

EVOLUTION OF PERIODONTOLOGY AS A SPECIALITY

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ABSTRACT:

Periodontal diseases are diseases affecting the tooth supporting structures. These diseases are not a recent discovery; studies have indicated that diseases of the gums and loosening of teeth are as old as humanity. The remarkable stories of people, events, and discoveries over the centuries have brought us to modern periodontology. When one realizes just how extraordinary the journey has been and where we are today, it is exciting to imagine the vast number of possibilities for tomorrow's specialty of periodontology. The goal of virtually eliminating periodontal diseases as a public health problem seems not only feasible but probable for the large majority in most populations. Surely the future will see more people worldwide receiving professional assistance for prevention of and treatment for periodontal disease so that all persons can enjoy better health. We can look back with pride and satisfaction at the extraordinary evolution of periodontology, and we can look forward with excitement, and perhaps a little admiration, to where we are about to go. Indeed, periodontology stands poised to meet the challenges of the next generation.

Keywords: Periodontology, Speciality, History, Periodontist.



INTRODUCTION:

Periodontal diseases are diseases affecting the tooth supporting structures. These diseases are not a recent discovery; studies have indicated that diseases of the gums and loosening of teeth are as old as humanity.

Some 4000 years ago, the Egyptians and the Chinese described periodontal diseases as inflammatory conditions. During the prehistoric era suffering caused by oral microorganisms was considered to be worse than the suffering in hell (Fig.1)^[1], as no proper treatments were available for dental problems and people were forced to

undergo a painful extraction of teeth without any anesthesia to get rid of dental problems (Fig.2).^[1]

Figure 1: Ivory tooth carving of 6th century



It is well to remember that, up to the early part of the nineteenth century, most of the

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dental care (including periodontal care) in Europe was carried out by barber-surgeons, market surgeons and village blacksmiths.^[1] In North America, the earliest practitioners were quacks. Well into the nineteenth century, the range of treatment was limited to tooth extractions, rinsing the mouth with a variety of tinctures and at times periodontal diseases were thought to be incurable. So there was an ever increasing demand to find solutions for the periodontal diseases. The history of evolution has proved times and again that science has only gotten stronger and more predictive. Hence an attempt has been made to know the historical background and the need for the evolution of periodontology as a specialty in the present essay.

Figure 2: Painful extraction



HISTORICAL BACKGROUND

Each and every invention has some historical background. “Those who fail to read the history are destined to suffer the repetition of the same mistakes”.

Hippocrates (460-335 B.C.); discussed the etiology and pathogenesis of different forms, including the situation when “the gums were bleeding or rotten”, and he recommended the use of herbal mixtures,

fruit juices and hot iron as treatments. The early Hebrews, the Romans and later the Arabs of the middle ages all contributed in various ways to the description and treatment of gum diseases.

Pierre Fauchard published his book, “*The Surgeon Dentist*”, in 1728. He described in detail about his periodontal instruments and the scaling techniques to detach hard matter or tartar from the teeth. He recommended meticulous scaling of all the teeth with special instruments to remove calculus. He also prescribed mouthwashes, dentifrices and the splinting of loose teeth.^[2]

The early English contribution to the understanding and management of periodontal diseases was made by **John Hunter**, a physiologist and surgeon of broad intellectual and scientific interests, widely known for his 1771 work on “The natural history of the human teeth.”^[2]

James Lind, a surgeon in the Royal Navy, conducted clinical tests that proved that citrus fruits and their juices would cure and prevent scurvy (oral features include: swollen gums, bleeding gums, loose and shaking teeth), the disease which killed a million seamen between the year 1600 and 1800 ^[2].

THE BEGINNING OF EVOLUTION OF PERIODONTOLOGY AS A SPECIALTY

John W. Riggs (1811-1885) was convinced that the periodontal disease (alveolar pyorrhea) was local and starts with inflammation of the gingiva, which through apical extension would include the alveolar

bone and lead to pocket formation, causing increased mobility and terminal loss of the support of the tooth. He maintained that alveolar pyorrhea could be cured by meticulous removal of these accumulations. Thus it was generally accepted that supra gingival plaque can be eliminated, reduced or modified by means of simple mechanical or chemical measures. However, as soon as subgingival plaque is established, it cannot be eliminated by using ordinary concepts of oral self care but requires professional intervention. Riggs highlighted the important influence of local factors on the development of clinical periodontitis. And he became the first practitioner to limit his practice to the treatment of periodontal disease. [2]

Non-specific plaque hypothesis: new age or ancient history?

