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MESSAGE

Dear Colleagues,

The rising tide of violence against doctors, including those in the dental profession, is a deeply troubling trend that we must confront head-on. As healthcare providers, our primary mission is to care for our patients, but the increasing incidents of aggression and hostility threaten our ability to do so safely. It is crucial that we unite as a profession to advocate for stronger protection and to raise awareness about the profound impact this violence has on our practice and well-being. Our commitment to patient care must be matched by a commitment to our own safety and security. It is imperative that both governmental and societal measures are strengthened to ensure the safety and well-being of our healthcare providers, allowing them to continue their vital work without fear of harm. Let us work together to ensure that our profession remains a safe and respected field, where we can continue to serve our communities without fear.

Sincerely

Dr.Prameetha George Ittycheria

Editor-IDA Thiruvalla.

MESSAGE

Greetings On Behalf of IDA Thiruvalla Office,

As we prepare for yet another season of Onam festivities, let us not forget the people of Wayanad who are struggling to come to terms with the catastrophic event that shook their lives and brought sorrows everywhere. We are grateful to our members for their immediate response and generous contribution to the cause heeding to the request of help from the state office and the branch office. Together let us rebuild the shattered lives of the survivors and secure them a better future.

IDA Thiruvalla branch continues its exceptional commitment towards taking dentistry to greater heights and reemphasizes the need to upgrade ourselves regularly. In line with our motive, we successfully conducted a CDE in the second quarter on the use of CBCTs and digital dentistry in routine dental practice. Our dynamic CDH wing along with the efficacious WDC wing conducted several awareness classes and checkup camps for the differently abled and their caregivers and kudumbasree members. Mother's Day was celebrated in a unique way with the mothers in destitute home with homebaked goodies by WDC member. We were able to make our presence felt impactfully among the public by organising a bike rally involving the MarThoma Youth along with a mobile LCD screen with anti-tobacco messages on MC Road, Thiruvalla, on account of World No Tobacco Day.

As we release the second issue of TAPER, we commend the remarkable job done by our Journal Editor Dr Prameetha George Ittycheria in ensuring that it caters to young dentists, academicians, as well as seasoned practitioners alike. Hope the readers find it educative and enriching to their daily practice.

DR SEEMA JOSEPH
Honorary Secretary
IDA Thiruvalla

MEDICAL PROFESSION AT THE RECEIVING END : AN ANALYSIS OF CRIMINAL LIABILITY FOR DOCTORS UNDER THE NEW PENAL LAW

Dr. Zubin Cherian, B.D.S. LLB

ABSTRACT

Bharatiya Nyaya Sanhita, 2023 (BNS) was passed by both the Houses of Parliament and assented by the Hon'ble President of India on 25th December, 2023. The Act came into force from 1st July 2024. This Act replaces 'The Indian Penal Code, 1860' which was enacted during the colonial era by the British led government. Even though several amendments were made in it by the Central Government of India since independence, it did not serve the purpose for which it had been enacted. Now the Government of India has felt it necessary to revamp the existing criminal laws in order to strengthen the law and order of our country. In order to make these existing criminal laws relevant to the contemporary situation, the Government of India has made substantial changes to the criminal laws of our country. The intention of the Government in enacting these new criminal laws is to provide speedy justice to the common man by simplifying the legal procedures. However, the Indian Medical Association (IMA) has expressed significant concern over the BNS and its provisions related to the medical negligence. The controversy centers around Section 106(1) of the BNS, which stipulates a two-year imprisonment for medical practitioners convicted of causing death by negligence during medical and surgical procedures. This article analyses the implications of the new penal law to the medical fraternity.

Key Words : Culpable Homicide, Death, Imprisonment, Medical Negligence, Negligent Act.

INTRODUCTION

Criminal jurisprudence was in existence before the British Rule in India. But there was no uniformity in the administration of criminal justice in India. The Britishers found difficulty in following the system of administration of criminal justice which was being followed in various parts of India. For ease of administration of criminal justice, the Britishers found it necessary to codify the Penal law in India. So a Law Commission was appointed in 1834 with Lord Macaulay as its President and Macleod, Anderson and Millet as the Commissioners to study the desirability of preparing a penal code for India to bring uniformity in criminal law. After wide circulation and thorough revision, the commission finally submitted its final report to the Legislative Council in 1856. After prolonged discussions and consideration, the draft penal code was approved with modifications by the council. It received the assent of the Governor-General-in-Council on October 6, 1860 and was brought into force on 1 st January, 1862.

The Indian Penal Code (IPC) is a comprehensive piece of legislation. It comprises of 23 chapters and 511 sections. The code embodies the penal law of the country. It is an admirable compilation of substantive criminal law covering a vast range of anti-social behaviour in relation to the state or society as it existed at that time. The IPC is one of the most comprehensive penal code among the penal codes of various countries in the world. The statute, though of colonial vintage, has shown its resilience even after 160 years of its existence. The IPC, which was a colonial legislation, was retained as the main penal law of the country even after India became independent in 1947. Though it had stood the test of time, it was felt that changes have to be brought in the penal law of the country to meet the changing situation prevailing in our country. For this purpose the Parliament has enacted a new penal code titled, 'The Bharatiya Nyaya Sanhita, 2023" to replace The Indian Penal Code, 1860. The Act received the assent of the Hon'ble President on 25 th December 2023 and it came into force from 1 st July 2024. This Act has serious implications for the medical professionals especially the provisions dealing with death due to negligence of the doctors.

CAUSING DEATH BY NEGLIGENCE

Section 106(1) of the BNS, 2023 deals with the offence of causing death by negligence.

According to this sub-section, "Whoever causes death of any person by doing any rash or negligent act not amounting to culpable homicide, shall be punished with imprisonment of either description for a term which may extend to five years, and shall also be liable to fine; and if such act is done by a registered medical practitioner while performing medical procedure, he shall be punished with imprisonment of either description for a term which may extend to two years, and shall also be liable to fine."

Explanation to this Sub-Section provides that : "For the purposes of this sub section, 'registered medical practitioner' means a medical practitioner who possesses any medical qualification recognized under the National Medical Commission Act, 2019 (30 of 2019) and whose name has been entered in the National Medical Register or a State Medical Register under that Act."

IMPLICATIONS OF THIS SECTION TO SUB PRACTITIONERS

For a medical practitioner to be held liable for an offence under this sub-section, the following ingredients need to be established:

1)The medical practitioner should have caused the death of any person who was a patient under his care by doing an act;

2)Such an act should be rash or negligent but not amounting to culpable homicide;

3) Such an act should have been done by a registered medical practitioner while performing a medical procedure;

4)Such registered medical practitioner should be a person who possesses any medical qualification which is recognized by the National Medical Commission Act, 2019 (NMC Act);

5)The name of such registered medical practitioner should have been found entered in the National Medical Register or State Medical Register under the NMC Act.Punishment prescribed under this Sub-Section for causing death by negligence

The punishment prescribed for committing an offence under this sub-section is five years imprisonment and fine. However, in case if the offence is committed by a registered medical practitioner, it is two years imprisonment and fine.

CULPABLE HOMICIDE

Section 100 of the BNS, 2023 defines the offence of culpable homicide and Section 105 of the BNS, 2023 prescribes punishment for culpable homicide not amounting to murder. According to Section 100 of the BNS, which provides that – "Whoever causes death by doing an act with the intention of causing death, or with the intention of causing such bodily injury as is likely to cause death, or with the knowledge that he is likely by such act to cause death, commits the offence of culpable homicide." Section 105 of the BNS, 2023 prescribed punishment for committing the offence of culpable homicide not amounting to murder. According to this section, the offender shall be liable for imprisonment for life or imprisonment for not less than 5 years but which may extend to 10 years and fine.

INTENTION OR KNOWLEDGE

Intention and knowledge are used as alternate ingredients to constitute the offence of culpablehomicide. However, intention and knowledge are two different things. Intention is the desire to achieve a certain purpose. Intention or the mental element in committing the crime is an essential ingredient of culpable homicide. But intention is difficult to legally establish by direct evidence, as it essentially is a manifestation of a person's mind and inner feelings, which requires going into a person's mind to determine what intention the person had.

