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ADVANCED SCIENCE INDEX



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ORIGINAL RESEARCH ARTICLE

COMPARATIVE EVALUATION OF DENTINAL CRAZING FOLLOWING INSTRUMENTATION WITH THREE DIFFERENT ROTARY FILE SYSTEMS USING STEREOMICROSCOPE- AN IN VITRO STUDY

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ABSTRACT

Introduction: Root canal preparation is one of the most important steps in the success of root canal therapy. Research has shown that different root canal shaping systems damage the root canalwall to various degrees resulting in dentinal cracks that have the potential to develop into vertical root fractures. TF adaptive technology is a recently introduced technology which shows both continuous rotation and reciprocation movements depending on the root canal morphology.

Materials and Methods: 40 freshly extracted single rooted human mandibular premolars were collected. Teeth with pre-existing defects were excluded from the study. The teeth were sectioned coronally to a length of 13mm. The mesiodistal and buccolingual width of canals were measured radiographically to standardize canal dimensions. All the teeth were mounted on acrylic blocks. Based on root canal instrumentation protocol the teeth were divided into four groups of (n=10) each. Group A: Control- No instrumentation was done. Group B: Teeth were instrumented using Twisted files Adaptive (Sybron Endo) motion. Group C: Teeth instrumented with Protaper used in reciprocation movement. Group D: Teeth instrumented Twisted files used in continuous rotation. After instrumentation root canals were sectioned at 3, 6,9mm from the apices and examined under Stereomicroscope for cracks under 25X magnification.

Results:

The study results showed that control group showed no dentinal defects which was significantly lower than ($P < 0.05$) other three groups. There was no statistical difference ($P > 0.05$) between the TF used in adaptive rotation and Protaper used in reciprocating motion. The TF used in continuous rotation showed maximum dentinal cracks amongst the test groups which was significantly lower ($P > 0.05$) than other two test groups.

Conclusion: Within the limitations of the study it can be concluded that instrumentation with rotary file systems induce dentinal cracks/craze lines. TF adaptive motion showed less dentinal cracks compared to TF in continuous rotation, Protaper in reciprocation.

Key Words: TF adaptive, Reciprocation, Protaper, Dentinal crazing.

Introduction:

Successful endodontic therapy depends upon combination of proper diagnosis, locating all canals, thorough biomechanical preparation and three dimensional obturation of root canal system. Biomechanical preparation is one of the most important factors for successful root canal treatment and determines the efficacy of all subsequent procedures.^{1,2} It is done to completely remove organic tissue, microorganisms and debris by enlarging the canal diameter and creating a shape that allows for a proper seal of the obturating material. This procedure of cleaning and shaping could be done with hand files or rotary Nickel Titanium files. Rotary Ni-Ti instrumentation has significant advantages over hand filing as it saves considerable amount of time and shaping procedure could be accomplished much easily³. However Ni-Ti instrumentation could potentially cause dentinal defects in the walls of the canal which may act as areas of stress concentration and crack initiation. These Ni-Ti instruments increase the risk of dentinal damage to root in the form of complete cracks, incomplete cracks, craze lines or fractures⁴. Craze lines can later propagate into vertical root fracture (VRF). VRF is a significant clinical problem which often leads to tooth extraction. Several factors such as force of instrumentation, pressure applied during lateral compaction, masticatory forces, irrigants used during cleaning and shaping that determines the development of dentinal cracks within the root canal system¹⁻².

Aim:

Comparative evaluation of dentinal crazing following instrumentation with three different rotary file systems using Stereomicroscope- an in vitro study

- 1) Twisted file (rotation)
- 2) Protaper files (reciprocation)
- 3) TF Adaptive (adaptive motion)

Materials and Method:

Forty freshly extracted, single rooted human mandibular first pre molars with mature apices and single, straight canals ($<5^\circ$) were collected, ultrasonically cleansed and stored in distilled water. Teeth were examined under 2.5X magnification to rule out visible cracks/ fractures. Pre-operative radiographs were taken in buccolingual and mesiodistal directions. The buccolingual and mesiodistal diameters of canals at 3mm and 9 mm from apex were mea-

sured to standardize the samples. All the teeth were decoronated at the level of CEJ to obtain standard root length of 13mm, and covered with a thin layer of silicone and mounted on acrylic blocks. Apical patency was established with a #10 K file and working length determination was done. All the samples were randomly allocated to one of the four test groups

GROUPS (n=10 per group)

GROUP A-CONTROL Group -No instrumentation done

GROUP B: Instrumentation was done with Twisted Files Used with adaptive motor (Sybron Endo). Instrumentation sequence was SM 1 (20/0.04) And SM2 (25/0.06)

GROUP C-Instrumentation was done with Protaper files used in reciprocation motion with (X Smart plus, Dentsply, Motor). Instrumentation sequence SX, S1, S2, F1, F2

GROUP D- Instrumentation was done with Twisted files used in continuous rotation (X Smart, Dentsply). Single Instrument (25/0.06%)

The torque and speed settings were followed as per manufacturer's recommendation. Cleaning and shaping was completed with the different rotary file system. In all groups, each canal was irrigated with 3% sodium hypochlorite between each instrument used in canal preparation. In groups with preparation with rotary system, 17% EDTA (RC help) was used between each sequential instrument. The roots of all the teeth were sectioned horizontally at 3, 6, and 9 mm from apex using slow speed saw (Figure 1). Digital images of each section were captured under stereomicroscope (Expert DN 25X). Each specimen was checked by for the presence of dentinal defects

Crack Determination:

NO CRACK" was defined as root dentine devoid of any lines or cracks at the external and internal surface of the tooth.(Figure 2)

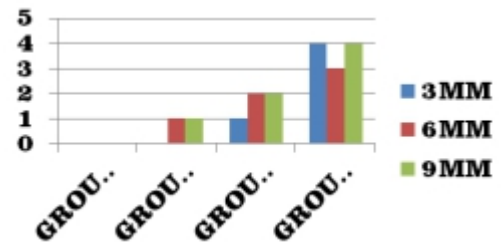
"CRACK" was defined as a presence of craze lines, cracks, fractures at any point on the tooth (Figure 3).

Statistical Analysis:

The data were analyzed using SPSS 17.0 software. Chi-square test was performed to determine the defects at different horizontal sections in each group and between groups. The level of significance was set at $P < 0.05$.

Results:

DENTINAL Cracks (%)	Group A (%)	Group B (%)	Group C (%)	Group D (%)
AT 3MM	0 (0)	0(0)	1 (10)	4 (40)
AT 6MM	0 (0)	1 (10)	2 (20)	3 (30)
AT 9MM	0 (0)	1 (10)	2 (20)	4 (40)
Total no of cracks	0 (0)	2 (6.6)	5 (16.6)	7 (36)



Group D showed the maximum number of cracks which was significantly higher ($P < 0.05$) than Group B, Group C and there was no significant difference between Group C and Group B. While group A showed no dentinal cracks. Within groups there was no statistically significant difference in Group A, Group B, Group C, Group D ($P > 0.05$) at 3mm, 6mm, 9mm respectively

Discussion:

The files used in the study were selected because they had similar cross sections (triangular). Other parameters such as apical diameter, taper were standardized and the variable was kinematics of rotation so that the effect of kinematics of rotation on dentinal crack formation could be assessed.⁵⁻⁷ There are no previous studies in the literature evaluating the kinematics of rotation on the development of dentinal cracks. The study results showed that control group showed no dentinal defects which was significantly lower than ($P < 0.05$) than groups which were instrumented with TF continuous rotation (Group D), Protaper used in reciprocation movement (Group C), TF adaptive (Group B). This finding is in accordance with previous study by Ashwinkumar et al that instrumentation with rotary file system induce dentinal crack formation¹⁷.

