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# JIDAK

Apr.- June 2021, Volume 3 , Issue 2

JOURNAL OF INDIAN DENTAL ASSOCIATION - KOCHI



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Apr.- June 2021, Volume 3 , Issue 2

**JOURNAL OF INDIAN DENTAL ASSOCIATION - KOCHI**

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The journal invites manuscripts from dental and other allied health sciences. It publishes manuscripts under categories of Original Research, Review and Case Reports.

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## *Chief Editors Message*

Lets be hopeful!!!

It is a pleasure to release the second issue of JIDAK, the official publication of IDA Kochi branch.

Nearly a year and a half has passed since the COVID-19 pandemic became a visitor to our homes. We all are struggling to get our practices to normalcy, but let it be just a part of our life. Let's try to enjoy the positives of the current scenario by spending more time for our families and friends. Let's evangelise and seek spiritual comfort through technology and help the needy in our midst. This will make our life less stressful, accept life with all its contradictions, frustrations and disappointments and move forward.

However, we all can see a glimpse of hope to a better tomorrow awaiting us. Extensive vaccination programmes, effective implementation of lockdown in the state and the responsible public behavior has resulted in a promising status quo. Let's be grateful to those who have been responsible for this comforting change and be hopeful that a day we all are wishing for is just around the corner.



Dr Vidhya Parameswaran  
Chief Editor- JIDAK  
IDA Kochi

# CONTENTS

<b>PANDEMIC BRUXISM: AN UNWANTED GIFT OF COVID-19?</b> Dr. Joshua Johnson, Dr. Achshah Rachel Johnson Dr. Keerthy Rathan, Dr. Jesline Merly James Dr. Suneesh Kuruvilla, Dr. Subramaniam R.	04-07
<b>DO WE NEED NATURE IN DENTISTRY?</b> Dr. George Jacob, Dr. Deepti Paul	08-11
<b>MANAGING DEVELOPING MALOCCLUSIONS THROUGH TIMELY INTERCEPTION</b> Dr. Ravisankar Vijayan	12-15
<b>'INFODEMIC' - SPREAD, PREVENTION AND CONTROL</b> Riya Sunil Dhas, Dr. Vivek Narayan Dr. Bindu Bhaskar	16-19
<b>REATTACHMENT OF FRACTURED TOOTH FRAGMENT WITH PULPOTOMY IN IMMATURE TOOTH: A CASE REPORT</b> Dr. Leeba Varghese	20-25
<b>FABRICATION OF ATTACHMENT RETAINED GINGIVAL PROSTHESIS - AN APPROACH FOR MASKING ANTERIOR MAXILLARY ALVEOLAR DEFECT IN CLEFT LIP AND PALATE CASES</b> Dr. Shashank Uniyal, Dr. Vidhya Parameswaran Dr. Ankit Sharma	26-29

# PANDEMIC BRUXISM: AN UNWANTED GIFT OF COVID-19?

## ABSTRACT

The on-going coronavirus pandemic has considerably changed all our lives and redefined what it means to be normal. The consequent lock down and social restrictions generated a sense of financial insecurity, socioeconomic distress as well as psychological disturbances among the general public. The psycho emotional turbulence kept the individuals at a constant state of agitation for longer periods, triggering the body's natural 'fight or flight' response. Instead of making use of the lock down and social restrictions as an opportunity to rest and recharge, in a good proportion of people all the survival energy turned into stress, anxiety and apprehension. This accentuated levels of anxiety and emotional distress hampered general health to a remarkable extent. As pointed out by few recent studies, one of the notable oral manifestations of COVID 19 induced stress is bruxism and related temporomandibular disorders (TMDs). As a result, increased prevalence of microfractures of teeth or enamel, tooth wear, broken or chipped teeth, stiffness and pain in the jaw joint have also been reported. Management of stress related bruxism should be primarily directed to its cause. This should encompass the treatment of bruxism per se along with proper addressing of its underlying psycho emotional issues.