It can be gathered from the attendant circumstances of the case and more particularly from the actions of the accused. Knowledge means consciousness. The offender should reasonably expect that the consequences of his act would probably result in the death of a person, even if he did not intend the death. The word 'likely' as used in Section 100 is to denote a lower degree of likelihood.

RASH OR NEGLIGENT ACT

The doing of a rash or negligent act which causes death, is the essence of Section 106(1) BNS, 2023. According to Section 3(4) of the Act, which provides that – "In every part of this Sanhita, except where a contrary intention appears from the context, word which refer to acts done extend also to illegal omissions. Therefore, if an illegal omission occurs as a result of negligence, which results in death, then this section will apply. The term 'negligence' as used in this section, does not mean mere carelessness. The rashness or negligence must be of such nature so as to be termed as a criminal act of negligence or rashness.

NEGLIGENCE

The noted jurist, Winfield has defined negligence as "the breach of a legal duty to take care which results in damage, undesired by the defendant to the plaintiff." From the above statement, it can be very well seen that negligence comprises of the following elements:

a) Existence of a legal duty; b) Breach of that legal duty; c) Resultant damage caused by that breach.The concept of negligence can be summarized in the words of Alderson, B thus –"Negligence is the breach of a duty caused by omission to do something which a reasonable man guided by those considerations which ordinarily regulate the conduct of human affairs would do or doing something which a prudent and reasonable man, would not do."Negligence is the context of medical profession necessarily calls for a treatment with adifference to infer rashness or negligence on the part of a professional, in particular a doctor, additional considerations apply. Traditionally, the standard of care in law has been determined according to the Bolam test. This test had been laid down in the famous English case of Bolam V. Friern Hospital Management Committee [1957] 1WLR 582. The rule laid down in this case is known as the Bolam test. This is a test that can be carried out to ascertain whether a doctor or other medical professional has breached their duty of care to a patient. According to this test, if a doctor reaches the standard of a responsible body of medical opinion, they are not negligent. This basic principle relating to medical negligence has been accepted by the Supreme Court of India as the standard test for medical negligence (Jacob Mathew V. State (2005) 6 SCC 1). The criminal law in India has invariably placed the medical professionals on the pedestal different from ordinary person, even in the now replaced IPC, 1860. The Supreme Court of India relaxed the norms for doctors with regard to criminal liability for medical negligence by adding the requirement of "gross" medical negligence. However, they have recognized the culpability of doctors through civil liability by rewarding large compensation awards in its recent judgments.

CONCLUSION

Both the doctors practising modern medicine and the Indian Medical Association (IMA) have raised objections to Section 106 in the BNS. According to them, if found guilty, imprisonment may become mandatory for medical practitioners. The Indian Medical Association has pointed that there would be no criminal intent on the part of the doctor while treating a patient and as such there is no negligence on the part of doctors to attract criminal prosecution. According to them, Section 26 in the BNS which provides that – "Act not intended to cause death, done by consent in good faith for person's benefit" would be considered by the investigating officers before registering criminal cases or proceeding with criminal charges against doctors and according to them, in the rarest of rare cases, which can be considered as recklessness; the investigating officers could refer the case to an expert committee for opinion.

Doctors are upset over the fact that the new rules have made it mandatory for doctors to serve jail term if they are found guilty of negligence not amounting
to culpable homicide. Previously under Section 304-A of IPC, punishment for medical negligence by doctors in terms of imprisonment was not mandatory. Doctors were imposed a fine or a jail term extending up to two years under the IPC. As it stands today, the liability in case of medical negligence by doctors exists in both civil and criminal laws of our country.

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ARTIFICIAL INTELLIGENCE- A WARDING CHARM TO PEDIATRIC DENTISTRY.

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ABSTRACT
AI refers to the broad field of computer science that focuses on creating intelligent machines that can perform tasks that would normally require human intelligence, such as reasoning, perception, and decision-making. AI technologies are poised to revolutionize the way pediatric dental care is delivered, offering unprecedented opportunities for early detection, personalized treatment, and improved patient outcomes. This article explores the various applications of AI in pediatric dentistry and its potential to shape the future of children's oral health.
Keywords: Artificial Intelligence, pediatric dentistry, ECC management, Orthodontic diagnosis

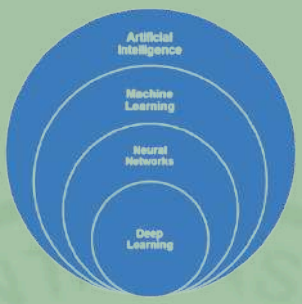
INTRODUCTION

Artificial intelligence (AI) is a field of computer science that engages in rendering machines the ability to look like they have human intelligence or the capability to replicate intelligent human behaviors[1] The advent of artificial intelligence in healthcare has been groundbreaking, reshaping the way of diagnosis, treatment plan and healthcare research by producing more accurate diagnoses and enabling more personalized treatments. Many studies on AI applications in dentistry are undergoing or even have been put into practice in the aspects such as diagnosis, decision-making, treatment planning, prediction of treatment outcome, and disease prognosis etc [2].

TECHNOLOGY OF AI

AI has diverse subfields. Machine learning (ML) and deep learning (DL) are the two major branches of AI that are used in medicine and dentistry. ML develops algorithms and statistical models using computers and help improve our cognition and understanding. It includes training algorithms on big datasets, detect patterns and utilize these patterns to forecast or decide upon fresh data. This ability to generalize from past data to new situations is a core feature of machine learning [3]. On the other hand, DL is a subset of machine learning that uses artificial neural networks (ANN) to mimic the learning process of the human brain. They are trained using larger amounts of data and algorithms and are more accurate. Artificial Neural Network (ANN), comprises of tiny communicating units known as neurons that are arranged in layers. Deep learning is nothing but an ANN with multiple hidden layers allowing them to learn complex representations of data. A subclass of ANN, convolutional neural networks (CNN) designed to process structured grid data, such as images, is predominantly used in dentistry and general medicine [4].

Convolutional Neural Networks have proven invaluable for processing intricate and large dental images. CNNs excel at recognizing patterns, structures, and anomalies in dental images, enhancing the efficiency and accuracy of diagnoses, particularly in complex cases involving X-rays and 3D scans. ML models and algorithms improve the understanding and cognitive capabilities of dental professionals. They analyze patient data, medical records, and other relevant information to make predictions and treatment recommendations [5].



PRACTICAL APPLICATIONS OF AI IN PAEDIATRIC DENTISTRY

ECC- Prediction, Prevention, Early Treatment.

Early childhood caries (ECC) represents a significant public health issue affecting children worldwide. ECC is a term that encompasses any form of caries occurring in infants, toddlers, or pre-schoolers, and it can have severe implications for a child's overall health, development, and quality of life [6]. The condition often leads to pain, infection, and tooth loss, which can negatively impact a child's nutrition, speech, and learning abilities. Furthermore, untreated ECC has been linked to higher rates of hospitalization and increased healthcare costs, placing a considerable burden on healthcare providers. As such, accurate and timely diagnosis and treatment are crucial in terms of managing ECC and mitigating its detrimental consequences [7]. The factors responsible for ECC are environmental and behavioral, also including an underlying genetic factor. Researchers have come up with different genes and gene polymorphisms responsible for dental lesions in patients. Making use of single nucleotide polymorphisms (SNPs) for predicting the risk of dental caries could be a highly valuable tool for clinicians to accommodate prevention strategies during the early stages of a child's life and for parents in terms of inculcating improved eating habits, according to Zaorska, K. et al .[8] In their study, the researchers made use of artificial neural networks to predict the presence of dental caries based on polymorphisms. The data from such predictions could help avoid caries altogether in children by taking appropriate measures, incorporating early treatments for affected caries, and, thereby, improving the child's overall quality of life [3]. Wu et al. examined the use of machine learning and 16s rRNA sequencing to predict tooth decay by identifying bacterial communities present in an individual's oral cavity. The study used the oral microbiome of mother–child dyads (both healthy and caries-active samples) in combination with demographic–environmental factors and relevant fungal information to create a multifactorial machine learning model based on the LASSO-penalized logistic regression method. The study identified several bacterial species that were caries predictive, including Streptococcus mutans, Lactobacillus fermentum, and Prevotella histicola.

