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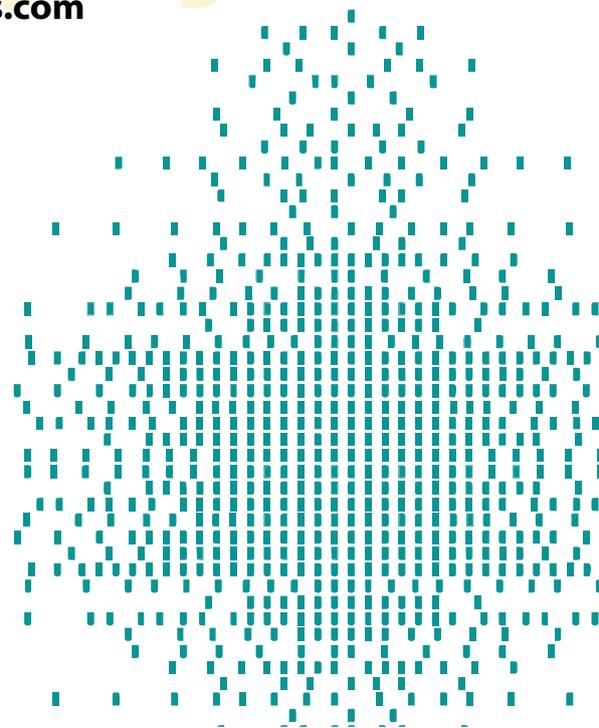
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PRESIDENT'S MESSAGE



Dr. M.B.Aswath Narayanan
President
IDA Madras Branch

Dear Members,

Dentistry is passing through a crucial phase in our country. With 309 Dental Colleges producing nearly 25,000 undergraduates & 6000 postgraduates every year, the Dental Surgeon to population ratio is slowly going down to acceptable limits.

On the downside not all the passed outs go on to start practice- many leave the profession to join other activities, some go abroad, a few do not continue with their profession .Further most often they end up in urban areas only.

This leads to a chocking effect in urban areas & lack of quality care in rural areas. About rural areas, I shall dwell in the next issue.

In urban areas, as the competition increases, incomes are bound to be affected. Dental Surgeons have invested a lot in education, setting up a practice & created a lifestyle commensurate with their profession-but mostly with loans. And once when returns do not meet the expectations, a lot of bad taste is left in the mouth-literally!!!

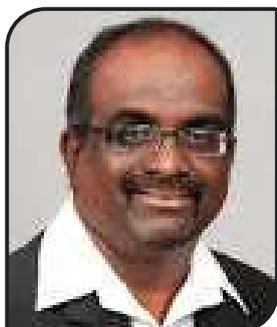
Therefore sound financial planning may be the key even as one enters the undergraduate curriculum & the student comes to terms with what to expect outside. He should be educated in this aspect- the department of Public Health Dentistry taking the lead. Secondly , to outshine the others certain measures need to be undertaken- Evidence based practice, asepsis, correct waste disposal through Governmental agencies, following DCI ethical guidelines, following local corporation/ municipality guidelines (regarding land, building, name board, tax, drainage) and ethical practice. Keeping abreast of all the recent advances is a must as the patients are well informed.

Keep in mind the golden adage-"The treatment of the disease must not be worse than the disease itself". It is better to be safe than sorry.

A handwritten signature in blue ink, appearing to be 'M.B. Aswath Narayanan', written in a cursive style.

Dr. M.B.Aswath Narayanan

SECRETARY'S MESSAGE



Dr. H. Thamizhchelvan
Hon. Branch Secretary
IDA - Madras Branch

Dentistry is one of the various fields which takes quantum leaps almost every single day. It is the responsibility of the dental professionals to be updated with such developments, particularly those that of relevance to the quality of patient case. A journal is a platform to share knowledge, encourage research work and showcase the research work for the upliftment of the quality of treatment.

The journal of Indian dental association has served for many years as an important form for knowledge exploration, research innovations and discrimination of ideas. With the constant support and cooperation of the wonderful team of Chennai, we have been successful in promoting dental excellence in a scientific manner to students and its members and wish to continue the same in future.

I acknowledge the crucial importance of our highly skilled editors and reviewers and would like to express my special thanks to the team members and the dedicated review team. Thank you !!!

We sincerely hope this will continue to help many practitioners to enrich their knowledge and skills on the never ending science of dentistry.

with regards !!!

A handwritten signature in blue ink, appearing to read 'H. Thamizhchelvan'.

Dr. H. Thamizhchelvan

LETTER FROM THE EDITOR



Dr. C.K. Dilip Kumar
Editor-in-Chief
IDA - Madras Branch

The progress of a journal from its infancy into maturity depends on various factors. The initial hurdles are launching the journal and finding the right resources to run it. Once the sustenance is established the aim is to make it self-sufficient. The onus shifts to generating its own funds. For this, the primary goal is visibility. The journal needs to be seen, read, downloaded and used for referencing. Once this visibility comes in, the journal is not only respected but also patronized by people far and wide.

The time has come when we need to focus on making our journal more visible through quality work that is submitted, reviewed and published. It's a sincere request from the Editors desk that our contributors submit more original work that would enable us to increase the standards of our indexation.

I believe that this is not an impossible task; it just needs realization by each one of us to take a more serious step in improving the quality of submissions. This combined effort from our part would certainly bear fruit in a period of time in the form of a native journal with not only increased visibility but also popularity. Once again thanks to all our contributors and readers for their patronage.

A handwritten signature in blue ink, which appears to read 'C.K. Dilip Kumar'.

Dr. C.K. Dilip Kumar

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Elevating ourselves in the society...

With the mushrooming of countless dental clinics and ever increasing number of dentists, there is always a looming threat of dilution of principles and ethics in dental practice, for the sake of survival. Today, the profession is on the verge of losing its identity as an essential health care service. There has come a time when we have to “refine and define” our roles in the society through “standardization” of principles and practice of dentistry.

The concept of standardization in practice has many benefits. It not only creates a sense of security and trust amongst the public, regarding the profession but also improves the general image of a dentist and acceptance of his or her role in the society as a responsible and conscientious citizen. The next evil that the process of standardization may eliminate, is the practice of some individuals offering “discounts on services” explicitly, to solicit patients. A clinic with obviously good standards, would speak for itself and would negate the need for a noble profession such as ours, to go into a business mode.

The system of accreditation is now an accepted practice in most fields - engineering, accounting and education. However, with health care services it is reserved mainly for hospitals and institutions. The National Accreditation Board for Hospitals & Health Care Providers is one such board which is empowered to inspect, advice and certify uniform standards in the structural process and working of hospitals. But these organizations do not encompass the entirety of the practice of dental services. ISO (International Organization for Standardization) accreditation, commonly acquired by dental clinics these days, mainly focuses on management standardization and uniformity of

work-flow, which may not be adequate in ensuring the ideal quality of treatment delivered to patients.