There was no statistical difference ($P > 0.05$) between the TF used in adaptive motion and Protaper used in reciprocating motion. The TF adaptive system showed least dentinal cracks amongst the test groups which was not significantly different

($P > 0.05$) than other two test groups. The TF Adaptive system was introduced by Sybron Endo in 2013 uses both reciprocation and continuous rotation movements with existing Twisted files in a new elements motor showing adaptive motion. According to the manufacturer adaptive motion utilizes a combination of rotation and reciprocation movement depending on the stress experienced by the file in the root canal system. When there is no stress on the file it shows a continuous rotational movement with no backward rotation. But when there is a stress on the file it shifts to reciprocation mode with clockwise and counter clockwise angles ranging from 600 to 0° and 370 up to 50°. The degree of clockwise and counter clockwise rotation varies based on stress experienced by the file. One major difference between adaptive and conventional reciprocation movement is that the clockwise and counter clockwise rotation angles are fixed for reciprocation movement. This adaptive movement along with R phase manufacturing process of TF allows the file to adapt to different levels of intra canal torsional forces causing fewer dentinal damage there by produces less incidence of dentinal cracks compared to continuous rotation⁹⁻¹³.

The null hypothesis in the study was rejected as ($P < 0.05$) between TF adaptive and Protaper (Reciprocation), TF (continuous rotation)

In the present study there was no difference in dentinal crack formation at 3mm, 6mm, 9mm respectively in all three groups which suggests that

stress exhibited by a file on canal wall is distributed evenly. However this finding is in contrast to a previous study by Kim et al where it was stated that more dentinal cracks were observed in the apical sections¹⁶. This may be explained by the usage of varying tapered file (Protaper) exhibiting different stress at different sections.

In the present study teeth were mounted on acrylic blocks and silicone impression material to simulate the clinical scenario of bone and periodontal ligament. In order to create an even thickness (0.2-0.3 mm) of silicone rubber simulating the PDL, the roots were first immersed in fluid wax and then removed. A layer of 0.2-0.3 mm wax remained on the root surface. The tooth with the wax was then immersed in the acrylic resin block. After the resin had cured, the teeth and wax were removed from the block. The wax was removed from the tooth and the tooth was then replaced in the resin block with silicone rubber.

In the present study all the samples were evaluated for presence of cracks at the beginning of the study and also after sectioning the samples. This was done to eliminate other causes such as force of extraction, sectioning methods which could induce dentinal cracks.

Limitations of the study include the different manufacturing process employed for different files could influence the development of dentinal cracks. Also that all the files used in the study were used as per manufacturers recommendation. This difference in torque and speed settings could influence crack formation.

Conclusion:

Within the limitations of the study it can be concluded

- 1) Instrumentation with rotary file systems induce dentinal cracks/craze lines.
- 2) TF adaptive motion showed less dentinal cracks compared to TF in continuous rotation, Protaper in reciprocation.

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DENTISTRY IN THE DEVELOPMENT OF MODERN ANESTHESIOLOGY: A REVIEW

ABSTRACT

Dentistry has played a vital role in the development of modern anesthesia. The evolution of modern anesthesia started in the 19th century with the contributions from dentists like Horace Wells, William Morton and many others. Dentistry was the qualitative and quantitative leader in the provision of anesthesia at this time. Today dentistry has moved towards the use of local anesthetics (with or without sedation) for the control of pain and anxiety. More complicated and major procedures in oral and maxillofacial surgery still rely on the use of general anesthetics although not allowed to administer general anesthetics.

Keywords: Anesthesiology, Dentistry, Oral and Maxillofacial surgery.

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No history of anesthesiology can exclude the contribution of dentistry especially oral and maxillofacial surgery (OMFS). For years man has understood that the pain from surgical treatment is worse than that of simply not treating the condition. The fear of pain associated with treatment was such that patients often refused treatment, accepting their inevitable fate, often death. The ancients noted that surgical procedures could be done on unconscious patients without subjective pain. Even therapeutic strangulation to a point of unconsciousness became an option for surgical treatment but it often rendered them dead. Overdoses of certain agents like ethyl alcohol, opiates, hallucinogens, or even mesmerism were used to relieve the pain of surgery. These were however not predictably safe or effective.¹



Fig 1: operations without anesthesia

In 1799 Sir Humphry Davy an English chemist, noticed that the pain associated with his own erupting third molar was relieved by the inhalation of nitrous oxide. He published in *Researches, Chemical and Philosophical*: "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place" (1800). English physician Henry Hill Hickman's "experiments circa" in 1823 involved partial asphyxiation of animals in glass domes. He confirmed the ancient belief that unconscious animals with "animation suspended" could be operated without pain. He added small amounts of carbon dioxide and other agents to the

bell chamber. Hickman's suspended animation via asphyxiation found little enthusiasm even after he wrote of his experiments to the Royal Society of London in 1824.³

Dr Crawford W. Long of Georgia successfully advocated ether to his patients for surgical procedures in 1842. Although he was the first to observe the potential benefits of this agent he never made his observations known for the benefit of others, thus forgoing the honor of being the discoverer of surgical anesthesia. Medical student William E. Clark administered ether to a Miss Hobbie for a dental extraction, performed by dentist Elijah Pope in January 1842 predating Long. Davy, Hickman, Long, Clark, Pope, and others such as Robert Collier (mixed opium with rum in 1839) and E.R. Smilie (combined opium and ether in 1844) all flirted with the potential to be the "greatest benefactor to mankind" for the discovery of anesthesia, but none effectively publicized their observations. The task was accomplished by Horace Wells, DDS, in 1844.¹

HORACE WELLS, DDS

Wells' observation and publication of the benefits of nitrous oxide in surgery is well known. He had attended Professor Gardner Q. Colton's nitrous oxide demonstration at Hartford, Connecticut, where he saw the subject traumatically lacerate his skin without reaction after inhaling nitrous oxide. Wells' a dentist who was uncomfortable with the pain subjected to patients by his treatment was inspired by what he saw. The very next day he arranged for John M. Riggs, DDS, to remove Wells' own tooth after receiving nitrous oxide from Colton, without pain. He demonstrated his findings clinically at the Massachusetts General Hospital where one of the medical students volunteered to get his troublesome third molar extracted under nitrous oxide and later reported that he was completely satisfied with the procedure and did not recall the extraction. The world recognized Wells' singular efforts in 1864 after a lot of controversy. The American Dental Association (ADA) resolved "..... that to Horace Wells, of Hartford, Connecticut, (now deceased) belongs the credit and honor of the introduction of anesthesia in the United States of America....."⁵