The model demonstrated an AUC (Area under the Curve) of 0.84 for predicting caries in children and 0.87 for predicting caries in mothers, indicating a strong predictive capacity. The researchers found that incorporating demographic and environmental factors into the model and emphasized the importance of considering multiple factors when predicting dental caries risk [9]. The findings reveal that machine learning algorithms can be a promising way to enhance the prediction, detection, and management of ECC by achieving high accuracy, sensitivity, specificity, and AUC values. It seems that the versatility of these algorithms can allow targeted preventive measures, improved clinical decision-making, and tailored interventions for ECC management [7].

PEDIATRIC RESTORATIVE DENTISTRY

Application of AI for tooth restoration design Digital dentistry by using computer-aided design and computer-aided manufacturing (CAD-CAM) systems benefits from dental software systems and intraoral scanners to provide three-dimensional surface models of remaining teeth, on which dental restorations are designed. The designed restorations can be milled or printed in a final material. In this context, AI models can be used to automate the design of dental restorations through customized reconstruction

AI models provide a biogeneric tooth reconstruction as an output for a scanned image of the destructed tooth as an input. Thus, AI models can be employed for designing the occlusal surface of restorations [10].

ORTHODONTIC DIAGNOSIS

Accurate and precise orthodontic diagnosis relies on patient data, meticulously collected from a comprehensive database containing a detailed inventory of the patient's concerns. Patient assessment process in clinical settings faces challenges related to both accuracy and time constraints. Recognizing the need for enhanced efficiency, particularly in imaging and diagnosis, automation has become imperative, given the substantial time investment required for comprehensive patient evaluations and record compilation [11]. The transition to digital platforms for patient data collection, coupled with the establishment of digital databases for diagnostic and treatment purposes, has been facilitated by the integration of digital dentistry tools. While digital data acquisition has expedited the diagnosis and treatment phases, the analysis and decision making stages still rely on the expertise of a clinician. This combination of automation and clinician experience aims to strike a balance, ensuring both speed and accuracy in the orthodontic assessment process. Leveraging AI technology can not only streamline the diagnostic process but also contribute to increased accuracy, marking a significant advancement in orthodontic practices [12].

AUTOMATED CEPHALOMETRIC TRACAG

In the realm of pediatric orthodontics, the diagnosis and treatment planning processes heavily rely on cephalometry—a technique that measures soft tissue profiles, facial features, and skull bones. The process of manual cephalometric tracing is laborious and subject to human error in identifying landmarks and measuring cephalometric parameters. Efficiencies in time and accuracy are realized through the adoption of computer-assisted cephalometric tracing, minimizing the potential for human error and enhancing the diagnostic precision of cephalometric analysis. Various research articles indicate that the integration of AI-driven automated cephalometric tracing yields positive outcomes, having achieved a notably high success rate surpassing 90%, particularly in the differentiation of cephalometric landmarks using computerized software and web-based applications. This innovative technique harnesses artificial intelligence and employs cutting-edge deep learning methods to identify cephalometric landmarks, aiming to reduce human error and enhance overall time efficiency in orthodontic procedures [12].

ENHANCED PATIENT EXPERIANCE

AI technologies can significantly enhance the patient experience in pediatric dentistry by making dental visits more comfortable and less intimidating for children. Virtual reality (VR) and augmented reality (AR) applications can create engaging and immersive environments that distract and entertain young patients during dental procedures.

Moreover, AI-driven chatbots and virtual assistants can help educate children and their parents about oral hygiene practices, answer common questions, and provide post-treatment care instructions. These tools can improve communication between the dental team and patients, ensuring that children receive the best possible care and support [13, 1]).

OPTIMISED DENTAL PRACTISE MANAGEMENT

AI can streamline various aspects of dental practice management, allowing pediatric dentists to focus more on patient care and less on administrative tasks. AI-powered software can automate appointment scheduling, billing, and inventory management, reducing the burden on dental staff and minimizing the risk of human error. Additionally, AI can analyze patient data to identify trends and patterns, helping dental practices optimize their operations and improve efficiency. For example, predictive analytics can forecast patient appointment cancellations, enabling practices to adjust their schedules accordingly and reduce downtime [15, 16]

FUTURE APPLICATIONS OF AI

AI in pediatric dentistry has the potential to completely transform the field by improving patient care, shortening procedures, encouraging youngsters to have healthier teeth, with the help of algorithms and robots. The following are some possible areas for growth:

- Patient Interaction Robots: Humanoid robots, such as Nao, can be employed to engage with children, helping to reduce anxiety and make the dental experience more comfortable. These robots can communicate with patients, guide them through procedures, and provide distractions during treatments [17].
- AI-assisted diagnosis systems: Pediatric dentists should be able to diagnose cavities, dental abnormalities, and other oral pathologies in children early on with the use of sophisticated AI algorithms. To detect indications of dental problems swiftly and precisely, these systems might make use of natural language processing, radiography image analysis, and other clinical data [12].
- Robotic-Assisted Surgery: Systems like the Yomi robot assist in performing precise and minimally invasive dental surgeries, improving accuracy and reducing recovery times. These robots can help in planning and executing complex dental procedures with a high degree of precision[17].
- Personalization of treatment: AI might be used to tailor treatment regimens to the unique requirements of every child. This could entail figuring out the ideal treatment plan for a given dental disease while taking the patient's age, general health, and preferences into account[12].
- Training Simulators: Robotic simulators offer realistic training environments for dental students and professionals. These simulators can replicate various dental procedures, allowing trainees to practice and refine their skills in a controlled setting [17].

CONCLUSIONS

Dentistry is progressing into a new era characterized by data-driven and robot-assisted medicine. Despite this, the recent advancements in modern robot technology, machine learning (ML), and artificial intelligence (AI) have yet to be fully integrated into dental research, and they have not achieved the technological readiness and cost-efficiency required for entry into the dental market. Subsequent efforts may concentrate on the creation of cloud-based frameworks intended to streamline data integration and encourage cooperative data exchange. Utilizing vast volumes of high-quality data can enhance the accuracy of prediction results and picture interpretation when employing ML techniques, since data are the fundamental building elements of robust models. An AI model that has been properly trained, may be able to assist in the screening, advance diagnostic measures, simplify treatment planning, reduce errors, and ultimately enhance the effectiveness of the overall health, also in the field of pediatric dentistry research.

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ENDOVITAL: A NEW PARADIGM FROM CONVENTIONAL NONSURGICAL ROOT CANAL TREATMENT- A CASE REPORT.

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ABSTRACT
Root canal treatment of all the roots of multirooted teeth is the preferred method of treatment modality for all cases diagnosed with Symptomatic Irreversible pulpitis (SIP) with Apical periodontitis (AP). But based on the concept of spread of inflammation in pulp tissue in compartments, vital pulp therapy (VPT) is could be considered for treating teeth with AP. So there is a chance that we can combine Non -Surgical Endodontic Treatment (NSET) with Vital Pulp Therapy (VPT) in multi rooted tooth with SIP and AP with considerable success. This concept of 'ENDO VITAL' was first proposed by B .Koli et al They have evaluated the outcome of a combination of NSET and VPT for the management of permanent mandibular molar with SIP and AP and obtained a success rate of 90% in NSET group and 93.3% in the NSET-VPT group. So in the current presentation, I will be reporting a case report of endodontic management of multirooted permanent teeth presented with SIP and AP with ENDO VITAL treatment modality.

