



Knowledge and Awareness about Minimally Invasive Surgical Techniques in Periodontics among Dental Students

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Authors' contributions

This work was carried out in collaboration between both authors. Author TC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author AR managed the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

Minimally invasive surgical techniques (MIST) are performed using magnification from surgical microscopes, surgical telescopes or endoscopic visualization. The exclusive property of MIST is that it reduces the chair time required to perform the procedure and results in limited morbidity to the patient during the surgical procedure. The aim of this study was to evaluate the knowledge and awareness about minimally invasive surgical techniques in Periodontics among dental students. A 6-item questionnaire was prepared and circulated through an online portal among dental students. The results obtained from the survey were tabulated, analysed and represented graphically using SPSS software (Version 23). Frequency distribution and percentage were calculated. In the present study, 56% of them were aware about the implications of MIST in Periodontics, 73% of them knew the advantages of MIST and 53% of them were aware that MIST reduces healing period of the periodontal wounds. However, only 10% of them have performed MIST in periodontal procedures. The present study suggested that even though majority of the undergraduate dental students had adequate knowledge and awareness about MIST and its advantages; only very few had incorporated the technique in their practice. Therefore, this study emphasizes the need for more clinical training programs.

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1. INTRODUCTION

Any surgical procedure should be easy to perform from operators' side, less time taking, less pain and postoperative discomfort, less costly, more acceptable and beneficial to the population [1]. Taking consideration to all these in 1995, minimally invasive surgery technique (MIST) was introduced by Harrel and Ress [2]. Minimally invasive surgical techniques (MIST) are performed using magnification from surgical microscopes, surgical telescopes or endoscopic visualization. This technique in general aims at minimizing the trauma of any interventional process with satisfactory result.

Minimally invasive techniques in medicine is defined as procedures that avoid open invasive surgery in favor of closed or local surgery. These generally involve use of laparoscopic devices and remote-control manipulation of instruments with indirect observation through an endoscope. This minimizes surgical trauma and promotes healing [3].

In dentistry, MIST is a concept that preserves dentition and supporting structures [4]. Periodontitis is one of the most common oral diseases. It is caused by pathogenic bacterial flora present in dental plaque which eventually results in destruction of soft tissues and hard tissues. This inflammatory process results in tooth loss [5-7]. Regeneration of lost periodontal tissues has always been the ultimate goal of periodontal therapy [8].

In the last decade, research works has been focused on the design and performance of surgical procedures for periodontal regeneration. In order to increase surgical effectiveness, the use of operating microscopes and microsurgical instruments has been suggested and the use of microsurgical approach in combination with different regenerative materials resulted in maintenance of primary wound closure in more than 92% of the treated sites during the whole healing period [9,10].

Literature search reveals many studies assured the effectiveness of minimally invasive surgical techniques in periodontal procedures by the

enhancement of clinical parameters and reducing patient morbidity. In this context, this study was undertaken to assess the knowledge and awareness about minimally invasive surgical techniques in Periodontics among dental students.

2. MATERIALS AND METHODS

The present study was a questionnaire based study. A 6-item questionnaire (Table 1) was formulated and circulated among undergraduate dental students of a private dental college. 100 students were selected randomly. The responses were then collected and subjected to statistical analysis using SPSS Software (Version 23). Descriptive statistics (Frequency distribution and percentage) was calculated.

3. RESULTS AND DISCUSSION

The present study was to evaluate the knowledge and awareness about minimally invasive surgical techniques among dental students. A total of 100 dental students participated in the survey.

In the present study, 56% of them were aware about the implications of MIST in Periodontics (Fig. 1). 35% of them were aware that flap reflection is minimal in MIST compared with conventional surgery (Fig. 2). Only 10% of them have performed MIST in periodontal procedures (Fig. 3). 73% of them knew the advantages of MIST (Fig. 4) and 53% of them were aware that MIST reduces healing period of the periodontal wounds (Fig. 5). 91% of them suggested that MIST should be incorporated in everyday practice (Fig. 6).