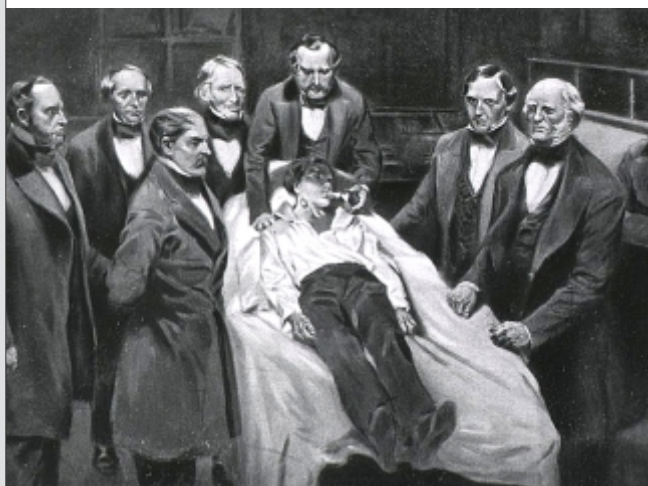


Fig 2: Demonstration of general anesthesia at the Massachuset

In 1872 the American Medical Association (AMA) resolved “.....that the honor of the discovery of practical anesthesia is due to the late Dr. Horace Wells of Connecticut....”⁶

In 1944, the centennial anniversary of Wells’ discovery, virtually every anesthesia entity confirmed Wells’ primacy as the ‘father of surgical anesthesia’. The ADA conducted a yearlong worldwide celebration and also published a book memorializing the event. The American Medical Association (AMA) later on deferred from their previous endorsement and said that Wells was “....one of the first...”



Fig 3: Horace Wells

WILLIAM TAGGERT GREEN MORTON, DDS

Dr William T.G. Morton was a member of the inaugural 1840 Baltimore College of Dental Surgery and subsequently an associate of Wells at Hartford, Connecticut. Morton tried a different inhalational agent, his invention “Lethion” (ether fragrancd with perfume), at the Massachusetts general Hospital operating room. The patient was successfully anesthetized and a neck tumor quickly removed. Lethion was soon disclosed to be ether and widespread use of the agent followed. In the Mexican American war ether was used liberally without Mortons’ permission by the government that had granted him the patent. Morton himself later advocated 3000 anesthetic gratis during the civil war.⁷



Fig 4: administration of ether by William Morton

In addition to the question about who deserved the primacy for the discovery of safe and effective anesthesia, there were other issues. The American Association of Dental Surgeons (AADS) said that “.....every itinerating dentist, who gouges out a tooth or fills a cavity with amalgam....can arm himself with an inhaling apparatus and a bottle of anesthetic material, with which he expects to prey on the public.... Hence in all minor operations in surgery, their administration is forbidden, as that their demand in the practice of dental surgery is small.”⁸

With regard to doctors who had ready access to anesthesia such as Wells, stated that anesthesia “should be free as the air we breathe” seeking to provide to

the widest patient population. Others such as Morton by means of his U.S. patent sought to significantly restrict the ability of patients to receive anesthesia. Doctors who did not have ready access to anesthesia such as the AADS sought to restrict anesthesia use by saying that it was uneconomic, unsafe, immoral, hindered healing, and so on. Patients on the other hand wanted more anesthesia options during their treatment as it significantly reduced pain. Even religionists sought to curb anesthesia, quoting Genesis 3:16 as justification: "unto the woman he said, I will greatly multiply thy sorrow and thy conception, in sorrow thou shalt bring forth children."⁹ Perhaps they noted that people seemed to take more comfort in ether and chloroform during times of physical pain than from religion. The debate about anesthesia diminished greatly when Queen Victoria opted for chloroform during delivery of her seventh child in 1853.

Samuel Stockton White (DDS) - best known to OMS for carbide burs was also the first to commercially render nitrous oxide into liquid form in 1881 by means of hand-pump compression. Before this those administering nitrous oxide had to provide the gas themselves for patient use, stored and delivered via large rubber bags.¹³

Alfred Coleman (DDS) published in British Journal that it was possible to save some of the products of respiration for further use in 1868. Coleman described his invention of a carbon dioxide absorber that allowed nitrous oxide to be reused, naming the device "The Economizer."¹⁴ Coleman was named the first dental fellow of the Royal College of Surgeons.

Green Vardiman Black (DDS) the father of modern dentistry and founding dean of the North Western University School of dentistry developed the carious lesion classification system. He also lectured on the "introduction of Bromide of ethyl as an anesthetic for dental purposes or any very short operation" in 1883.¹⁵

Ferdinand Hasbrouck (DDS) in 1893 induced President Grover Cleveland with 100% nitrous oxide and extracted teeth from the corpus of an intra oral tumor. The incident was kept secret from public for decades.¹⁶

Statistically dentistry was the qualitative and quantitative leader in the provision of anesthesia at this time. There were only a few medical anesthesia providers; on the other hand "signs on dental offices everywhere proclaimed" the availability of general anesthesia for tooth extraction.¹⁷

Charles Teeter (DDS) in 1902 introduced the first anesthetic machine capable of delivering nitrous oxide, oxygen, ether and chloroform. The gas could be warmed, rebreathed, and administered under positive pressure. Later he added the mercury column to monitor the flow of inhalational agents. He also designed the first nasopharyngeal tube for clinical use. He was elected president of both the Anesthesia research society and the American society of anesthesiologists.^{18,19}

Jay A. Heidbrink (DDS) was the first to color code the anesthesia gas tubes and invented the pin index safety system. Heidbrink owned a practice in Minnesota that employed three dental anesthesiologists who would induce and recover patients with 100% nitrous oxide. The American Dental Society of Anesthesiology (ADSA) Heidbrink award is named after him.

Edgar Randolph Rudolph Parker (DDS), known popularly as "painless Parker" was an early advocate of the routine use of local anesthesia, formulating his own solution "hydrocaine."²⁰ The routine use of local anesthesia in dentistry did not come to popularity until the 1930's.²¹

ORAL AND MAXILLOFACIAL SURGERY PREQUEL

1920 - 1940's were the years immediately preceding the formalization of Oral and Maxillofacial surgery. Since Wells and Morton, a number of dentists had used general anesthesia as they became available. Their use was highly controversial, as it was also a part of medicine and the less favorable patient risk / benefit analysis that existed. The success of Painless Parker using local anesthesia led to dentistry moving towards that mode of pain relief. However a core group of dentists committed to the use of general anesthesia persisted. This group of exodontists from Wells and Morton to Hansbrouck in the 1800's and followed by Teeter and Heidbrink and others were the precursors of today's specialty of Oral and Maxillofacial Surgery (OMFS). What set the OMFS

pioneers apart from the rest of dentistry was their use of general anesthesia.