**Key words:** COVID 19, pandemic, bruxism, temporomandibular disorders.

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## INTRODUCTION

Bruxism is a repetitive masticatory muscle activity characterized by clenching or grinding of the teeth, or bracing or thrusting of the mandible.<sup>1</sup> It can act as a possible risk factor for several negative consequences of health like masticatory muscle pain, oral mucosal damage, mechanical tooth wear, and failures of prosthodontic constructions. This condition is split into sleep bruxism (SB) and awake bruxism (AB). Both sorts of bruxism affect males and females equally. Many psychosocial factors like stress and anxiety are reported to be related to both sleep bruxism and awake bruxism as well.<sup>2</sup> Bruxism as a whole is commonly considered the most harmful parafunctional activity of the temporomandibular joint (TMJ).<sup>3</sup>

In late December 2019 a brand new, un-familiar and threatening pandemic called COVID-19 (Coronavirus 2019 disease), caused by the SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) infection, began to spread around the world. The routine life was altered for months and ultimately it ended up in severe health threats, economic uncertainty, and social isolation, leaving potential adverse effects on the physical and mental state of the people. Stress, anxiety, and depression were the most common psychological responses of people to the Coronavirus pandemic.<sup>2</sup> Elevated levels of stress and anxiety have a well-established link to bruxism.<sup>4</sup> The psychological impacts of COVID 19 can influence the oral and maxillofacial syndromes, like Temporomandibular Disorders (TMD) and bruxism, which could further aggravate the orofacial pain.<sup>2</sup> This article reviews the prevalence of bruxism in COVID 19 times, its pathophysiology, signs and symptoms as well as management.

### Review of literature

Few studies have illustrated elevated levels of bruxism and temporomandibular disorders associated with those suffering with an altered psycho-emotional status.

Concomitant studies were conducted among around 1800 subjects in two culturally different countries, Israel and Poland with an objective to evaluate the effect of the current pandemic on the possible prevalence and worsening of

TMD and bruxism symptoms. The results showed that the coronavirus pandemic has significantly altered the psychoemotional status of both Israeli and Polish populations, resulting in the intensification of their bruxism and TMD symptoms. The most reported possible/ probable predictors of sleep and awake bruxism reported were gender, anxiety and concerns about COVID 19 on mental health and social relationships. The authors concluded that the aggravation of the psychoemotional status caused by the Coronavirus pandemic can result in bruxism and TMD symptoms intensification and thus lead to increased orofacial pain.<sup>2</sup>

According to data from the ADA Health Policy Institute's COVID19 impact poll for the week of 21st September 2021, a majority of participating dentists have seen a rise in stress-related oral health conditions in their patients since the onset of the COVID19 pandemic. More than half of the polled dentists reported an increase in the prevalence of bruxism (59.4%), chipped and cracked teeth (53.4%), and temporomandibular disorder symptoms (53.4%) among their patients. The survey results concluded that increased stress related oral manifestations could be attributed to psychological impacts of COVID 19 on individuals.<sup>5</sup>

Few studies have reported aggravated responses among patients suffering from TMDs.

A study was conducted with an objective to evaluate the presence of reported symptoms of TMD and the level of depression, somatization, and stress perceived among one hundred and eighty two participants in Italy. This study supported the hypothesis which stated lockdown as a major stressful event that may trigger temporomandibular disorders or increase reported symptoms in subjects already suffering from this dysfunctional pathology. Nearly 40% of the participants reported complaints related to bruxism (grinding of teeth or clenching of the jaw during the day and/or night, and jaw ache or feeling stiff when waking up in the morning). Almost 51.4% of subjects who reported a worsening of TMD symptoms in the last month related this condition to the coronavirus lockdown and to the stress experienced in that period. The results of this study seem to support the

hypothesis that stress during the pandemic lockdown influenced the onset of temporomandibular joint disorders and facial pain, albeit with individual responses.<sup>6</sup>

A prospective cohort study aimed to understand the impact of COVID-19 distress on psychological status and facial pain severity in people with temporomandibular disorders among 45 adults (19 chronic, 26 acute/subacute TMD) in Italy. The participants were recruited prior to the COVID-19 outbreak. Baseline assessment took place before the outbreak while a follow-up was performed immediately after the lockdown period. COVID Stress Scale scores were significantly higher in those with chronic TMDs compared to those with acute/subacute TMDs. The study findings reinforced the role of COVID 19 related stress as a possible amplifier of chronic pain and pain-related disability in people with TMDs.<sup>7</sup>