The need of the hour may be in the constitution of an independent organization which not only supervises the process of management and work-flow but also establishment of optimal infrastructure, uniformity in training of health care providers, documentation of records, enforcement of “best practices in health care” including sterilization, waste disposal etc, and finally, scrutinizing practice ethics. Another remarkable benefit of accreditation and standardization is protection of the dentist from patients who are litigation friendly. Consumer redressal forums take negligence more seriously than ignorance and, it's worth remembering that standardization of patient care helps in eliminating negligence to a great extent.

Let's aim at standardization of our practice. Elevation is inevitable !!!

Dr. Elavenil Panneerselvam

Assistant Editor,
e-MIDAS Journal

Knowledge about Medical Emergencies among Interns in Dental Colleges in Chennai

Dr. Simin Abraham¹, Dr. K. Mohamed Afradh¹

¹3rd Year Post Graduates,
Dept. of Oral and Maxillofacial
Surgery, SRM Dental College and
Hospital, Ramapuram, Chennai.

Abstract

Background: A Medical emergency is a sudden and unexpected onset of an illness or injury that is acute and poses an immediate risk to patient's life. Although the incidence is not high, such emergencies can and do arise in dental setups. Effective management of an emergency situation is the responsibility of each dentist. **Methodology:** This Cross sectional and descriptive questionnaire study was conducted among 130 interns from 13 dental colleges of Chennai, selected using a stratified random sampling. The questionnaire consisted of 5 closed and 1 open ended questions. Experience and perceptions regarding medical emergency and its management was evaluated. **Result:** Out of 130 participants, 52% were males and 48% were females. 54.6% of interns showed an excellent preparedness, 35.4% had a good preparedness and 10% had moderate preparedness, regarding usage of emergency drugs. 94.6% felt the need for a proper medical emergency training in their curriculum. **Conclusion:** Dental interns had a minimal knowledge of medical emergencies, drugs and equipments. It was found that their overall preparedness was not up to the mark. A transformation in the existing conventional system and continuing education program in this perspective is the need of the hour.

Key words: Chennai, Confidence, Dental College, Equipments, Emergencies, Interns, Knowledge, Perception, Preparedness, Questionnaire, Training.

Introduction

Medical emergencies can be alarming to any clinician but these situations can be less alarming if proper preparations are made [1]. A medical emergency is a sudden and unexpected onset of an illness or injury that is acute and poses an immediate risk to patient life. Fortunately, serious medical emergencies in dental practice are not common but they are all the more alarming when they occur. Life threatening emergencies can occur any time, any-where and to anyone which confines in dental office due to the increased level of stress which can induce syncope and sometime hyperventilation. Hence every dentist must be prepared to manage medical emergencies which may arise in practice.

So far studies about the preparedness and experience of dentist in dealing with medical emergencies have been conducted in various countries. Unfortunately these countries have dental education programs different from those in India. Within the limits of the literature review done for the current study there is only one study [1] have reported the Indian dental graduate's preparedness and competency towards a medical emergency. Against this background of limited information with doubts over perceived competency among fresh dental graduates in management of an emergency, the present study is done to investigate

- Experience of handling medical emergency
- To evaluate the perceptions about medical emergencies among interns in dental colleges in Chennai.

Methodology

This Cross sectional and descriptive questionnaire study was conducted among 130 interns from 13 dental colleges in Chennai. Sampling was done by 90% power @ 5% Alpha. Sample size were calculated based on studies by [1,2]. Level of statistical significant was set as $p < 0.05$ using Chi square test. Ten participants were selected randomly from 13 dental colleges from

Tamilnadu. Participants who have cleared the final year BDS exam and currently a CRRI and those who were willing and present during the time of survey were included. Ethical approval was obtained from the scientific review board of Saveetha University. A written informed consent was obtained from all the participants.

Participants were given a 7 item pretested questionnaire adapted from the study by Praveen et al [1]. The questionnaire was used to gather information on the frequency and type of medical emergencies encountered by interns in the past 4 years. It also analyzed their knowledge, attitude and perceptions regarding dental emergencies in dental practice. On the basis of answers to preparedness based questions, we calculated a preparedness score, with 0.5 - 2 marks given for each correct answer (based on the importance of the question)

The final score was 26 for preparedness regarding emergency drug usage and it was 16 for preparedness regarding emergency equipment usage. The total score was given ranges to classify the preparedness as poor, moderate, good and excellent. Descriptive statistics using mean and standard deviation and percentages were used. Chi square test was used to check the significance in difference in association.

Result

Hundred and thirty interns participated in the study. The mean age of the participating interns were 23.5. Out of the 130, 52 (40%) were males and 78 (60%) were females. About 31% of interns had experienced a medical emergency during their four years of study. The difference in encountering medical emergencies between 13 dental colleges was found to be statistically significant. Less than 15% of the students experienced conditions like hypoglycemic attack and syncope, less than 10% of them experienced conditions like allergy and asthmatic attack, less than 5% of them experienced

conditions like angina, anaphylactic reaction, epileptic fit, hyperglycemic attack, myocardial infarction and stroke in their patients.

Table 1 describes the recommended emergency drugs and confidence in using them. 69.2% of the interns were aware of adrenaline, 72.3% were aware of aspirin, 50.8% were aware of glucagon, 40% were aware of Glyceryltrinitrate, 43.8% were aware of Prednisolone, 48.5% were aware of Chlorpheniramine, 48.5% were aware of Salbutamol, 65.4% were aware of glucose, 67.7% were aware of Hydrocortisone, 40% were aware of midazolam, 46.2% were aware of Dextrose, 61.5% were aware of Oxygen and 56.9% were aware of Atropine as essential drugs in their emergency kit. Figure 1 depicts the preparedness regarding usage of emergency drugs. 54.6% of interns showed an excellent preparedness about usage of emergency drugs, 35.4% had a good preparedness and 10% had moderate preparedness.

Drug	Yes (%)	No (%)	Unsure (%)	Confident (%)	Not Confident (%)
Adrenaline	69.2	23.8	6.9	60	40
Aspirin	72.3	22.3	5.4	60.8	39.2
Glucagon	50.8	40.0	9.2	41.5	58.5
Glyceryltrinitrate	40.0	49.1	10.9	35	65
Prednisolone	43.8	46.2	10.0	36.2	63.8
Chlorpheniramine	48.5	42.3	9.2	36.2	63.8
Salbutamol	48.5	43.1	8.5	38.5	61.5
Glucose	65.4	27.7	6.9	60.8	39.2
Hydrocortisone	67.7	26.2	6.2	57.7	42.3
Midazolam	40.0	49.2	10.8	28.5	71.5
Dextrose	46.2	43.8	10.0	38.5	61.5
Oxygen	61.5	30.8	7.7	56.2	43.8
Atropine	56.9	34.6	8.5	44.6	55.4