In 1918 the American society of Exodontists was formed (ASE) and in 1921 renamed itself the American society of Oral surgeons and exodontists (ASOSE).²² The groups literature and annual presentations from 1920 - 1930 were dominated by the topic of inhalational general anesthesia, but also included intravenous agents such as sodium thiopental as a cutting edge presentation in 1934. During this era dentists were the most prolific providers of general anesthesia not only in dentistry but in all the health professions. The American board of Oral surgery was established in 1940 and for decades board candidates spent nearly equivalent amount of time studying surgery and anesthesiology.

In 1918 Harry Seldon a surgeon anesthesiologist, graduated from the New York University school of dentistry and went on to publish several successful editions of *Practical Anesthesia for dental and oral surgeons - local and General* in the 1930, 1940, 1950's. His texts present a retrospective history of the advancements in anesthesiology and surgery during these years.

1940's was significant in that anesthesiology changed from what was often considered as insignificant, that might be administered by technicians during surgery, to an area that is essential by dentistry, medicine, veterinary medicine and nursing. This remarkable growth was brought about by two major factors. First it marked the 100th anniversary of the discovery of anesthesia even though it was still a controversial thing. The second factor was the World War II which saw the profound use of general anesthesia. The military formally planned the use of general anesthesia during surgery. Leonard Monheim DDS and other dentists such as Milton Jaffe were leaders as dental anesthesia providers during this time.²³ Heidbrink's anesthesia mask was modified for aviators and more than one million masks were produced for aviators. Leonard Monheim published the "A, B, and C's" of pre-anesthetic risk while Henry Archer offered "1, 2 and 3's" risk classification. In 1963 the ASA produced its first physical status classification, of which later versions were added and even used today.

Adrian Orr Hubbell, (DDS) graduated from the university of southern California, school of dentistry in 1937 and subsequently trained as a resident in oral surgery and anesthesiology at the Mayo clinic where he was introduced to the new intravenous short acting barbiturate, sodium thiopental which was found to be a valuable drug for office based oral and maxillofacial surgery. He administered more than 300,000 thiopental anesthetics without mortality. He published his findings in dental and medical literature²⁴ and also obtained a US patency for an apparatus for handling fluid, popularly known as the "Hubbell's Bubble".²⁵ It had a hand held rubber bulb by which incremental doses of thiopental could be administered. Hubbell used thiopental as his single agent, usually omitting even local anesthesia. In the 1950's Hubbell along with Harold Krogh, offered this successful thiopental technique as a continuing education to the oral and maxillofacial community, thus establishing the basis of the preferred intravenous technique used by many to this day. Hubbell was the first to publish the term "team anesthesia", the office based outpatient general anesthesia experience developed by oral and maxillofacial surgery.²⁶

The 1950's started with the decision of the ASA to cancel unrestricted membership for dentists, which included many dentist anesthesiologists and oral and maxillofacial surgeons.²⁷ The ADSA was then established by the former dentist members who realized that dentistry needed a platform to address their anesthesia issues.



Fig 5: modern anesthesia equipment

Although most of the anesthetics provided in OMFS in the 1960's were general anesthesia, sedative techniques were present. Niles Jorgenson, DDS at Loma Linda university, developed the popular "Jorgensons technique" of intravenous Phenobarbital, meperidine, and scopolamine. Harry Langa DDS in New York advocated the 'relative anesthesia' technique with a shift from N₂O/O₂ general anesthesia to N₂O/O₂ sedation. Milton Jaffe DDS reported the use of intravenous ether for sedation.^{28,29} Diazepam was made available by Hoffman-La Roche in 1963.

In 1976 the ASA introduced the resident's written examination as the first step in becoming board certified in anesthesiology. The University of Utah and other medical anesthesiology programs petitioned the ASA to allow dentists to continue on the track to ASA board certification. These requests were refused by the ASA with the determination to cancel all unrestricted dentist anesthesiologists membership in the ASA.²⁷

In 1990 the ASA contacted the accreditation council of graduate medical education (ACGME) and opined that residencies that train dentists should not be accredited. The ACGME contacted all anesthesiology residencies and informed that if dentists continued to be trained, programs might lose accreditation. Almost all medical residencies no longer admitted dentists for training. In October 1991, the ADSA voted to discontinue its funding support for a specialty in anesthesiology in dentistry.³⁰

Today dentistry has moved towards the use of local anesthetics (with or without sedation) for the control of pain and anxiety as they were considered relatively safe and well tolerated by the patients for relatively short dental procedures.²

Conclusion

It is interesting to note the contribution of dentistry in the development of modern general anesthesia. History and literature shows that dentists especially oral and maxillofacial surgeons were the qualitative and quantitative providers of general anesthesia once upon a time, not only in the field of dentistry but the whole of medical profession. Today dentistry has moved towards the relatively safer local

anesthetic agents for the control of pain in minor procedures. More complicated and major procedures in oral and maxillofacial surgery still rely on the use of general anesthetics. Although not allowed to administer general anesthetics by themselves oral and maxillofacial surgeons should have a thorough knowledge about the different aspects of the use of these agents; the study of which are included in their curriculum.

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UNDERSTANDING EPIDEMIOLOGICAL TRANSITION IN INDIA

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ABSTRACT

Evolution is a key biological phenomenon in various forms of life and as far as human species exist they are amenable to changes constantly. The impacts of epidemiologic, demographic and nutritional transitions are rapidly reflected in developing country like India in a negative way owing to the mistangled influences of globalisation, industrialisation and urbansiation. The key to balancing the aftermath of the transitions is proper planning and utilization of resources along with strong boost to public health awareness and environmental friendly policies to ensure maintenance of homeostasis. Inequalities in health still acts as major hurdle for efficient distribution of health care services to cater the ever growing population which requires design of proper health care statistics to identify the weaker sections of people and assigning policies for their overall well-being and development.

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Introduction

As a developing country India is facing huge transitions in epidemiological, nutritional and demographic levels which impacts the population as a whole in various dimensions. The key component can be global burden of disease with progress from communicable to non-communicable diseases. Epidemiologic transition can be portrayed as a combination of demographic and nutritional transitions which overlap each other. The gap in epidemiologic transitions in relation to urban and rural areas can be interlinked to differences in socio-economic conditions of people. The major socio-economic issues in rural areas are poverty, malnutrition, in-adequate access to health care, lack of education and sanitation issues including unsafe drinking water. The common issues in urban areas being environmental pollution, un-healthy diet and ways of living, addiction to smoking and alcohol due to stress factor. The irony to be noted is that even though the in-equalities are prevailing among social classes, the burden of diseases is still relevant in various sections of society. The significant progress on other hand is reduced cases of mortality due to communicable diseases and epidemics as a result of extensive immunisation programmes, better technological progress in medical care, economic growth and increased awareness.

Furthermore, demographic transition is acknowledged by the changing spheres of people migrating from rural to urban areas owing to rapid industrialisation and urbanisation in turn leading to economic stability due to reduction in income inequalities and labour demands, which is more profound in developing countries than the developed one resulting in improved standards of living among the middle income groups which constitutes the majority of Indian workforce. The key notable feature as a result is lack of physical activity and increased sedentarism due to the work culture causing weight gain which has triggered obesity as the end-product.¹ As a result rates of cardio-vascular diseases are on a higher side which is the main cause of mortality in the current scenario of life events. Irregularities in working hours, increased work pressure and the

need for economic stability has resulted in such a phenomena. Moreover pediatric obesity is a rising cause of concern as more children rely on processed foods rich in fat content coupled with reduced physical exertion due to influence of computing and video-gaming which can pre-dispose them towards adult obesity and risk of metabolic syndrome.

