirect role in carcinogenesis. As there is an imbalance in oral microbiota in periodontal disease, this produces the pro-inflammatory mediators like Interleukin (IL)-1 $\beta$ , IL-6, IL-8, matrix metalloproteinases (MMP), Tumor necrosis factor (TNF)- $\alpha$ , C-reactive protein (CRP), Nuclear factor (NF)- $\kappa$ B. This in turn leads to a cellular morphology alteration and carcinogenesis due to the persistent chronic inflammation.

2. Malignant transformation: The microbial effect on epithelial cells transforms them into malignant cells in the early stages of tumorigenesis.

3. Host's immunosuppression: This occurs due to down-regulation of pro-inflammatory cytokines, up-regulation of anti-inflammatory cytokines, prevention of T-lymphocytes activation and disruption of immune-related signaling pathways.

4. Microbiota imbalance: The imbalance in the microbial shift leads to dysbiosis and plays significant role in cancer cell formation.

5. Anti-apoptotic activity: *P.gingivalis* promotes excessive anti-apoptotic activity, which induces



**Figure 2 Role of *P.gingivalis* in tumorigenesis**

Figure 2: Adapted from: K.R. Atanasova and O. Yilmaz.

Looking in the *Porphyromonas gingivalis* cabinet of curiosities: the microbium, the host and cancer association. *Molecular Oral Microbiology*. 2014; 29:55–66.



changes in the mitochondrial intrinsic Janus kinase/signal transducers and activators of transcription (JAK/STAT) pathway, phosphorylation of bad, increases bcl2: bax ratio, secretion of anti-apoptotic enzyme (Nucleoside diphosphate kinase) that cleaves adenosine triphosphate (ATP) and prevents activation of P2X7.

6. Production of carcinogenic substances involves in inflammation associated carcinogenesis.

7. Translocation: As mentioned earlier, the microbiomes are translocated via the blood stream and the digestive tract to the tumor site.

### Inflammation associated cancer pathogenesis

Inflammation is tremendously increased by production of carcinogenic substances in excessive amounts<sup>9</sup> and persistent presence of inflammatory mediators is (Figure 3) indirectly connected with cancer development. Some of the carcinogenic substances secreted by periodontal pathogens are:

1. Reactive oxygen and nitrogen species (ROS, RNS): Produced by Gram-negative organisms and involve in cellular transformation, tumor survival invasion, angiogenesis and metastasis.

2. Volatile Sulfur Compounds (VSC's): They are formed by *P.gingivalis* and lead to escalation in inflammation.

3. Lipopolysaccharides (LPS): Their source is from Gram-negative oral bacteria and have a role in inflammatory reaction induction.

4. Gingipain: Secreted by *P.gingivalis*. It activates the inflammatory signals and induces MMP-9.

### Future Directions

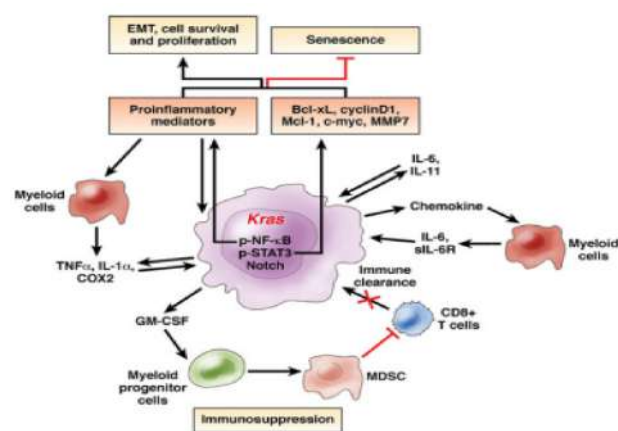
As science is ever evolving, more representative studies with standardized methods are needed to understand the exact mechanisms linking periodontitis and pancreatic cancer, to detect the strength of association between periodontal disease and pancreatic cancer, and to find the impact of periodontitis stage on pancreatic cancer risk.

### Conclusion

Based on the current evidences, it can be concluded that, there may be a positive association between periodontitis and pancreatic cancer, and recognition of periodontitis as an important risk factor, therefore has greater significance. As periodontitis is a preventable and manageable disease, effective implementation of treatment measures like proper oral hygiene maintenance, routine dental examination and professional periodontal therapies will not only improve the oral-health related quality of life, but may also reduce the overall risk of pancreatic cancer.

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**Figure 3. Role of inflammation in pancreatic cancer**

Figure 3: Adapted from: Ilya Gukovsky, Ning Li, Jelena Todoric, Anna Gukovskaya, Michael Karin. Inflammation, Autophagy, and Obesity: Common Features in the Pathogenesis of Pancreatitis and Pancreatic Cancer. *Gastroenterology*. 2013; 144:1199 –1209

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# Periodontitis and Breast Cancer

Ciby Abraham<sup>1</sup>, Elbe Jacob<sup>2</sup>, Anila S<sup>3</sup>

## ABSTRACT

Breast cancer is the second leading cause of cancer death in women. Breast cancer incidence is reported in women worldwide in every country. The risk factors of breast cancer include, increasing age, obesity, alcohol consumption, family history of breast cancer, history of radiation exposure, reproductive history, tobacco use and post-menopausal hormone therapy. Periodontitis is an inflammatory condition affecting the tissues surrounding the teeth which can eventually lead to loss of tooth. The inflammatory mediators and components present in periodontitis are also involved in certain systemic diseases, including cancer. This review narrates the association of periodontitis as a risk factor for breast cancer and also highlights the microbial profile associated with genetic markers.