Table 1-Knowledge about Emergency drugs and confidence in using them

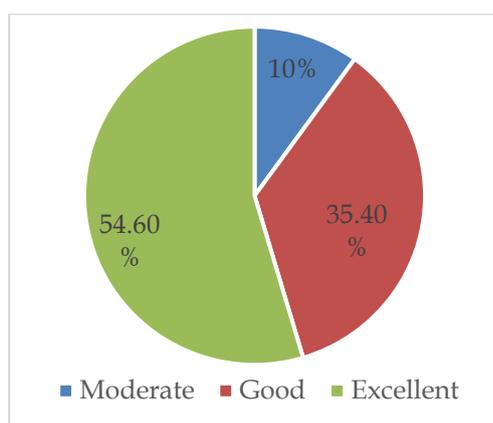


Figure 1 Preparation in Recognizing Emergency Drugs

Table 2 describes the knowledge regarding emergency equipments and confidence in using them. 56.9% had knowledge on Oxygen face mask, 70.8% on single use syringe, 44.6% on Oropharyngeal airway, 53.8% on Pocket mask, 45.4% on Self inflating child and adult BVM, 47.7% on Portable suction, 57.7% on Blood glucose measurement device and 43.1% on automated external defibrillator. Figure 2 depicts 46.2% had excellent preparedness, 46.9% had good preparedness

and 6.9% had moderate preparedness. According to hours of training received for basic life support, 4.6% of interns had spent 75-100% of time, 36.2% had spent 50-75% of time, 24.6% had spent 25-50% of time and 34.6% had spent 0-25% of time training in basic life support.

Equipment	Yes (%)	No (%)	Unsure (%)	Confident (%)	Not Confident (%)
Oxygen face mask	56.9	41.5	1.6	70.8	29.2
Single use syringe	70.8	20.8	8.4	63.1	36.9
Oropharyngeal airway	44.6	45.4	10	36.9	63.1
Pocket mask	53.8	38.5	7.7	43.8	56.2
Self inflating child and adult BVM	45.4	43.8	10.8	43.1	56.9
Portable suction	47.7	43.1	9.2	40.8	59.2
Blood glucose measurement device	57.7	36.2	6.2	50.8	49.2
Automated external defibrillator	43.1	48.5	8.5	31.5	68.5

Table 2 -Knowledge about Emergency equipments and confidence in using them

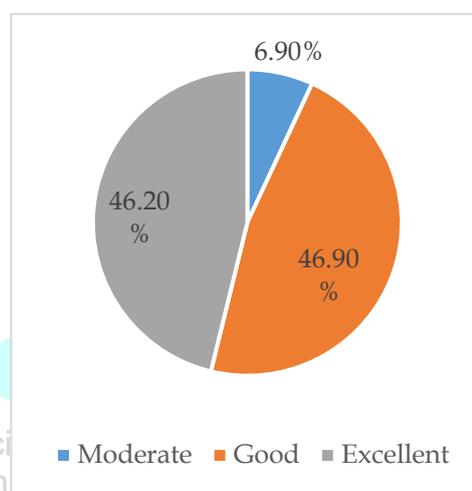


Figure 1 Preparation in Recognizing Emergency Drugs

Table 3 describes the competency regarding performing emergency procedures. 51.5% were competent in administering intravenous drug, 49.2% competent in intramuscular injections, 60% competent in maintaining airway, 70% competent in using the ambu bag, 59.2% competent in using the glucose meter, 78.5% competent in using defibrillator and 70.8% competent in administering oxygen. Out of one hundred and thirty interns, 94.6% felt the need for more medical emergency training. From an open ended question, it was observed that the knowledge of the dental interns was at an acceptable level as majority of them expressed to terminate the treatment and activate emergency services when any emergency situation occurs.

AREA	YES (%)	NO (%)
Administration of intravenous drug	48.5	51.5
Intramuscular injections	50.8	49.2
Maintaining airway	40.0	60.0
Using an ambu bag/bag valve mask	30.0	70.0
Using a glucose meter	40.8	59.2
Using a defibrillator	21.5	78.5
Administering oxygen	29.2	70.8

Table 3-Competence level in emergency management

Discussion

The most important step in management of medical emergencies is the recognition of emergency situation. Dentist must be prepared to manage medical emergencies in their practice. Several studies have assessed dental interns on management of medical emergencies [1,2,3]. There are many studies carried out on dental surgeons about perception in medical emergencies [2,3]. The current study is first of its kind to be carried out in all dental colleges in Chennai. The sampling methodology allows the sample to be representation of interns from all dental colleges in Chennai.

The mean age of the participating interns were 23.5. Out of the 130, 52 (40%) were males and 78 (60%) were females. In the current study 23.8% of the interns had faced life threatening situation, this was lower when compared to 58% in the study by Praveen et al [1]. Syncope / hypoglycemic attack was the most common type of emergency encountered by the interns in the current study, this result was in accordance with the study Praveen et al. The most commonly encountered emergencies seen by the interns in thirteen colleges of Chennai were hypoglycemic attack and syncope, followed by allergy and asthmatic attacks which indicate that the training for these emergencies will make them more competent.

Interns feedback for the management of emergency drugs in the study had an excellent preparedness (54.6%), good preparedness (35.4%) and moderate preparedness (10%). These interns had a good knowledge in identifying drugs like adrenaline, glucose and oxygen. The knowledge was not in an acceptable level, particularly in drugs like midazolam, prednisolone and chlorpheniramine and very few interns recognized that these are essential drugs [4]. In the study of Amirchaghmaghi et al (2010) and Chapman P.J. 1997 [2,5], the most recognized drugs were oxygen and adrenalin and nitroglycerin where as in the study of Gupta.T. (2008) [6], oxygen and bronchodilator spray were most common and in Atherton, G.J., 2000 et al., the most common drugs used were oxygen and adrenalin. Hence it is perceived that interns are to be educated on the usage of every single drug in their practices which will improve the knowledge of the drugs for the wellbeing of the patients.

Single use syringe, pocket mask and blood glucose measurement device was eminent to some extent and lower knowledge was seen regarding equipment like portable suction, self-inflating child and adult bag valve mask [4,7]. The confidence in the use of drugs and equipments mentioned were at a low level than the knowledge for all the drugs and equipments mentioned (Table2). This emphasizes that due to inadequate awareness of medical emergency, the interns lack

confidence. From the responses regarding the number of hours of medical emergency training undertaken in undergraduate curriculum, only 34.8% have received more than 10 hours where 25.4% have completely not received any training. In the study of Praveen et al. [1], 57% of dental graduates have undergone medical emergency and basic life support training for less than 5 hours which was very low. The result may be due to lack of definitive guidelines about the training with medical emergencies in the dental curriculum [7]

Overall in this study, 94.6% have felt that they need more medical emergency trainings. However the result indicates a pathetic level of competence in dental interns during emergencies. The medical emergency training should be assessed and improved to ensure the safety and wellbeing of the patient at all times. The result confirms that the dental interns are not well trained to manage the medical emergencies and perceived that there is an utmost need for vibrant education [8,9].