It is reported that there has been an increase in patients presenting with features of toothwear, attributed to grinding and jaw clenching. The prevalence of cases reporting pain with tooth fractures been seen increasingly in dental practices.<sup>8</sup>

## Pathophysiology

It is well documented that emotional stress plays a role in accentuating masticatory muscle activity bruxism and consequent circulatory changes in masticatory muscles, which can cause TMD symptoms.<sup>9</sup> The various psychological issues involved in emergency and threatening situations like COVID-19 pandemic are able to trigger a chain of events that end up in extreme levels of sympathetic activity and further release of adrenocortical steroids which lead to muscle vasoconstriction and increased peripheral vascular resistance. Feelings of warmth and cold, palpitations, tachycardia, nausea, abdominal pain, diarrhoea, and constipation can all be the consequences of autonomic stress responses. All these reactions are supposed to initiate/aggravate a situation of system overloading, a common finding in bruxism and TMD patients.<sup>10</sup>

## Signs and symptoms

Pain in the teeth and sensitivity to heat and

cold, chronic muscular facial pain with tension head aches caused by intense muscle contraction, microfractures of teeth or enamel, tooth wear, broken or chipped teeth, stiffness and pain in the jaw joint with restricted opening and difficult chewing can be indicators of bruxism. Sometimes, the pain may mimic headache or ear ache.<sup>11</sup>

## Management

Management of bruxism should primarily focus on the elimination of its cause. Proper case history should be elicited prior to the initiation of treatment. Spending quality time with family members, being indulged in different healthy exercises and sports activities, following a schedule/routine, and taking a break from traditional and social media could enable people to combat the mental health issues to a certain level. Public awareness campaigns aimed at keeping up mental health in the prevailing situation is yet another action that should be urgently undertaken.<sup>12</sup>

The Inter-Agency Standing Committee (IASC) guidelines can also be adapted are organized around a 4-tiered intervention pyramid: (1) restoring basic services and security for the affected population, (2) strengthening family and community networks, (3) providing distressed individuals with psychosocial support, and (4) providing specialized mental health intervention for severely affected survivors.<sup>13</sup>

Various treatment modalities for bruxism per se includes occlusal therapy where occlusal splints are provided for preventing dental grinding and consequent toothwear in case of sleep bruxism, behavioural modifications that includes psychoanalysis, hypnosis, meditation, sleep, hygiene measures with relaxation techniques and self-monitoring. Another recommended option is biofeedback technique that works on the principle that bruxers can unlearn their behaviour when a stimulus makes them aware of their adverse jaw muscle activities. Pharmacological therapy utilising drugs that inhibit acetylcholine release at the neuromuscular junction (NMJ) is yet another successful line of treatment.<sup>11</sup>

## CONCLUSION

COVID 19 catastrophic calamity has caused significant adverse effects in the psycho social domains of individuals and populations. Various cross-sectional studies have shown its oral impacts in the form of aggravating bruxism and other TMDs. The crisis and its psychological as well as oral impacts need to be addressed at the earliest.

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# DO WE NEED NATURE IN DENTISTRY?

## ABSTRACT

In dentistry we intend to reconstruct the lost structures and restore the functions in the most natural way we can. Understanding 'The Nature' in Dentistry is the first step towards achieving this goal. The natural functions of the oral tissues and its development has a key role in treatment planning in dentistry. This article reviews some of the current possibilities of this concept in our routine practice of dentistry.

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## Do we need Nature in Dentistry?

The rules and laws of Nature always make us think about our importance among the plethora of species in this world. Human beings have better intelligence, sophistication, communication, among all the better developed animals in this planet. Each and every element of the stomatognathic system is tailor made to perform its specific function, whether it is the teeth in occlusion, periodontium, jaw bones, salivary glands, tongue, muscles of mastication or the Temporomandibular Joint.

In dentistry we intend to reconstruct the lost structures and restore the functions in the most natural way we can. Understanding 'The Nature' in Dentistry is the first step towards achieving this goal. 'Biomimetics' is a terminology coined to get a proximity to nature for all the restorative procedures we carry out in our practice<sup>1</sup>.