**Keywords:** Breast cancer, Periodontitis, Genetic marker, Risk factor

## Introduction

A plaque biofilm-related chronic multifactorial inflammatory illness, periodontitis, causes a chronic, irreversible, and damaging inflammatory response.<sup>1</sup> The prevalence of periodontal disorders, which are marked by persistent inflammation and infection, rises with age. A growing body of research indicates that periodontal disease raises the risk of a number of malignancies, including lung, gastrointestinal, and oral cancers.<sup>2</sup> More than 1.5 million new cases of breast cancer are recorded each year, making it the second most frequent malignancy among women worldwide.<sup>3</sup> Due to delayed menopause, brief breastfeeding periods, fewer pregnancies, late pregnancy ages, and early menarche, the prevalence has been rising. The additional risk factors for breast cancer are obesity, alcohol consumption, and a lack of physical activity.<sup>4</sup> Disorders of the oral microbiota may be linked to breast cancer risk.<sup>5</sup> Animal experiments have reported that oral

*Fusobacterium nucleatum* can spread to breast tissue via hematogenous route, where it speeds up tumour growth and accelerates metastatic disease.<sup>6</sup> The state of one's periodontal health has recently been linked to an increased risk of breast cancer. A World Health Organization report states that 19.4 to 89.7 women out of 100,000 will develop breast cancer.<sup>7</sup> Therefore, the purpose of this review was to present a brief note on the possible links between chronic periodontitis and breast cancer.

## Inflammatory Factors

The alteration of oral flora and subsequent influx of inflammatory components into the systemic circulation, which may act as a procarcinogen at distant sites, is the most widely accepted theory for the link between periodontal disease and cancers.<sup>8</sup> Through the transfer of oral bacteria, bacterial toxins, and inflammatory mediators like prostaglandins, cytokines, and

<sup>1,2</sup>Intern, <sup>3</sup>Professor and Head, Department of Periodontics, St Gregorios Dental College, Kothamangalam, Ernakulam, Kerala  
Corresponding Author: Ciby Abraham, E-mail: cibyabraham97@gmail.com

interleukins, periodontal inflammation encourages systemic inflammation. This temporary bacteraemia may stimulate cellular differentiation, which is seen during the oncogenesis process.<sup>9</sup> By many mechanisms, oral bacterial dysbiosis can increase the production of virulence factors resulting in an inflammatory condition in the host and chronic inflammation.<sup>8</sup>

### Microbial Factors

Gram-negative species such *Porphyromonas gingivalis*, *Tannerella forsythia*, *Fusobacterium*, *Prevotella*, *Actinomyces*, and rare Gram-positive bacterial species like *Streptococcus* and *Staphylococcus* were reported to be colonising the subgingival biofilm of breast cancer patients. These microbes are all regarded as strong periodontopathogens.<sup>8</sup> The potential of *Porphyromonas gingivalis* and *Fusobacterium nucleatum* to generate distinct mechanisms for inflammasome activation and activity was recently discovered, and as a result, this systemic inflammation may unintentionally contribute to chronic diseases like breast cancer.<sup>10</sup> Interestingly, the idea that the breast can be a favourable environment for the growth of disease-associated bacteria cannot be ignored because it is composed of

fatty tissue with substantial vasculature and lymphatic drainage.<sup>11</sup>

The microbiological profile related to breast cancer genes such as Breast Endocrine Receptor (BRER), Breast Human Epidermal Growth Factor (BRHR) Receptor-2 (HER-2) positive, Breast Triple positive (BRTP), Breast Triple Negative (BRTN) is depicted in Table 1.

The Odds Ratio (OR), Hazards Ratio (HR) and Relative Risk (RR) of various studies relating breast cancer to periodontitis is depicted in Table 2.

### Conclusion

Various studies have concluded that the women with periodontitis have two to three times higher odds of being diagnosed with breast cancer than those without periodontitis. The dental professional would benefit from the awareness that periodontal disease is a risk factor for various types of cancer including breast cancer. Therefore, it may be beneficial for people with periodontal disease to think about taking a few precautions to lower their chance of developing cancer. This can involve emphasising the value of undergoing routine dental check-ups and practicing good oral hygiene

**Table 1: Association of microbial species with breast cancer genes**

Type of microorganism	Name of the species	Type of breast cancer	Association with periodontitis (+ = positive association)
Bacterial signature	<i>Actinomyces</i>	BRER+BRHR+BRTP+BRTN	+
	<i>Staphylococcus</i>	BRHR+BRTP+BRER	+
	<i>Fusobacterium</i>	BRER+BRHR	+
	<i>Mycoplasma</i>	BRTN+BRER	+
	<i>Bordetella</i>	BRHR	+
	<i>Bifidobacterium</i>	BRER	+
	<i>Chlamydia</i>	BRTP	+
	<i>Campylobacter</i>	BRTP	+
	<i>Legionella</i>	BRTP	+
	<i>Escherichia</i>	BRHR	+
	<i>Streptococcus</i>	BRHR	+
Viral signature	<i>Herpesviridae</i>	BRER+BRHR+BRTP+BRTN	+
	<i>Papillomaviridae</i>	BRER+BRHR+BRTP+BRTN	+



techniques, to minimise the severity of the disease and inflammation. However, further research is required to investigate these hypothesised relationships. In order to establish a clear connection between periodontal

disease and cancer, it will be helpful to utilise uniform and standardised criteria for periodontal disease and consistent, strict control of the confounding factors, such as smoking and alcohol consumption. However,

Table 2: Studies on the association of breast cancer and periodontitis. (OR= Odd's Ratio, RR= Relative Risk, HR= Hazard ratio)

Author	Type of study	Year	Result
Dr. Ishwariya Krishnan	Case-control	2022	Patients with periodontitis significantly increased risk of breast cancer (OR=2.74)
Mengmeng Jia	Prospective cohort	2020	Patients with periodontitis significantly increased risk of breast cancer (HR=1.07)
Michaud DS	Prospective cohort	2018	Patients clinically diagnosed with periodontitis significantly increased risk of Breast cancer (HR= 1.32)
Heikkila P	Prospective cohort	2018	With increasing periodontal pocket depth (PPD) significantly increased risk of breast cancer (RR= 1.19)
Nwizo NN	Prospective cohort	2017	Patients with self-reported periodontal disease significantly increased risk of breast cancer (HR= 1.13)
Sfredde	Case-control	2017	Patients clinically diagnosed with periodontitis significantly increased risk of breast cancer (OR= 2.72)
Dizdar O	Retrospective cohort	2017	Patients clinico-radiographically diagnosed with periodontitis significantly increased risk of breast cancer (RR= 2.40)
Chung SD	Retrospective cohort	2016	Patients clinically diagnosed with periodontitis significantly increased risk of breast cancer (HR= 1.23)
Mai X	Prospective cohort	2016	With increasing loss of height of crest of alveolar bone significantly increased risk of breast cancer (HR= 1.15)
Soder B	Prospective	2011	Patients clinically diagnosed with periodontitis significantly increased risk of breast cancer (OR= 13.08)
Freudenheim	Prospective cohort	2015	Patients with self-reported periodontal disease significantly increased risk of breast cancer (HR= 1.14)
Arora M	Prospective co-twin	2010	Patients with self-reported periodontal disease significantly increased risk of breast cancer (HR= 1.12)
Hujoel	Epidemiologic follow up	2003	Patients clinically diagnosed with periodontitis have significantly increased risk of breast cancer (OR= 1.32) in the

this review may aid in raising awareness of the value of maintaining good dental health, which may lower the risk, morbidity, or death due to breast cancer.

