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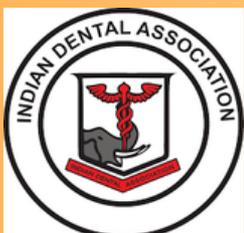
July 2023



Bangalore Dental Journal

BDJ

2023



Official Publication of IDA Bangalore Branch



Editorial



Dr. Uma SR
Editor in chief
IDA Bangalore Branch

Greetings and Warm wishes,

First and foremost I take this opportunity to thank all the senior members, past and present office bearers and members of Indian Dental Association Bangalore Branch for giving me an opportunity to serve the association as Editor for the year 2023.

Being a life member of IDA I have been associated with IDA since 2010 and served in various posts as Executive committee member, CDE Chairman and Vice President of IDA Bangalore branch and Central council member.

One of the cornerstones of academia is journal publication. Scientific publications yields benefits such as professional advancement , recognition ,individual promotions and also is a communication channel for researchers.

I am delighted to bring you the first edition of our esteemed scientific journal for the year 2023. Within the pages of this edition, you will find an array of articles that delve into a wide range of scientific disciplines. I would like to extend my heartfelt gratitude to the authors who have entrusted us with their invaluable contributions.

With Regards,

Dr. Uma S R

Editor

Asst. Professor

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2023

Greetings,



**Honorable Minister for Higher
Education, Government of Karnataka.**



IDA Bangalore Branch Wishes
Our Dear Patron **Dr MC Sudhakar**,
for being inducted in the
**Cabinet of Ministers, Government of
Karnataka, 2023.**

Foreword



Dr Ranganath V
President
Karnataka State Dental
Council

Greetings and Warm wishes,

It's been a pleasure to be part of the IDA Bangalore branch serving the association at various capacities for last 25 years. It has been a wonderful journey, meeting dentists and witnessing the progress of the association.

I have taken over as president of KSDC for 2nd term with the help of our association and all the dentists of Karnataka.

In my term this time will start social security initiative for all the dentists. It's a painstakingly put together package that will benefit all of us.

I congratulate Dr Uma editor under the leadership of President Dr Srivastava is going to be one of the best. I am sure everyone is going to benefit from the journal.

Best Wishes to the team.

2023

IDA Bangalore Branch

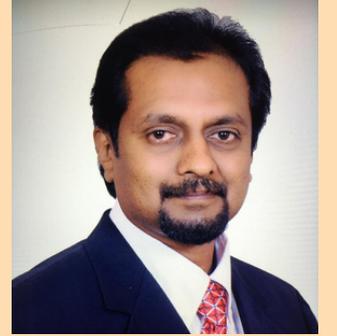
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Dr. B K Srivastava
President
IDA Bangalore Branch

I, Dr. B.K Srivastava, President of IDA Bengaluru Branch (2023) take the pleasure to thank all the IDA members for confiding in me and bestowing me with the honour of the branch president. I thank all my office bearers who have been a constant support in bringing out a very fruitful tenure of 2023 and expecting the same support in future.

I acknowledge the efforts of Dr.Uma S R, the Editor of IDA Bengaluru Branch Journal. This journal has lot of information on the recent advances in Dentistry and Dr Uma has left no stone unturned in her efforts in bringing this journal issue before you.

On behalf of the IDA Bengaluru Branch, I thank all the authors who have contributed to this issue and expect more support to bring out such journal issues in future.

Jai IDA

Jai Karnataka.

PRESIDENT'S MESSAGE



Dr. D V Vidhya Sagar
Hon. Secretary
IDA Bangalore Branch

"A drop of water offered as a little help deserves a fountain to return the favor".

I express great appreciation and heartfelt gratitude to the editorial team and reviewers of our journal for their valuable contribution to the success of this journal. It would have been impossible to achieve and maintain high standard and rigor of the journal without the teams efficiency and hard work.

SECRETARY'S MESSAGE



Dr. Dhayakar K V
Hon. Treasurer
IDA Bangalore Branch

"Teamwork makes the dreamwork and everyone in this team has proved this true". I would like to take the opportunity to thank the editorial team for there valuable contribution and efforts to bring this journal for our Dental community. I also thank the authors and reviewers warm work earnestly and looking for more editions from the team.

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2023

The Changing Facets of Dentistry in India: A Leap towards Holistic Oral Healthcare

Dear Editor,

I am writing to shed light on the transformative evolution occurring in the field of dentistry in India, which is setting a new standard for oral healthcare. The advancements and changing facets of dentistry are revolutionizing the way we perceive dental care, improving accessibility, and enhancing treatment outcomes. This transformation is undoubtedly a significant milestone in ensuring holistic oral health for all Indians. I was and am in a privileged position to observe these transformations from a close quarter as I donned many hats as an academician, practitioner, consultant and also as a speaker for the corporate health sector enabling me to visit practices all across India in the last five years.

One of the most remarkable changes is the integration of technology in dental practices across the country. Cutting-edge innovations, such as digital imaging, 3D printing, and computer-aided design and manufacturing (CAD/CAM), have revolutionized diagnosis and treatment planning. Dentists now have access to highly accurate and efficient tools, allowing them to provide precise and personalized care to their patients.

Moreover, these technologies have significantly reduced the treatment duration, making dental procedures more convenient and time-effective.

Furthermore, the traditional approach to dentistry, which mainly focused on treating oral diseases, is gradually shifting towards a preventive and proactive model. Dentists in India are now emphasizing the importance of oral health education, promoting regular check-ups, and encouraging good oral hygiene practices among individuals of all age groups. This proactive approach not only helps prevent oral diseases but also improves overall health, as several systemic conditions have been linked to poor oral health.

Another significant change in the dental landscape is the increasing emphasis on cosmetic dentistry. Indians are becoming more conscious of their appearance and the role that a beautiful smile plays in boosting self-confidence. Consequently, the demand for cosmetic dental procedures such as teeth whitening, veneers, and orthodontics has witnessed a surge. This evolving trend is an indicator of a society that values not only oral health but also the aesthetic aspect of dentistry.

In addition to technological advancements and shifting treatment paradigms, the Indian dental industry has also witnessed an increased collaboration among dental professionals. Dentists are now working in multidisciplinary teams, incorporating specialists from various fields to provide comprehensive care to patients. This collaborative approach ensures that patients receive a wide range of dental services under one roof, leading to improved treatment outcomes and enhanced patient satisfaction.

Moreover, the concept of dental tourism is gaining traction in India. The country's rich cultural heritage, affordable treatment costs, and skilled dental professionals are attracting patients from all over the world. This influx of international patients not only boosts the economy but also facilitates knowledge exchange, promoting the growth of Indian dentistry on a global scale.

While the changing facets of dentistry in India present numerous advantages, it is essential to ensure that these developments reach all sections of society. Efforts should be made to make oral healthcare accessible and affordable to underserved populations in both rural and urban areas. Additionally, continued professional education and training programs should be encouraged to keep dentists updated with the latest advancements and best practices in the field.

In conclusion, the changing facets of dentistry in India are transforming the landscape of oral healthcare, bringing in technological advancements, preventive measures, cosmetic enhancements, collaborative practices, and global recognition. These changes are paving the way for a future where every Indian can enjoy comprehensive, affordable, and holistic oral healthcare. It is crucial for policymakers, healthcare professionals, and the society at large to continue supporting and investing in these advancements to ensure a bright and healthy smile for all.

Dr.Kishore H C
Consultant Periodontist
Head of Education, Curaden India
Private Ltd

Improving oral health care access through existing healthcare delivery system

Authors: Kanika Sumaiya, Naganandini S, Kumar Gaurav Chhabra, Jahnvi, Satyendra Singh, Avishek Singh
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Abstract:

Oral diseases are highly prevalent among people of India. The mouth is the gateway to the rest of the body and reflects what is happening inside. Periodontal disease has been linked to systemic disease similarly systemic disease can have an impact on oral health. In addition, there are many systemic diseases that have oral manifestations, such as cardiovascular disease, stroke, diabetes, and nutritional problems. Oral health problems can have an adverse effect on the quality of life. In India 60% people have dental caries and 80% people have gum disorders. Many people are suffering from oral pain and other problems of the mouth or teeth. This is due to low oral literacy, availability and accessibility of oral health care services. Promotion of oral health and prevention of oral diseases must be provided through primary health care and public health intervention.

This article focuses on populations and their ability to access and navigate the oral health care system. The dental profession plays a pivotal role in improving oral health. The purpose of this article is to examine ways to integrate oral health in various National programmes and policies like to control communicable and non-communicable diseases, nutrition of infants, maintain reproductive health of women.

Recommendations increasing access by educating social workers, mid-wives in public health care centers on importance of maintaining oral hygiene. Indian government and Dentists have a crucial role to play in ensuring that everyone has access to care and that oral health care is the right of all people.

Keywords: Oral-Health, Primary health care centers, Health programs, Accredited social health activist, National oral health programme.

Introduction

According to the World Health Organization “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”^[1] Health is a universal need and right of every human despite of which ethnic group they belong to. A person's quality of life is affected by their oral health, which has a significant negative influence in their well being.^[2]

Oral health is defined by the World Health Organization as “the retention throughout life of a functional, aesthetic and natural dentition of not less than 20 teeth and not requiring a prosthesis.”

Systemic health has a negative impact on oral health vice versa oral health also can be negatively impacted by systemic health.

A good example of this is dental caries, which mostly affect people worldwide. Although it is not a fatal illness, it has a significant impact on a person's physical and psychological health, as well as how they develop, enjoy life, appear, communicate, taste food, and socialise. Severe caries lowers children's quality of life because it disrupts children's eating and sleeping patterns, causes pain, discomfort, disfigurement, acute and chronic infections, and results in missed school days and decreased learning capacity.