### The natural way of Stomatognathic Development

The Functional Matrix Theory by Dr. Melvin Moss explains how naturally our organs mold to adapt to the functions during each growth stage. From the day a new born suckles to breast feed, nature sets a pattern amicable for the proper growth and development of the human body.<sup>2</sup> The eruption of teeth, development of jaws, growth spurts, all have an impact on the proper positioning of teeth in the dental arch to achieve best contacts and occlusion which becomes the future backbone for a functionally good dentition.<sup>3</sup>

The tongue plays an important role in all these, which above all acts as the janitor of the oral cavity. With its constant and rigorous movements, make sure that teeth are cleaned on all surfaces possible with saliva as the cleansing solution in between. Tooth shape, size, texture, modulus of elasticity, wear resistance, contacts and contours and occlusion are also nature's selection to perform the tough task of mastication, along with need of looking good with the concept of esthetics and proportions set by human civilization and social hurdles.<sup>4</sup>

Early detection and correction of tongue ties and lip ties in new born can correct many issues with breastfeeding which help the child to gain the natural source of immunity at an earlier age itself. Proper guidance for the mother during this time helps her put into practice good methods of feeding, can relieve her from the early breast feeding issues like breast pain due to engorgement.

### The need of preservation

Understanding the role of nature in the tissues what we work with, Preservation becomes the key role in operative procedures. DeVans Dictum in Prosthodontics states 'Perpetual preservation of what remains is most important than the meticulous replacement of what is lost.' In other words, the principle of tooth preservation in operative procedures is gaining more attention. With the advancement in magnification and more organized way of practice these principles are feasible in every procedure we execute on a day to day practice. Some of the common examples from our routine Conservative Dentistry and Endodontics are given below.

### Conservative Restoration of Vital teeth

The earlier concept of 'Extension for Prevention' is more of a myth now. Bonding techniques and adhesive materials have improved, which can restore even the smallest to the larger preparations and also the stress bearing areas. The use of improved posterior composites and better matrix systems has been a promise to restorative dentistry.

The tough to restore deep proximal preparations of teeth is now manageable with indirect composites and Lithium di-silicate bonded restorations. The earlier concept of root canal therapy and crowns for deep caries lesions or difficult deep proximal caries is no longer justified. Intentional root canal therapy also has to be avoided as much as possible to preserve the natural consistency of the teeth and periodontium.<sup>5</sup>



Lithium di-silicate resin bonded restorations with buccal and lingual margins at or above the heights of contours.<sup>7</sup>



### Vital Pulp therapies

Tooth with vitality, but still with a prognosis are given priority for procedures which help to maintain the vitality of the pulp tissue. Deep caries management has a breakthrough with the introduction of bioceramic materials. Pulpotomy procedures have better prognosis with biocompatible materials like MTA and Biodentin.<sup>6</sup>

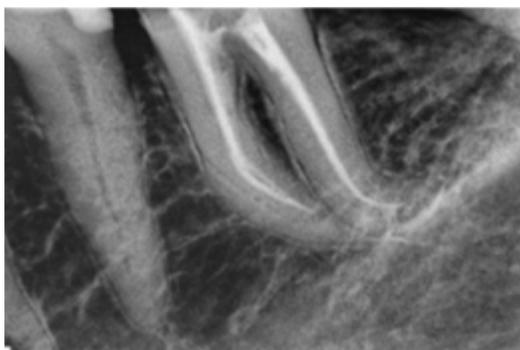


Coronal pulpotomy and apexogenesis performed with the intention of preserving the vitality of root canal pulp tissue in a 8 year old child.

### Conservative Root canal Therapy

Starting from the design of conservative access to the minimal removal of root dentin, many studies indicate better structural integrity for root treated teeth. Today's Endodontics depend

more on irrigation techniques than over preparation.<sup>7</sup>



Comparison of the older wide preparations with the newer concept of limiting the taper of the preparations.

## Conservative Post Endodontic restorations

Concept of crown for each and every root canal treated tooth is now a history and no longer an evidence based treatment. With the breakthrough in ceramic technology and concepts of adhesion, conservative restorations are now possible with minimal tooth loss after endodontic therapy. Newer modalities include composite bonding, Laminates, Onlays, Overlays and Endo crowns which can preserve tooth structure.<sup>8</sup>



Porcelain laminate veneer act as an esthetic post endodontic restoration for this case with a root canal treated UR1 instead of a full crown

In post and core restorations also, more conservative preparations are encouraged with the use of fiber reinforced composite posts which have the same modulus of resiliency as that of the root dentin and can be bonded to the tooth structure giving a 'Mono-block like effect'.