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# Role of Microsurgery In Periodontal Therapy - A Narrative Review

G Kishore Kumar<sup>1</sup>, R Kadhiresan<sup>2</sup>, U Arunmozhi<sup>3</sup>, R Shanmuga Priya<sup>4</sup>

## ABSTRACT

The periodontist can undertake clinical operations with greater accuracy than with traditional surgeries using surgical operating microscope which has increased illumination and magnification for visual clarity. Currently, it appears that employing a surgical microscope is the greatest option for improving one's ability to diagnose problems and treat them effectively. This article seeks to illustrate the fundamentals of periodontal plastic surgery, particularly the use of magnifying lenses and microsurgical tools, knot tying, clinical applications, and the aesthetic effects of microsurgery. The literature suggests that microsurgery with better visual acuity offers important benefits such as reduced patient discomfort, quick healing, improved aesthetics, and compliance among patients. Combining periodontal microsurgery with minimally invasive surgical methods enhances a clinician's capacity to precisely manipulate the tissues, providing the easiest and most likely result.

**Keywords:** Microsurgery, Magnification, Surgical Microscope, Illumination, Periodontal Surgery

## Introduction

Periodontal therapy should ideally arrest disease progression and regenerate the lost attachment apparatus. The goal of periodontal surgery has always been to alleviate or eliminate the degeneration associated with progressive periodontal disease.<sup>1</sup> Over the past decade, the field of Periodontics has seen increasing surgical refinement of many procedures. Such refinements require more detailed surgical skills resulting from increased visual acuity. In order to consistently succeed with guided tissue regeneration, cosmetic crown lengthening, gingival augmentation methods, hard and soft tissue ridge augmentation, osseous resection, and dental implants, periodontists must have clinical expertise that pushes their technical proficiency to the limits and beyond that of normal visual acuity. Thus, periodontal microsurgery has evolved to overcome the

above limitations.<sup>2</sup> The application of magnification to Periodontics promises to change clinical concepts of periodontal surgical care. Microsurgery has become an indispensable asset in medicine for many years and the recent application of its principle to various fields in dentistry like periodontal surgery has been extremely valuable.<sup>3</sup>

## Conventional surgical techniques

Conventional surgery/macro surgery is defined as those surgical procedures performed with the unaided eye, without the assistance of magnification. Periodontal surgery practiced today may inevitably be relegated to a lesser role in the future.<sup>4</sup> Conventional surgeries involve a larger area including more soft and hard tissue manipulation which results in greater postoperative edema, inflammation, and pain. Healing is by second-

<sup>1</sup>Postgraduate student, <sup>2</sup>Professor, <sup>3</sup>Professor & Head, <sup>4</sup>Professor, Department of Periodontics, Sri Venkateswara Dental College and Hospital, Chennai, Tamil Nadu. Corresponding Author: Dr. G Kishore Kumar, E-mail: kishorekk56743@gmail.com

ary intention and requires more time. Tissue is injured more by crushing than manipulation, which hampers healing due to increased bleeding with reduced visibility & lesser patient acceptance. To overcome these limitations and to concurrently meet patients' expectations and achieve desired therapeutic goals, advanced surgical techniques are the need of the hour.<sup>5</sup>

## Microsurgery

Microsurgery is defined as refinements in existing basic surgical techniques that are made possible using the surgical microscope with subsequent, significantly improved visual acuity. Microsurgery has been introduced to the specialty of Periodontics in 1992.<sup>6</sup> In 1979, Daniel defined microsurgery in broad terms as "surgery performed under magnification by the microscope". In 1980, microsurgery was described by Serafin, as a methodology-a modification and refinement of existing surgical techniques using magnification to improve visualization, with applications to all specialties. Microsurgery is an advanced surgical technique in which normal vision is enhanced through the magnification using loupes or surgical microscope. This increases motor movement precision from one millimetre (mm) to 10 micrometer( $\mu$ m).<sup>7</sup>

Microsurgery is used in Periodontics due to its three major advantages:

1. Enhancement of motor skills to improve surgical ability
2. Decreased tissue trauma at the surgical site
3. A narrow surgical field

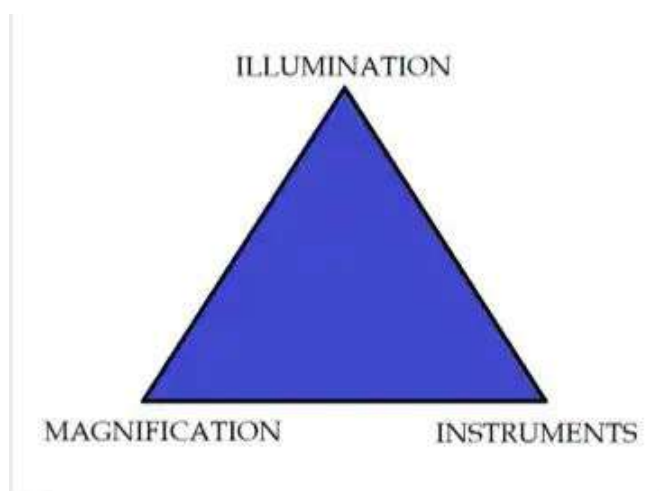


Figure 1: Microsurgical Triad

## Microsurgical Triad

The three elements, i.e., magnification, illumination, and refined surgical skills by instruments are called the microsurgical triad (Belcher et al. 2001)<sup>8</sup>, the improvement of which is a prerequisite for improved accuracy in surgical interventions. (Figure 1)