It restricts activities of child at school and a person at work place causing millions of hours of absenteeism. Gingivitis is one of the dental diseases usually pain free; as a result, causes a heightened host inflammatory response. Other Disorders such as Oral Potentially Malignant Disorders, oral cancer, and orofacial discomfort, which can shorten life expectancy or degrade life quality. Having poor oral health leads to reduced number of teeth, which leads to poor nutrition intake, further compromises their systemic health. The management of systemic disease may become more difficult if dental diseases like acute infections of a chronic oral disease go untreated.^[3]

Nearly 60% and 80% of Indians, respectively, have dental caries and gum disorders. Additionally, diseases like bacterial endocarditis, atherosclerosis, chronic obstructive pulmonary disorders, and preterm low birth weight have all been linked to oral problems. Diabetes and periodontal health are closely related.^[4]

By including oral health into general health promotion programmes and assessing oral requirements in socio-dental approaches, health planners can significantly improve both general and oral health.^[2]

As health is a state responsibility, there are various healthcare services provided to the public to maintain the health of the people. These healthcare services are mainly classified under Curative services, Preventive services, promotive services, rehabilitative service.

Public health services are administered at various level such as sub centres, Primary Health Centre (PHC), Community Health Centre (CHC), and various national health programme in India.

The goal of the healthcare system is to provide healthcare services. It functions within the boundaries of the nation's socioeconomic and political system.^[1]

PHCs can be a pivotal part in accelerating oral health. The various public health care delivery system in India is mention in Table 1. There is one CHC in a population of 80,000 to 1.20 lakh people. Dentist is direct appointed at CHC level. Therefore, to treat oral diseases dentist population ratio is 1:2,00,000 which shows the significant need of creating an oral healthcare structure in India. A large portion of the community that resides in rural region are devoid of these services. There is still inadequate infrastructure for providing.

Oral health services in India in spite of the fact that there is substantial preventive medicine, preventive treatment, diagnostic aids available.^[5]

The Indian government has taken a number of actions to improve the healthcare system.

Oral health literacy rate can be increased by implementing various oral health promotion with existing healthcare programmes in India (figure 1).

Oral health education should be incorporated in healthcare schemes and national level healthcare programmes to enhance oral health literacy among population. Training medical professionals in effective communication techniques and spreading awareness of oral health issues are two national initiatives to raise the literacy levels of citizens in oral hygiene.

Table I

A) Primary health centre	Primary health centres Sub centres Health and wellness centre
B) Hospitals / health centers	Community health centres (CHC) Rural hospitals District hospitals/health centres Specialist hospitals Teaching hospitals
C) Health insurance schemes	Employees state insurance Central government health scheme
D) Other agencies	Defence services Railways

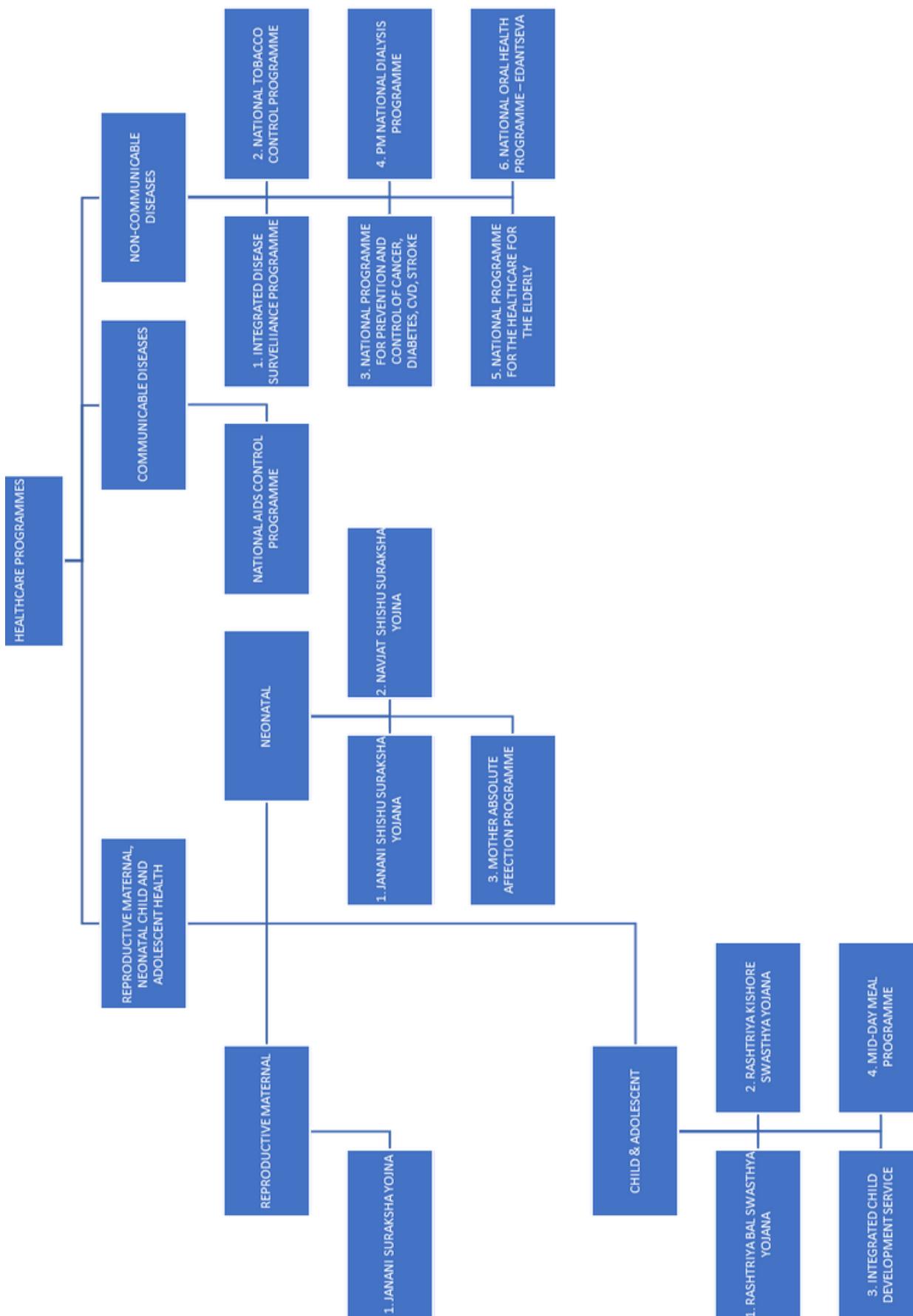


Figure 1. Healthcare programmes in India.

• **Janani Suraksha Yojana.**

Launched on April 12, 2005, with the goal of lowering maternity and new-born fatalities by promoting hospital deliveries and prioritising institutional care for women from families living below the poverty line.^[7] Specific intervention includes delivery of ante natal care package and keeping track of high-risk pregnancies. Emergency obstetric care during childbirth, skilful post-partum care for mother, facility care based for sick infant, and skilled care during birth. Ante natal care should also consider oral health of the patient throughout pregnancy. Research has shown repeatedly both the mother's and the baby's health outcomes can be affected by poor dental health during pregnancy. Maternal oral health issues increase the likelihood that new-borns will acquire early caries and is closely linked to unfavourable pregnancy outcomes, such as preterm and low birth-weight babies. However, there are no preventive measures available to keep pregnant women's oral health in good condition.

Poor oral hygiene in pregnant mother can be the cause of premature delivery, low birth weight, pre-eclampsia, acute necrotizing ulcerative gingivitis, granuloma, pregnancy tumours.

High level of oestrogen and progesterone can cause loosening of teeth.

Antenatal care should promote maternal oral health. Contrary to dentists, midwives frequently provide family support during the first year of life and are the first healthcare provider a pregnant woman interacts with. Midwives are therefore the health care professionals of choice when it comes to conveying crucial health messages to expectant women, promoting oral health awareness, and making referrals to dentists.^[6]

One of the important components of this strategies are Accredited social health activist (ASHA). They could be educated about the oral healthcare, proper brushing technique and use of floss and mouthwashes. ASHA workers should educate pregnant ladies about dietary changes using more leafy vegetables in their diet from the beginning as tooth formation begins in 6th week of Intra Uterine life.

The ASHA kits could include a toothpaste, brush, mouthwash interdental brush/floss for mother and oral wipes for baby along with the other drugs.

- **Janani Shishu Suraksha Yojna (JSSK)**

The Indian government has established JSSK on 1st June, 2011. The programme ensures free entitlement for pregnant women for deliveries, caesarean, nutrition and access to the health care facilities without any delays.^[7] It also covers the expense of sick new born baby and make sure they receive best healthcare facilities.

- **Navjat Shishu Suraksha Yojana**

Its goal was to provide basic new-born care and resuscitation training to medical staff at each delivery location.^[7] It was started to address concerns about prenatal care.

- **Mother Absolute Affection Programme (MAA)**

The Ministry of Health and Family Welfare established the MAA programme nationally on August 5, 2016, in an effort to put a clear emphasis on breastfeeding promotion through the health system.^[8]

Oral health is important for general health and women frequently overlook it during pregnancy. Early childhood caries (ECC) is predicted by a mother's history of cavities or active caries. ECC is the most common disease in children and a significant global public health concern. Worldwide, it affects 5-94% of children aged between 1- to 5-year-old.^[6]

- Children have tooth pain and difficulties with eating, speaking, and interacting with others. Children with ECC may also experience issues with tooth eruption, tooth development, and an increased risk of cavities in the permanent dentition

Oral health can be integrated from very young age. Streptococcus infection can get pass from mother to baby during or after birth. These bacteria can survive in the oral cavity and get attached to the teeth as soon as the first incisor erupts. So as the child grows it faces problem like early childhood caries which affects eating habits phonetics. Therefore, it is crucial to preserve both the mother's and the child's dental health. To avoid these situations the health personnel can educate new mother to wipe their baby's oral cavity with wipes after every feeding session. Avoid letting baby sleep with milk bottles in their mouth as it can cause choking of babies or nursing bottle caries in later year of life.