## CONCLUSION

Understanding the natural functions of the oral tissues and its development has a key role in treatment planning in dentistry. Care should be exercised to preserve natural tissues to the maximum. 'Less is More' is the new normal in Conservative and Operative Dentistry. Nature

needs to be respected and preservation is the key. Skill and knowledge of the materials we use is the game changer which helps us to implement these principles in our routine dentistry.

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# MANAGING DEVELOPING MALOCCLUSIONS THROUGH TIMELY INTERCEPTION

## ABSTRACT

Identifying a developing malocclusion during mixed dentition or early permanent dentition and orthodontic intervention by the general dentist or specialist can go a long way in reducing future malocclusion. This interceptive approach will simplify later orthodontic treatment or sometimes even can eliminate future comprehensive orthodontic treatment. This article intends to give general practitioners an overview of the different developing malocclusions and basic guidelines of when to treat, what to treat and when to refer.

**Key Words-** Developing Malocclusion, Interception, General practitioner.

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## INTRODUCTION

Every dentist who treats children, consciously or unconsciously would do limited orthodontic procedures such as interceptive extraction of deciduous teeth, space maintenance for permanent teeth etc. It is not prudent to think of orthodontics just in terms of appliances alone. It is also taking care of development of occlusion and jaws longitudinally<sup>1</sup>. All qualified dental practitioners should recognize the orthodontic requirements of their patients<sup>2</sup>. This article is designed to help general practitioners examine children from an orthodontic point of view.

Practitioners should be well versed with the normal development of jaws and occlusion to identify potential malocclusions in the future. The recognition of abnormality is the first step towards providing care. So a few words related to normalcy in both deciduous and mixed dentition is discussed below.

### Deciduous Dentition

Spacing is normal between the anterior teeth in deciduous dentition<sup>1</sup>. Lack of it may be a concern since crowding of permanent dentition is a probable sequel. Usually minimal intervention is carried out during this stage. Patient should be evaluated at regular intervals. The presenting deciduous condition will give an idea of the future permanent dentition.

### Mixed Dentition

The usual sequence of eruption of permanent teeth is- first molars [6 years] lower central incisor [6-7 years], upper central incisors and lower lateral incisors [7 years], upper lateral incisors [8 years], lower canines [9-10 years], first premolars [10-11 years], second premolars, upper canines and second molars [12 years]. The sequence of eruption is more important than chronological age of eruption<sup>2</sup>. General delay in eruption of more than 2 years needs proper investigation. Localized delay of more than 6 months with contralateral tooth of same arch erupted also needs to be evaluated through proper history, clinical examination and radiographs<sup>3</sup>. The fanning and distal tipping of upper incisors with midline diastema [ugly duckling stage] is a normal

finding at this stage and usually self corrects after eruption of upper canine<sup>1</sup>. Mild crowding of upper and lower incisors in early mixed dentition period is also not an abnormality, as it usually gets reversed by itself with growth of jaws and usage of primate spaces<sup>2</sup>.

### Possible Interceptive Measures For Different Developing Abnormalities In Occlusion And Jaw Growth

#### Unerupted Upper Central Incisor

It is vital to take thorough history [for trauma, avulsion, contra lateral tooth eruption] and clinically examine the patient for any gingival bulge. Radiographs would be required to establish the presence or absence of the permanent incisor, any pathologies like odontomes, supernumerary or eruption cyst that can prevent normal eruption. Dilaceration of the incisor root can also interfere in normal eruption. The orthodontic management would require creation/maintenance of space for the central incisor, surgically remove the pathology, expose and bond central incisor and bring it to the arch via traction. It is logical to get a specialist's advice in such cases as stage of root development of the incisor dictates the time of removal of pathology.