Loureiro M et al in 2015 conducted a study among post graduates and stated that 86% of them incorporated MIST in their daily surgical practice. Only 14% of them failed to incorporate MIST in their routines. The main barrier to the adoption of MIST, both basic and advanced, was the lack of knowledge and awareness where they worked [11]. However, in the present study 10% of them performed MIST in periodontal procedures. This is not in agreement with the previous study. This might be because the study population of the present study was undergraduate dental students.

Table 1. Questionnaire to assess the knowledge and awareness about minimally invasive surgical techniques in Periodontics

S. no	Questions	Options
1	Are you aware of Minimally Invasive Surgical Techniques used in periodontal procedures (MIST)?	a. Yes b. No
2	Is flap reflection minimal in MIST compared to conventional surgery?	a. Yes b. No
3	Have you performed MIST in any of the periodontal procedures?	a. Yes b. No
4	Are you aware of the advantages of MIST?	a. Yes b. No
5	Are you aware that MIST reduces healing period of the periodontal wounds?	a. Yes b. No
6	Do you think MIST should be incorporated in everyday practice?	a. Yes b. No

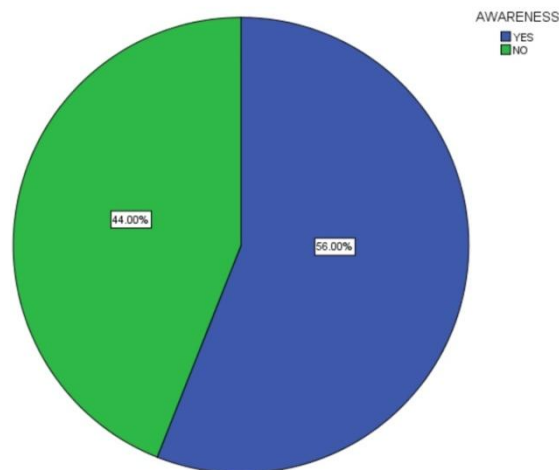


Fig. 1. Pie chart representing the student's response about awareness of MIST in Periodontics. About 56% of them were aware about the MIST and 44% were not aware about it

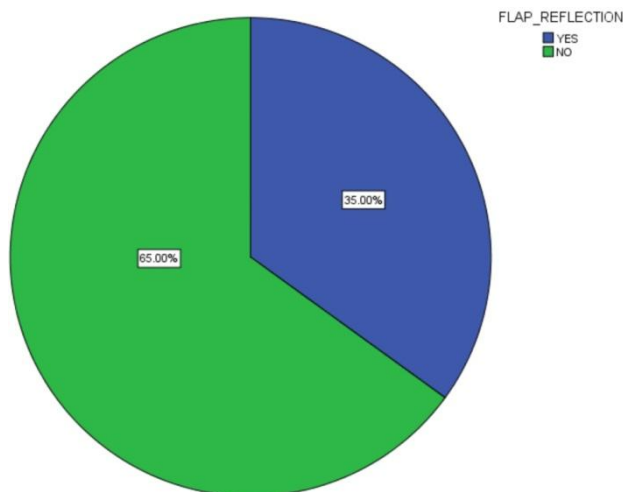


Fig. 2. Pie chart representing the student's response about flap reflection in MIST compared to conventional surgery. About 35% were aware and 65% were unaware about it

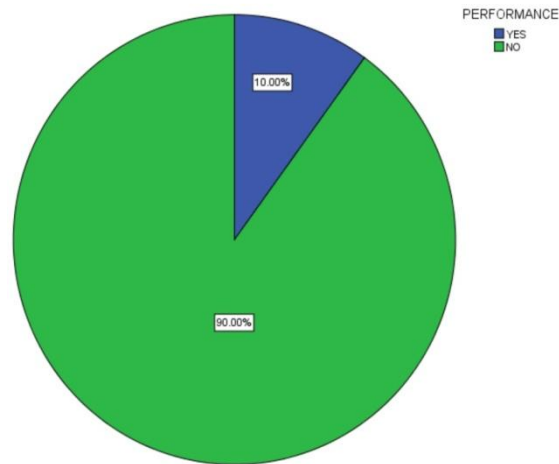


Fig. 3. Pie chart representing 10% of them performed MIST in periodontal procedures, 90% of them have never performed MIST in periodontal procedures