- **Rashtriya Bal Swasthya Yojana (RBSY)**

RBSY was introduced in February 2013. In order to manage the 4Ds that are common in children, it involves early identification and intervention services for children's health.

These 4Ds refer to defects at birth, disease in children, deficiency conditions and developmental delays including disabilities.^[7]

70% of children in between age of 0-7 years are suffering from plaque-induced gingivitis⁹. That is due to poor oral hygiene. It can cause dental caries in erupting teeth. The health conditions like neural tube defect and cleft lip and palate require immediate attention of a dental professional. Neural tube defects affect 4.5 out of every 1000 live births (95% CI: 4.2 to 4.9) and orofacial cleft is 1.3 per 1000 births (95% CI 1.1 to 1.5).¹⁰ So, the centres allocated for this scheme should include screening of patients through ASHA workers for new-borns during home visits and oral healthcare professional at Anganwadi centre and treatment of defects to be done immediately.

• **Rashtriya Kishore Swasthya Yojana**

The Rashtriya Kishor Swasthya Karyakram was introduced on 7th January, 2014 which will target problems affecting young people between the ages of 10 and 19 such as substance abuse, nutrition, and reproductive health.

In India 16% of children were not concerned about their own teeth and gums and 35% have never visited a dentist and only 17% of children are taken to dentists when they experience pain or discomfort.^[10] Pubertal gingivitis is generally seen in 9 to 14 years of age. Puberty results in a change in hormonal levels that modify gingival inflammatory response to dental plaque because of the fluctuation in hormonal levels.^[9]

Diseases due to Nutritional deficiencies such as scurvy has major oral manifestations of bleeding gums which can be prevented by nutritional enrichment. Oral health education must be imparted in schools and community through regular dental camps. Oral prophylaxis should be part of this programme. Educating them about brushing flossing and mouth rinses and regular dental intervention by professionals is required.

• **Integrated Child Development Services (ICDS)**

The ICDS program was initiated in 1975 in accordance with the nation's child policy. The ICDS programme aims to minimise mortality, malnutrition, morbidity and school dropout while also enhancing the Nutrition and physical health of kids aged 0 to 6 years.

It also lays the groundwork for a child's appropriate physical, psychological, and social development. This programme includes a significant nutrition component in the type of supplemental nutrition, prophylaxis of vitamin A, and dispensing of iron and folic acid. The Indian government has established Anganwadi and mini Anganwadi.

To ensure that mothers and their babies receive oral hygiene teaching, Anganwadi staff at the village level should promote IEC (information, education, and communication) materials in PHC, CHC and Anganwadi teaching them correct way of brushing, importance of maintaining oral hygiene. Dental kits that include toothbrushes, tooth pastes could be distributed.

• **Mid-Day Meal Programme**

Since 1961, the nation-wide mid-day meal programme, also referred as the school lunch programme, has been in existence. The main goal of the programme is to keep more kids in school and recruit more of them for enrolment so that children' literacy levels would improve. Oral health evaluation should be a key component of the programme.

School teachers' knowledge about oral diseases and their treatment are low.^[11]

There should be education models and IEC materials in schools. Teachers should teach children to gargle after every meal and tell its importance. Mid-day meal should be enriched with fibres and contain less sugary food to prevent dental caries.

Communicable disease

• **National AIDS Control Programme (NACP)**

In 1987, this initiative was launched. Its goal was to restrict HIV/AIDS from spreading further in order to minimize mortality and morbidity as well as the socioeconomic devastating impact of HIV/AIDS. Mid-term plans were introduced for prevention and raising awareness. NACP (IV) 2012-2017 target the high-risk groups with focused treatments, their counselling and HIV test screening^[7] HIV has severe impact on oral health. In later stages, HIV infection shows, oral symptoms like persistent white spots or unusual lesion on the tongue or in the mouth, ulceration, thrombocytopenia, xerostomia and salivary gland disorders.

There are various oral disorders that is due to systemic HIV infection, fungal infection like candidiasis, cryptococcus neoformans, histoplasmosis, viral

Infections like herpes zoster, cytomegalovirus, human papilloma virus, herpes simplex, hairy leucoplakia. Bacterial infection like PDL Diseases and neoplastic diseases like Kaposi's sarcoma, lymphoma. It's important that oral healthcare should be an integral part of the anti-retroviral therapy 2004 steroidal cream and mouthwashes should be given to the patient. Anti-fungal lozenges and pills should be provided in fixed Integrated Counselling and Testing Centres and also in mobile vans.

• **Non- Communicable diseases Integrated Disease Surveillance Programme**

A state-wide IDSP was launched in India in 2004 and is aimed at both state and federal governments. Its objectives include early detection of the disease and long-term surveillance to facilitate formation of effective national policies. This has given India an aggressive impetus to consolidate its surveillance capabilities, mainly for epidemic-prone diseases.

According to estimates, alcohol usage, bad eating habits, smoking, sedentary lifestyles, and infectious diseases contribute for about 43% of cancer deaths. In general, poor and underprivileged groups are vulnerable to risk factors such tobacco use,

alcohol usage, infectious pathogens, and environmental carcinogens.

The two primary risk factors for oral cancer are presumed to be alcohol and tobacco use. Oral cancer should be constantly monitored because drinking alcohol and smoking together are expected to increase risk by 74% overall, 80% for males, and 61% for women respectively.^[12]

Severe periodontitis affects more than 10% of the adult population worldwide, making the disease more common than cardiovascular disease. The prevalence of periodontal disease is estimated at 7.4%, making him the 11th most common disease in the world with approximately 538 million patients. In India, the incidence of gingivitis was assessed to be 46.6% and the prevalence of periodontitis to be 51%.^[13]

Smoking, obesity a declining socioeconomic situation, and stress brought on by other non-communicable diseases (NCDs) like cancer, diabetes, cardiovascular disease, and cerebrovascular disease are all risk factors for periodontitis. For this reason, including periodontal disease in surveillance programs is very important. This enables people to be educated and take immediate and necessary steps.

- **National Tobacco Control Programme (NTCP)**

India ranks second in terms of both production and consumption of tobacco. Based on the Global Adult Tobacco Survey India, 2016–17, 29% of all adults in India consume tobacco.^[14]

The Government during the 11th Five-Year Plan 2007-2008, has established a National Tobacco Program to raise awareness of the harmful consequences of tobacco use and decrease tobacco production and supply. A regulatory program NTCP was implemented to ensure effective approach of the provisions of the Cigarettes and Other Tobacco Products Act 2003 (COTPA) and to develop the acceptance of tobacco prevention and control strategies recommended by the WHO

Framework Convention on Tobacco Control.

Dentists play a vital role in assisting patients to quit smoking and tobacco cessation. Despite recognizing the importance of dentist involvement, dentists lack the expertise to encourage patients quit smoking.^[15] Smoking adversely affects oral tissues. Smoking substantially increases the incidence and severity of periodontitis when it comes to periodontal health.

- Dental patients seek help from their dentists on how to quit smoking since they are conscious of the detrimental effects of smoking on their oral health. Dentists are the only medical professionals who can immediately recognize the harmful effects of smoking.^[12] Therefore, PHC, CHC and Anganwadi should have smoking cessation centres where patients are encouraged to quit smoking through counselling and pharmacotherapy.

- **National Programme for Prevention and Control of Cancer, Diabetes, CVD, Stroke**

In India, the prevalence of non-communicable diseases (NCD) is rising and surpassing that of communicable diseases as TB, HIV, and other water- or vector-borne illnesses. According to statistics, non-communicable diseases such chronic obstructive pulmonary disease, diabetes, cardiovascular disease and cancer account for 60% of all fatalities. Over time, losses resulting from early deaths from heart disease, stroke, and diabetes escalate. The initiative was executed between 2010 and 2012 in 100 districts spread across 21 States.

The prevalence of NCDs in this study was hypertension (10.60%), diabetes (14.45%), and hypertension with diabetes (93.11%) in the adult population.^[16]

The evidence suggests that periodontitis is a complication of diabetes, despite the fact that a number of oral conditions have been linked to diabetes mellitus. Oral candidiasis can occur in people with long-term diabetes that is not well-controlled. A risk factor for having poor glycaemic control is periodontitis.^[17] Increased periodontitis in patients is also significant of increased coronary heart disease. People with poor oral health are more vulnerable to strokes. The supposition is that improving oral hygiene reduces the risk of stroke. Lack of information about how oral health affects overall health as well as difficulty accessing primary dental care may raise the risk of stroke.^[18]

Rural areas with little awareness of these diseases should have access to dental treatment. Every PHC/ CHC should have educated ASHA and Anganwadi workers to check oral health in patients coming with these systemic problems.

- **Prime Minister National Dialysis Programme (PMNDP)**

The PMNDP was established on 07th April 2016 to provide services like

free dialysis to the people below income threshold.

Incidence of Chronic kidney disease in Indian population is estimated to be 17%.^[19] Dental plaque contains bacteria that can enter the bloodstream and affect the entire system. Oral bacteria have the ability to cause bacteraemia and enter the bloodstream by actively passing through the periodontal epithelium. The main pathways that result in systemic inflammation include the direct or indirect impacts of circulating bacteria, inflammatory mediators, and immune complexes from infected or inflamed periodontal tissues on other body sites. There is substantial proof that the chronic inflammation brought on by pathogenic microbiota and poor dental hygiene accelerates the development of chronic kidney disease.^[20] Utilization of prevailing dental health care should be prerequisite. Discerning people in early stages can prevent further systemic complication of the disease.

