

INTRODUCTION

Periodontitis is one of the most common oral inflammatory infectious diseases & the leading cause of tooth loss and characterized by the destruction of tooth-supporting tissues. It's a complex phenomenon comprising of bacterial challenge and host response factors.¹ This disease in its wake leaves behind a trail of destruction mainly pertaining to the tooth supporting structures. Periodontal therapy consists of treatment modalities aimed at arresting infection, restoring the lost structure and to maintain a healthy periodontium.² The goal of periodontal therapy is to provide a dentition that functions in health and comfort for the patient.³ This is generally achieved by elimination of the periodontal infection resulting from the sub-gingival colonization of periodontopathic bacteria.⁴

Complete removal of calculus is essential to achieve a biologically acceptable tooth surface in the treatment of periodontitis. However, evidence has shown that residual calculus exists not only on teeth treated by scaling alone but also on teeth treated by flap surgery following scaling & root planning. Also the evidence strongly suggests that optimization of the surgical approach and control of surgical variables, particularly in relation to flap design and management, can improve outcomes. In fact, the ability to access the defect along with minute detailing debridement and sealing the flap from contaminated oral environment seems to be the key requirements of open flap debridement procedures. Thus to improve the ability of clinicians to accomplish these outcomes, the use of a microsurgical approach could be considered. Combining enhanced visual acuity with the use of specifically designed microsurgical instruments

could allow for more accurate and atraumatic manipulation of soft and hard tissues, thereby increasing the ability to properly debride the defect and the root surfaces.⁵

In 1921, Carl Nylen, who is considered the father of microsurgery, first used a binocular microscope for ear surgery.⁶ From 1921- 1960 microsurgery was utilized in different specialties and achieved better results than macrosurgery. Apotheker and Jako first introduced the microscope to dentistry in 1978.⁷ During 1992, Carr published an article outlining the use of the surgical microscope during endodontic procedures.⁸ In the Oral Surgery field , Leblanc JP and Van Boven RW , laid the foundations and used nerve microsuturing nerve repair techniques to treat traumatic injuries to the lower dental nerve.⁹ In 1993, Shanelec & Tibbetts presented a continuing-education course on periodontal microsurgery at the annual meeting of the American Academy of Periodontology which led to the development of centers devoted to teaching periodontal microsurgery.¹⁰ Belcher wrote an article in 2001 summarizing the benefits and potential usages of the surgical microscope in periodontal therapy .¹¹

The use of microscopes in dentistry has brought on a major revolution in dental treatment. Microsurgery is being used in various fields of dentistry. It's perceived advantages in periodontal surgery are due to the enhanced visual acuity associated with magnification and better soft tissue manipulation and a variety of factors associated with soft tissue manipulation especially the ability for primary closure of the flap, plays an important role in the outcome of the flap surgery.¹²⁻¹⁴

Operating microscope renders three unambiguous benefits of illumination, magnification, and increased precision in delivery of surgical skills, collectively known as microsurgical triad.¹⁵ Illumination achieved through fiber-optic technology has improved

the methods of focusing light on specific areas and is a standard feature of surgical operating microscopes. Magnification, the second component of the microsurgical triad, can be achieved through the use of the loupes and the operating microscope. Both types of optical magnification have their own advantages and limitations. Loupes can be simple, compound, or prism in design. These are available in the form of eyeglasses or attached to a headset. Compound and prism designs produce superior magnification and are commonly used in dentistry today.¹⁶

Dental loupes are the most common system for optical magnification. They are fundamentally dual monocular telescopes with side-by-side lenses that converge to focus on the operative field.¹¹ The clinician's eyes have to converge to view the operative field which results in eyestrain, fatigue, and even pathologic vision changes; especially after prolonged use.¹⁷

The reason microsurgery has gained acceptance among some periodontists is not because of reduced morbidity, but the end-point result of microsurgery is superior to conventional surgery. The difference is seen in clean incisions, close wound apposition, reduced hemorrhage, and reduced trauma at the surgical site. The difference is self-evident and can be startling when compared with conventional surgery. As much as judgment and knowledge play a role in surgery, but in the end it is a craft. Surgeons appreciate craftsmanship, especially when it rises to artistic levels greater than those possible with conventional surgery. The clinician's personal gratification in performing more ideal work may be an important factor in the acceptance of microsurgery in periodontics. Periodontal surgery when viewed under the microscope reveals the coarseness of the most surgical manipulation. What appears as gentle handling of

tissues is discovered to be a gross crushing and tearing. The microscope is a tool that permits less traumatic and less invasive surgery.¹⁸

Ergonomic benefits in the form of diminished shoulder, neck, and back problems, improved vision, and reduced eye fatigue have been reported from the findings of qualitative research at Vancouver Community College in British Columbia. Therefore, beneficial ergonomic aspect of magnification may be the most influential factors in its adoption by the dental profession at large scale.¹⁹

The idea of minimal invasiveness could be achieved by using microsurgical instruments with the aid of magnification which help the surgeon to make very small cuts just enough to expose and gain access to the operating spot.²⁰

In addition to the use of magnification and reliance on atraumatic technique, microsurgery ensures the use of specially constructed microsurgical instruments, specifically designed to minimize trauma. An important characteristic of microsurgical instruments is their ability to create clean incisions that prepare wounds for healing by primary intention. Proper instrumentation is fundamental for microsurgical intervention. A basic set comprises of a needle holder, micro scissors, micro scalpel holder, anatomic and surgical forceps, and a set of various elevators. This helps limit tissue trauma and promotes faster healing.²¹

Periodontitis is the sixth most common disease prevalent disease globally. The prevalence is highest among the adults and economically weak population in India.²²

Microsurgery offers new possibilities to improve periodontal care in variety of ways. Its benefits include improved cosmetics, rapid healing, and minimal discomfort and enhanced patient acceptance.²³

In the present study is to compare the microsurgical approach with conventional procedure in open flap debridement and evaluate the benefits of microsurgical approach over the conventional procedure in the treatment of periodontitis.