Willoughby D. Miller (1853-1907) was an American dentist and the first oral microbiologist. Miller was the first to investigate the relationship between oral bacteria and periodontal disease. He believed that the disease was not caused by a specific bacterium but by a complex array of various bacteria normally present in the oral cavity, what was later known as the nonspecific plaque hypothesis.

William Hunter (1861-1937) felt that oral organisms had specific actions on different tissues (focal infection as a major cause of general illness) and these organisms acted by producing toxins, resulting in low-grade sub-infection, which produced systemic effects over prolonged periods. Finally, he believed that the connection between oral sepsis and resulting systemic conditions

could be shown by removal of the causative sepsis via tooth extraction and observation of the improvement in systemic health. **Hunter's focal infection theory** became widely accepted, leading to widespread extraction of teeth. He strongly believed that, the septic infection in the gums and in the periosteum of the sockets constituted a great source of sepsis to the body. Later Hunter's theory fell in dispute and it was discarded as it was not backed by the scientific evidence, however, recently Hunter's focal infection theory has reemerged as "Periodontal Medicine". [3,4,5]

DO WE REALLY NEED SPECIALIZED TRAINING IN PERIODONTOLOGY?

Dentist to population ratio in India is approximately 1:10000^[6] and the periodontist to population ratio in India might be approximately 1:100000 or more. Even today majority of the population suffers from gingival diseases and only about 20-30% of the population suffers from periodontitis, and majority of these diseases are induced by dental plaque. Majority of the periodontal patients are screened and treated by the general dental practitioners. Unfortunately, majority of the general dental practitioners think that there is no need of undergoing specialty training in periodontology as periodontal diseases can be managed by simple scaling and by the use of antiseptic mouth rinses. Presently, this view is changing, as general dental practitioners are realizing that periodontal diseases are multi-factorial in origin. When the disease is diagnosed in the most advanced stages (severe periodontitis/aggressive periodontal

diseases), its therapy often needs more elaborate curative treatments such as advanced periodontal surgery by the use of barrier membranes or bone grafts, which is very technique sensitive. Thus this kind of advanced treatment should be preferably performed in the hands of a clinician specialized in periodontology with adequate training in surgical skills and biological understanding.

DOES UNDERGRADUATE DENTAL EDUCATION PREPARE THE GENERAL DENTAL PRACTITIONER FOR RENDERING ALL PERIODONTAL SERVICES?

The Dental Council of India ensures that the training given to dental practitioners equips them with the skills needed for prevention, diagnosis and treatment relating to anomalies and illnesses of the teeth, mouth, jaws and must fulfill the minimum training recommendations, including periodontal management.

For adequate periodontal management the graduates in dentistry must be competent in the management of periodontal diseases in patients of all ages. Specifically, he or she must:

1. be competent at evaluating the periodontium, establishing a diagnosis and prognosis and formulating a treatment plan.
2. be competent at supra-gingival and subgingival scaling and root debridement, using both powered and manual instrumentation and in stain removal and prophylaxis.

3. be competent at diagnosing, explaining and discussing the need for advanced periodontal surgical procedures and the proper method of referral for speciality care.

The detailed review of this profile, clearly underscores the need for specialized training, since, although the general practitioner is competent at carrying out most periodontal procedures, he or she is not competent at performing the advanced surgical procedures required for the treatment of the severe/aggressive periodontitis cases.^[7]

IMPORTANCE OF POSTGRADUATE PROGRAM IN PERIODONTOLOGY

The postgraduate program is an organized, directed, graduate program in periodontal practice. In general terms the training program is a full-time training program of 3 years duration and includes theoretical, clinical and research training. And it allows a clinician to familiarize him/herself with the management of rare and complex periodontal diseases with the latest techniques.

WHO IS A PERIODONTIST?

A periodontist is a dentist who specializes in the prevention, diagnosis and treatment of periodontal disease and in the placement of dental implants. They receive extensive training in these areas, including three additional years of education beyond undergraduate dental program. Periodontists are familiar with the latest techniques for diagnosing and treating periodontal disease. In addition, they can perform

cosmetic periodontal procedures to achieve the smile one desires.

ADVANTAGES OF EVOLUTION OF PERIODONTOLOGY AS A SPECIALTY

1. Periodontology as an independent field of dentistry has demonstrated major developments both in education and research.
2. Clinical research allowed the identification of several risk factors for periodontal diseases such as tobacco use, stress, diabetes, and genetic susceptibility.
3. Research also showed the connection between periodontitis and systemic conditions, the concept of "Periodontal Medicine" is well understood now.
4. Both plaque and non-plaque induced periodontal diseases can be managed more effectively.
5. Lot of emphasis is put on supportive periodontal therapy.
6. Periodontal diagnosis has improved with the use of standardized clinical/radiological parameters as well as microbial testing.
7. The approach to periodontal care is patient centered; focusing not only on the severity of the disease but on the patient's needs and demands.
8. Development of new surgical techniques.