Meanwhile stress also plays a pivotal role due to increased demands for economic welfare and good quality of life pushing people beyond their comfort zone and breaking the work-social life balance which immensely affects the personal health and contributes to unhealthy ways of living such as consumption of junk food products, smoking and alcoholism. This can cause elevated blood pressure levels, reduced immunity levels and infection risks, and high exposure of cardio-vascular diseases.

Another interesting variable of urbanization which can be linked to epidemiologic transitions is Industrialisation. It produces both favourable and un-favourable outcomes. The key ones being enhanced economic development leading to better access for healthcare in urban cities with state of advanced facilities thereby influencing mortality rates disproportionately by reducing deaths due to communicable and non-communicable diseases. On the other hand, industrialisation has contributed to depletion of ozone layers by infiltration of poisonous gases from the factories and industrial sites and they are more densely distributed in urban cities than in rural areas.

Nevertheless, as a result of over-crowding of the cities environmental pollution may lead to chronic pulmonary diseases and cancerous conditions which may boost up the morbidity and mortality rates especially in slum areas. Another interesting component is reduction of educational in-equalities among men and women. Nowadays, more women are educated and there is a need for female labour in industrial and technological sectors reflecting a reduction in birth rates as more emphasis is laid on family planning and nuclear families. The birth preventive measures adopted by women in the current scenario will help to improve maternal health conditions such as better

pre-natal and antenatal care thereby more focus could be provided to infant healthcare and this is a boon to single child in nuclear families promoting their well being and holistic development. The fertility rates have gone down drastically following family planning and life-style conditions decreasing the birth rates and death rates simultaneously.² On the contrary there is a hike in morbidity rates as the geriatric population are slowly rising limited by disabilities.

Meanwhile cardio-vascular diseases, diabetes, cancer and chronic pulmonary diseases are the major non-communicable ones plaguing developing countries like India. According to the statistics from WHO in 2012, ischaemic heart diseases, chronic pulmonary disease and stroke contributed to around 12%, 10% and 9% of death rates respectively when compared to communicable ones such as tuberculosis (6%) and diarrhoea (2.7%) and an estimate of 26% are more prone and probable to die due to Non communicable diseases.³ This lays emphasis on adopting preventive measures to combat diseases rather than just focussing on treatment aspect. Another interesting aspect is that technological and medical advancements has decreased infant mortality rates and rather birth rates tend to drop due to health policies and educational advancements among women which can reflect on maternal and child health on a positive way. So the key aspect of demographic transition is temporality. On the other hand there is an escalated population of geriatrics with disability which has raised the burden of diseases and reflective of demographic gap. More emphasis has to be laid on governmental policies along with reducing the gap between socio-economic factors, psycho-social behavioural mechanisms of people with a key focus on improving overall health trends to understand more about temporality factors related to demographic transitions. The key emphasis could be re-structuring the health delivery system and making sure accessibility of services towards rural people. Next, an enhanced focus could be to promote population based interventions such as health education programs and macro-economic police.⁴ Indian population falls under

stage two of demographic transition⁵ but since there is a divide between social, cultural, economic and geographical factors with respect to rural and urban areas there is a slight tendency in urban areas to shift to stage 3 especially people living in high economic backgrounds as they can afford more quality of healthcare and adopt healthier life-styles.

Moreover, nutritional transition has witnessed a change in dietary patterns in both urban and rural areas. The focus in urban areas is fast-food which is so called the comfort food high in saturated fats. The reason to go for such foods is being less expensive when compared to organic fruits and vegetables, palatal acceptability, a high surge in fast food joints catering to the urbanized population and above all a status symbol in high profile social and economic classes. This trend has led to high intake of LDL cholesterol leading to obesity which has a higher risk of atherosclerosis leading to stroke and cardiac arrests.¹

Even though India has its fare share on agriculture and horticulture the majority of cultivation of cash crops has been exported to boost the revenues and wide-spread use of pesticides and insecticides been sprayed to the crops to meet the consumer demands thereby making them in-edible to human consumption. The end-result being hike in the prices of fruits and vegetables due to black-market methods adopted by traders making it unaffordable to middle and lower income groups to buy good quality edible foods. The surveys undertaken by National Sample survey organization has shown a sharp contrast with 23% more fats and oils being used in rural areas and 58% more in urban areas. Moreover, statistics also show 53% deaths in the year 2008 due to non-communicable diseases and 33% men and 32% women had hypertension above the age of 25.

Nevertheless it is an innate human nature to rely on sugary foods and dietary fats from very young age and this character can prolong till adulthood. Diets rich in sugars and saturated fats are known to cause obesity leading to non-communicable diseases and hence morbidity and mortality. Globalisation has played a huge impact on nutritional transition and

urbanization acts as a key mediator. Indians are more prone to adopting westernized diets especially in urban areas. The key pressing factor lies in the psycho-social aspect of people. The advent and rise of fast food joints coupled with globalization has led to more people sticking to unhealthy diet such as burgers and pizzas which is linked to high status in society as it is considered to be more affordable for higher social classes and it has become a norm especially in children and young adults due to peer influences and moreover their easy availability has worsened the situation. The common diet related diseases are Type 2 Diabetes mellitus, Metabolic syndrome, Hypertension and Chronic Heart diseases which has led to increased mortality and morbidity in recent years.⁷ The Consumerism culture currently is very supportive for globalization which results in more processed foods available in the market containing high saturated fats and salt which has been labelled “easy to cook” and eat attracting more consumers towards unhealthy ways of eating. Industrialisation has led to in-flexible working hours for men and women especially in the field of Information Technology. Working women in nuclear families do not get enough time to take care of the family and the general perspective would be to encourage children to consume ready to eat foods thereby managing time constraints. The digital media also portrays more of adverts about fast foods and fizzy drink which enhances these products reachability especially among young children and adolescents.