## Microsurgical Instrument

Proper instrumentation is fundamental for microsurgical intervention. An important characteristic of microsurgical instruments is their ability to create clean incisions that prepare wounds for healing by primary intention. With microscopic magnification and the use of microsurgical instruments, tissue trauma and bleeding can be minimized. The most used precision grip in microsurgery is the pen grip which gives greater stability than any other hand grip.<sup>9</sup>

The instruments should be approximately 18 centimeter (cm) long and lie on the saddle between the operator's thumb and the index finger; they should be slightly top - heavy to facilitate accurate handling. In order to avoid an unfavourable metallic glare under the light of the microscope, the instruments often have a coloured coating surface. The weight of each instrument should not exceed 15-20gram in order to avoid hand and arm muscle fatigue.<sup>10</sup> The working tips of microsurgical instruments are much smaller than those of regular instruments. Needle holders and tissue forceps are made of titanium to provide consistent manipulation of the tissues. Such instruments are resistant to distortion from repeated use



Figure 2: Microsurgical Blade



and sterilization, non-magnetized and are lighter than the stainless-steel instruments.

### Knives and Scalpel Blades

The knives most used in periodontal microsurgery are those used in ophthalmic surgery or plastic surgery. These knives have their characteristic ability to create clean incisions to prepare the sharp flap margins for healing by primary intention.<sup>11</sup>(Figure 2)

### Micro scissors

Different sizes of scissors are used - 14 cm and 18 cm long scissors are used to manage the delicate part of the adventitial tissues. The tips of scissor blades can be straight or gently curved. Straight scissors cut sutures and trim the adventitia of vessels or nerve endings. Curved scissors dissect vessels and nerves.<sup>12</sup>

### Micro forceps

They are used to handle minute tissues without damaging them and to hold fine sutures while tying knots. (Figure 3) Micro forceps can make those manoeuvres that cannot be performed by hand. There are different types of micro forceps for different operations.<sup>13</sup>

### Micro Needle Holder

It is used to grasp the needle, pull it through the tissues, and tie knots. They differ in the way they grasp the needle. The most used are 14 cm and 18 cm. The tips can be straight or gently curved, but the latter are most often used. (Figure 4) The choice of the tip is determined by the nature of the suture. A titanium needle holder is the best choice.<sup>14</sup>

**Table 1: Basic Periodontal Microsurgery Instruments**

SL.NO.	MICROSURGERY INSTRUMENTS	TYPES
1.	KNIVES AND SCALPEL	<ul style="list-style-type: none"> <li>▪BLADE BREAKER KNIFE</li> <li>▪CRESCENT KNIFE</li> <li>▪MINI-CRESCENT KNIFE</li> <li>▪SPOON KNIFE</li> <li>▪LAMELLAR KNIFE</li> <li>▪SCLERAL KNIFE</li> <li>▪CASTROVIEJO SCALPEL</li> </ul>
2.	MICROSCISSORS	<ul style="list-style-type: none"> <li>▪EXTRAFINE MICROSCISSOR (STRAIGHT)</li> <li>▪EXTRAFINE MICROSCISSOR (CURVED)</li> </ul>
3.	MICRO FORCEPS	<ul style="list-style-type: none"> <li>▪STRAIGHT JEWELLER FORCEPS.</li> <li>▪CURVED JEWELLER FORCEPS</li> </ul>
4.	MICRONEEDLE AND SUTURES	



**Figure 3: Microsurgical Forceps**



**Figure 4: Microsurgical Needle Holder and Conventional Needle Holder**

### Micro sutures

Ideally, the incisions should be almost invisible and closed with precisely placed, small sutures with minimal tissue damage and no bleeding. With all the surgical subspecialties, suture materials (4-0 to 10-0 size) and techniques have evolved to the point that sutures are designed and developed for specific procedures (Figure 5). What has been developed for medicine is subsequently used in dentistry. The criteria necessary for successful use of suture materials are dependent on the surgical procedure to be performed and the factors necessary to successfully close the wound in a manner that promotes optimum healing.<sup>15</sup>

### Magnification and Illumination

Loupes are the most common magnification system used in dentistry today. Loupes are optical aids for magnified projection of an object on the retina.<sup>16</sup>

Three types of Keplerian loupes commonly used in Periodontics are:

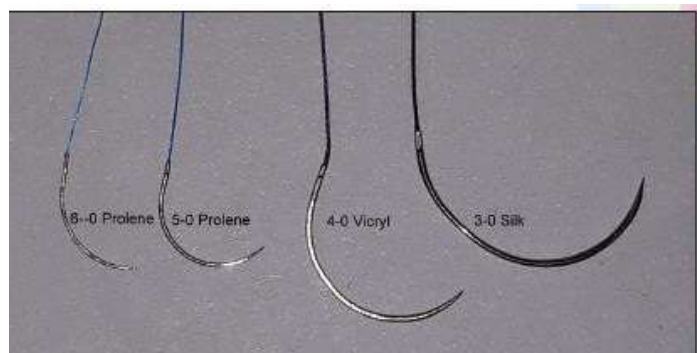
- 1) Simple single – Element loupes (Figure 6)
- 2) Compound loupes (Figure 7)
- 3) Prism telescopic loupes (Figure 8)

### Loupe Magnification

Wide ranges of magnifications are available in loupes, ranging from 1.5x to 10x. Loupes with less than 2x magnifications, are usually inadequate for the visual acuity necessary for microsurgery. For most periodontal procedures in which magnification is needed, loupes of 4x to 5x provide an effective combination of magnification, field size, and depth of focus.

### Surgical Microscope

The operating microscope (OPM) combine the magnification of loupes with a magnification changer and a binocular viewing system. Optical elements of surgical microscopes are more advanced than those found in loupes and the depth of focus and field of view characteristics are enhanced. It provides higher magnification, greater flexibility, comfort in optical



**Figure 5: Suture Needle**



**Figure 6: Simple Loupes**

magnification and superior optical performance compared with dental loupes. (Figure 9)

The surgical microscope is a complicated system of lenses that allows stereoscopic vision at a magnification of approximately 4 - 40x with an excellent illumination of the working area. The light beams fall parallel onto the retinas of the observer so that no eye convergence is necessary and the demand on the lateral rectus muscles is minimal.<sup>17</sup>

## Loupes Versus Operating Microscopes

Loupes and optical microscope have some common features which include:

1) Both loupes and the operating microscope improve visual acuity and are beneficial in enhancing periodontist's ergonomic comfort and efficiency by increasing the optical working distance.