- **National Programme for the Healthcare for the Elderly**

The Government of India enacted the National Policy on Older Persons in 1999, and Section 20 of "The Maintenance and Welfare of Parents and Senior Citizens Act, 2007" deals with regulations for medical care of senior citizens.

Geriatric oral healthcare is as crucial as systemic health. Including dental healthcare in this programme is a necessity.

Dental needs for elderly persons are always changing and growing. For elderly patients to be managed, it's important to understand the medical and dental aspects of ageing, but it's also essential to provide them adequate oral care.

It is advised for elderly to brush their teeth twice a day, use fluoridated toothpaste and abstaining from sweets.

Depending on their ability to complete oral hygiene, it is advised that older patient visit the dentist at least every six months for clinical revaluation, regardless of their dental status. Many senior citizen struggle to effectively control plaque formation. These patients can use manual or electric/sonic brush. There are different devices that make brushing teeth easier for those who has a history of arthritis or stroke. Those with decreased capacity of oral self-care should receive prophylaxis more regular. Moreover, elderly health care delivery in a community setting necessitates accessible structures and a setting that can be navigated safely. There must be a clear route at least 28 inches wide in the room and through doorways to allow those using walkers or canes to move around safely.^[21]

• **National Oral Health Programme E-dantseva**

Through 2020, the National Oral Health Program aspires to promote "optimal oral health" for everyone by providing affordable, equitable, and accessible oral healthcare.^[23]

The most common dental problems can be avoided with routine check-ups and early treatments. Due to a lack of awareness among the general public and healthcare professionals, our oral health has been overlooked for many years. Oral illnesses have gotten worse in rural regions due to a lack of education and awareness. especially in rural areas where healthcare services are depleted. Lack of awareness and education in rural areas has led to worsening of oral diseases. In order to accomplish these goals, the Indian government has implemented other ongoing health programmes at different stages of the primary healthcare system and community healthcare facilities under the National Health Mission for the dissemination of information to increase oral health awareness all throughout the nation.

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Clinical and Histopathological Presentation of Pyogenic Granuloma : A Case Series

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Abstract:

Background:

Pyogenic granuloma (PG) is a common inflammatory hyperplasia of the skin and oral mucosa that is typically brought on by chronic low-grade local irritation, traumatic damage, or hormonal causes. Many times, poor dental hygiene is the main contributing factor. The most common intraoral site is gingiva, although it can also affect the lips, tongue, buccal mucosa, and, in rare cases, the hard palate.

Case presentation :

3 cases (varied age groups and both genders) reported to the Department of Periodontology, Government Dental College & Research Institute, Bangalore with the chief complaint of swelling of gums in front and back tooth region in upper and lower arches. The treatment plan included surgical excision using scalpel. Excisional biopsy was done which revealed established phase in two of the cases and healing phase in one of the case.

Results:

Uneventful healing was observed in all the cases without any pain. No recurrence or scarring was observed in 6-12 months follow-up.

Conclusion:

Surgical excision has proven to be a safe and effective method for treating intraoral PG. Varying histopathological presentation in relation to its clinical course and chronological stage was observed which was connected. Understanding the same is necessary to comprehend the lesions. For a precise diagnosis, clinical correlation should be performed as well. Long-term follow-up is advised owing to the high recurrence rate.

Keywords: Pyogenic granuloma, histopathology, scalpel excision

Introduction

Soft tissue enlargements of the oral cavity frequently present with diagnostic quandaries since they can be caused by a variety of pathologic diseases. Pyogenic granuloma [PG], also known as lobular capillary haemangioma, is a benign, vascular, soft tissue tumour of the oral cavity

that is thought to be reactive and non-neoplastic.

The neoplastic growth of PG is supposed to be a response to various stimuli such as chronic localized irritation, trauma, hormones, and drugs. The term “pyogenic granuloma” was coined by Hartzell in 1904 and is still being used to denote this lesion. B

But this terminology is a misnomer since neither it is due to bacterial infection nor does it produce any pus.

Also, histo-pathologically there is no true granuloma formation.^[1-3] Its occurrence in the oral cavity is not uncommon, and poor oral hygiene is considered to be the precipitating factor. It is more common in females, implicating the possible effects of female sex hormones on blood vessels. Peak incidence occurs in the second and fifth decade of life. Mostly, it involves the gingiva and presents as a nodular growth, slow growing or rapid in nature.^[4]

Extra -gingival sites include tongue, hard palate, lip, buccal mucosa, and the floor of the mouth.

Characteristically it presents as a small pinkish soft tissue swelling, the size ranging from few milli-meters to a few centi-meters. The mass may have a pedunculated or sessile base and is usually non-tender, but it can bleed on touch. The course of the lesion can be described as “early,” “established,” and “healing” type. The colour of the lesion also varies and is dependent on the vascularity of the lesion in relation to its clinical course.^[5]

The early lesions are usually pinkish in colour and resemble the normal mucosal colour. Established lesions are reddish to purplish due to the increased vascularity whereas the late healing type presents as pinkish to whitish mass.^[5]

The natural course of this lesion can be categorized into three distinct phases, namely, (i) cellular phase, (ii) capillary phase/vascular phase, and (iii) involutionary phase.^[6] This case series describes three cases of pyogenic granuloma in various phases of its clinical course and histopathologic phase.

Case Presentation

A total of three cases have been included for describing the various histopathological presentations and clinical course. The histopathological presentation shows variations according to the various phases and has been described below. Clinical presentation of the three cases are shown in Table 1. Surgical Excision procedures for Case 1, 2 and 3 are shown in Figure 1, 2 and 3 respectively.

Case 1: A 76-year-old male patient presented with the complaint of painless and progressive swelling in the gingiva involving the edentulous space in relation to 16 extending buccolingually for the past 4 months. The swelling was pinkish-white coloured, lobular with rough surface, firm in consistency with a pedunculated base. It was associated with slight difficulty in swallowing and speaking which was associated with bleeding. Patient had poor oral hygiene.

and was under antihypertensive medication. Excisional biopsy was performed under local anesthesia after obtaining consent from the physician. The gross specimen measured approximately $1.2 \times 0.7 \times 0.5$ cms and showed a rough, lobular surface (Figure 1.c). The microscopic examination of H&E stained section shows stratified squamous epithelium and underlying connective tissue. The low power view revealed epithelium that exhibits ortho-keratinization and at areas, para-keratinization. Perplasia and spongiotic changes are noted in the epithelium. The underlying connective tissue consists of dense collagen fibers. High power view showed endothelial lined capillaries containing endothelial lined capillaries containing RBCs, extravasated RBCs, moderate mixed inflammatory infiltrate consisting of mainly of neutrophils, lymphocytes and mast cells are noted in the background of mature connective tissue stroma (Figure 4). Features of established stage of PG in capillary phase was observed

Case 2:

50-year-old female patient presented with the complaint of swelling in the interdental papillae between 42 and 43 for the past 5 months. On examination, there was a reddish-pinkish mass with a sessile

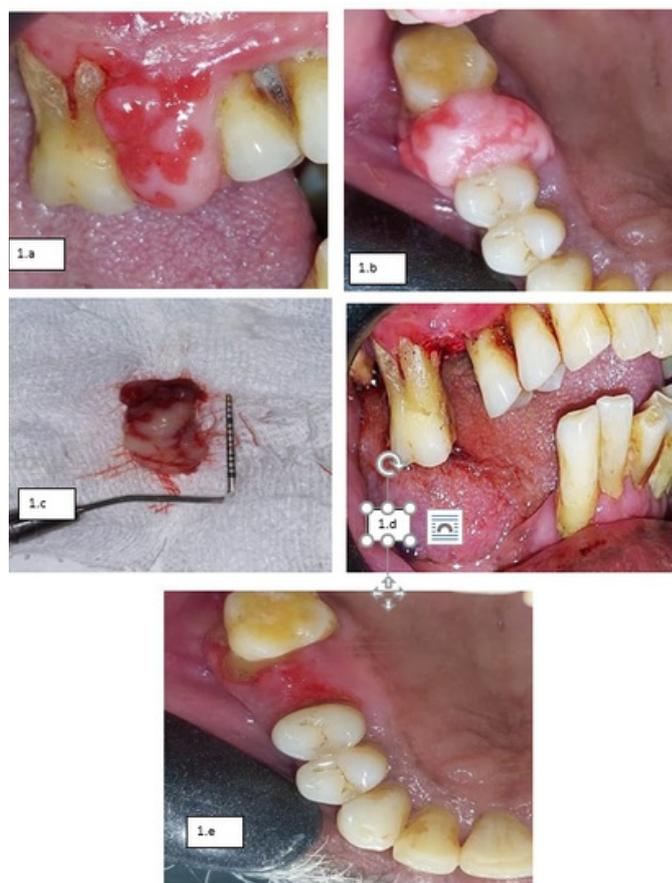


Figure 1.a and Figure 1.b: Pre-operative view

Figure 1.c: Gross specimen

Figure 1.d: 1 week post-operatively

Figure 1.e: 1 month post-operatively

$1.0 \times 0.6 \times 0.3$ cms in size, smooth in texture and firm in consistency. (figure 2b)

The microscopic examination of H&E stained section showed para-keratinized stratified squamous epithelium and underlying connective tissue. The epithelium shows spongiotic changes in the superficial areas. In most of the areas, epithelial atrophy is noted, whereas in few areas, proliferation of rete ridges is evident.