INTRODUCTION

Accurate diagnosis of the disease of the pulp can only lead to correct treatment plan, which will ultimately lead us to the favourable outcome. But the currently the most widely used pulp sensibility methods like vitality tests do not actually provide us with exact inflammatory status of the pulp thereby we may end up in incorrect diagnosis and treatment plan for the tooth. [1]The preferred treatment modality for the tooth diagnosed with irreversible pulpitis(IP) with apical perododntitis (AP) is NSET, which has got a success rate of 95%.[2]But the limitations of NSET states that it is non conservative,non biologic, time consuming, needs skill and expensive where as Vital Pulp Therapy(VPT) like Direct Pulp Capping, Pulpotomy etc are more conservative, biologic, maintain pulp functions and less chair side time. Acc to Witherspoon &Taha et al coronal pulpotomy has a success rate of 78-90% in cases of reversible pulpitis and 75-100% in cases of symptomatic Irreversible pulpitis(SIP) without AP.[3,4]In cases of SIP with AP ,VPT found to have a success rate of 67.5%.[5] Recently, a randomized clinical trial on vital pulp therapy with root canal therapy for the treatment of mature permanent mandibular molar teeth with apical periodontitis was done with a success rate of 93.3% and found that this modality can be a minimally invasive treatment option.[6]The purpose of the present case report is to present a case which demonstrate the endodontic management of a symptomatic mandibular molar with the combination of NSET & VPT, which is named as ENDOVITAL treatment modality.

CASE REPORT

A 45 year old female patient came to the department of Conservative Dentistry and Endodontics with the chief complaint of dull pain with lower left back tooth. On clinical examination, there was deep occlusal caries with 37(Fig 1) and was tender on vertical percussion and palpation. There was no presence of periodontal pocket ,sinus tract or swelling. On vitality assessment with cold test (Roeko, Endo-Frost), 37 was having pain with lingering response. Intra Oral Periapical Radiograph (IOPA) shows coronal radiolucency involving enamel, dentine, approximating distal pulp horn and periapical rarefaction seen with mesial and distal root with Orstavik Periapical index score (PAI)of 3 for distal root & 2 for mesial root(Fig2).So a diagnosis of Symptomatic Irreversible Pulpitis (SIP)with Apical Periodontitis(AP) was made with the tooth.

After obtaining informed consent, tooth was anaesthetised with inferior alveolar nerve block with lignocaine (LOX 2% Lidocaine with 1:100,000 adrenaline)and was isolated with rubber dam (hygienic,Coltene,USA) and liquid dam. Entire procedure was done using 3.2x magnifying loupe (TTL Galilean Loupe, Admetec Israel). Access opening was done using No: 2 round bur (Mani)and orifices were located and bleeding was noted from both mesial and distal orifices(Fig 3).Coronal pulp tisuue was amputed using high speed diamond bur to the orifice level. A cotton pellet socked with 2.5% Hypochlorite solution was placed over orifices or 2 mnts, followed by dry cotton pellet. Since there was still profuse bleeding, the procedure was repeated for another 6 mnts. At the end of 8 mnts, it was noted that there was profuse bleeding from distal root and bleeding was arrested from mesial root (Fig 4). So it was decided to do VPT for mesial root and NSET for distal root. Mesial canal orifice was sealed with white MTA(Proroot MTA Dentsply DeTrey,Konstanz, Germany) to a thickness of 2-3 mm, which was lined on top by Resin modified GIC (Prevest,Denpro,Jammu,India)(Fig 5).Standard NSET procedures initiated with distal canal and temporized after cleaning and shaping. On second visit, the tooth was completely asymptomatic, so obturation was done in distal canal using AH plus as sealer. Access cavity was sealed using resin Composite (Beautifil-Bulk fill Shofu)
(Fig 6). Post-Operative symptoms was assessed via telephone and it was found that tooth was completely free of symptoms and kept on further long term follow up.

DISCUSSION

Accurate Diagnosis is the key to successful treatment outcome. But current endodontic diagnostic aids will not throw light into the level of inflammatory status of the pulp, they just differentiate tooth into vital and non-vital, which can lead to false diagnosis and treatment. According to seltzer and Bender, inflammation will extend only 2mm from the exposure site of pulp.[7] Usually inflammation spread in an apical direction and presence of vital pulp tissue can lead to healing of the reversibly injured tissue, if capped with appropriate pulp capping materials. [8]

According to AAE position statement on VPT (2021), VPT techniques are means of preserving the vitality and function of the dental pulp after injury resulting from trauma, caries or restorative procedures. Histologic evidence of the progression of the pulpitis suggests that there is no discrete boundary that would render a pulp beyond repair. It was suggested to interpret pulpitis as as patially graded disease into "initial, mild, moderate and severe pulpitis". VPT can be designed for cases of initial, mild or moderate pulpitis after evaluating the bleeding status of the exposed pulp tissue. Molecular biomarkers released by sensory nerves (Substance P,prostaglandins, MMPs) from dentinal fluid or pulpal blood could be much more reliable markers of pulpal inflammation. Currently in the absence of these chairside molecular diagnostic tests, we can directly observe the pulp and assess the bleeding before and after attempting hemostasis with NaOCl using magnifying aids which will give insight into the pulpal status of inflammation and thereby the exact treatment plan. If we could arrest the bleeding from exposed pulp with in 10 mts(preferably < 5mnts) ,it is advised to do VPT for that root /tooth even if it was originally diagnosed with IP with AP. If the bleeding is profuse even after 10mnts of haemostasis, better to opt for NSET.[9]

Now VPT is gaining momentum and each endodontic case should be thoroughly evaluated to see whether any VPT measures like Indirect Pulp Capping(IPC),Direct Pulp Capping(DPC),Partial Pulpotomy(PP),Complete Pulpotomy(CP) will be possible. Indications & Contraindication of VPT is described in Table 1.In this case report, since there was profuse bleeding from distal root ,it was inferred that the there was severe inflammation and NSET was done. In mesial root, since we could achieve haemostasis with in 10 mnts, the pulpal inflammation was mild-moderate and orstavik PAI was less than 2, so we could do VPT with mesial root successfully. Such treatment modality of combining NSET with VPT in the same multirooted teeth is novel and is refered to as 'ENDOVITAL' by Koli B et al. They have evaluated the outcome of a combination of NSET and VPT for the management of permanent mandibular molar with SIP and AP and obtained a success rate of 90% in NSET group and 93.3% in the NSET-VPT group.[6]

In this report, the exposed pulp in mesial root was capped with MTA, which created a favourable environment for pulpal healing. MTA has the capacity to induce growth factors which could signal mesenchymal stem cells to differentiate into odontoblast like cells which can create dentin bridges. Other new bioceramic material also can be tried for pulp capping like biodentine,CEM, bioaggregate etc.. The clinical and radiographic success of ENDO VITAL cases is described in Table 2 & 3. Like VPT , Endo vital cases alsso needs long term follow up upto 4 years. Post endo vital restorations has to be evaluated periodically and if needed has to be reapaired.

Conclusion

Though Endo vital cases looks promising considering the advantages of tooth being vital, long term clinical trials and meta analysis is needed to clearly dictate the success of such cases. Also its is the need of the hour that we have to have a chair side efficient diagnostic tool preferably that denotes inflammatory markers so that we can clearly assess the status of pulp and so the treatment accordingly.

Fig 1: Pre op Image

Fig 3: Access Opening showing bleeding

Fig 5: Mesial orifice sealed with MTA

Fig 2: Pre-op IOPA

Fig 4: Haemostasis achieved from mesial root

Fig 6: Post Obturation IOPA

Indications	Contraindications
Age: young <35 yrs	Old
Vitality +ve response	Vitality -ve
IP with or with out AP	Necrotic Pulp
Multirooted teeth with PAI score < 2 atleast in one root	Multi rooted teeth with PAI> 2 in all roots
I/O-Bleeding –attain haemostasis with 5 to 10 mnts with NaOCl	I/O profude bleeding even after 10 mnts of hemostasis
Restorable tooth	Non restorable teeth
Probing PDL pocket depth & mobility is WNL	Periodontally weak tooth

Table 1 (Indications and Contraindications of VPT)

Table 2 (Clinical success of endovital cases)

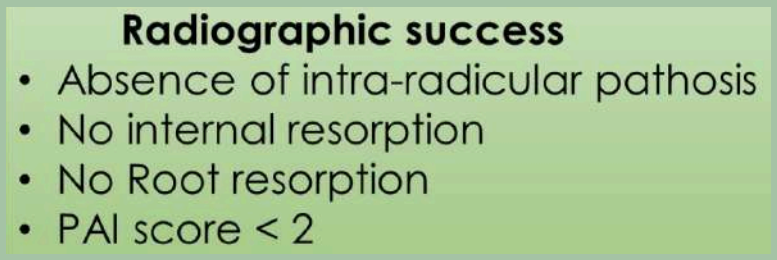

Table 3 (Radiographic success of Endovital cases)

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DIGITAL IMPRESSIONS IN DENTISTRY

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ABSTRACT

Digital impressions represent cutting-edge technology that allows dentists to create a virtual, computer-generated replica of the hard and soft tissues in the mouth using lasers and other optical scanning devices. It involves using advanced technology to create precise 3D images of a patient's teeth and surrounding oral structures. The digital technology captures clear and highly accurate impression data in mere minutes, without the need for traditional impression materials that some patients find inconvenient and messy. The impression information then is transferred to a computer and used to create restorations, often without the need for stone models.