#### Single Tooth Cross bite

They are self devastating as it leads to upper incisal wear and gingival recession of lower incisors there by demanding emergency attention. Such crossbites are usually dental in origin and can easily corrected using a simple removable appliance design incorporating z springs in relation to upper incisor in cross bite, Adams clasp on upper permanent first molars, ball end clasp between deciduous molars and posterior bite plane. Once the cross bite is corrected, it is self retaining without needing any retainers.

#### Increased Overjet

Increased overjet could be due to skeletal or dental etiology. Clinician should be able to diagnosis the underlying problem between a skeletal Class II or due to environmental causes like digit sucking, tongue thrusting etc. As diagnosis of an orthodontic patient is beyond the scope of this article, reader is advised to

look for another source<sup>4</sup>. If the increased overjet is due to mandibular retrognathia, functional appliances like Twin Block may be needed [Figure 1] with or without head gear [Figure 2] depending up on the presence of any maxillary component. If the cause is due to any aberrant habits, etiology eradication using habit breaking appliances is absolutely vital for the stable correction.



Figure 1- Twin block appliance



Figure 2- Head Gear appliance

### Reverse Overjet

Clinician should be able to diagnosis the underlying problem between a skeletal or dental etiology. Single tooth crossbite is more of dental in origin where as large number of teeth can be of skeletal origin. Depending up on skeletal base diagnosis, 3 scenarios exist with different management strategies. Single tooth cross bites with displacement and Class I skeletal base can be treated with simple removable appliances with z springs. Two or

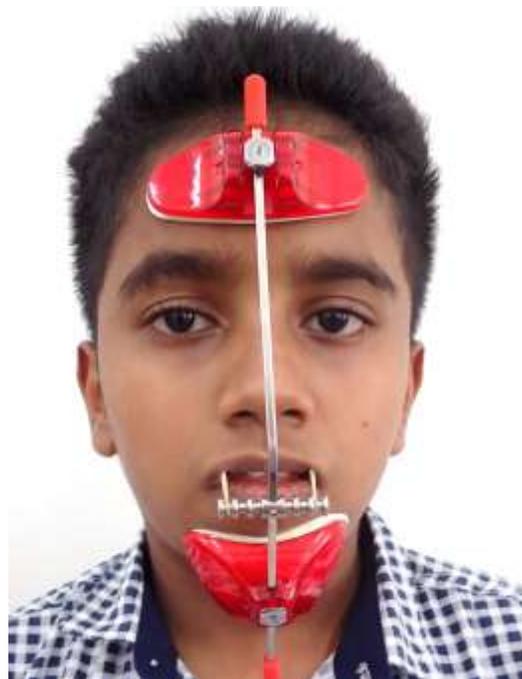


Figure 3- Reverse pull head gear appliance

more incisors in cross bite with Class I skeletal base can be treated with 2x4 fixed appliances. Anterior cross bite with Class III skeletal base needs to be intercepted with orthopedic appliances like reverse pull headgear [Figure 3]. There are no hard and fast rules here and clinician sometimes needs to take appropriate decision taking into consideration the growth status and compliance of the patient.

### Early Loss of Deciduous teeth

In situations where deciduous teeth need to be extracted (Caries) or has been lost prematurely the space should be maintained for the succeeding permanent tooth. This can be done by giving space maintainers. It can be done using band and loop appliance if unilateral or lingual arch/Nance button if bilateral.

### Some Important Points Revisited<sup>5</sup>

- Correct age for using Class II functional appliances is 10-13 years for females and 11-14 years for males during growth spurts.
- Correct age for Class III growth modification appliances is 7-10 years age.
- Reverse pull headgear is most effective if

used in early mixed dentition stage [upto 10years age]

- U2, U/L 5, L1 are the most commonly congenitally missing permanent teeth apart from third molars.
- Relatively little space loss occurs if Es are extracted in a spaced dentition [not upper] and also after 10 years of age. Mesial drifting is more in the upper arch than lower arch
- Significant expansion of upper arch to correct crowding during mixed dentition except in the presence of posterior cross bite is unstable.
- Posterior cross bite needs to be corrected in mixed dentition stage to prevent them become established in permanent dentition.
- Supernumerary teeth in primary dentition almost always erupt and can be extracted. In turn the successor tooth may develop supernumeraries in 35-50% cases.
- Supplemental or missing primary teeth can be reproduced in permanent dentition also.(#)
- Primary canines are whiter and more bulbous at cervical level than permanent canines
- If upper lateral incisor is rotated and labially positioned before the eruption of the permanent canine, there are high chances that the canine will be impacted labially.