High power view showed sub-epithelial connective tissue with mild chronic inflammatory infiltrate predominantly consisting of plasma cells and

Lymphocytes along with blood vessels interspersed with haphazardly arranged long and short fascicles of collagen bundles and few fibroblasts and fibrocytes. Hence, describes an established stage of pyogenic granuloma in capillary phase.

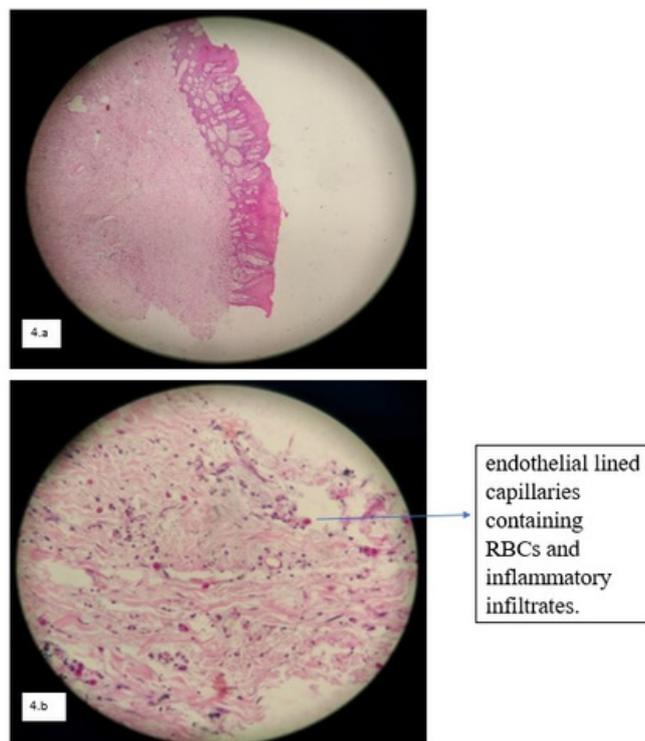


FIGURE 2: Case 2 surgical procedures
 Figure 2.a: Pre-operative view
 Figure 2.b: Gross specimen
 Figure 2.c: Immediately after excision

Case 3:

A 41 year-old female patient presented with the complaint of painless swelling in the interdental papillae between 13 and 14 since 3 months. Patient was concerned about the cosmetic problem caused by the lesion. On examination, there was a single pale whitish mass with a pedunculated base 0.6×0.4×0.6cms in size, smooth in texture and firm in consistency (Figure 6.b). The microscopic examination of H &E stained section shows connective tissue devoid of epithelium.

High power view showed endothelial lined dilated capillaries and blood vessels in the background of mature connective tissue stroma. Few densely packed collagen fibres along with fibroblasts and fibrocytes are noted. Along with moderate amount of mixed inflammatory infiltrate predominantly consisting of neutrophils, lymphocytes and plasma cells. Features conforming to the healing stage of pyogenic granuloma in involutionary phase was observed.



Hyperplasia and spongiotic changes are also noted (H&E, 100x);
 Figure 4.b high power view showed endothelial lined capillaries containing RBCs, extravasated RBCs, moderate mixed inflammatory infiltrate.(H&E, 400x)

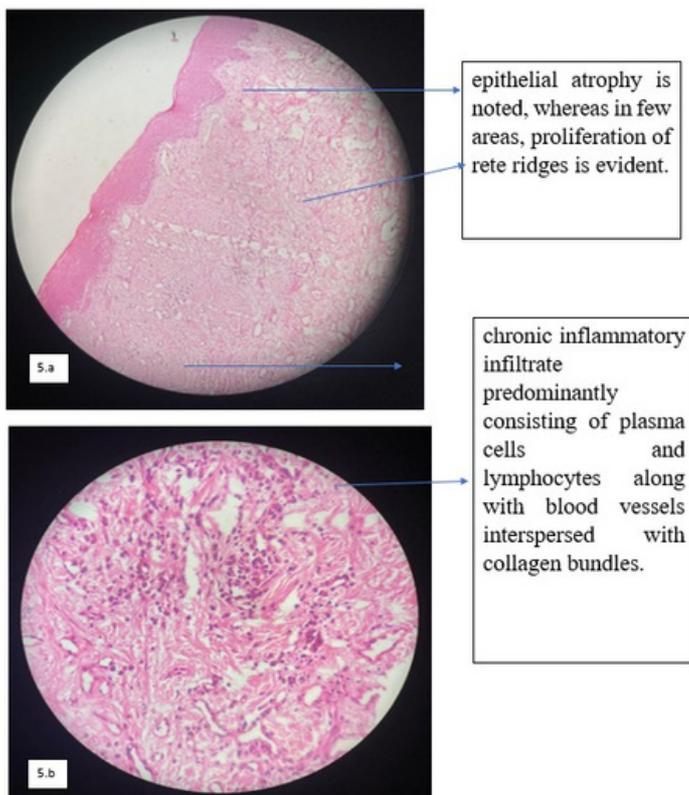


FIGURE 5: Histopathologic images (CASE 2)
Figure 5.a : low power microscopic view showing para-keratinized stratified squamous epithelium and underlying connective tissue. In most of the areas, epithelial atrophy is noted, whereas in few areas, proliferation of rete ridges is evident. (H&E, 100x);
Figure 5.c: chronic inflammatory infiltrate predominantly consisting of plasma cells and lymphocytes along with blood vessels interspersed with collagen bundles. (H&E, 400x)

Case 3:

A 41 year-old female patient presented with the complaint of painless swelling in the interdental papillae between 13 and 14 since 3 months. Patient was concerned about the cosmetic problem caused by the lesion. On examination, there was a single pale whitish mass with a pedunculated base 0.6×0.4×0.6cms in size, smooth in texture and firm in consistency (Figure 6.b).

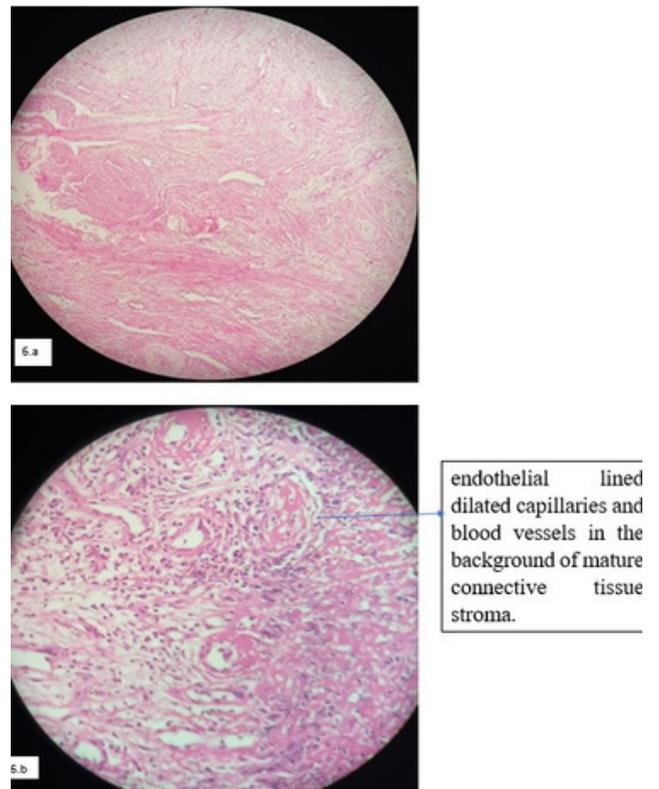


FIGURE 6: Histopathologic images (CASE 3)
Figure 6.a low power view showing shows connective tissue devoid of epithelium.(H&E, 400x);
6.b) High power view showing endothelial lined dilated capillaries and blood vessels in the background of mature connective tissue stroma.

The microscopic examination of H &E stained section shows connective tissue devoid of epithelium. High power view showed endothelial lined dilated capillaries and blood vessels in the background of mature connective tissue stroma. Few densely packed collagen fibres along with fibroblasts and fibrocytes are noted. Along with moderate amount of mixed inflammatory infiltrate predominantly consisting of neutrophils, lymphocytes and plasma cells. Features conforming to the healing stage of pyogenic granuloma in involutionary phase was observed.

Sl. no	Age	Gender	Site	Size	Shape & Surface	Clinical Course/ Histopathlogic Phase
Case 1	76	Male	Gingiva	1.2x0.7x 0.5cms	Irregular & rough	Established Phase/capillary phase
Case 2	52	Female	Gingiva	0.6x0.4x 0.6cms	Irregular & smooth	Established Phase/capillary phase
Case 3	41	Female	Gingiva	1.0x0.6x 0.3cms	Irregular & rough	Healing Phase involution

Table 1: Clinical presentation & Histologic phases of the cases

3. Discussion:

Soft tissue swellings are the most frequently and perplexed lesions encountered by otolaryngologists, dermatologists, and dental surgeons in daily practise. In order to rule out other major pathological disorders, it should be strictly emphasised when taking the case history to enquire about the onset, progression, and correlation of these lesions with pain.

PG exhibit a significant predilection for the gingiva in the oral cavity, with the interdental papillae being the most frequent site in 70% of cases. The maxillary anterior region of the mouth is where they are most prevalent.^[7]

However in the present study, it was reported in the maxillary posterior as well as mandibular anterior areas. Extra-gingival sites include the tongue, hard palate, lip, buccal mucosa, and the floor of the mouth.

The exact aetiology of pyogenic granuloma is not known. Low-grade chronic irritation, trauma, and hormone imbalances, which results in the overzealous proliferation of vascular type of connective tissue are considered as the possible causes. In many situations, gingival irritation and inflammation caused by poor oral hygiene, dental plaque and calculus, or overhanging restorations may be triggering causes.