9. Advances in tissue engineering and bone regeneration.

10. Utilization of latest technology for the effective management of periodontal diseases (LASERS, microscopes, powered Electro Medical Systems for surgical and non-surgical therapy, phototherapy and others).

11. Advances in smile enhancement procedures (cosmetic treatment).

12. Implant therapy for the replacement for missing teeth.

13. Periodontists are playing a key role in the interdisciplinary approach.

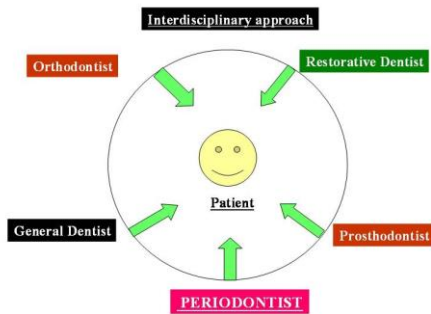
14. Periodontists are well trained and equipped to manage medically compromised patients.

15. A shift in paradigm is taking place from curative to creative periodontal therapy.

PERIODONTAL OFFICE AS A HUB FOR INTERDISCIPLINARY APPROACH

Interdisciplinary approach is the new mantra for the effective management of complex periodontal challenges. In interdisciplinary approach patient is seen by all the clinicians at one place who may be involved in the team, and a treatment plan is created through the interaction of these clinicians.^[8] Moreover, to establish a comprehensive treatment plan in cooperation with a restorative dentist, orthodontist or oral surgeon, often requires involvement of a well-trained periodontal specialist (Fig. 3).

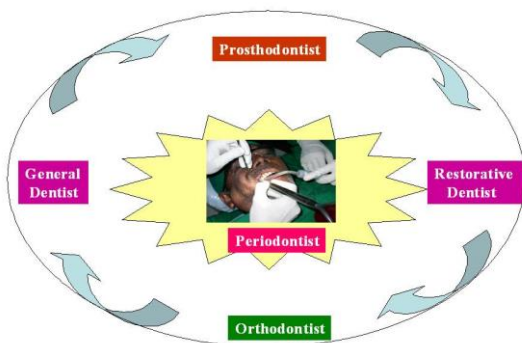
Figure 3: Periodontist plays a key role in interdisciplinary approach



EVOLUTION OF MODERN DENTISTRY AROUND PERIODONTOLOGY

Today, periodontology is considered as a gateway for dentistry, as in majority of the cases periodontal therapy needs to be performed first to maintain/improve existing periodontal support. Thus, periodontists are acting as the most important pillars of dentistry, without which dentistry will collapse (Figs. 4 and 5).

Figure 4: Periodontist plays a key role in modern day dentistry

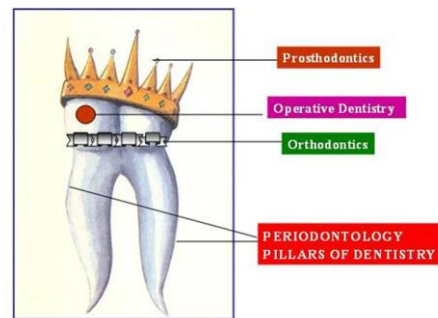


CONCLUSION:

As this brief review of the past has shown, the clinical discipline we call periodontology has come a long way. The remarkable stories of people, events, and discoveries

over the centuries have brought us to modern periodontology. When one realizes just how extraordinary the journey has been and where we are today, it is exciting to imagine the vast number of possibilities for tomorrow's specialty of periodontology. In future, how can we assure that all persons have access to periodontal care?

Figure 5: Jurisdiction of various dental specialties, failure of periodontal therapy leads to loss of tooth



The goal of virtually eliminating periodontal diseases as a public health problem seems not only feasible but probable for the large majority in most populations. Surely the future will see more people worldwide receiving professional assistance for prevention of and treatment for periodontal disease so that all persons can enjoy better health. What a phenomenal moment in time has come to periodontology as a specialty of dentistry and medicine. We can look back with pride and satisfaction at the extraordinary evolution of periodontology, and we can look forward with excitement, and perhaps a little admiration, to where we are about to go. Let's enjoy the future. Indeed, periodontology stands poised to meet the challenges of the next generation.

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