Conclusion

The study shows Syncope and hypoglycemic attack are commonly encountered medical emergency situation. Interns had a good knowledge on medical emergency, drugs and equipments and they expect this topic to be a part of their curriculum. It is perceived that many interns need further training as well as hands on courses. By increasing the volume and quality of training, the capability to recognize and manage medical emergency can be enhanced.

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ABO Grouping & Its Implication in Oral Diseases

Dr. S. Prasanna¹, Dr. A. Ramesh Kumar², Dr. K. Raj Kumar³, Dr. R. Ramya⁴, Dr. S. Dinesh⁵,
Dr. Swarnalakshmi⁶

^{1,6} PG Student, ² Professor,

³ HOD, ⁴ Reader

Dept. of Oral Pathology, SRMDC,
Ramapuram, Chennai – 89.

⁵ Asst. Professor,

Sree Balaji College of
Physiotherapy, Pallikaranai,
Chennai – 100.

Abstract

Blood is one of the important fluid in the body that maintains health and harmony of an individual. Blood grouping not only helps in identifying and categorizing individual but literature review also shows that they can help in eliciting the risk factors and cancer susceptibility in individual. This review article aims at highlighting interrelationship and susceptibility of varied lesions between ABO blood grouping and certain oral lesions.

Introduction

Blood is a connective tissue in fluid form. It is considered as the fluid of life because it carries oxygen from lungs to all parts of the body and carbon dioxide from all parts of the body to the lungs. It is known as fluid of growth as it carries nutritive substances from the digestive system and hormones from endocrine gland to all the tissues. The blood is also called the fluid of health because it protects the body against the diseases and gets rid of the waste products and unwanted substances by transporting them to the excretory organs like kidneys.¹

Blood Groups and Oral Lesions²

Cancer incidence in humans has gradually increased over the last century. Surgical, radio, chemotherapeutic and biological treatments have experienced important advances, with concomitant reduction in the morbidity associated with the radical surgical practices of the past. The term “oral cancer” includes a diverse group of tumors arising from the oral cavity (Khalili, 2008) usually included are cancers of the lip, tongue, pharynx, and oral cavity.

The World Health Organization (WHO) reported oral cancer as having one of the highest mortality ratios amongst all malignancies (Parkin et al., 2000). Although oral cancer is rare and attracts little attention, it is more common than Hodgkin's disease tumours affecting other organs. It ranks 12th among all cancers (Jemal et al., 2002).

It is important to diagnose oral cancer in its early stages, since the management of small and localized tumors involves less morbidity and mortality than more advanced-stage disease, where treatment must be more aggressive.

Biochemical and molecular genetic studies have contributed to our molecular knowledge of blood group-associated molecules in the past few years. Among the 30 blood group systems presently identified, among which ABO, Hh, Lewis and Secretor are the main representative species, are indirect gene products (Hakomori et al., 1967). They are synthesized

by Golgi-resident glycosyltransferases, which are the direct products of the blood group genes. Cell-surface carbohydrates are built up in a stepwise fashion when monosaccharides are transferred from their sugar nucleotide derivatives to appropriate acceptors. Each particular type of transfer is catalyzed by a unique specific glycosyltransferase.

In tumors, changes in glycosylation are found in both glycolipids and glycoproteins (Hakomori, 1999; Le Pendu et al., 2001). Altered glycosylation plays a major role in most aspects of the malignant phenotype, including signal transduction and apoptosis. Historical studies associating the Lewis system antigens and/or ABH system secretory antigens with disease are varied and generally inconclusive.

Fucosyltransferase is an enzyme that transfers an L-fucose sugar from a GDP-fucose (guanosine diphosphate-fucose) donor substrate to an acceptor substrate. The acceptor substrate can be another sugar such as the transfer of a fucose to a core GlcNAc (N-acetylglucosamine) sugar as in the case of N-linked glycosylation, or to a protein, as in the case of O-linked glycosylation produced by O-fucosyltransferase. Some of the proteins in this group are responsible for the molecular basis of the blood group antigens, surface markers on the outside of the red blood cell membrane. Most of these markers are proteins, but some are carbohydrates attached to lipids or proteins. It creates a soluble precursor oligosaccharide FuC-alpha ((1,2) Galbeta) called the H antigen which is an essential substrate for the final step in the soluble A and B antigen synthesis pathway.⁷

Association of ABO Blood Grouping with Oral Lichen Planus³

Lichen planus is a chronic autoimmune mucocutaneous disease characterized by multiple clinical presentations. Oral Lichen Planus (OLP) commonly involves buccal mucosa, tongue, or gingiva with a prevalence of 1-2%. It is a potentially malignant disorder with malignant transformation rate of 0.4-5%. Erosive and atrophic forms of OLP have relatively more potential for malignant transformation.

Alexander in 1921 was first to describe the possibility of association between ABO blood groups and malignancy. A close association between gastric cancer and blood group A (Aird et al. and Walter). In Indian population, the patients with blood group A have predisposition for oral cancer (Tyagi et al). Studies show that there is increased risk of oral cancer associated with blood group A (Jaleel & Nagarajappa).

It is a disease of unknown etiology and with multifactorial pathogenesis which is a CD8+ T cell-mediated autoimmune disease. The CD8+ T lymphocytes induce keratinocyte apoptosis and cause epithelial basal cell layer damage. Genetic factors, lifestyle, and emotional stress can also contribute in the pathogenesis. In adults, women are affected more commonly than men.

A relationship between ABO blood groups and Oral lichen planus has been established. People with blood group A have a greater tendency to develop Oral lichen planus, a premalignant disorder. Blood group antigens, apart from being present on red blood cell membranes, are also present on epithelial cells of various other tissues, including the oral mucosa. The relative down regulation of glycosyl transferase, which is involved in the biosynthesis of A and B antigens, can be seen during the development of oral lesions (Mendel et al., Orntoft). Partial or complete deletion of epithelial blood group antigens due to aberrations in their synthesis brings about changes in their cell surface.

The altered antigen pattern on the cell surface is a tumor-related change, which can also be seen in precancerous condition like Oral lichen planus. H antigen is a blood group antigen present in all the individuals irrespective of blood group types. It is the precursor for the formation of A and B antigens. In people belonging to A and B blood groups, the precursor H antigen is converted to A and B antigen, respectively, whereas in O blood group individuals it remains in the original form. People with O blood group have the highest amount of H antigen, which affords protection against Oral lichen planus. Hence, O blood group people were least susceptible to develop Oral lichen planus, which is consistent with the results in the oral cancer patients.

Treatment of lichen planus is to control the episodic outbreaks that occurs, but the lesions are usually not completely cured. Reticular and plaque forms usually do not require treatment other than reassurance and follow up. The mild cases of erosive lichen planus are treated with topical corticosteroids combined with antifungal agents.