Although PG can be diagnosed clinically with high accuracy, radiographic and histopathological studies can help confirm the diagnosis and guide treatment. To rule out more serious disorders, all clinically suspected pyogenic granulomas must be biopsied.

The differential diagnosis of oral PGs include hemangioma, lymphangioma, peripheral giant cell granuloma, peripheral ossifying fibroma, conventional granulation tissue, malignancy, Kaposi's sarcoma, angiosarcoma, non-Hodgkin's lymphoma, syphilis, tubercular ulcer, traumatic ulcer, and cutaneous horn of the lip.^[8]

Younger lesions may be mistaken for histopathologically for haemangioma, Kaposi's sarcoma, and for bacillary angiomatosis clinically.^[9,10] Haemangioma generally presents in extra-gingival locations and is devoid of any inflammatory components, which helps in differentiating it from PG.^[9] Histopathologically, the absence of atypical cells and bizarre vascular channels helps to differentiate PG from Kaposi's sarcoma whereas absence of any granular bacterial material differentiates it from bacillary angiomatosis.^[11]

Similarly, older lesions can be mistaken for oral fibroma, peripheral giant cell granuloma, or peripheral ossifying fibroma.

The older lesions show certain resemblances to oral fibroma or peripheral ossifying fibroma due to the presence of extensive fibrosis in the stroma.

However, the increased vascular component and the inflammatory infiltrate are indicative of pyogenic granuloma and helps in differentiating it from these lesions. Also, a prior history of bleeding from the growth would be suggestive of the involutory phase.^[12] The presence of capillaries having varying calibers histopathologically confirmed the diagnosis of PG. Lobular capillary haemangioma is a more correct term for this lesion because of these characteristic histopathological features.

Overall, a careful clinical and histopathological correlation is sufficient to identify pyogenic granuloma.^[2,4,9]

Surgical excision is the treatment of choice for PG. Surgical excision of PG usually simple without much postoperative complications. Other conservative methods such as cryosurgery and laser excision can be used in extragingival sites like upper lip to prevent scarring owing to aesthetic concern. Simple surgical excision was performed in our case. Healing was uneventful without any post-operative complications.

PG does not undergo malignant transformation, but it can recur occasionally after surgical excision, commonly in gingival sites.^[13] To reduce the likelihood of recurrence, the lesion should be removed with a broader margin, all the way to the periosteum or the source of the problem. All the cases were followed up for 6 months and none of them presented with any recurrence. Meticulous scaling and root planning with complete removal of irritants and also complete surgical excision could have been the reason for no recurrence.

4. Conclusion

Although oral pyogenic granuloma is not an uncommon cause of soft tissue lesions of the oral cavity, it may have an unusual presentation, posing a diagnostic dilemma to the treating surgeon. Histopathological examination confirms the diagnosis and rules out various soft tissue lesions with similar appearance. Surgical excision is the treatment of choice with rare recurrence.

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Platelet Rich Fibrin - An advancement in tissue healing and accelerated regeneration

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Abstract:

Platelet rich fibrin, an advancement in medicine that demands less invasive therapies and faster recovery time. This innovation in dentistry is the preparation and use of platelet concentrated suspension of growth factors. This has the potential to be used alone or in combination with grafts or other biomaterials. This review paper aims to explain the benefits and role of PRF in dentistry and the revolutionary change it can bring about in dental treatments.

KEYWORDS: *platelets, tissue regeneration, wound healing, growth factors.*

Introduction

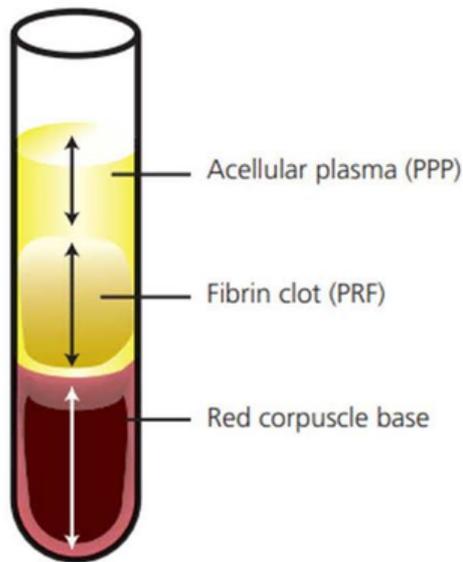
Platelet Rich Fibrin (PRF) or also known as Leukocyte and platelet rich fibrin is a derivative of PRP where autologous platelets and leukocytes are present in a complex fibrin Matrix. It is a platelet rich concentrate that is obtained by a process of blood centrifugation with a resultant product that is rich in platelets and plasma proteins that help accelerate healing of soft and hard tissue which makes it an efficient tissue-engineering product. The platelets and the leukocyte cytokines along with the fibrin matrix have a therapeutic potential that is yet to be explored.

The platelet activation in response to tissue damage occurs during the production of PRF, release biologically active proteins which includes, platelet-derived growth factors Alpha granules, VEGF, Epidermal growth factors which help in tissue healing and regeneration.

Procedure:

- PRF preparation protocol is very simple which involves collection of

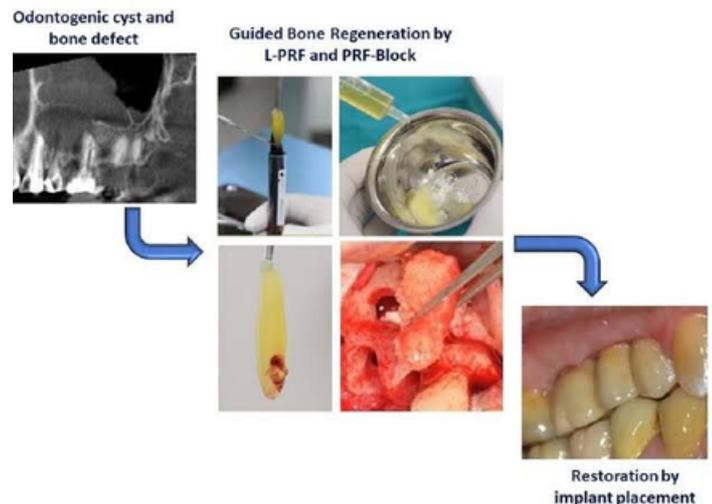
- about 5ml of whole venous blood in sterile vacutainer tubes of 6 ml capacity without the anti-coagulant.
- The vacutainer tubes are then placed in a centrifugal machine at 3000 revolutions for 10 mins.
- After the centrifugation is complete the end product is obtained in 3 layers.
- The three layers include: red lower fraction containing RBC's
- Upper straw coloured cellular plasma
- Middle fraction containing the fibrin clot
- Upper layer is removed and the middle fraction is collected, 2mm below the dividing line which is the PRF concentrate.
- The mechanism here is that fibrinogen which is initially concentrated in the high part of the tube combines with circulating thrombin due to centrifuge to form fibrin.
- The platelets are trapped in large numbers in fibrin meshes which is 6-8 times more concentrated than the natural concentration.



Mechanism Of Action:

- PRF which contains a rich concentrate of plasma proteins and platelets help in tissue engineering.
- PRF adds blood cells back in the site of injury and promote healing. The platelet activation action takes place where growth factors along with the rich fibrin matrix help in homeostasis and matrix has a property of angiogenesis.
- Post the centrifugation process, the PRF is extracted and the natural coagulation process forms a fibrin with growth factors and white blood cells which is the extra cellular matrix. This matrix is responsible for the formation of new blood vessels and new vascular network keeping the wound moist and Release Growth Factors.
- PRF is used as a membrane to protect the wound and is mixed with bone graft which results in a sticky bone consistency which is suitable for use in bone graft area.
- After the bone socket is cleaned and the jaw bone is exposed,

it is supplied with very little blood thereby reducing its ability to heal and regenerate is also reduced. When PRF is introduced into the socket, the matrix rich on leukocytes and platelets release growth factors which promote new bone growth.



Scope Of Application:

- PRF in most oral-surgery procedures is key for regeneration and tissue engineering. The slow polymerization during centrifugation and fibrin-based structure could make PRF a better healing biomaterial than most with presence of growth factors and cytokines in platelets play key roles in inflammation and wound healing. Platelets also secrete fibrin, fibronectin and vitronectin, which act as a matrix for the connective tissue and as adhesion molecules for more efficient cell migration. This has led to the idea of using platelets as therapeutic tools to improve tissue repair and especially in case of infected wounds to be revolutionary as this matrix contains leukocytes. It is used in various surgical procedures post Eucleation or lesions, removal of impacted molars and Pre-prosthetic surgeries.

•Its use has been advocated for regenerative periodontics and wound healing as it aids in the treatment of periodontal infra-bony defects. It's use in conjunction with freeze dried bone allograft improves bone regeneration at a much faster rate and enhances formation of new bone in bone grafts and other bony procedures.

•PRF is directly used to fill cavities in surgical sites and especially the extraction sockets which not only prevents reinfection but also provides faster healing and tissue regeneration.