On the contrary, as the socio-economic conditions improve people tend to enhance their diet by consuming more red-meat which can lead to cancer susceptibility. To combat the negative effects of dietary transitions the governmental policies should be aimed at preventive measures ranging from curbing processed foods and fizzy drinks in the market and encouraging more people to follow traditional diet patterns such as rice, wheat, millets and cereals through nutritional counselling which would bring about a stable diet pattern and enhance the reduction in life-style disorders and taxation of fast food joints and processed foods can go way ahead to reduce

unhealthy food habits. Currently India is undergoing stage two in nutritional transition but a fluctuating curve can be noticed among people living in high SES groups tracing their way towards healthy diets and lifestyle practices along with exercise regimes. So the transition is from traditional diet rich in carbohydrates and proteins to hydrogenated fats and processed chemical treated foods.⁸

Effects of epidemiologic, demographic and nutritional transitions on oral diseases

India faces a huge burden of oral diseases each year. The fact that oral diseases are neglected by majority of population in low socio-economic levels due to less awareness and education about its impact leads to more agony. Teeth is a major organ responsible for chewing, mastication and speech and it has to be given utmost care by an individual to lead a good quality of life in the society. The fact that dental diseases lead to nutritional impairment can lead to morbidity and pressing fact that oral cancer leads to mortality should be of utmost importance.⁹

Epidemiological transitions coupled with dimensions of demography and nutrition has a negative effect on oral health. For instance smoking is the main risk factor for oral diseases such as periodontitis and oral cancer and the fact that irrespective of Socio-economic status criteria, smoking and smokeless tobacco forms is quite common among rural and urban areas. India is the country with highest oral cancer cases in the world and more cases are reported in rural areas due to widespread use of smokeless forms such as arecanut and beetlenut. There is another interesting aspect to link tobacco chewing to culture especially among Hinduism where arecanut chewing is a part of cultural heritage.¹⁰ Amongst the urban population stress has been coined a major factor in the wake of work pressure especially among men, amidst industrialization forcing them to smoke more cigarettes per day. Then fact that smoking has a higher incidence of contracting periodontitis and oral cancer which can eventually lead to tooth loss and malignancies in later stages of life. Alcoholism can also be pointed out as an mediator to exaggerate risk of periodontitis

in smokers and susceptible to oral infections as a result of impaired host resistance. Owing to peer-pressure, stress to perform well either in studies or work-place and the failure to cope up in balancing life has lead to young individuals refuting to alcohol and drug abuse perpetuating burden of oral diseases.¹¹

In addition as a result of changed diet trends, use of carbonated drinks and sugary products has lead to higher prevalence of dental caries especially in children and adults. Intake of processed sugar rich foods in adults mainly in urban cities has shown direct link to Diabetes mellitus which can predispose to oral infections rapidly. The extensive use of carbonated sugary drinks which leads to attrition of teeth as well, is related to following westernized diet which is linked to globalization and Industrialisation especially in the urban cities. Likewise, in lower economic classes due to insufficient intake of diet rich in fruits, vegetables and vitamins can lead to greater susceptibility of oral infections due to reduced immunity especially deficiency of vitamin A, D and proteins are linked to hypoplasia of enamel.⁹ This can prove that irrespective of socio-economic divides among the rural and urban areas oral diseases are prevalent among the population classes. "According to WHO non-communicable disease profile in 2014," shows tobacco smoking as an adult risk factor among 25% males and 4% females respectively. This statistics clearly proves the susceptibility of Indian population to contract oral cancers.

Nevertheless, the fact that dental diseases are quite expensive to treat makes it more difficult for the common man to seek treatment and majority of the individuals bear the pain for a long-time and eventually resulting in loss of tooth and other dental infections worsening the situation. It also prevents people from functioning well in the society due to social inhibitions, steals the confidence of a person to smile and greet, adversely affecting community relations and tend to cause low self esteem thereby affecting the mental health. As malnutrition is very common among children in under-privileged communities it

can lead to decreased host resistance and thereby more prone to dental infections.

Conclusion:

The effects of epidemiologic, demographic and nutritional transitions are rapidly reproduced in developing country like India in a unfavourable way owing to the mistangled influences of globalization, industrialisation and urbanisation. The key to stabilizing the impact of the evolution is proper planning and utilization of assets along with strong boost to public health awareness and environmental friendly policies to ensure maintenance of equilibrium. Inequalities in health still acts as dominant obstacle for productive dispersion of health care services to cater the ever increasing population which requires draft of proper health care statistics to analyze the weaker portion of people and assigning policies for their overall well-being and development.

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VERRUCOUS CARCINOMA IN ASSOCIATION WITH PROLIFERATIVE VERRUCOUS LEUKOPLAKIA: A CASE RARE ENTITY

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ABSTRACT

Verrucous carcinoma (VC) also known as Ackerman's tumour is a low grade variant of oral squamous cell carcinoma (OSCC) commonly affecting the buccal mucosa of oral cavity. Clinically VC has a proliferative cauliflower-like appearance. Smokeless tobacco is found to be the most etiological factor for VC although other potentially malignant lesions like proliferative verrucous leukoplakia (PVL) may act as a predisposing factor. PVL is characterized by malignant transformation in nearly 74% of the cases and seen mainly in older women without any habits. It begins as a simple slow growing persistent leukoplakia that tends to spread, become multifocal and affects the gingiva frequently. We report a rare case of VC associated with PVL in 59 year old woman without any habits.

Key words: Verrucous carcinoma; Proliferative Verrucous Leukoplakia; Ackerman's tumour; Oral Cavity.

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Introduction

Verrucous Carcinoma (VC), is a low grade variant of squamous cell carcinoma, was first described by Lauren V Ackermann in 1948 so it was known as Ackermann's Tumor".¹ It has pathognomonic clinical appearance, biological behavior and microscopic features. The neoplasm appears exophytic papillary in nature with a rough, pebbly surface. Majority of the patients give a history of chewing tobacco, may also have poorly fitting dentures, carious and jagged teeth.² A high-risk potentially malignant disorder, PVL begins as a simple slow-growing, persistent hyperkeratosis that tends to spread and become multifocal and, in time develops exophytic, wart-like, or erythroplakic areas that become carcinomas.³ We herewith report a case of VC associated with PVL in 59 year old woman with no history of any habits or local etiological factors noted.

Case report

A 59 old female patient reported to the department of Oral medicine and Radiology with a chief complaint of white growth on the right aspect of cheek and tongue as well as white changes on the lower gum noticed in two months. Detailed history taking revealed that white lesions on right buccal mucosa appeared firstly which progressed to tongue and mandibular gingiva. It was slowly progressive without any discomfort reported other than mild xerostomia. Patient had consulted a dentist and was given candid gum paint and vitamins. Initially patient noticed some change, but the lesion was progressive. Medical history revealed that she was under antihypertensive and antigastric medication. Uneventful extraction history was also reported. She never had any habit history.

On clinical examination right buccal mucosa near commissure and lateral border of posterior third of tongue were noted with white exophytic growth having warty appearance of about 1x 2 cm in size. The buccal mucosal lesions are associated with nonscrappable white plaque lesions extend to lower labial gingiva till left lower canine. (Figure-1) A provisional diagnosis of PVL was given and differential diagnoses considered were VC, OSCC, verruca vulgaris and hyperplastic candidiasis.



Figure1: Clinical photographs showing a.white exophytic growth having warty appearance on right buccal mucosa b. white exophytic growth having warty appearance on lateral border of posterior third of tongue c.white plaque lesions on lower labial gingiva .

Incisional biopsy was done from exophytic growth of right buccal mucosa and microscopically section showed hyperparakeratotic stratified squamous epithelium with parakeratin plugging and broad elongated rete ridges with pushing borders. Minimal dysplastic change could be noted. Underlying minimal connective tissue exhibited with intense chronic inflammatory cell infiltrate. (Figure-2) Correlating clinical and histopathological features the given

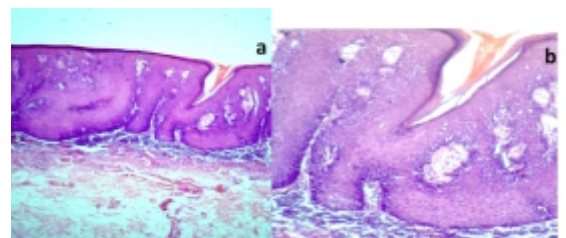


Figure-2: Photomicrograph showing section with hyperparakeratotic hyperplastic stratified squamous epithelium with parakeratin plugging, broad elongated rete ridges with pushing borders, minimal dysplastic changes and intense chronic inflammatory cell infiltrate, a(4x) & b(10x)

specimen was confirmed the diagnosis of VC. Patient underwent laser surgery later.