2) A multitude of eye, neck, shoulder, and back problems that are common to dentists assuming a

shorter working distance to increase visual acuity without magnification, may be eliminated by using the surgical microscope.<sup>18</sup>

Increasing the normal working distance by 6 to 8 inches has been shown to improve vastly the postural ergonomics and eye strain of industrial workers.

## Advantages of loupes

- Less expensive and initially easier to use.
- Loupes also tend to be less cumbersome in the operating field and are less likely to breach a clean operative field.

## Advantages of operating microscopes

- Greater operator eye comfort because of the parallel viewing optics of the Galilean system as well as the range of variable magnification.
- Excellent coaxial fibreoptic illumination
- Countless accessories such as still and video cameras for case documentation.



Figure 7: Compound Loupes



Figure 8: Prism Loupes



Figure 9: Surgical Microscope



### Limitations of loupes

▪Lack of variable magnification, and that an individual light source may be required, particularly for magnification in the range of or greater than 4.0 diameters.

### Limitations of operating microscopes

- Restricted area of vision and loss of depth
- Loss of visual reference points
- A steep learning curves
- Expensive to buy

### Wound Healing Following Periodontal Microsurgery

In periodontal surgery, the benefits of surgical magnification involve the exploration of minimally invasive approaches and effective wound closure.<sup>19</sup> Microsurgery encourages repair through primary healing, which is rapid and requires less formation of granulation or scar tissue. Wound healing studies show anastomosis of microsurgical wounds within forty eight hours. Secondary wound healing is slower because new tissue formation is required to fill voids at the edge of the partially closed wound. Because surgical trauma is minimized during microsurgery, less cell damage and necrosis occurs, resulting in less inflammation and reduced pain. During the past decade, focus has been on the design and performance of surgical procedures for periodontal regeneration. Specific surgical approaches have been advocated to preserve soft tissues and to achieve stable primary wound closure in order to seal the area of regeneration from the oral environment.<sup>20</sup>

### Implications of microscopes in Periodontology

Like any magnification, the surgical operating microscope improves visual acuity. This results in:

1. The transmission of surgical skills with better accuracy leads to more precise incisions with smaller instrumentation, less trauma, and faster postoperative recovery.
2. Repositioning of tissues precisely using sutures and smaller needles.
3. A clearer view of the root surfaces, allowing for more thorough calculus removal and enhanced root smoothness.

### Discussion

A systematic review was conducted by Yadav et al in 2018 to compare the microsurgical approach with conventional (macroscopic) therapy for the treatment of gingival recession. This systematic review demonstrated that the microsurgical approach offers the distinct advantage of increased vascularization of the grafts, relatively better percentages of root coverage, a significant increase in width and thickness of keratinized tissue, improved aesthetic outcome, and decreased patient morbidity.<sup>21</sup>

A recent retrospective study by Nibali et al. showed significant improvements in intrabony defects by means of clinical attachment gains and radiographic bone fill using minimally invasive nonsurgical therapy (MINST). Following, supragingival and subgingival debridement using thin piezoelectric devices and Gracey mini curettes under a magnification lens, an attempt was made to stimulate and stabilize a blood clot within the defect. This minimally invasive, non-surgical technique using microsurgical instruments reduced the risk of soft tissue trauma and may have a significant positive impact in the treatment of medically compromised patients or patients who are not good surgical candidates.<sup>22</sup>

The inability to see and reach intrabony abnormalities is one of the main drawbacks of the above-mentioned microsurgical procedures. Harrel has unveiled the Video assisted – Minimally Invasive Surgery (V-MIS) approach, which allows for either buccal or lingual access, to overcome these constraints. When compared to conventional periodontal regenerative procedures, the results indicated a considerable improvement in clinical parameters after 36 months. The removal of “micro-islands” of calculus on the root surface, which has been linked to an increase in subgingival inflammation and has been shown to be associated with the success of this technique, according to the author, was previously not visible with high magnification surgical microscopes but was clearly visible using the videoscope.<sup>23</sup>

For periodontists, microsurgery offers new techniques and information that can significantly enhance the therapeutic outcomes of many periodontal operations, including enhanced cosmetic outcomes, quick healing, little discomfort, and increased patient accept-



ability. Magnification will undoubtedly be used more frequently in dentistry's future in all clinical specialties, including Periodontics. With the use of microsurgery, periodontal procedures will change from being focused on a macro to a micro field, yielding accurate and more predictable results.

## Conclusion

Even though periodontal microsurgery is still in its infancy, it has a lot of potential. It is a skill that must be honed over time to reach the highest level of expertise in periodontal field especially in root coverage and soft tissue augmentation procedures. The tiny world of microsurgery poses unique dexterity and perception problems that, when mastered, promote creative treatment options for improved outcomes. Its implementation is more difficult than traditional periodontal operations and technique-sensitive. The usage of microscopes will increase as their benefits become more obvious. As more people learn about periodontal microsurgery as a form of treatment, the conventional surgical approach involving big incisions will begin to fade out of popularity.

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# Precision at its Finest: Piezosurgery in Periodontics and Dentistry

Alin Mary John<sup>1</sup>, Deepak Thomas<sup>2</sup>, Suresh D K<sup>3</sup>, Ajesh Joseph<sup>4</sup>, Ahila D<sup>5</sup>, Shahna N<sup>6</sup>

## ABSTRACT

Dentistry has witnessed the emergence of a lot of innovations. Piezosurgery is an excellent technique that has various applications in the field of dentistry. It is an effective way of precise bone cutting sparing the soft tissues, resulting in better bone formation, better healing response and improved patient comfort. It is based on low frequency ultrasonic micro vibrations. Piezosurgery has become a boon in Periodontics. This article throws light on the applications of piezosurgery in dentistry and in the field of Periodontics

**Keywords:** Piezosurgery, Ultrasonics, Bone, Healing

## Introduction

Periodontitis is a chronic inflammatory disease of the tooth and its supporting structures. The treatment of this condition is primarily dependent on the removal of local factors and the restoration of the bony architecture. The treatment modalities for periodontal disease consist of both surgical and non-surgical methods. Surgical methods of treatment include both resective and regenerative modalities. Other than the conventional methods of resective surgeries using hand instruments, and the usage of motor for removal of bone, piezosurgery is considered as a recent advancement in periodontal therapy.<sup>1</sup>