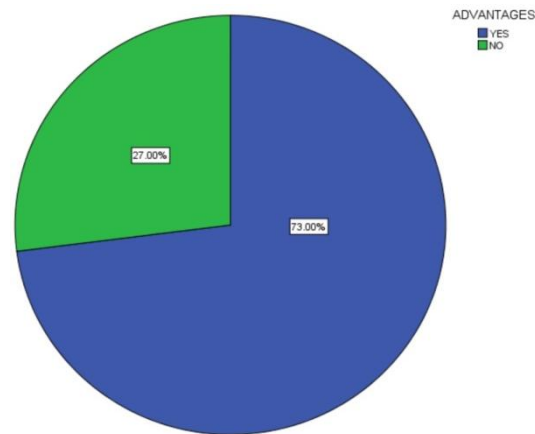


Fig. 4. Pie chart representing the student's response about advantages of MIST. About 73% of them were aware and 27% were unaware about it

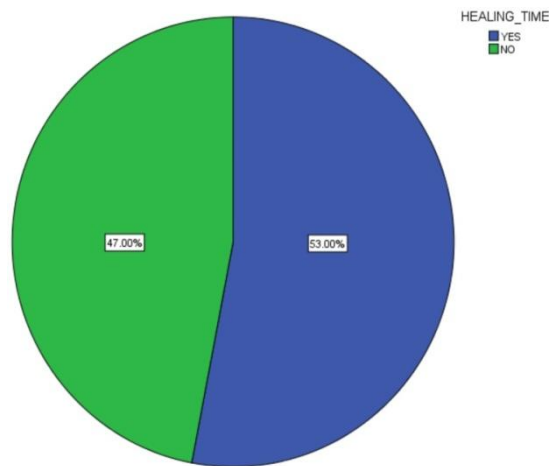


Fig. 5. Pie chart representing the student's response about healing period of the periodontal wounds followed by MIST. About 53% of them agreed that MIST reduces the healing period and 47% disagreed

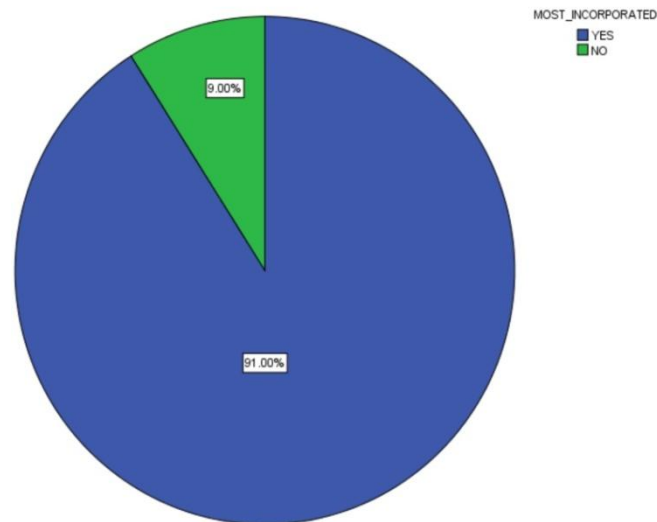


Fig. 6. Pie chart representing the student’s response about incorporation of MIST in everyday practice. About 91% of them agreed that MIST should be incorporated in everyday practice and 9% disagreed

Widera D et al in 2007 proposed that to achieve rapid healing, the incisions for flap elevation in MIST should be minimal which in turn results in less post surgical bone loss and edema [12]. Takei HH et al in 1985 proposed a new surgical approach called the papilla preservation technique. The buccal aspect of the flap is designed with a sulcular incision around each tooth, with no incisions made through the interdental papilla [13].