Advantages:

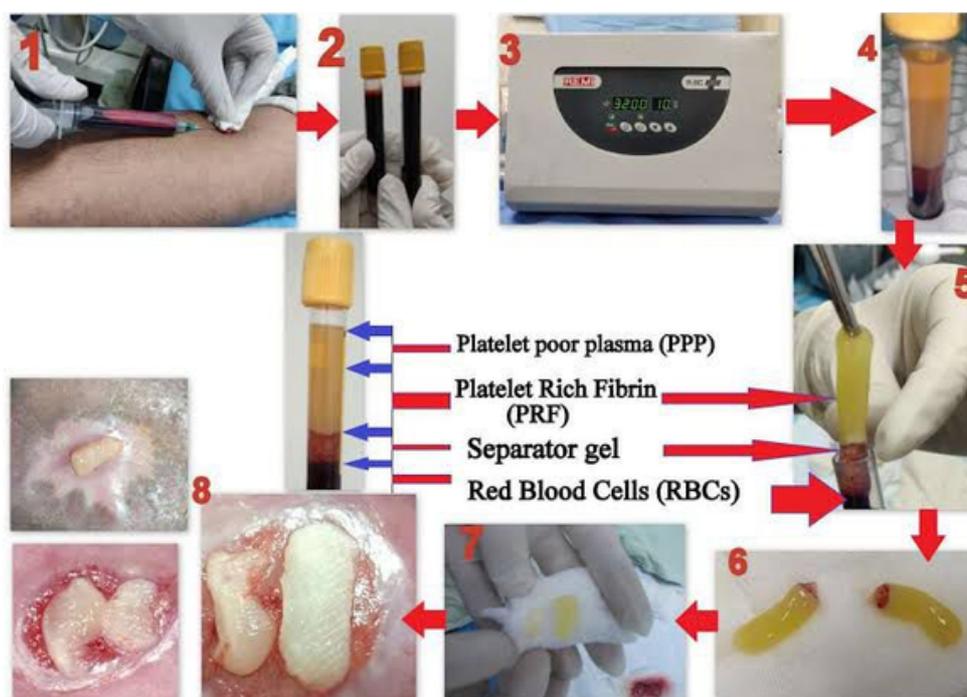
- No anticoagulants that affect the release of growth factors.
- No drugs (calcium chloride) that could affect fibrin polymerization.
- No animal products (Bovine thrombin) that could affect the coagulation process and immune system activation.
- PRF has the presence of natural fibrin network, which protects the growth factors from proteolysis.

- PRF favours the development of micro vascularization leading to a more efficient cell migration.
- PRF has the presence of monocytes, leukocytes and other white cells that have an important role during the inflammatory phase of healing.
- PRF manufacturing requires minimum time from the doctor.

Disadvantages:

PRF protocol depends on its manipulation from the time the blood sample is being collected and transference of the sample to the centrifuge. Human errors are most common during the procedure.

- The final amount that might be available for the procedure may be low after processing leaving very less bio active material to be available for use.
- Patients with bleeding disorder do not qualify for the procedure.
- Many times the desired effect is not seen in the patient and the reason is unknown.



Conclusion:

PRF, its application of the procedure in various dental treatments and its compatibility as a biomaterial in healing and tissue regeneration gives way to be used in multiple ways. Simplified processing technique without any complex handling makes it superior to PRP. PRF can be used to promote wound healing, bone regeneration, graft stabilisation, wound sealing, and homeostasis. Because the fibrin matrix is better organised, it is able to more efficiently direct stem cell migration and the healing program. Although PRF belongs to a new generation of platelet concentrates, the biologic activity of fibrin molecule is enough in itself to account for significant cicatricle capacity of the PRF. The slow polymerisation mode confers to PRF membrane as a particularly favourable physiologic architecture to support the healing process.

However, it is now necessary to look further into platelet and inflammatory features of this biomaterial. Only a perfect understanding of its components and their significance will enable us to comprehend the clinical results obtained and subsequently extend the fields of therapeutic application of this protocol.

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Lepromatous Leprosy Masquerading as Plasma Cell Gingivitis with Granulomatous Cheilitis- A Rare case report

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Abstract:

Introduction:

Plasma cell gingivitis (PCG) is a gingival disease characterized histologically by plasma cell infiltration in connective tissue. Granulomatous cheilitis (GC) is an uncommon condition with an unknown etiology that causes non-emissive swelling of one or both lips. Leprosy is a chronic infectious disease caused by the acid-fast bacteria *Mycobacterium leprae* that mostly damages the skin and peripheral nerves.

Method:

The patient in this case is a 38-year-old guy with gingival growth, cheilitis, and a crust on the lip. Tissue histopathology and immunohistochemistry indicated that the lesion was borderline Hansen's disease, a rare occurrence.

Result:

The swelling of the gingiva decreased gradually after non-surgical periodontal therapy. Later, on recurrence biopsy was performed, and a decrease in lip swelling was observed following leprosy treatment administered by a dermatologist.

Conclusion:

Since similar pathologic changes are seen clinically in leukemia, multiple myeloma, discoid lupus erythematosus, atrophic lichen planus, desquamative gingivitis, or cicatricial pemphigoid, which must be differentiated through hematologic examination, early diagnosis is crucial for an effective treatment plan.

KEYWORDS: *Plasma cell gingivitis, Cheilitis, granulomatous disease, Hansen's disease*

Introduction

Plasma cell gingivitis is characterized by erythematous, edematous, nonulcerated gingival tissue that is primarily limited to the maxillary anterior gingiva and mucosa and is infrequently accompanied by cheilitis and glossitis.^[1] Plasma cell gingivitis gets its name from the presence of a large number of plasma cells in the afflicted tissues.

The underlying physiological phenomenon appears to be hypersensitivity. Granulomatous cheilitis (GC), an uncommon condition with an unknown origin, is distinguished by non-remissive swelling of one or both lips and a distinctive histologic appearance of noncaseating granulomas. Some regard GC as an oligosymptomatic form of

Melkersson-Rosenthal syndrome (MRS), and it has also been linked to sarcoidosis, Crohn's disease, gingival granulomatosis, atypical tuberculosis, and angioneurotic edema.^[2]

The presence of both disorders shows that they share an etiopathogenesis.

Leprosy, also known as Hansen's disease (HD), is an old bacterial disease that, while treatable, remains a significant health issue in many parts of the world. HD is caused by infection with the *Mycobacterium leprae* bacillus, which causes a persistent infection in humans that mostly affects peripheral nerves and skin but can also impact the eyes, mucous membranes, bones, and testes and resulting in a variety of clinical phenotypes.^[3]

Case Presentation:

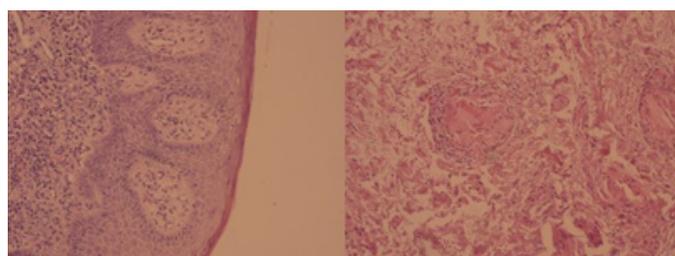
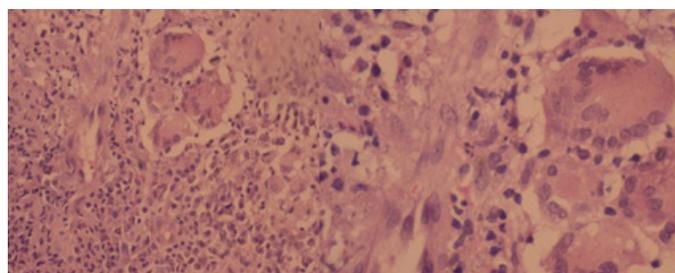
A 38-year-old male patient presented to the Department of Periodontology with complaints of lower lip swelling for 20 days and increasing gum bleeding while brushing his teeth. The patient had a history of anaemia but was not taking any medicines. The patient stated that he had previously used charcoal-containing toothpaste to clean his teeth for 20 years but had lately changed to cinnamon-containing toothpaste 20 days before the dental visit.

- **Extraoral examination** revealed cheilitis of lips.
- **Intraoral examination** demonstrated that the gingiva's attached and marginal margins were all inflamed. The gingiva was edematous, red in color,

and friable in texture. With the margins coronal to the cemento-enamel junction, loss of stippling and the loss of normal gingival contour were seen. An insignificant provocation caused gingival bleeding. The small amount of local deposits had no effect on the gingival irritation. 4-6mm generalized pseudopockets were seen all over the dentition. Neither gingival recession nor clinical attachment loss was seen.

Initial Investigation:

A hematologic analysis was performed; however, it produced no notable results. There were no related skin lesions and Nikolsky's sign was negative. To make a certain diagnosis, a gingival and lip biopsy were also performed.



Histopathologic Examination:

Earlier, the stratified squamous epithelium was seen in the gingival biopsy microscopy, along with sheets of plasma cells, neutrophils, histiocytes, and giant cells in the sub-epithelium. Additionally observed were focal areas of calcification and ulceration. These characteristics favored the diagnosis of Plasma cell Gingivitis with foci of ulceration and dystrophic calcification.

Lip biopsy microscopy revealed stratified squamous epithelium with mononuclear inflammatory cell infiltration. Well-formed granulomas constituted of epithelioid cells and histiocytes with Langhans-type giant cells were found in some areas.

These histologic findings pointed to Granulomatous Cheilitis.

Initial Treatment:

Non-surgical periodontal therapy, a change in dentifrice, and intralesional steroids were injected into the lip area were used to manage the case, and a gradual decrease in the lesion was observed. The patient was followed for two years at three-month, six-month, and twelve-month intervals.

Because the lesion reappeared later, a biopsy of the lip lesion was taken for histopathological examination.

Investigations:

Following a year, a lip biopsy revealed skin with an atrophic epidermis. Dermis displayed mononuclear cell rims and well-defined granulomas with enormous cells. There was proof that *Erector Piloni* had been destroyed. Deeper cutaneous nerve twigs, however, seemed to be unaffected.

These histologic characteristics made Borderline, Tuberculoid Hansen's disease more prevalent.