Piezosurgery is the technique for cutting bony structures using piezoelectric vibrations. It works on the principle of ultrasonic microvibrations.<sup>2</sup> Piezoelectric effect was discovered by Pierre and Jacques Curie in 1880. Dr. Tomaso Vercellotti invented piezoelectric surgery to overcome the limits of traditional instrumentation in oral surgeries.<sup>3</sup>

## Principle

The word piezo is derived from Greek word 'piezen' which means to press tightly.<sup>1</sup> Piezoelectric

effect is the appearance of an electric charge across certain crystals like quartz, Rochelle salt, ceramics etc. when they are under mechanical pressure. Inversely in the presence of an electric field the crystals tend to get deformed resulting in production of ultrasonic frequency oscillations which are amplified and transferred to a vibrating tip. The tip on application with slight pressure on the bone generates a mechanical cutting phenomenon called cavitation.<sup>3,4</sup>

## Mechanism of Action

Ultrasonics is a branch of acoustics that deals with sound vibrations at frequencies above the audible level i.e., >20 kilohertz(kHz). Here the sonic is an ultrasound wave of high amplitude produced by three different methods. The methods include:

1. Mechanical method where the frequency is up to 100kHz
2. Magnetostatic method where the frequency lies in the range of 18-25 kHz
3. Piezoelectric effect- in the range of 25-50 kHz

The piezoelectric effect is used in piezo surgery to convert mechanical energy in the form of tension

<sup>1</sup>Intern, <sup>2,4</sup>Reader, <sup>3</sup>Professor & Head, <sup>5,6</sup>Senior Lecturer, Department of Periodontics & Implantology, Educare Institute of Dental Sciences, Malappuram, Kerala. Corresponding Author: Dr Deepak Thomas, E-mail: drthomasdeepak@gmail.com

and compression into electric energy.<sup>1</sup>(Figure 1)

### Piezoelectric Device -Modes

There are three modes that are widely used in the field of dentistry, which includes:

- Low mode
- High mode
- Boosted mode

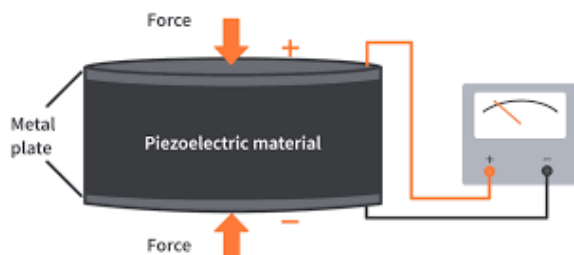
Low mode has been found useful for apical root canal treatment and high mode for cleaning and smoothing bone borders. Boosted mode is useful in the execution of the osteoplasties and osteotomies.<sup>3</sup>

### Piezosurgery Unit

A piezosurgery unit comprises of (Figure 2):

- piezoelectric handpiece
- control unit which helps to control the frequency of vibrations, power of cutting and the amount of irrigation
- holders for the handpiece and irrigation fluids
- foot switch that activates the handpiece tips

Various types of handpiece tips including scalpel, saw, cone compressor, bone harvester etc are available. They are available in different sizes and shapes with titanium or carbide coating. Piezosurgery requires light handpiece pressure and an integrated saline coolant spray so that overheating of the bone is avoided and visibility of the surgical site is increased. The frequency is usually set between 25 and 30 kHz producing micro vibrations of 60–210 millimeter amplitude with power exceeding 5Watt.<sup>3</sup>



**Figure 1: Principle of Piezoelectric effect**

(Adapted from circuit bread <https://dwma4bz18k1bd.cloudfront.net/tutorials/direct-piezoelectric-effect-principle.jpg>)

### Biological Effects on Bone

The effects of mechanical instruments on the bone structure and the viability of cells are important in regenerative therapy. High temperatures, applied even for a short time, are dangerous to cells and may cause necrosis of tissue. There has been an histologic comparison of the effect of a standard ultrasonic insert to a rotary bur and a surgical chisel. The ultrasonic insert, like the surgical chisel, is useful to cut and not burnish the bone. The smoothest surface of the bone was produced by the rotary bur. The rate of bone healing was found the best when the bone was removed by a surgical chisel or ultrasonic insert. In a followup study, using ultrasonic instruments in the surgical removal of teeth and osseous surgery, ultrasonic inserts were found to remove bone with ease and preciseness. There were no evidences of detrimental histologic changes.<sup>5,6</sup>

In a study by Vercellotti et al a modulated frequency piezoelectric knife was investigated as a means of performing ostectomy and osteoplasty.<sup>7</sup> The rate of postoperative level of bone change was used to compare the effectiveness of piezosurgical instruments with a standard carbide bur and a standard diamond bur. The results showed that the piezosurgery provided a more favorable osseous response than traditional carbide and diamond burs when surgical ostectomy and osteoplasty procedures were done. Since the piezosurgery insert vibrated within a width of 60–200



**Figure 2: Piezosurgery unit**

(Adapted from Austin journal of dental applications: <https://austinpublishinggroup.com/dental-applications/fulltext/jdav3-id1090.php#fig1>)

mm at a modulated ultrasonic frequency, an elevation in temperature was avoided which eliminated the bone damage. Ultrasonic osteotomy preserves microstructure of bone facilitating the healing of bone and, in turn, osseointegration, which is the key to success of dental implants.<sup>8,9</sup>

Research has shown that the healing process after the surgical procedure is facilitated with the use of piezoelectric surgery reducing the inflammatory response when the graft is healing. This helps in to stabilize the live bone tissue after it has been grafted.<sup>10</sup> Studies conducted by Majewski showed that the piezoelectric surgery, would help to harvest the correct shape of block more accurately for a ridge defect helping it to stabilize it in the recipient site. This facilitates the shaping and contouring of the cortical portion of the graft. Piezosurgery tips does not generate pressure and vibrations in the bone when the bone is being prepared whereas it is difficult to perform using the rotary instruments.<sup>11</sup>

The piezoelectric knife is effective in the removal of mineralized tissues. Studies have shown its effectiveness in ridge expansion to place dental implants and also to perform sinus lift procedures.<sup>12</sup> This technique has the ability to cut the bony window with simplicity and precision, thereby avoiding the risk of membrane perforation due to the shape of the bone scalpels working with ultrasonic modulating vibrations.