ABO Blood Group and Periodontal Disease⁴

Periodontal disease comprises a heterogeneous group of infectious disease that lead to pathologic destruction of

the periodontium. It is well known that periodontal disease can vary with respect to bacterial etiology, host response and clinical disease progression. Even though differences exist among the various types of periodontal disease, all share the common characteristic of complex host - bacterial interactions and the disease onset and progression reflect the balance between homeostasis and destruction of the periodontal tissue.

Bacteria, environmental influence, various host factors such as diabetes, smoking and genetic predisposition are considered to be major cause of periodontitis.

The tissue localization of the histo-blood group antigens show that antigens in the tissues correspond to the erythrocyte blood group, but the tissue expression is dependent on the secretor status of the individual. Secretor status is secretion of blood group antigens ABO (H), which may be a factor influencing the development of systemic oral diseases in the stratified epithelium. The expression of histo-blood group antigens depends on the level of cellular differentiation and maturation, and there is a sequential elongation of the terminal carbohydrate chain during the life span of the cell.

Basal cells usually exhibit the short carbohydrate chains that are A/B precursors, whereas A or B antigens may be seen in the spinous cell layer. Variation in the differentiation patterns among keratinized against non-keratinized epithelium plays a vital role in the expression of blood group antigens. Keratinized squamous layer may express A or B antigens in only very a small number of highly differentiated cells, leaving the precursor H antigen expressed on spinous cells.

Greater propensity for periodontal disease among O blood group individuals while the propensity was least among AB blood group individuals have reported in several studies. A significant association of periodontitis with Rh factor was seen with more individuals being Rh positive as compared with Rh negative.

ABO blood groups, Rhesus factor, and Behçet's disease⁵

Behçet's disease is a recurrent multisystem vasculitis characterized by oral ulcers, mucocutaneous disorders, and ocular findings. Behçet's disease may be life-threatening, affecting the central nervous system, large vessels, or gastrointestinal tract. A strong association with human leukocyte antigens (HLA)-B51 and TNF- α , IL-10, and IL-23R gene polymorphisms has been indicated in Behçet's disease.

Blood groups, red cell isoenzymes, hemoglobin variants, and serum proteins are the genetic markers in

human blood used for identifying human genetic variation. Antigens of the ABO blood group family have been known for a long time. The genes that determine the A and B phenotypes are found on chromosome 9p and are expressed in a Mendelian co dominant manner. ABO blood group is a useful and valuable source because inheritance of blood groups is not affected by any environmental factors. Trial case studies have shown significant associations of particular HLA antigens and also ABO blood groups with various autoimmune diseases such as juvenile diabetes, multiple sclerosis, rheumatoid arthritis, psoriasis and celiac disease.

ABO (H) Antigens of Blood Types in the Saliva of Patients with Oral Cancer⁶

Relation between the A or B blood group antigens and malignant tumors have been studied. Rat colon carcinoma cells indicate that cells with a expressions are tumorigenic but cannot be compared with human carcinogenesis because the expression of blood group antigen is opposite that seen in the human which was done experimental species.

In the normal oral cavity, keratinized epithelium in the palate or gingiva shows little or no expression of A or B blood group antigen. Since a change from a non-keratinized to a keratinized differentiation pattern is a characteristic of many oral carcinomas and potentially malignant lesions, the lack of expression of blood group in such lesions could be due to a change in differentiation pattern of the epithelium.

Leukoplakias that developed in the buccal mucosa show expression of A antigen, while histologically it appeared as keratinized lesions which indicate that loss of antigen is not necessarily associated with hyperkeratinization or even with oral cancer. The secretor status in saliva of a group of patients with chronic hyperplastic candidiasis with control group where 68% of those having the disease were non-secretors, whereas the percentage of non-secretors in the control group was statistically significantly lower (Lamey et al, 1991).

Candidal leukoplakia was considered as belonging to precancerous lesions, therefore, a hypothesis that the non-secretor status may have an impact in the pathogenesis of oral cancer in non-secretors needs to be considered. Non-secretors have a more intensive disease, with higher probability of gaining epithelial dysplasia leading to a conclusion that non-secretors might be more prone to the development of oral carcinoma.

Precancerous lesion that has a more significant malignant alteration is erythroplakia, but Vidas et al. research did not include a single examinee with such an

alteration in oral cavity. Significantly larger percentage of non-secretors found in patients that have precancerous lesion with strong epithelial dysplasia, therefore more non-secretors can be found among patients with oral carcinoma.

Conclusion

Identification of blood grouping not only helps in blood transfusion, but also helps in predicting the risk of infection and oral lesions in particular blood group. Each blood group are predisposed to certain lesions which can be detected on regular monitoring and screening. Apart from adverse habits predisposing to oral lesions, identifying the blood group and appropriate cessation therapy and counselling will help in controlling the rapidly growing oral cancer.

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Dentinogenesis Imperfecta: Case Report and Review of Literature

Dr. Jaget Reddy MDS¹, Dr. Christeffi Maybel MDS², Dr. P. Sai Archana MDS³, Dr. Sivansatish MDS⁴

¹ HOD,
^{2,4} Reader,
³ Lecturer,
Dept. of Oral Medicine &
Radiology, Chettinad Dental
College and Research Institute,
Kelambakkam, Chennai

Abstract

Dentinogenesis imperfecta (DI) is a developmental tooth disorder affecting dentin, characterized by the presence of opalescent dentin caused due to autosomal dominant pattern resulting in a greyish blue to brownish discoloration of the teeth. It can affect both deciduous as well as a permanent dentition. This case report describes a 26-year-old male patient with clinical and radiographical characteristic features of dentinogenesis imperfecta.

Keywords: Autosomal dominant, dentinogenesis imperfecta, dystrophic dentin, pulpal space obliteration.

Introduction

Dentinogenesis imperfecta (DI) or hereditary opalescent dentin, was first described in the late 19th century. It is a localized mesodermal dysplasia affecting both the primary and permanent dentition. The disease is inherited in an autosomal dominant mode with high penetrance and a low mutation rate. Parents seek for dentist's advice and treatment during tooth eruption. Early diagnosis and treatment of DI is recommended, as it may prevent or intercept deterioration of the teeth causing cavity leading to disturbance in the function and in severe cases changes in occlusion. The esthetic concern proves to be a biggest challenge if not diagnosed early and intervened. So the purpose of this article is to make the general dentists and specialists to identify the disease early and be aware of its treatment options present when encountered with a patient suffering from this hereditary disease.

had tooth fracture. His family history revealed the presence of a similar manifestation in his mother, father, grandfather, as well as his child.

Intra oral examination revealed a generalized greyish-bluish opalescence in all the upper and lower teeth along with attrition of teeth, root stumps in 16, 13, 34 and missing teeth in relation to 36, 46 (Image 1, 2). Patient's Intra-oral periapical radiography (Image 3) revealed generalized obliteration of coronal and radicular pulp chamber in teeth. OPG (Image 4) revealed obliteration of the pulp chamber with bulbous crowns. No radiodensity differences are seen between enamel and dentin. Hence on confirming the diagnosis, the patient was referred to prosthodontics for veneer placement in his teeth.