Keywords – digital impressions, optical impressions, CAD-CAM

INTRODUCTION

In modern dental practice, the accurate replication of oral structures is crucial for effective diagnosis, treatment planning, and the fabrication of restorations. Historically, achieving an exact replica involved creating negative impressions using various materials, followed by forming positive replicas. However, traditional techniques have limitations such as material handling challenges, patient discomfort, and potential inaccuracies.

The advent of computer-aided design and manufacturing (CAD/CAM) technology, initially developed in the engineering field in the early 1970s, marked a significant advancement for dentistry. This technology enabled the development of CAD/CAM systems specifically tailored for dental use .[1,7]

Digital intraoral imaging emerged in the 1980s as an innovative approach, allowing dentists to construct virtual, computer-generated models of hard and soft tissues using lasers and optical scanning devices. These three-dimensional (3D) digitization techniques have evolved considerably, leading to the development of advanced intraoral scanners today.

HISTORY

The concept of digital impressions in dentistry began in the 1980s. The first notable development was the introduction of CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing) systems. Dr. Francois Duret, a French dentist, is often credited with pioneering this technology in dentistry.

The first optical impression system for dental office, CEREC 1 (Chairside Economical Restoration of Esthetic Ceramics), was introduced and marketed by Sirona Dental Systems, in 1986. This system, developed by Mormann and Brandestini, allowed dentists to design and mill ceramic restorations in-office, significantly reducing the time required for dental restorations. The CEREC 2 and subsequent CEREC 3 were developed to overcome the drawbacks of the previous system. The current CEREC 3D system was introduced in 2003. The early 2000s saw significant advancements in digital impression technology.[2] Intraoral scanners became more sophisticated, providing higher resolution and more accurate images. The next machine to take the lead was developed by Brontes technologies Lexington, Massachusetts, USA, as Lava COS (Chairside oral scanner); later acquired by 3M. The Cadent iTero introduced iTero scanners in the year 2007. Later in the year 2008 D4D Technologies introduced the E4D Dentist system. The evolution of the machines kept happening until the complete refinement happened. The hardware and the software in the present generations have overcome all the drawbacks that were faced earlier, and digital impression which was just a topic of discussion has now become the reality. 3Shape, another key player in dental technology, launched its TRIOS intraoral scanner, which offered high-speed scanning and enhanced accuracy.[3] Planmeca USA also introduced their intraoral scanner. Intraoral scanners like the CEREC Omnicam and the 3Shape TRIOS 3 provided full-color scanning, making it easier for dentists to visualize the oral cavity and communicate with patients.

CONVENTIONAL IMPRESSION VS DIGITAL IMPRESSION

The traditional method of impression includes multiple steps; thereby chances of incorporating errors are more, by both the dentist and laboratory technicians. A proper technique, an ideal impression material and proficient skill of the dentist are essential for obtaining an accurate impression. The comfort of the patient being the primary concern, conventional impression procedures are often cumbersome, particularly for patients with a strong gag reflex or sensitive mouths. [4] On the contrary, digital image of the patient's teeth can be created with the use of intraoral scanners without much of a difficulty. Conventional techniques are more time-consuming, with multiple steps required to create a usable model. Digital impressions technique is a f aster process, with immediate data capture and quicker turnaround for restorations. Clinical studies have proven that the fit of the indirect restorations is more accurate with digital impression compared to traditional impression. In Conventional methods, although initial costs are lower, they may have higher long-term costs due to material usage and storage. Digital impressions procure higher initial costs but has potentially lower long-term costs due to efficiency and reduced material waste. Physical models require significant storage space and are less convenient to share. Digital files are easy to store, manage, and share with other dental professionals.

BENEFITS OF DIGITAL IMPRESSIONS

Accuracy: Digital impressions provide highly accurate representations of the teeth and gums, which can lead to better-fitting dental restorations.

Comfort: Patients often find digital impressions more comfortable than traditional methods, as they eliminate the need for impression trays and materials.

Speed: The process is faster, reducing chair time for patients and allowing for quicker turnaround on restorations.

Digital Storage and Sharing: Digital files can be easily stored and shared with dental labs or other specialists, streamlining communication and collaboration.

Enhanced Visualization: Dentists can use the digital images to better explain treatment plans to patients, improving understanding and acceptance.

HOW DIGITAL IMPRESSIONS WORK- THE WORK FLOW

Intraoral Scanning: A handheld scanner is used to capture detailed images of the teeth and gums. The scanner projects a light source onto the area being scanned, and sensors capture the reflected light to create a 3D image.

Data Processing: The captured images are processed by specialized software to create a precise digital model of the patient's mouth.[8]

Design and Fabrication: The digital model can be used to design and fabricate dental restorations such as crowns, bridges, aligners, and implants. This can be done in-house with CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing) technology or sent to an external lab[6].

COMMON APPLICATIONS

Crowns and Bridges: Digital impressions can be used to design and produce custom crowns and bridges with high precision.

Orthodontics: Clear aligner treatments, such as Invisalign, often rely on digital impressions to create a series of aligners that gradually move teeth into the desired position.

Implants: Digital impressions aid in planning and placing dental implants by providing accurate maps of the patient’s oral structures. [9]

Veneers: Dentists use digital impressions to design veneers that fit perfectly over the front surface of the teeth.

KEY TECHNOLOGIES

Intraoral Scanners: Devices like the iTero, CEREC, and 3Shape TRIOS are commonly used to capture digital impressions.

CAD/CAM Systems: These systems allow for the design and milling of dental restorations in-house, often in a single visit.

3D Printing: Some dental practices use 3D printers to create models, surgical guides, and even final restorations based on digital impressions.

CEREC SYSTEM

The CEREC (Chairside Economical Restoration of Esthetic Ceramics) system, introduced in 1987, revolutionized dental CAD/CAM technology by enabling intraoral digital impressions, alongside the Duret system, using the concept of "triangulation of light." The most popular iteration, the fourth-generation CEREC AC Bluecam, employs visible blue light from LEDs with shorter wavelengths, significantly improving scan accuracy. This system allows for faster image acquisition through continuous image capture and provides comprehensive occlusion analysis by scanning both arches and displaying contact points digitally. The CEREC AC offers flexibility with options for in-office restoration fabrication or sending digital impressions to a lab via CEREC CONNECT, where restorations can be milled or models created traditionally. This system enhances practice efficiency and patient satisfaction by enabling single-visit restorations and ensuring precise, well-fitting results, positioning it at the forefront of modern dental technology[4, 10].