Piezosurgery is efficient in collection of the bone particles with optimal size and low heat generation minimizing the possibility of thermal necrosis. A feature of the use of piezosurgery is the significant number of surviving osteoblasts and osteocytes in bone blocks removed by ultrasonic surgery, besides, the clinical outcomes sometimes cannot be seemed when compared to surgery with rotary instruments.<sup>13</sup>

### Indications<sup>4</sup>

- soft tissue debridement
- root surface smoothening
- bone grafting, preparation of implant site
- removing an implant
- procedure for lifting the sinus
- retrograde root canal treatment
- apicectomy
- cystectomy

- ankylosed teeth extraction
- orthodontic surgeries

### Contraindications<sup>4</sup>

No absolute contraindications exist.

- cardiopathy
- patients having uncontrolled diabetes mellitus
- patient undergoing radiotherapy
- patients who have metal/ceramic crowns
- patients with pacemakers

### Uses in Dentistry

Retrograde preparation of root canal can be done with piezosurgical equipment; bone can be cut with great precision facilitating ridge augmentation and ridge expansion, tooth extraction, ankylotic tooth extraction and surgical orthodontic surgeries.<sup>4</sup>

### Piezosurgery in Periodontics<sup>13</sup>

- supragingival and subgingival scaling and root planing
- lavage of periodontal pocket
- crown lengthening
- soft tissue debridement
- resective surgeries
- regenerative surgeries – periodontal intra bony defects can be treated by obtaining autogenous grafts

The inserts used are those whose vibrations can enter in resonance with the piezoelectric ceramic chips of shaft and can be classified as follows:

**Titanium nitrate coating:** They are very effective for osteoplasty technique or for harvesting bone chips. They have the maximum cutting efficiency, avoid corrosion, and increased working life.

**Diamond coating:** They are used in the case of thin bone osteotomy or for complete osteotomy close to anatomical structures. They provide clinically less efficacious cut, histologically are more traumatic than cutting inserts, but much safer.

Diamond coating insert tips can be classified as:

**Sharp insert tips:** Sharp insert tips are used in osteotomy whenever a fine and well-defined cut in the bone structure is needed. Insert tips are also available with sharp edges that are indicated for osteoplasty techniques and/or harvesting bone chips.



**Smooth insert tips:** The smoothing insert tips have diamond surfaces which may enable precise and controlled work on the bone tissues. Smoothing insert tips are used in osteotomy for preparation of difficult and delicate structures.

**Blunt insert tips:** Blunt insert tips are used for soft tissue preparation. This includes elevation of Schneider's Membrane or for lateralizing nerves. In Periodontology, these tips are indicated for root planing.<sup>14</sup>

### Piezosurgery in Implantology<sup>13</sup>

- for harvesting block (bone) grafts
- placement of the implant in the recipient sites
- osteotomy procedures
- distraction osteogenesis followed by implant placement
- for retrieval of blade implants
- ridge expansion and placement of implant
- maxillary sinus elevation procedures
- drilling hole in the bone for placement of implant
- for insertion of implant

### Benefits of Piezosurgery Over Traditional Surgical Equipments

Piezosurgery requires very little hand pressure. The micromotors that are used in bone surgery transform the electric energy into mechanical energy. The cutting is the result of rotation produced by the movement of the drill or by the oscillating movement of the bone saw. The drill produces a cutting action which combines the speed and the torque of the drill, with the pressure exerted on the handle and the cutting action of the bur. Nevertheless, it is the pressure that makes the surgical procedure more difficult to control and, therefore, less safe. This results in better operator sensitivity and control, stating that the clinician can develop a better sense and precision for the cutting action because of the microvibration of cutting tip. The cutting action is less intrusive, producing very minimal collateral tissue damage resulting in better healing. Due to the cavitation effect on physiological solutions (like blood), piezosurgery creates a bloodless surgical site than with conventional bone cutting instruments and thus improves the visibility of the working area.

Unlike traditional burs and micro saws, piezosurgery inserts does not get heated thereby reducing the risk of postoperative necrosis.<sup>14</sup>

A study was conducted by Esteves et al to compare the differences of osteotomies performed with piezosurgery and conventional drill and was revealed that the bone healing showed no differences between two groups histologically and histomorphometrically except for a slightly higher amount of newly formed bone seen thirty days after the use of the piezosurgery device.<sup>15</sup>

Sonke Harder et al conducted a study to evaluate and to compare the bone cutting performance and intraosseous temperature development of three modern ultrasonic devices such as Piezosurgery II professional tip OT7 (Mectron), Piezotome, tip BS1 (Acteon), Surgi Sonic tip ES007. After the study Piezotome and Piezosurgery II showed significantly higher cutting performance than the Surgi Sonic and the smallest increase in intraosseous temperature was produced by Piezotome.<sup>16</sup>

### Advantages

- increased soft tissue protection
- vital structures like nerves, blood vessels can be protected from mechanical and thermal injury during osteotomy
- cavitation and microvibration effects of piezosurgery provides better visibility of the operative field
- decreases the psychological stress and fear of the patient as it has less vibration and noise
- vitality of the tooth is preserved<sup>13,17</sup>
- better visibility of the operative field<sup>18</sup>
- decreased blood loss
- better patient comfort
- only small amount of pressure is required
- use of chisel can be avoided
- reduce the chances of coagulation necrosis of osteotomized fragments
- greater precision bone cuts are produced<sup>3</sup>

### Disadvantages<sup>3</sup>

- expensive
- technique sensitive

■increased duration of surgery with less experience of the operator.

■difficult to learn

■high level surgical control is required

## Conclusion

The advent of piezosurgery has improved the results of various dental treatments especially periodontal therapy, implantology and maxillofacial surgeries. Proper training should be acquired by the clinician for performing piezosurgery as it is technique sensitive and a time-consuming procedure. Piezosurgery produce precise bone cutting protecting the soft tissues,vital structures and improved bone healing.