Final Treatment:

Later patient received anti-leprosy drugs and the lesion subsided subsequently.

Discussion:

Plasma-cell gingivitis has been labeled variously as atypical gingivostomatitis, idiopathic gingivostomatitis, and allergic gingivostomatitis. Cheilitis and glossitis were frequently connected with the illness, and many cases were assumed to be an allergic reaction to a component of chewing gum. However, it appeared that the condition was widespread between 1966 and 1971. It was assumed that an allergen-causing hypersensitivity had been present in the suspected products for a limited time.^[4]

In 1971, Kerr and Kennet reported the clinical features of the disease process of allergic gingivostomatitis and demonstrated that it was a hypersensitivity reaction to some constituent of chewing gum and/or hard candy.^[5] Gargiulo et al. classified PCG as an immunological reaction to allergens, neoplasia, or of unknown origin. Mishra et al in 2015 highlights the adverse effects and irrational use of herbal agents in dentifrices.^[6] Our case study exhibits

comparable findings and is consistent with past research. Leprosy-related oral lesions are infrequent, however they might appear as lepromas or leprous plaques on the hard palate and lips. These are more common in multibacillary forms of the disease, specifically in lepromatous and borderline leprosy.^[7] The present case report's peculiarity is the appearance of a rare condition called borderline tuberculoid Hansen's disease in the lower lip. Therefore, a combined interdisciplinary approach between a periodontist and a dermatologist is required to treat this condition.

Conclusion:

Since leukemia and other fatal conditions can mimic plasma cell gingivitis, a thorough case history must be taken along with hematological, histopathological, and immunohistochemical testing in order to rule out other lesions and make the correct diagnosis. Although oral lesions in Hansen's disease are uncommon, they can develop on the hard palate and lip and, if caught early, can help avoid further complications.

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Gingival Lichen Planus: Lesion following Covid-19 Vaccination- A Case Report

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Abstract:

Lichen planus and lichenoid drug eruptions uncommonly occur after vaccination. Most commonly associated vaccines were Hepatitis B, influenza, and herpes zoster vaccines. Lichenoid reactions and Lichen planus developing after administration of covid-19 vaccines have been recently reported.

Case Presentation: We describe a case of a 37 year old patient who developed Lichen planus after First dose of COVID-19 Vaccination .The case was managed symptomatically by Topical steroid application.

Conclusion: Our case suggests that COVID -19 vaccine may be a trigger factor for developing Lichen Planus.

Introduction

Oral lichen planus, is a chronic inflammatory muco-cutaneous disorder. Lichen planus and lichenoid drug eruptions while uncommonly occur after vaccination, hepatitis B, influenza, and herpes zoster vaccines were the 3 most commonly associated vaccines.¹

In March 2020 the World Health Organization announced, the coronavirus

Disease 2019 (COVID-19) as pandemic. Cutaneous reactions were increasingly observed as the COVID-19 vaccines became widely distributed,. Oral lichenoid lesions or oral lichen planus can be rare adverse reactions to these vaccines .² In 10% of patients with Oral lichen planus, the disease is confined to the gingiva. ³ Erythematous lesions affecting the gingiva result in desquamative gingivitis. Oral Lichen Planus involving gingiva usually presents as desquamative gingivitis and is most often clinically indistinguishable from other diseases including

mucous membrane pemphigoid and pemphigus vulgaris. Clinical, histologic, and serologic investigations are often required to differentiate among desquamative Gingivitis-associated disorders to provide adequate therapy, and improve the prognosis of patients.

Aim :

This paper reports a case of gingival lichen planus, developing in a female patient, after receiving the first dose of COVID-19 vaccine.

Case-Report :

A 37-year-old female patient, presented to the out-patient department with a chief complaint of burning sensation in the mouth for the past 3 months. The burning sensation was found to aggravate on eating spicy foods. There was no history of prior drug intake (including any drugs that can trigger lichenoid eruption) before the onset of dermal lesions.

When asked about possible trigger, the patient informed ,she received the first dose of COVISHIELD vaccine [Recombinant, replication-deficient chimpanzee adenovirus vector encoding the SARS-CoV-2 Spike (S) glycoprotein.] following which she developed skin (Fig 1) and gingival lesions(fig 2a,2b) within 72 hours . The patient reported to a dermatologist with complaints of multiple red to violet, painful and itchy lesion developing on the scalp, armpits and extremities. These skin lesions were treated by a dermatologist with topical application of steroid (clobetasol propionate, salicylic acid, and urea lactic acid ointment).while on follow-up, she refused to receive the second dose of vaccine, fearing flare up of lesion.

On intraoral examination, diffuse erythematous areas were seen interspersed with white keratotic streaks present over the posterior gingiva (Fig.3) extending anteroposterior from the region adjacent to canine to the posterior tooth region.



Fig 1: Skin Lesions (Multiple hyper pigmented plaques were noted on the extremities)



Fig 2a: Lesion on right posterior gingiva



Fig 2b: Lesion on right and left posterior gingiva

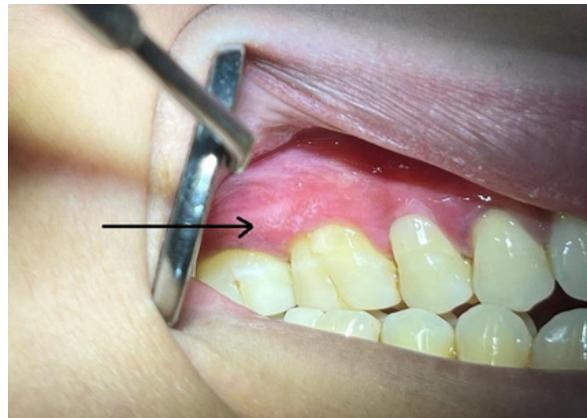


Fig 3 : Gingival Lichen Planus : a atrophic red lesion with interspersed white striations involving the gingiva

Based on the clinical findings and patient's history, the lesion was provisionally diagnosed as Oral Lichen Planus on posterior gingiva bilaterally. In view of Lichen Planus or Lichenoid reactions developing following the first dose of COVID-19 vaccination and the clinical appearance of lesions, a gingival punch biopsy was performed with a possibility of Atrophic Lichen Planus following COVID-19 vaccine. Histopathological examination features showed dense mononuclear infiltrate and granulation tissue consistent with atrophic Lichen Planus.(Fig.4) Direct-immunofluorescence test was inconclusive for IgG, IgA, IgM and C3.

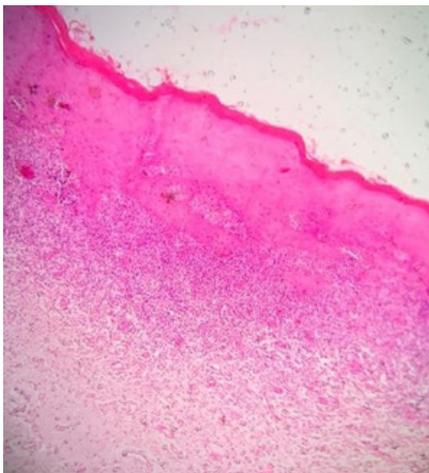


Fig.4: Histopathological features showed dense mononuclear infiltrate and granulation tissue

Differential Diagnosis:

Lichenoid drug reactions.

Investigations:

a. Complete blood picture and haemogram –was found to be within the normal limits.

b. Punch biopsy for histological and Direct immune-florescence examination.

Treatment:

The patient was advised to use a topical corticosteroid, three times daily for two weeks applied directly to the lesion and was recalled for regular follow-up.

Discussion:

Lichen Planus is an inflammatory condition involving the skin and/or mucous membranes, of unknown etiology mediated by T lymphocytes. It can be associated with numerous triggers, such as medications, infections (such as Hepatitis C), and vaccines.⁴

Hepatitis B, influenza, and herpes zoster vaccines were the 3 most commonly associated vaccines.¹ Henry Zou et al reported in their review a total of 152 cases of post-vaccination Lichen Planus in retrospective and prospective studies.⁶ A retrospective cohort study by Hertel M et al and another retrospective registry-based study by McMOhan D E et al found that mRNA-based vaccines were most commonly implicated in post-vaccination LP onset.^{2,5} Although the physio-pathological mechanisms underlying the relationship between LP and vaccination for COVID-19 are still poorly understood,

however, it has been shown that after such vaccines there can be a stimulation of the immune response of T helper lymphocytes type 1 (Th1),⁷ leading to the stimulation of the production of interleukin (IL)-12, tumor necrosis factor (TNF- α), and interferon (IFN- γ), cytokines involved in the pathogenesis of LP.⁸ At present it can be stated that COVID-19 vaccines can cause strong T-cell responses. Direct-immunofluorescence test was inconclusive for IgG, IgA, IgM and C3.

Mucosal involvement affects over half of all Lichen Planus patients and frequently can be the sole presenting sign.

It is most commonly seen in the oral cavity but can be found on the esophagus, glans penis, vagina, or vulva.

The erosive and atrophic forms are commonly associated with a burning pain exacerbated by hot or spicy foods. Therefore it is necessary to understand the underlying mechanism for the development Lichen Planus with vaccination for Oral Lichen Planus has been reported in the COVID-19-vaccinated patients, including the present case report, further observations are required to confirm whether this condition is genuinely related to the vaccine and to study the precise underlying mechanism.

Summary

Why are these cases new information?	Lichen planus can be rare adverse reactions to vaccines. This case presents Lichen planus developing after COVID-19 vaccine
What are the keys to successful management of these cases?	Since Lichen Planus is an immunologically-mediated disease, corticosteroids are the drugs of choice for treatment
What are the primary limitations to success in these cases?	Since the underlying mechanism is not completely understood, the treatment is usually for symptomatic relief.

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