Lava COS

The Lava C.O.S. (Lava Chairside Oral Scanner; 3M ESPE, Seefeld, Germany), introduced in the market in 2008 after its invention in 2006, is a chairside device for creating digital impressions. This advanced scanner utilizes continuous video to capture detailed information displayed on a touch screen and features 192 LEDs and a 22-lens system with pulsating blue light. Dentists can rotate and magnify the scanned tooth preparation on-screen, switching between 3D and 2D views as needed. The system allows for full arch scanning post-tooth preparation and occlusion checks by scanning from the buccal aspect with teeth occluded. Images are sent directly to a laboratory, where technicians digitally mark the margins and section the virtual model before forwarding it to the manufacturer. Acrylic models, created at a model fabrication center after virtual ditching and articulation, can be used for both conventional laboratory techniques and CAD/CAM restorations.

i Tero

The iTero digital impression scanner, used chairside, captures 3D digital impressions of tooth contours and gingiva using parallel confocal imaging. It collects 100,000 points of laser light and produces highly focused images across more than 300 focal depths. The scanner is capable of capturing impressions for inlays, onlays, crowns, and bridges. During the scanning process, it provides the dentist with a series of verbal and visual cues tailored to each patient, guiding them through the procedure. Occlusion is recorded with two interocclusal views at centric, allowing the dentist to view the image and check interocclusal clearance during the same appointment, thus eliminating the need for traditional bite registration materials. [4]

E4D SYSTEM

D4D Technologies developed the E4D system, which operates based on optical coherence tomography and confocal microscopy principles. The system features a cart with separate scanning and milling units, with automated intercommunication between the units. The scanner utilizes red laser light oscillating at 20,000 cycles per second to reflect light from the tooth, capturing a series of images to create a 3D model. This allows the dentist to inspect the occlusion and prepared tooth from various angles for accuracy. The milling component, controlcentric, allowing the dentist to view the image and check interocclusal clearance during the same appointment, thus eliminating the need for traditional bite registration materials. [4]
led via a touch-screen panel, enables simultaneous milling of both sides of the restoration once the digital scan is sent to the milling machine. The E4D system does not support scanning and transferring images to a laboratory but can scan impressions for chairside milling of restorations.

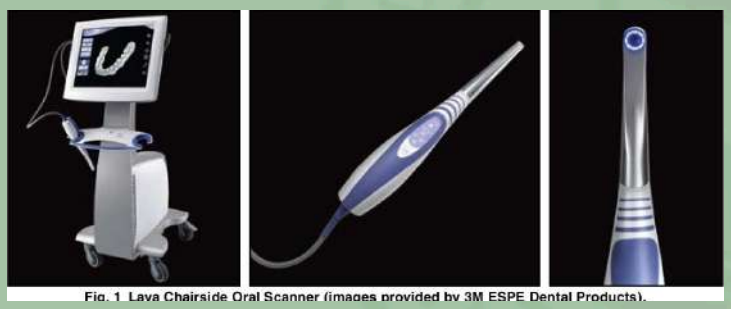
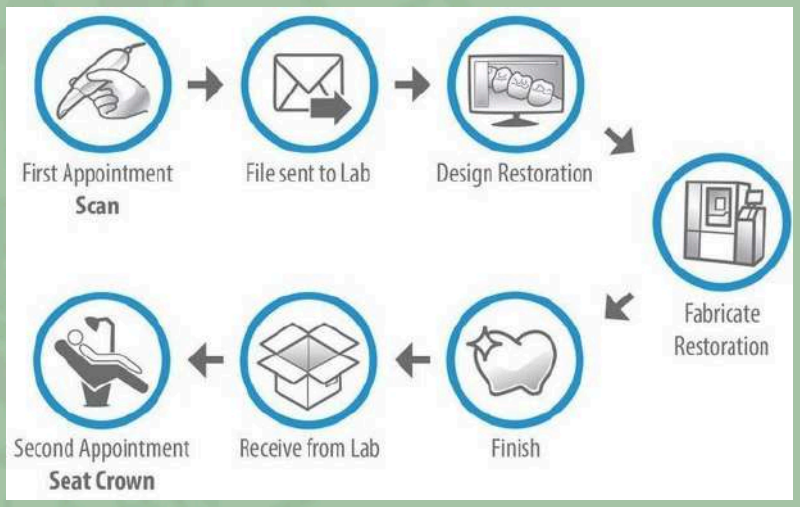


Fig. 1. Lava Chairside Oral Scanner (images provided by 3M ESPE Dental Products).



FUTURE TRENDS

Integration with Other Digital Tools: Digital impressions are increasingly being integrated with other technologies like digital X-rays and CBCT (Cone Beam Computed Tomography) scans to provide comprehensive diagnostic information. [5]

AI and Machine Learning: These technologies are being developed to further enhance the accuracy and efficiency of digital impressions and restorative planning.

Remote Dentistry: Digital impressions facilitate teledentistry by allowing remote consultations and treatment planning.

Digital impressions are transforming dentistry, making procedures more efficient, accurate, and comfortable for patients. As technology continues to advance, their role in dental care is expected to expand further.

CONCLUSION

Both conventional and digital impressions have their place in dentistry, and the choice between them depends on various factors, including the specific clinical situation, the dentist's experience and preference, and the patient's needs. While conventional impressions remain widely used and effective for many procedures, digital impressions offer significant advantages in terms of accuracy, patient comfort, and efficiency, making them an increasingly popular choice in modern dental practices.

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BAD POSTURE IN DENTISTRY
'HOW IT AFFECTS YOUR CAREER'

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ABSTRACT
With ever growing population and life span across the globe, it is a very well-known fact that medical and dental ailments are on an exponential spree. The etiology of various spectrum of illness of patients which professionals come across is addressed well in terms of research and constant surveillance. But the long and short term squeal of job related health issues among dental professionals are to be discussed in a way that it eludes awareness on ergonomics. Poor posturing among dentists can lead to development of an array of consequences. Here, we try to throw light on the challenges faced by them in relation to posture maintenance. The remedial measures are depicted with a common aim of relief from all work related health problems.

keywords ; Sequelae , Ergonomics, Postuíre

INTRODUCTION

Ergonomics in dentistry is a very well-known topic among professionals .The word 'posture' in ergonomics is defined as the manner in which different parts of the body are located in order to allow a special task execution. In dentistry, the working position represented by the spatial arrangement of the dentist's entire body around the patient must be understood. The practice of dentistry involves high finesse dental preparations, precision and control in executions that require a particular attention, concentration and patience of the dentist, in addition to the dentist's physical and mental well-being. The ideal posture of a dentist gives him the optimal working conditions and the physical and psychological comfort throughout the execution of the procedure. A "good" posture provides the dentist more working energy, a reduced stress level, increased comfort, lack of pain and muscular tension and a lower risk for iatrogenic errors. A "bad" posture induces premature fatigue, pain, stress, negative attitude to work and poor quality of work, thus leading to development of musculoskeletal disorders. Musculoskeletal disorders are defined as muscular pain or injuries to the human support system that can occur after a single event or cumulative trauma, negatively impacting daily activities. Symptoms can range from pain in the upper limbs, such as the forearm and wrist, to postural muscles such as the upper and lower back, neck and shoulders as well as lower extremities such as hips, thighs, knees and ankles. Left untreated, musculoskeletal disorders can evolve into more severe degenerative and inflammatory conditions. Following are the manifestations of musculoskeletal disorders.

LOWER BACK PAIN

Between 50 and 70% of people have recurrent episodes of pain, and one-third of patients continue to have persistent, recurrent or intermittent pain after their first episode. In addition to the difficulty with healing, the degenerative process is ongoing with age, and many patients do not minimize potential risk factors. All of this can contribute to continue episodes of low back pain.

The cause of Low Back Pain is often multifactorial but combined motions of lumbar flexion with rotation increase risk to the lumbar disk. This is further exacerbated by inflexibilities around the hips and pelvis as well as relative weakness of the stabilizers of the lumbar spine, including the abdominal and gluteal muscles.

Fig: Herniated Disc at L4 L5 Level

Fig: Normal MRI of Lumbar Spine

UPPER BACK PAIN

Frequently due to the strain of postural and scapular muscles. Abnormal posture, static postures, poor strength of the muscles also contribute to the development of dorsal pain.

NECK PAIN

Due to spasm or tenderness in the upper trapezius muscle, often on either sides of neck , or retracting arm . Trigger points in this muscle result in headaches behind the eye, into the temple, and in back of the neck. The upper trapezius muscles are responsible for elevating the shoulders and rotating the neck. In rounded shoulder posture, the upper trapezius and neck muscles largely support the arm's weight, increasing muscular strain on the neck and shoulder. In dentistry, trapezius myalgia is caused by static, prolonged elevation of the shoulders, mental stress, infrequent breaks, and poor head posture.