Discussion

VC is a less common tumour, represents 4.5-9% of oral squamous-cell carcinomas and its aetiology is not yet well defined.¹ Smokeless tobacco users are at a higher risk of developing VC than non-tobacco users. Human papilloma virus has been identified in the cells of this tumour but is still not considered as a causative factor.¹ The most common sites reported are the buccal mucosa, gingiva and the alveolar ridge; other sites of involvement include the palate, floor of the mouth and lip. VC is characterized by well circumscribed cauliflower-like exophytic growth with a cleft, pale, warty or fungating appearance, attached by a broad base. It is clearly demarcated from the adjacent mucosa with a pebbly mamillated surface. VC is locally aggressive and with no metastatic potential.¹ The most important differential diagnoses of VC includes: (i) OSCC showing verrucoid features, (ii) PVL (iii) verrucous hyperplasia (iv) pseudo-epitheliomatous hyperplasia, (v) verruca vulgaris, and (vi) keratoacanthoma.²

The histopathological features of VC includes hyperkeratotic hyperplastic epithelium with parakeratin plugging and bulbous “elephant feet” like ridges showing endophytic growth pattern with pushing borders, typically showing minimal or absent cytological atypia and intact basement membrane.^{2,4} If at all focal atypia or dysplasia is evident, it must be limited to the basal layer of epithelium. Lympho-plasmacytic inflammatory reaction is marked especially, in cases, where keratin has plunged deep into the connective tissue inducing foreign body granuloma formations.² All these features were evident in our case.

Diagnosis of verrucous carcinoma is difficult and its reporting needs experience.⁵ Verrucous hyperplasia or leukoplakia is the initial pathologic diagnosis in 60% of cases. Deep incisional biopsy or wide excision is needed correct diagnosis of VC. The prognosis of verrucous carcinoma is better than conventional malignant tumours. Various treatment modalities include surgery, chemotherapy, or combination of these with photodynamic therapy.²

PVL is a rare condition first described by Hansen et al. in 1985 and it's an aggressive form of oral idiopathic leukoplakia.⁶ An association with human papilloma virus infection has been suggested. PVL appears to resist to all attempts at therapy and often recurs. The World Health Organization also described the PVL with a high rate of malignant transformation, 74%.³ PVL is a distinct clinical form of oral leukoplakia which in turn is defined by its progressive clinical course, changing clinical and histopathologic features, and potential to develop into cancer, defined by Cabay et al, 2007.⁷

PVL commences as one or more homogeneous leukoplakic areas and later, the lesions enlarge and affect other locations, especially the gingivae. The buccal mucosa, gingiva, and alveolar ridges were most often affected.³ The diagnosis of PVL based on clinical data is often late due to its progressive evolution from homogeneous leukoplakic areas spreading to many different locations and the appearance of verrucous forms takes time. Histopathology may help, but it depends on the site biopsied, the stage of the disease, and presumably by other factors. Murrah and Batsakis (1994) and Batsakis et al (1999) proposed four stages of histopathological development with PVL: hyperkeratosis without epithelial dysplasia, verrucous hyperplasia, VC and OSCC.³ Lesions are managed with surgery, carbon dioxide laser, and photodynamic therapy.⁶

Conclusion

Cases of VC, PVL, verrucous hyperplasia, and verrucous keratosis are clinically indistinguishable; biopsy should be advised as early as possible for the sake of early diagnosis and prompt treatment. VC associated with PVL may be an indication of “field cancerization” and can lead to multiple recurrences, so such patients should be kept under regular follow-up.

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IDIOPATHIC GINGIVAL FIBROMATOSIS: A CASE REPORT AND ITS MANAGEMENT

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ABSTRACT

Idiopathic gingival fibromatosis, also known as, gingival hyperplasia, is a rare condition affecting the oral cavity. It is nothing but the overgrowth of gingiva at some point of time leading to esthetic and phonetic problems. Herewith, we report a case of idiopathic gingival fibromatosis in a 43 year old male patient, highlighting differential diagnoses and its approach of management.

Keywords: Gingiva, fibromatosis, hyperplasia

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Introduction:

Gingival overgrowth is a condition that results in esthetic, functional and masticatory disturbances in the oral cavity. Idiopathic gingival fibromatosis is the fibrous enlargement of the gingiva that has no definite cause¹. Various etiologies have been described for gingival enlargement such as poor oral hygiene, inadequate nutrition or systemic hormonal stimulation². The condition is also seen in several blood dyscrasias such as leukemia, thrombocytopenia or thrombocytopathy. The progressive fibrous enlargement of the gingiva is a facet for the condition³. Literature reports of various genetic linkage and heterogeneity associated with the condition⁴. The condition may manifest as an autosomal dominant or less commonly as an autosomal recessive mode of inheritance^{5,6}. It can occur either as an isolated disease or can be part of a syndrome⁷. Genetic linkage to the chromosome 2p21-p222 and 5q13-q22 is seen in autosomal dominant forms of gingival fibromatosis which are non syndromic^{8,9}.

Idiopathic form of gingival overgrowth is considered as gradually progressive benign enlargement that affects the marginal gingiva, attached gingiva and the interdental papillae. The condition usually overlies the tooth surfaces, thereby causing functional disturbances to the patient. Here we report a non syndromic case of Idiopathic gingival fibromatosis along with its management.

Case Report:

A 43 year old male patient named Mr. Sulaiman reported to our department with chief complaint of enlargement of gums noticed since 11/2 years. According to the patient, initially enlargement was small in size and gradually increased to the present size within a period of 1 year. He reported no reduction in size of the growth. It was not associated with any pain, bleeding or discharge. Patient reports of difficulty in mastication and speech due to the contact with tongue. Recently underwent extraction in the upper jaw tooth following which growth of gingiva was seen. Patients medical, family and personal histories were noncontributory. Extraoral examination revealed a dolicocephalic head with convex profile and incompetent lips.

Intraoral soft tissue examination revealed bulbous enlargement of the gingiva with respect to the maxillary arch (figure 1). Local examination of gingiva revealed generalized diffuse, bulbous enlargement seen on the posterior aspect of the jaw, compared to anterior half, that extends medially 0.5 cm away from the midline. Laterally it involves the free gingiva, attached gingiva and the interdental papillae. Color of the gingiva was slightly pale. Overgrowth covers almost 2/3rd of the crowns of posterior teeth. Surface of the mucosa appeared to be smooth and glossy. There were no signs of bleeding, erythema or any discharge. On palpation



Figure 1: Gingival Overgrowth of maxilla



Figure 2: Anterior half of maxilla



Figure 3: Posterior half of maxilla

inspectory findings were confirmed. Lesion was firm in consistency, non-tender & did not bleed on probing. Surface was smooth to palpate. There were no signs of bleeding or discharge upon palpation.