Case Report



Image - 1



Image - 2

A 26-year-old male, reported to the Department of Oral Medicine with a chief complaint of attrited teeth in his upper and lower jaw and has a desire to place cap on his teeth. Patient has a history of attrited teeth along with yellowish-brown discoloration since childhood. He had neither pain nor sensitivity and claims he never

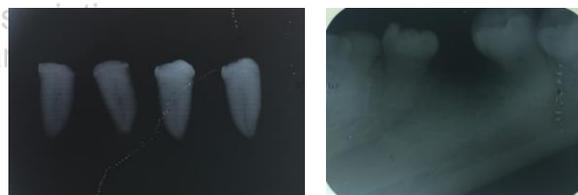


Image - 3 IOPA



Image - 4

Discussion

Human dentition is subjected to considerable variations in size, form and number of teeth as well as in structure of dental tissues. Disorders in teeth may occur due to various reasons and affects various layers of teeth depending on the time of formation. DI was first recognized by Barret in 1882. The term was coined by Robert and Schour in 1939⁽¹⁾. The first published report describing the disorder as an enamel defect was reported by Talbot as quoted by Witkop. The term 'hereditary opalescent dentin' was first used by Skillen

, Finn and Hodges to describe the brown translucent enamel that have an opalescent sheen and are lacking in pulp chambers. Since DI is inherited in an autosomal dominant disease, there is a 50% chance that a child born to an affected parent will themselves be affected (2). This also indicates uniform gene expression and complete penetrance for the gene in the family. Mutations in gene or trauma cause dysregulation in formation of structures. If it occurs during formation of enamel it results in the formation of amelogenesis imperfecta and if it occurs during dentin formation it results in dentinogenesis imperfecta. Mutations in the genes encoding the major protein constituents of dentine seem to underlie most hereditary dentine defects. Three distinct protein products are formed from the initially translated polypeptide: dentine sialoprotein (DSP), dentine glycoprotein (DGP) and dentine phosphoprotein (DPP) (3)

Shields et al Classified Dentinogenesis Imperfect into three types (4)

DI type 1 - associated with osteogenesis imperfecta.

DI type 2 - has essentially the same clinical radiographic and histological features as DI type but without osteogenesis imperfecta;

DI type 3 - is rare and is only found in the triracial Brandywine population of Maryland.

Clinically with this disorder, both dentitions are affected. The color of the teeth varies from brown to blue, sometimes described as amber or gray, with an opalescent sheen. The enamel may show hypoplastic or hypocalcified defects in about one-third of the patients and, in an affected patient, tends to crack away from the defective dentin (5). The exposed dentin may undergo severe and rapid attrition. Radiographically the teeth affected shows obliterated pulpal chambers in coronal and radicular pulp. Bulbous crowns can be seen with short roots.

Histologically- the enamel, although normal in structure, tends to crack. The dentin-enamel junction is not scalloped. In most cases the structure of the mantle dentin is normal, whereas the dentinal tubules of the circumferential dentin are coarse and branched and the total number of tubules is reduced. The presence of an atubular area in the dentin with reduced mineralization and a reduced number of odontoblasts are consistent findings. Pulpal inclusions and much interglobular dentin are also frequent. The biochemical characteristics of the dentin include a collagen defect and a primary defect in the calcifying matrix (6).

Syndromes that are associated with dentinogenesis imperfect are Ehlers Danlos syndrome (7), Goldblatt syndrome, Brachio-skeletogenital syndrome, Osteodysplastic primordial short stature with severe microdontia, opalescent teeth, and rootless molars

Differential diagnosis

Dentin dysplasia (DD) Type I clinically has normal appearing crowns, but radiographically the teeth have pulpal obliterations and short blunted roots **DD Type II** has the same phenotype as Dentinogenesis imperfecta Type II in the primary dentition but normal to slight blue- gray discoloration in permanent dentition. Both DD and DI have amber tooth coloration and obliterated or occluded pulp chambers. However, the pulp chambers do not fill in before eruption in DD Type II. A finding of a thistle-tube shaped pulp chamber in a single-rooted tooth increases the likelihood of DD diagnosis. The crowns in DD are usually are normal in size, shape, and proportion while the crowns in DI typically are bell-shaped with a cervical constriction. The roots in DD usually are not present or appear normal while the roots in DI typically are short and narrow. Association of periapical radiolucencies with non-carious teeth and without obvious cause is an important characteristic of DD Type I.

Fluorosis and non-fluoride-induced opacities needs to establish differences between symmetrical and asymmetrical and/or discrete patterns of opaque defects (8).

Congenital erythropoietic porphyria is a condition resulting from an inborn error of porphyrin metabolism. This deficiency leads to haemolytic anaemia, photosensitivity, blistering of the skin, and deposition of red-brown pigments in the bones and teeth.

Rhesus incompatibility- The discolouration which ranges from yellow through to green, brown and grey to black is usually found at the necks of teeth and the enamel hypoplasias are usually located in the coronal third of the teeth.

Tetracyclines have the ability to chelate calcium ions and to be incorporated into developing teeth, cartilage and bone, resulting in discolouration of both the primary and permanent dentitions. This permanent discolouration varies from yellow or grey to brown depending on the dose or the type of the drug received in relation to body weight.

Hence after diagnosis of disease, the treatment modalities for dentogenesis imperfect are as follows

The Dental approach for managing DI (9) -

- ❖ Vary depending on the severity of the clinical expression
- ❖ General considerations and principles of management Providing optimal oral health treatment for DI

Aims:

- ❖ Preventing severe attrition associated with enamel loss
- ❖ Rapid wear of the poorly mineralized dentin
- ❖ Rehabilitating dentitions that have undergone severe wear,
- ❖ Optimizing esthetics
- ❖ Preventing caries and periodontal disease

The clinician must be cautious in treating individuals with osteogenesis imperfecta as there is increased risk of bone fracture in the case of dentinogenesis imperfecta associated with osteogenesis imperfecta.

Restorative care

Routine restorative techniques often can be used effectively to treat mild to moderate DI in more severe cases with significant enamel fracturing and rapid dental wear, the treatment of choice is full coverage restorations in both the primary and permanent dentitions. In children the treatment will range from composites in anterior teeth and stainless steel crowns in posteriors whereas it's a mixture of treatments which may range from bleaching to veneering of teeth. The success of full coverage is greatest in teeth with crowns and roots that exhibit close to a normal shape and size, minimizing the risk of cervical fracture and loss of vertical dimension. Cases having severe loss of coronal tooth structure and vertical dimension may be considered candidates for overdenture therapy. Different types of veneers can be used to improve the esthetics and mask the opalescent blue-gray discoloration of the anterior teeth

Bleaching has been reported to lighten the color of DI teeth with some success; however, because the discoloration is caused primarily by the underlying yellow-brown dentin, bleaching alone is unlikely to produce normal appearance in cases of significant discoloration

Endodontic considerations: Some patients with dentinogenesis imperfecta will suffer from multiple periapical abscesses from pulp exposure due to extensive coronal wear. The potential for periapical abscesses is an indication for periodic radiographic surveys on individuals with DI. Because of pulpal obliteration, apical surgery may be required to maintain the abscessed teeth. Periapical curettage and retrograde amalgam seals have demonstrated short-term success in teeth with short roots

Occlusion: Class III malocclusion with high incidences of posterior crossbites and openbites occur in DI Type I and should be evaluated ⁽¹⁰⁾.