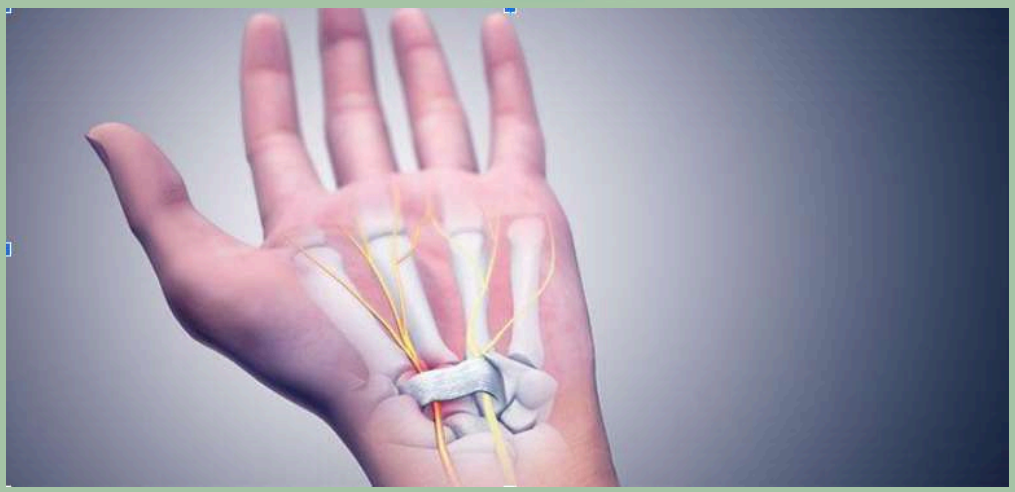
Fig: Normal MRI Cervical Spine

HAND, WRIST AND ELBOW INVOLVEMENT

A predominant cause of repetitive motion hand disorders is constant flexion and extension motions of the wrist and fingers. Chronic, repetitive movements of the hand and wrist, especially with the hand in 'pinch' position, seem to be the most detrimental. Other common contributing factors to hand and wrist injuries include movements in which the wrist is deviated from neutral posture into an abnormal or awkward position, working for too long period without allowing rest or alternation of hand and forearm muscles; mechanical stresses to digital nerves from sustained grasps to sharp edges on instrument handles, forceful work and extended use of vibratory instruments.

Some of the common hand and wrist conditions are as follows:

- Tendinitis/tenosynovitis
- DeQuervain's tenosynovitis
- Trigger finger
- Carpal Tunnel syndrome(entrapment of median nerve)
- Guyon's syndrome (entrapment of ulnar nerve)
- Tennis elbow



SIGNS OF MUSCULOSKELETAL DISORDERS

- Decreased range of motion
- Loss of normal sensation
- Decreased grip strength
- Loss of normal movement
- Loss of coordination.

SYMPTOMS OF MUSCULOSKELETAL DISORDERS

- Excessive fatigue in the shoulders and neck
- Tingling, burning or other pain in arms
- Weak grip, cramping of hands
- Numbness in fingers and hands
- Clumsiness and dropping of objects
- Hypersensitivity in hands and fingers.

DENTAL RISK FACTORS

Awkward Postures

Prolonged static postures are inherent in dentistry work. Awkward postures that involve forward bending and repeated rotation of the head, neck and trunk to one side are common occurrences during clinical work. As posture deviates more from neutral, the muscles that are responsible for the preferred side of rotating or bending become stronger and the matching antagonistic muscles become elongated and weakened, creating a muscle imbalance. Muscles that are under stress from PSP are also susceptible to ischemia, due to the prolonged contraction and following fatigue .

Under normal conditions, damaged tissues under these conditions are repaired during periods of rest. However, in dentistry the rate of damage exceeds the rate of repair due to insufficient rest periods, potentially leading to necrosis of the muscle. More stress is placed on the intervertebral discs when lifting, lowering, or handling objects with the back bent or twisted compared with when the back is straight. Manipulative or other tasks requiring repeated or sustained bending or twisting of the wrists, knees, hips, or shoulders. Activities requiring frequent or prolonged work over shoulder height can be particularly stressful.

Dental personnel assume these awkward positions for the following reasons:

- To coordinate the relative positions between dentist and assistant.
- To obtain optimal view of teeth within the patient's mouth.
- To provide a comfortable position for the patient.
- To maneuver complex equipment and reach for instruments.

FORCEFUL EXERTIONS

Tasks that require forceful exertions (like tooth extractions) place higher loads on the muscles, tendons, ligaments and joints. Prolonged experiences of this type can give rise to not only feelings of fatigue but may also lead to musculoskeletal problems when there is inadequate time for rest or recovery. Force requirements may increase with:

- Use of an awkward posture.
- The speeding up of movements.
- Use of small or narrow tool handles that lessen grip capacity.
- Increased slipperiness of the objects handled.
- Use of the index finger and thumb to forcefully grip an object

REPETITIVE MOVEMENTS

If motions are repeated frequently and for prolonged periods, fatigue and muscle-tendon strain can accumulate. Effects of repetitive motions from performing the same work activities are increased when awkward postures and forceful exertions are involved. Repetitive actions as a risk factor can also depend on the body area and specific act being performed.

TIME

Works that require use of the same muscles or motions for long durations increase the likelihood of both localized and general fatigue. In general, the longer the period of continuous work the longer the recovery or rest time required.

FRICTION

Repeated or continuous contact with hard or sharp objects, such as non rounded desk edges or unpadded, narrow tool handles may create pressure over one area of the body (e.g., the forearm or sides of the fingers) that can inhibit nerve function and blood fow.

VIBRATION

Exposure to local vibration occurs when a specific part of the body comes in contact with a vibrating object, such as a power hand tool.

WORK ENVIRONMENT

This includes the psychological demands of doing meticulous surgery with little or no rest or diversion and time pressures. Dentists with work-related musculoskeletal disorders show a significant tendency to be more dissatisfied at work and to be more burdened by anxiety, experiencing poor psychosomatic health and feeling diffident in their work.

POSTURE - HOW TO RECTIFY?

The posture described in "ISO Standard 11226 Ergonomics - Evaluations of static operating postures" is recommended for the dentists and is called balanced or neutral posture. The balanced or neutral posture is a reference point for the correct working posture and it is recommended to be maintained within the limits imposed by the practice conditions, throughout all the stages of the clinical acts. This is a seated posture - natural, unforced, stress free and symmetrical - that takes into account the loco-motor physiology of the human body.

The balanced posture features can be summarized as follows

1. A straight back and respect for the body symmetry; avoiding rounding the back into "C" shape.
2. Forward inclination of the trunk of a maximum of 20°; a greater forward inclination, the tilting to a side and the trunk rotation are contraindicated
3. Forward inclination of the head up to 20-25° from the trunk
4. Arms placed along the body, forward oriented within 10°; the forearms raised up to 25° from the horizontal line
5. The angle between the thighs and shanks of 105-110° or more
6. The thighs apart up to 45°, avoiding a rigid fixation of the hip joint
7. The shanks oriented perpendicular to the floor or slightly posterio
8. The feet on the floor oriented forwards in the same plane with the shanks; when the feet are symmetrically positioned below the operator hands, the posture is balanced.

Using the magnification systems (glasses and corrective lenses, loupes and telescopes, the operating microscope) deserves a special attention because it could have serious implications for posture. Properly chosen and adjusted, the magnification systems can prevent the bending of the dentist's head and the development of the musculoskeletal disorders.

A good posture is not a luxury and it does not require major investments but a rethinking of the way of working. The dentists should not live their professional life in discomfort and debilitating pain. They are here to alleviate the excruciating pain of the needy patients with precision.

LIVE YOUR LIFE // LIVE PAIN FREE // TAKE CARE

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ida hope

HELP OFFERED TO PROFESSIONALS IN EMERGENCIES

Indian Dental Association
Kerala State Branch

PROFESSIONAL PROTECTION SCHEME

- Legal support in medico-legal issues
- Monetary assistance for court cases
- Compensation of upto Rs.4,00,000 if awarded.