Differential diagnoses considered were

- (a) Inflammatory gingival enlargement- Here the lesion may be deep red in color. Enlargement will be soft and friable with a smooth shiny surface and tendency to bleed. There will be a life preserver-like bulge around the involved teeth. These all findings are negative for this case.
- (b) Hereditary gingival enlargement- There will be a positive family history for the patient. HGF starts at the time of active eruption of permanent dentition. Enlargement is maximum during adolescence but minimum during adult life.
- (c) Enlargements due to systemic diseases
 - Leukemia: Here the gingiva becomes soft, edematous and swollen. Appearance of gingiva is purplish & glossy. There will be symptoms of ulceration, pain & severe hemorrhage. There will be pallor in the surrounding mucosa.
 - Vit-C deficiency : Here the gingiva becomes tender, edematous and swollen. There is ulceration & necrosis of gingiva. Gingiva has a spongy consistency and bleeds frequently. The crest of interdental papillae appears red/purple.

The following investigations were carried out:-

1. Hematological investigations were done which showed that all values were within normal limits except for the RBC count which was slightly low.

Haemoglobin	13.4 gm%
Total count	5800 cells/cu.mm
ESR	10mm/1hr
RBC count	4.30 millions/cu.mm
Platelet count	2.33 akhs/cu.mm

2. Conventional radiographs were taken to check for any bony pathologies. Radiographs taken were panoramic radiograph and occlusal radiograph.

Panoramic radiograph showing normal anatomic hard tissue structures with multiple missing teeth and grossly decayed with respect to maxillary and mandibular arches. There are generalized interdental bone loss evident in maxillary & mandibular arches. It showed no bony involvement (figure 4) Maxillary true occlusal radiograph showing multiple missing teeth. There is no evidence of bony involvement (figure 5).

Multidetector computed tomographic scan was done to evaluate any bony involvement or erosions. It revealed evidence of soft tissue (gingival) thickening around the alveolar region of maxillary bone (figure 6) with few air pockets in the right infra temporal fossa, with no underlying bony erosions (figure 7).



Figure 4:
Panoramic radiograph showing no bony pathology



Figure 5:
Occlusal radiograph showing no bony pathology

3. MDCT scan (Advanced Imaging)

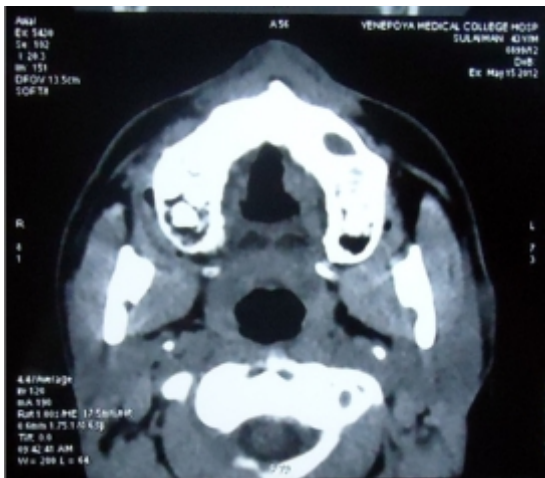


Figure 6: CT soft tissue profile (axial view) showing mucosal thickening



Figure 7: CT bony profile (coronal view) showing no bony involvement

Treatment:

A quadrant wise gingivectomy was performed under local anesthesia considering the size and extent of gingival overgrowth and periopack was placed followed by extraction of root stumps (figure 8,9). The



Figure 8: Gingivectomy done and periopack places (1st quadrant)



Figure 9: Gingivectomy done and periopack placed (2nd quadrant)

total masses of excised gingival tissue were sent for histopathological examination.

Histopathological report:

Incisional biopsy was carried out with respect to the posterior gingiva which revealed the presence of numerous collagen (mature and immature). Also revealed increased number of fibroblasts. Overlying epithelium exhibited tissue hyperplasia with various

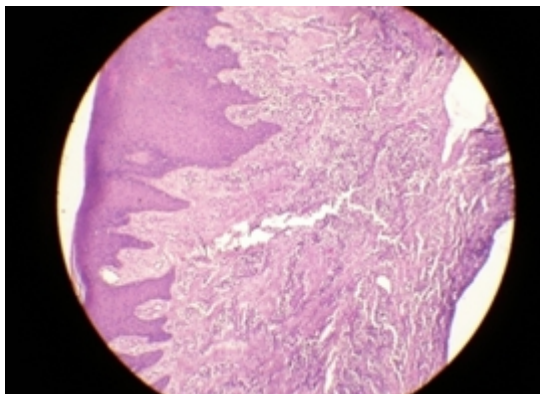


Figure 10: Histopathological picture



Figure 11: Healing after 2 months

degrees of chronic inflammation appreciated (figure 10). The patient was reviewed after 2 months (figure 11) and healing was satisfactory.

Discussion:

Gingival enlargement occurring within the oral cavity may affect single or both jaws¹⁰. The condition may vary from mild enlargement of the interdental papillae to segmental or uniform and marked enlargement¹². This case presents a non syndromic idiopathic gingival fibromatosis in a middle aged male patient. Patients family, medical and drug histories were non contributory, therefore, diagnosis of Idiopathic gingival fibromatosis was made. Various etiologies have been reported in literature (Table 1) for the development of gingival enlargement. Although the etiology of idiopathic gingival fibromatosis is unknown, it usually involves the proliferation of fibroblasts within the gingiva. The overgrowth response of gingiva does not involve the periodontal ligament but occurs peripheral to alveolar bone within the attached gingiva¹³.

Table 1: Causes of generalized gingival fibromatosis

Hyperplastic gingivitis
Mouth breathing gingivitis
Drug induced gingival overgrowth
Scurvy
Gingival overgrowth in pregnancy, leukemia
Hereditary gingival fibromatosis
Idiopathic gingival overgrowth

Literature suggest that fibromatosis gingiva affects the tooth eruption in early age, mastication and oral hygiene¹⁴. However, the present case was a middle aged old man who reported disturbed mastication and phonetics. Certain other cases reported atypical swallowing pattern in these patients¹⁵. Abnormal growth of gingiva may result in facial disfigurement which may be the complaint of most patients. Suggested treatment modality for idiopathic

gingival fibromatosis is gingivectomy¹⁶ which was done for the present case. High recurrence rate has been reported after surgery in case of gingival fibromatosis needs a close follow up. The present case is under follow-up every two months and the healing is satisfactory. In early age, surgical treatment should be carried out only after the eruption of complete set of permanent teeth¹⁷. Our patient was a middle age male, so the surgical treatment was carried out which was considered as the best approach. Histopathologically, fibromatosis shows a bulbous increase in the connective tissue which is avascular and has densely scattered collagen fibres, fibroblast cells and inflammatory infiltrate¹³ which was seen in the present case. After the treatment, patient was advised to maintain good oral hygiene and is under review.

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