Multidisciplinary approaches are essential in addressing the complex needs of the individuals affected with DI.

Preventive care

Regular periodic examinations can identify teeth needing care as they erupt. Meticulous oral hygiene, calculus removal, and oral rinses can improve periodontal health. Fluoride applications and desensitizing agents may diminish tooth sensitivity.

Discussion

Early identification and preventive interventions are critical for individuals with DI in order to avoid the negative social and functional consequences of the disorder.

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Non-Surgical Management of an Extensive Periapical Lesion in Immature Non-Vital Teeth: A Case Report

Dr G Ramya Harika ¹, Dr Cruz Nishanthini MDS ², Dr Saravanan Poorni MDS ²,
Dr Dasarathan Duraivel MDS ², Dr Manali Ramakrishnan Srinivasan MDS ²

¹ CRRRI Student,
Sri Venkateswara Dental College
and Hospital, Chennai, India
² Dept. of Conservative Dentistry
and Endodontics,
Sri Venkateswara Dental College
and Hospital, Chennai, India

Abstract

Physiological root end development and closure takes up to 3 years following tooth eruption. Any traumatic injury during this period will hamper the root end development. Large periapical lesions occur as sequelae of pulpal disease and often present without any acute pain and are usually diagnosed on routine radiographs. Endodontic therapy must be aimed at the elimination of bacteria from the root canal system. This creates a favorable environment for the root end formation or induces an apical barrier in a tooth that has lost the regenerative potential. Availability of multitudinal materials which when used perspicaciously provide excellent results and annihilate the need for surgical intervention. Circumstantiated here is a case with a large periapical lesion in relation to the maxillary left central and lateral incisors, which resolved on treatment using the traditional gold standard material, Calcium hydroxide.

Key Words: Apical barrier, Calcium hydroxide medicament, Non-surgical endodontic management, Traumatic injury to immature teeth.

Introduction

Traumatic dental injuries (TDI's) are often accident or sport related. These injuries are encountered more commonly in permanent teeth of children and young adults, frequently the maxillary anteriors. ⁽¹⁾

Root completion and closure of apical foramen occurs nearly 3 years after its eruption. ⁽²⁾ A significant consequence of traumatic injuries in these teeth with immature apex is the contusion of the pulp at the apical portion and severance of its blood supply. ⁽³⁾ This results in pulpal necrosis where the possibility of revascularization is implausible. Revascularization potential or reversal of pulpal damage depends on the intensity of dental injury. ⁽⁴⁾

The goal of endodontic therapy must be aimed to return the teeth to a state of normalcy in health and function by non-surgical techniques. ⁽⁵⁾ Surgical interventions are recommended only when non-surgical techniques have failed. ⁽⁶⁾

The ultimate challenge while endodontically treating teeth with open apices is obtaining an apical seal. The conventional treatment protocol for such cases with large periapical lesions consists of a chemo-mechanical preparation of the root canal system including a long term intracanal medicament of calcium hydroxide, which provides an alkaline pH inside the root canal and dentinal tubules to kill the bacteria and neutralize the bacterial toxins, which are the source of stimulation of inflammatory mediators. ^(7,8) This treatment also stimulates the formation of hard tissue barrier at the apical one third of the root. ⁽⁹⁾

This report presents a case of non-surgical management of immature non-vital maxillary central and lateral incisors with large periapical lesion.

Case Report

A 14 year old female patient reported to the department of Conservative Dentistry and Endodontics of Sri Venkateswara Dental College and Hospital, Chennai, with a chief complaint of discoloration in her upper front teeth for the past 3 years, for which no treatment was acquired. Patients medical and dental history was non-contributory.

Subjective and objective examination revealed Ellis and Davey's class 4 traumatic injury in #21, #22, with no mobility. The teeth did not respond to cold vitality test using frozen cotton pellets and Endo-Frost (Roeko Endo-Frost, Coltene, Germany) and Electric pulp test (Digitest, Confident, Bangalore, India). There was no tenderness to percussion. Intra oral periapical radiograph examination revealed a periapical lesion in relation to #21, #22. (Fig.1)



Figure 1: Pre-operative radiograph of #21 & #22

Based on the clinical and radiographic findings a diagnosis of immature non-vital teeth with chronic periapical pathosis was made. Non-surgical endodontic therapy was planned for #21, #22. Informed consent was obtained from the patient.

During the first visit, endodontic access was gained for the teeth #21, #22 using endo access bur (Maillefer, Dentsply, Ballaigues, Switzerland). Canal was explored with #10 Kerr file (Mani, Inc.; Tochigi, Japan). Pulpal remnants were removed using a barbed broach #25 (Pffifer Dent, Sallanches). Working length was

determined by Ingle's radiographic method (Fig.2). Cleaning and shaping was done. Canal was irrigated using 4ml of 5.25% sodium hypochlorite (Prime Dental Products, Thane, India) and 0.9% normal saline (Baxter, India pvt. Ltd., Tamil Nadu, India). Final irrigation done using 2% chlorhexidine (Stedman Pharmaceuticals Pvt Ltd., Thiruporur, Tamil Nadu).



Figure 2: Working length radiograph

After drying the canal with paper points (Maillefer, Dentsply, Ballaigues, Switzerland) a commercially available intra canal medicament of calcium hydroxide (Septodont, Soul dental solutions, Chandigarh, India) was placed in the canal using a lentulospiral (Maillefer, Dentsply, Ballaigues, Switzerland). Access cavity was then temporized with zinc oxide eugenol cement. (Deepak enterprise, Mulund(E), Mumbai, India).

The patient was kept on regular follow up and a fresh intra canal medicament of calcium hydroxide was placed every 15 days. The medicament was generously compacted so that it comes in contact with the periapical tissues. Periodic periapical radiographs were taken to assess the status of the teeth.