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## SPIK ANNUAL CONFERENCE 2023



The annual conference of SPIK 2023 held on 29th & 30th April 2023 at Magnet Hotel, Kannur was hosted by Department of Periodontology, Kannur Dental College, Anjarakandy, Kannur.

The program started on 29th April 2023 with inaugural function at 10 am with collaring of the President

by the Secretary followed by invocation.

Dr. C.K Ashokan, Past President SPIK welcomed the gathering. Dr. Presanthila Janam, President SPIK presided over the function, Dr. A Devadathan, Faculty Dean, KUHS inaugurated the program. Dr. Mohammed Feroz T. P, Secretary SPIK presented the secretary's report, Dr. Arun Narayanan, Organizing Chairman & Principal of Kannur Dental College and Dr. Jose Paul, President Elect SPIK felicitated during the function. Dr. Deepthi V, Organizing Scientific Chairman delivered the vote of thanks.

We received registration from institutions all over Kerala. A total of 100 delegates participated in the program. Scientific session on first day included presentations from Dr. Rashmi Hegde,



Inaugural function



Release of JSPIK and Perio Implant Scan



Professor in Periodontology, M.A Rangoonala College of Dental Science & Research, Pune on the topic “Periodontal Microsurgery”; Dr.Biniraj K.R, Professor & Head of Periodontology, Royal Dental College, Palakkad, on the topic “Perio Esthetics- Periodontist: The True Designer”: Dr V.C. Santhosh, Professor of Periodontology; KMCT Dental College, Calicut on the topic “Introduction to Corticobasal Implantology”,

and Hands-on session on Basal Implants , which was well appreciated. On the second day, Dr C.K Ashokan, Former Professor & Head of SAIDS, Calicut presented on the topic “Laser Dentistry-An update” and included a Hands-on session on Lasers. A Point Counterpoint session on the topic “Perio vs Implants” was moderated by Dr.Anil Melath, Principal, Mahe Institute of Dental Sciences, Mahe and Panelists were Dr. Jose Paul, Dean Student Affairs, Annoor Dental College, Muvattupuzha; Dr. Harikumar Kanakkath, Professor of Periodontology, Govt. Dental College, Calicut and Dr. Harish Kumar, Professor & Head of Periodontology, KMCT Dental College, Calicut.

The first (March)issue of Journal of Society of Periodontists and Implantologists of Kerala (JSPIK) 2023 and newsletter of SPIK - Perio Implant Scan were released by Dr. A Devadathan during the conference. Paper presentations for



Awarding of SPIK scholarship to Ms. Haritha KR by Dr Presanthila Janam



Dr. Rashmi Hegde



Dr.Biniraj K.R

### Scientific sessions



Dr V.C. Santhosh



Dr C.K Ashokan



the faculty and post graduate students and poster presentations for the post graduate students were present during the conference.

Executive committee meeting and Annual General body meeting of SPIK was conducted

after the scientific program. New office bearers were installed under the able leadership of Dr. Jose Paul as the President. The meeting was adjourned at 5pm on 30th April 2023.



Point Counterpoint session



Cricket match



Annual general body meeting



Office Bearers 2023-24

## International Gum Health Day 2023

As part of observing International Gum Health Day on May 12, 2023, an e-poster competition for students and online cartoon competition for kids of SPIK members was conducted. The entries

were judged by Dr. Rosamma Joseph, Dr. Jayan Jacob Mathew, Dr. Plato Palathingal, Dr. Sameera G. Nath and Dr. Deepa Dileep.

WINNERS OF E-POSTER COMPETITION		
	UNDER GRADUATE	POST GRADUATE
1st Prize	Ashfeena PP (Kannur Dental College) Dr Sarmila S (Azeezia Dental College)	Dr Salma Arif (Mahe Institute of Dental Sciences)
2nd Prize	Harikrishnan & Vishnugopal (Sree Anjaneya Institute of Dental Sciences) Dr Pooja Narayanan (KMCT Dental College)	Dr Rehana Bind A (Government Dental College Kottayam)
3rd Prize	-	Dr Linn Mary & Dr Anania (PSM Dental College)
WINNERS OF CARTOON COMPETITION		
1st Prize	Meenakshi A G (Daughter of Dr Anoop, GDC Trivandrum)	
2nd Prize	Amaya Filson (Daughter of Dr Tintu Madonna Joy, GDC Calicut)	

## Oral Hygiene Day 2023

On “National Oral Hygiene Day”, a dental screening camp and awareness campaign was organized in association with Southern Railway- Thiruvananthapuram division and Department of Public Health Dentistry, Government Dental College, Thiruvananthapuram at Kochuveli Railway Station on 1st August 2023. A total of seventy employees were screened in the dental check-up camp. The program was inaugurated by Dr. Sony Thomas, ACMS/TVC and awareness talk on “Oral Hygiene” was given by Dr. Manikandan G.R Periodontal Healthcare Convener, SPIK. Almost seventy-five passengers and railway employees participated in the awareness campaign.





## INFORMATION TO AUTHORS

### About the Journal

JSPIK accepts articles from dentists, dental specialists (any speciality) and students. The articles submitted must have relevance to the speciality of Periodontics. Authors are encouraged to submit research papers, interdisciplinary case reports, interesting case discussions, letters to editor review articles or short communications.

### Manuscripts

Articles should be type written on one side of A4 size (21x28cm) white paper in double spacing with a sufficient margin. Use a clear and concise reporting style. SPIK reserves the right to edit, manuscript, to accommodate space and style requirements. A soft copy of the article also has to be send to the editor's email: [editorspik@gmail.com](mailto:editorspik@gmail.com)

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- **Abstract:** An abstract of the article not exceeding 200 words should be included with abbreviated title for the page head use. Abstract should state the purpose of the study, investigations, basic procedures and the main findings. 4 key words of article should be mentioned below the abstract.
- **Tables:** Tables should be self explanatory, numbered in roman numbers, according to the order in the text and type on separate sheets of paper.
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### Address for communication

Dr Shahana C Mohamed, Editor JSPIK, Assistant Professor, Department of Periodontics, Government Dental College, Medical College P. O, Thiruvananthapuram - 695 011, Kerala, India. E-mail: [editorspik@gmail.com](mailto:editorspik@gmail.com)