SOCIAL SECURITY SCHEME

- Death Benefits of >15lakhs for the dependents (depending on no. of members)
- Accident and permanent disability benefits

HOPE MEDI

Complete Medical Insurance for the family including parents.

HOPE ASSURE

Professional indemenity up to 2 crores Clinic and residence insurance

GROUP PERSONAL ACCIDENT

OFFICE ADDRESS

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Hon. Secretary IDA HOPE
Flat No. 4, Mangalya Apartments, Near Amar Hospital
Attingal P.O., Trivandrum District-695101
Mob : 9847240328, 8075070983
e-mail: secretaryidahope@gmail.com

HOW TO BECOME A MEMBER ?

Apply to the Hon. Secretary, IDA HOPE through the branch representative with

1. Completely filled application in the prescribed form attested by the branch secretary /representative
2. Admission fee (depending on age) taken as DD/ NEFT in favour of IDA HOPE Payable at Attingal or Account transfer (proof of transfer compulsory)
3. Two recent passport size photographs
4. Copy of Degree certificate
5. Updated Dental Council Registration copy
6. Age and Address proof

- Enrollment subject to confirmation of credit of the amount to HOPE account.
- Joining fee and Renewal fee will not be collected from newly joining members in the same calendar year.

New memberships stops at the age of 50
(as on 1st April of current year)

Who can become a member of IDA HOPE ?

Members of IDA Kerala State up to the age of 50 who have a valid dental council registration are eligible to join IDA HOPE.

DEFAULTERS & DROPPED OUT MEMBERS

Members who do not renew by 31st of May will not be eligible for Social Security Coverage. They can renew up to 30th of September by paying a penalty of Rs.500. After 30th of September they will be considered as dropped out from the scheme.If they wish to rejoin, they can enter as a new member if below the age of 50.

ADMISSION – RENEWAL FEES

Admission fee

- Up to the age of 30 - **Rs. 5000**
- 31-40 yrs of age - **Rs. 7500**
- 41-50 Years of Age - **Rs. 10000**

Annual Renewal fee

- Annual renewal amount - **Rs. 1200**
- Additional **Rs. 500** / per death claim in a year
- Platinum Benefit scheme contribution – **Rs. 800** (for members >30 years)

Eligibility to join HOPE

- Valid membership in any local branch in IDA Kerala State certified by Branch Secretary.
- Bachelor Degree in Dentistry from any recognised institution in the Indian union.
- Valid registration in any state Dental Council in India.
- Certificate to verify proof of age
- Documental proof of address.

Contact your local branch Hope Representative to **JOIN NOW**

Account Details: IDA HOPE
A/c No: 0316053000008249
Bank : South Indian Bank
Branch : Attingal
IFSC : SIBL0000114

HOPE MEDI

Tailor Made Group Medical Inssurance Policy for IDA Hope Members.

- For HOPE members
- No Medical Checkup Needed
- Lowest Premium in the Market
- Pre-existing Illness Covered
- Add Spouse, Kids & Parents
- Cashless Facility Available

100% claim benifit for IDA KSB Members

HOPE MEDI Claims

Claim Management Guidelines- Reimbursement

For reimbursement of claims, claim form, discharge summary, discharge bill (summary and detailed) from the hospital, medical certificate, investigation reports etc., should be submitted to TPA through M/s Jubilee Insurance Brokers **within 15 days of discharge from hospital.**

UNIQUE TO HOPE MEDI

- Parents of primary members are also covered
- No age limits for parents
- No check up tests prior to joining
- Pre existing illness of parents also covered* (after 1 year for new joining)
- Additional expenses bound to occur for treatment in higher centers also covered*

In emergency contact:
Hon. Secretary IDA HOPE
@ 9847240328

HOPE MEDI-HIGHLIGHTS

● All HOPE members are automatically eligible ● Tailor-made policy for US, 4th term running with minimum glitches and complaints ● No age limit for joining ● No medical checkups prior to joining ● All pre existing illness covered for members and after one year for family ● No additional premium for pre existing illnesses ● Newborn baby cover from day 1 without any additional premium* ● Cashless treatment facility available* Standard treatment charge reimbursed* ● Premium subject to revision each year in accordance to cash out flow ● Policy premium in shared and hence the lowest figure quoted ● Minimum exclusion applicable for payment denial ● Premium paid is eligible for income tax exemption under section 80D.

Getting Hospitalised??
Contact:
Jubilee Insurance Broking Services
Rahul R : 7736810082
Jomcy George : 9544157065

IDA HOPE - FORMATION

HOPE is the unique scheme, driven as a FREE professional indemnity for its members

Started as PPS in 2002
Formed as HOPE in the year 2007 merging the two schemes

SSS Social Security Scheme **PPS** Professional Protection Scheme

MEMBERSHIP STRENGTH

3750+ MEMBERS

PRESENTLY IDA HOPE PROVIDES

Social Security (Death / Total Permanent Disability)
> 15 Lakhs for the dependents

Professional protection
compensations up to Rs. 4 Lakhs (with co-pay of 25% for 2 lakhs)

HOPE ASSURE

- **Extended Professional Indemnity cover of Rs. 25 Lakhs to 2 crores.**
- **Clinic & Residence Insurance against natural calamities-Fire, Floods, Burglary, Theft, Vandalish etc.**
- **Add on policy for Neon Signage & Plate Glass.**
- **New Public liability cover**

RENEWAL - JULY 10

HOPE LEGAL CELL (PROFESSIONAL PROTECTION)

LEGAL AID to the members for cases that may arise during the course of their professional practice.

The coverage for the new members starts **one month** after the acceptance of the complete documents including membership fee by the Hon. Secretary.

Takes up Dento - Legal cases of HOPE members from the first stage itself - Lawyer's Notice.

Engages and gets advice and support of Advocate Pays Advocate's / Legal fee and other expenses.

Fights out the case in Forum / Court Pays the compensation amount, if awarded

For Legal Assistance Contact **Dr. Satheesh K Joseph**, Vice Chairman-Legal Cell **Mob 9447141008**

SOCIAL SECURITY

- Supporting the family in the event of **Death / Total Permanent Disability** of a member.
- The contribution to the family **(Fraternity Contribution)** is collected from the members of the scheme @ **Rs. 500** per claim in a year.
- The coverage for the new members Starts **one year** after the acceptance of the complete documents including membership fee by the Hon. Secretary.

Dr. Anwar M Ali Vice Chairman- Social Security **Mob: 9446354333**

JOURNAL GUIDELINES

Manuscript type : accepted are i) research ii) case report iii) review iv) short study
Article should be typed in times new roman size 12 A4 size paper. Use 1.5 spacing through out with a significant margin. Authors are advised to retain a soft copy for the reference and a soft copy of the article has to be sent to the editors email
Ethical consideration: manuscript submitted for publication must comply with the following ethical consideration. Written informed consent must be obtained from the subject before their data included in the study. Any data from the patient must be submitted by hiding their identity. All research should be carried out with prior approval from institutional or national ethic committee and should be in accordance with Helsinki declaration of 1964. If animals are used for research, the authors must follow the institutional or national guidelines for the care of use of laboratory animals
Manuscript format
Title : The title of the article should be concise, specific & informative
Authors : Name of the author with his/ her highest academic degree and institutional affiliation. Name address phone number and email address of the author and corresponding authors should be mentioned.The maximum number of authors for article is five.
Abstract : the abstract should not exceed 200 words. Below the abstract 3 to 10 key words in alphabetical order should be given. Abstract should contain the purpose of the study, materials and method, statistical analysis, results and conclusion.
Manuscript: For all the manuscript the word limit would be up to 3500 words excluding the references and abstract.
Tables should be self-explanatory, numbered in roman numbers, according to the order mentioned in the text.
Illustrations should be clearly numbered, each figure should be referred to the text, high quality digital images must be submitted in JPEG format.
Reference : References must be included and the bibliography should follow the vancouver format. The referencing should be numbered sequentially as superscripts in order of their appearance.
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