Cortellini P et al in 1995 proposed the simplified papilla preservation flap and modified papilla preservation technique [14]. Similarly, Cortellini P et al in 2008 conducted a case cohort study to evaluate the clinical performance and the intraoperative and postoperative morbidity of MIST in the treatment of multiple deep intrabony defects in a single surgical procedure and reported that the patient morbidity and healing time was less in MIST when compared to conventional surgery [15].

Also, Kfir E et al in 2007 [16] and Dannan A et al in 2011 [17] stated that MIST reduces surgical trauma, allows stable primary closure of the wound, reduces chair time and minimizes patient discomfort and side effects. In the present study, 53% of them agreed that MIST reduces the healing period and 73% of them were about advantages of MIST.

4. CONCLUSION

The present study suggested that even though the majority of the undergraduate dental students

had adequate knowledge and awareness about MIST and its advantages; only very few had incorporated the technique in their practice. Therefore, this study emphasizes the need for more clinical training programs.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- Schluger S. Osseous resection; a basic principle in periodontal surgery. *Oral Surg Oral Med Oral Pathol.* 1949;2:316-25.
- Harrel SK, Rees TD. Granulation tissue removal in routine and minimally invasive procedures. *Compend Contin Educ Dent.* 1995;16(9):960-2.

3. Wickham J. Minimally invasive therapy. *Health Trends*. 1991;23:6-9.
4. Christensen GJ. The advantages of minimally invasive dentistry. *J Am Dent Assoc*. 2005;136:1563-5.
5. Page RC, Kornman KS. The pathogenesis of human periodontitis: An introduction. *Periodontol 2000*. 1997;14(1):9-11.
6. Kornman KS, Page RC, Tonetti MS. The host response to the microbial challenge in periodontitis: Assembling the players. *Periodontol 2000*. 1997;14(1):33-53.
7. Listgarten MA. Pathogenesis of periodontitis. *J Clin Periodontol*. 1986; 13(5):418-25.
8. Ramseier CA. Advanced reconstructive technologies for periodontal tissue repair. *Periodontol 2000*. 2012;59(1):185-202.
9. Cortellini P, Tonetti MS. Microsurgical approach to periodontal regeneration: Initial evaluation in a case cohort. *J Periodontol*. 2001;72:559-69.
10. Cortellini P, Tonetti MS. Clinical performance of a regenerative strategy for intrabony defects: Scientific evidence and clinical experience. *J Periodontol*. 2005;76: 341–50.
11. Loureiro MD, Claus CM, Bonin EA, Cury Filho A, Dimbarre D, Trauczinski P, Swanstrom L. Long-term professional performance of minimally invasive surgery post-graduates. *Revista do Colegio Brasileiro de Cirurgioes*. 2015;42(2): 130-5.
12. Widera D, Grimm WD, Moebius JM, Mikenberg I, Piechaczek C, Gassmann G, et al. Highly efficient neural differentiation of human somatic stem cells, isolated by minimally invasive periodontal surgery. *Stem Cells Dev*. 2007;16(3):447-60.
13. Takei HH, Han TJ, Carranza FA Jr, Kenney EB, Lekovic V. Flap technique for periodontal bone implants. Papilla preservation technique. *J Periodontol*. 1985;56:204-10.
14. Cortellini P, Prato GP, Tonetti MS. The modified papilla preservation technique. A new surgical approach for interproximal regenerative procedures. *J Periodontol*. 1995;66(4):261-6.
15. Cortellini P, Nieri M, Prato GP, Tonetti MS. Single minimally invasive surgical technique with an enamel matrix derivative to treat multiple adjacent intra-bony defects: clinical outcomes and patient morbidity. *J Clin Periodontol*. 2008;35:605-13.
16. Kfir E, Kfir V, Eliav E, Kaluski E. Minimally invasive guided bone regeneration. *J Oral Implantol*. 2007;33:205-10.
17. Dannan A. Minimally invasive periodontal therapy. *J Indian Soc Periodontol*. 2011; 15(4):338.

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