After 6 months, there was radiographic evidence of resolution of the periapical lesion. Following this obturation of #21, #22 was done with #80 size 2% guttapercha (Maillefer, Dentsply, Ballaigues, Switzerland) and zinc oxide eugenol sealer using cold lateral compaction technique. The access cavity was temporized with zinc oxide eugenol cement (Deepak enterprise, Mulund (E), Mumbai, India). (Fig 3, 4, 5) The coronal access cavity was restored with glass ionomer cement (GC Gold label, Japan) after a period of 1 week. A follow up radiograph was taken 6 months after the obturation i.e. 1 year after the treatment was initiated. This revealed exemplary resolution of the periapical lesion. (Fig. 6)



Figure 3: Radiograph with master cone in place



Figure 4: Obturation radiograph of #22



Figure 5: Obturation radiograph of #21



Figure 6: 6-month follow-up after obturation

Discussion

The exact mechanism behind the formation of periapical lesion is not well understood, it is believed that the presence of an infected and necrotic pulp creates a viable environment for the multiplication of microorganisms. The toxins produced by these microorganisms stimulate the inflammatory mediators which lead to periapical lesions. (10) It has also been proven that the number of microorganisms in the canal and the size of the periapical lesion has a positive correlation. (11,12) According to Torneck (1970), in an immature tooth Hertwig's root sheath begins matrix formation followed by subsequent mineralization when infection is eliminated from the canal and bacteriostasis is maintained. (13)

Calcium hydroxide (molecular weight=74.08) which is a strong base (pH=12.5-12.8) is thixotropic, insoluble in alcohol and water. It was introduced into endodontics in the year 1920 by Hermann as a biocompatible material for direct pulp capping. (14) It has also been employed for apexification since 1966. (15) Apexification is a method of inducing apical closure in immature teeth (with open apex) through the formation of mineralized tissue in the apical region in non-vital teeth. The mineralized tissue may be composed of osteocementum, osteodentin, bone or any combination of the three. (16) Apexification takes a period of years for organization and re-arrangement of the periapical bone, root and root canal filling materials and is not a static process. (17)

MTA (Mineral trioxide aggregate) can be used as an alternative to calcium hydroxide, the main advantage being the shorter treatment time and single visit apexification. (18) Biodentine is a newer material which has the properties superior to MTA. Its setting time is accelerated by the addition of calcium chloride which allows for a single visit apexification and obturation. (19) There are no long term clinical trials and investigations for these materials in comparison to calcium hydroxide. Evidence of superiority of their healing compared to calcium hydroxide is insufficient as well. (20,21)

Calcium hydroxide has the ability to cause necrosis, thereby destroys the epithelium and allows the intrusion of the connective tissue into the lesion which

results in healing of the lesion as stated by Sahliin 1988.⁽²²⁾

According to Souza et al⁽²³⁾, extrusion of calcium hydroxide beyond the apex leads to:

1. Anti-inflammatory action by formation of calcium proteinate bridges and inhibition of phospholipase.
2. Neutralization of acid products which cause the clastic activity.
3. Activation of alkaline phosphatase and
4. Antibacterial action.

Since calcium hydroxide is a radiolucent paste, the extent of it is difficult to assess radiographically. Calcium hydroxide which is extraradicular has resorbed without any apparent side effects and has proven successful both clinically and radiographically.^(24,25) The beneficial osseoinductive effects of calcium hydroxide when in close contact with periapical tissues was proposed by Ghose et al who also stated that the type of apical barrier formed will not be affected by the number of calcium hydroxide dressings.⁽²⁶⁾

Kaiser proposed apical closure and formation of calcified barrier using calcium hydroxide and camphorated parachlorophenol (CMCP) in 1964⁽²⁷⁾. Periapical repair and apical barrier formation of a pulpless tooth using calcium hydroxide was reported by Mehmet⁽²⁸⁾. Resolution of a large cyst like periapical lesion with calcium hydroxide paste was reported by Caliskan and Turken.⁽²⁹⁾ Healing of a chronic periapical lesion using calcium hydroxide mixed with chlorhexidine in 7 months was reported by Hitesh Sonigra et al.⁽³⁰⁾ This report presents a similar case with radiographic evidence of resolution of the lesion in a period of 6 months.

Calcium hydroxide also has some negative effects on the tooth structure as its long term exposure leads to reduced fracture resistance of the dentinal tubules with chances of tooth fracture.^(31,32,33) Some authors also advocated the deleterious effects if the material extruded beyond the apex under high pressure.^(34,35) Despite of the disadvantages, this paste may be used at any stage of root development due to its alkalinity and peculiar ability to heal large periapical lesions, infection control, ease of use and low cost.⁽³⁶⁾

The other treatment modalities available for managing such cases include, conservative root canal treatment, decompression technique, aspiration and irrigation technique, surgical treatment (apicoectomy and retrograde filling).⁽³⁷⁾ Surgery also has certain limitations as it leads to reduced root length of the existing short immature tooth, damage to adjacent vital teeth and anatomic structures, bone loss, apical walls

being thin may shatter on touch with a rotary bur, pain, discomfort and the young patient may not be cooperative and the cost of the treatment procedure.⁽³⁸⁻⁴⁷⁾

Conclusion

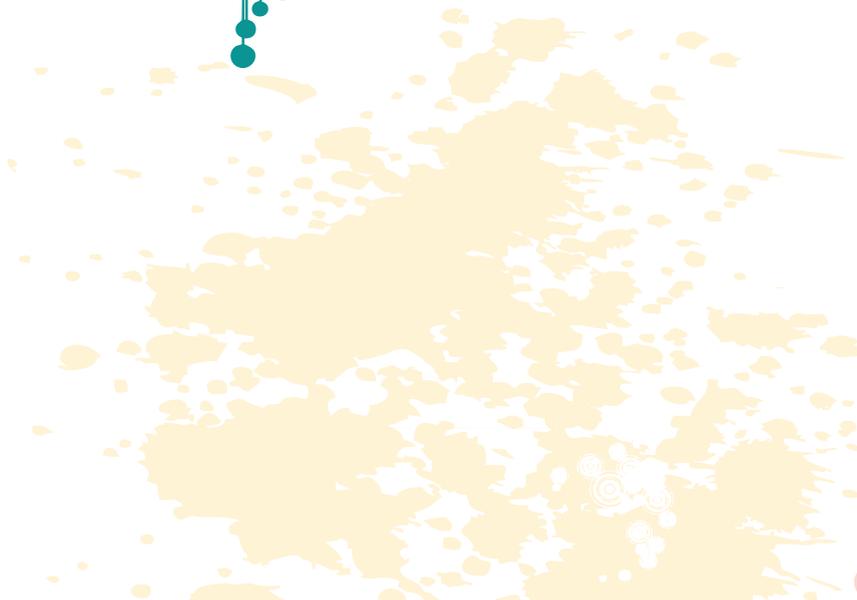
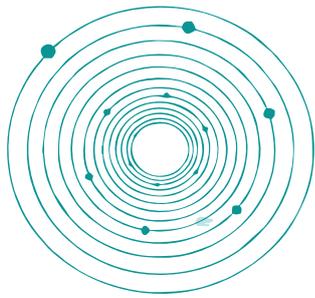
Non-surgical management of periapical lesions should be given the prime consideration over surgical techniques as the aim of the treatment is removal of the source of infection which can be accomplished non-surgically.

The current case report demonstrates a successful periapical lesion healing and closure of the apex by non-surgical endodontic treatment using calcium hydroxide which is an effective alternative to interventional surgical procedures.

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