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## CONCLUSION

I believe this article might have provided a blueprint to help you how to monitor, intercept or refer a developing malocclusion so that we can provide the best possible care at the right time with the limited resources. To conclude, it does not matter who treats, what matters is what best you can offer in terms of esthetics, function and stability.

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# 'INFODEMIC'- SPREAD, PREVENTION AND CONTROL

## ABSTRACT

Infodemics is an overabundance of information, some accurate and some not, that makes it hard for people to find trustworthy sources and reliable guidance when they need it. As COVID spreads havoc in the country, misinformation flows much faster than the virus from social media and other unfiltered networks, resulting in declining public faith in the health system and a perplexing sense of fear and anxiety. This review article revisits how an infodemic spreads and provides insights to prevention and management of misinformation in the context of the COVID 19 pandemic.

**Keywords :** Infodemic, COVID-19, misinformation, prevention.

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## INTRODUCTION

### 1. What is 'infodemics' all about?

Infodemics, coined in 2003, is a term that combine the words information and epidemics, referring to an excessive amount of information about a problem that is typically unreliable, spreads rapidly, and makes a solution more difficult to achieve, a state of information overload. As stated by the Pan American Health Organization, Infodemics is an over abundance of information, some accurate and some not, that makes it hard for people to find trustworthy sources and reliable guidance when they need it<sup>1,2</sup>.

### The current 'Infodemic'

Sadly, it is true that accompanying the current pandemic is a frightening Infodemic, which makes it even more difficult to control. As COVID-19 spreads havoc in the country, misinformation flows at a much faster rate than the virus from social media and private unfiltered networks like WhatsApp, Facebook, Twitter, Instagram, YouTube, TikTok, etc. Director-General of the World Health Organization (WHO) declared that the COVID-19 epidemic is going through an 'infodemic' of misinformation<sup>3</sup>. On March 28, in line with WHO, Antonio Guterres, the Secretary-General of United Nation, tweeted on his personal Twitter account that "Our common enemy is COVID-19, our enemy is also an 'infodemic' of misinformation"<sup>8</sup>. Compounding this information vortex is the fact that governments rarely make policy decisions solely on the basis of empirical evidence; political interest is the key, and the two are frequently at odds. Governments want to be perceived as being in control and are too quick to provide false reassurances. Such miscommunication is not helped by mass media, which are often guilty of favouring quick, sensationalistic reporting rather than carefully worded scientific messages with a balanced interpretation<sup>4,5</sup>.

### 2. How does the Infodemic spread?

An infodemic is an overabundance of information which may be online or offline.

With advancements in technology and social media, information is available at fingertips and this allows us to share news with one another with just a tap on the screen. This quick information exchange has increased the quality of life as people are able to access a vast source of information on any topic they need to know about. This ensures that everybody has access to information but the problem arises when the contents of these articles are questionable or misinterpreted.

### 3. Consequences

Misinformation confuses by diluting the pool of legitimate information. As this continues, it leads to a deterioration of public trust and fuels helplessness. It often results in confusion, panic attacks, and anxiety amongst citizens. This situation is extremely concerning because it undermines trust in health care programs. It is worthwhile to ponder who benefits from this misinformation. An editorial in the Lancet identifies financial gain, political gain, and experimental manipulation as potential beneficiaries of this lethal Infodemic<sup>5</sup>.

### 4. An ounce of Prevention- Let's flatten the Infodemic curve.

The key to limiting the Infodemic curve also lies in adoption of healthy behaviours at an individual level. The World Health Organization has suggested several tips to stem the flow of misinformation as depicted in fig 1 & 2.

According to WHO, the following steps can be employed to check the authenticity of a news<sup>6,7</sup>.

#### 1. Assess the source.

Check the source of the news. Only accept news from official and trustworthy sources.

#### 2. Go beyond the headlines.

Headlines can be misleading as they are meant to catch the reader's attention. So it is important to read through the whole article to understand its message.

#### 3. Identify the author.

Ensure that the author is qualified in the field to be making a comment on the topic.

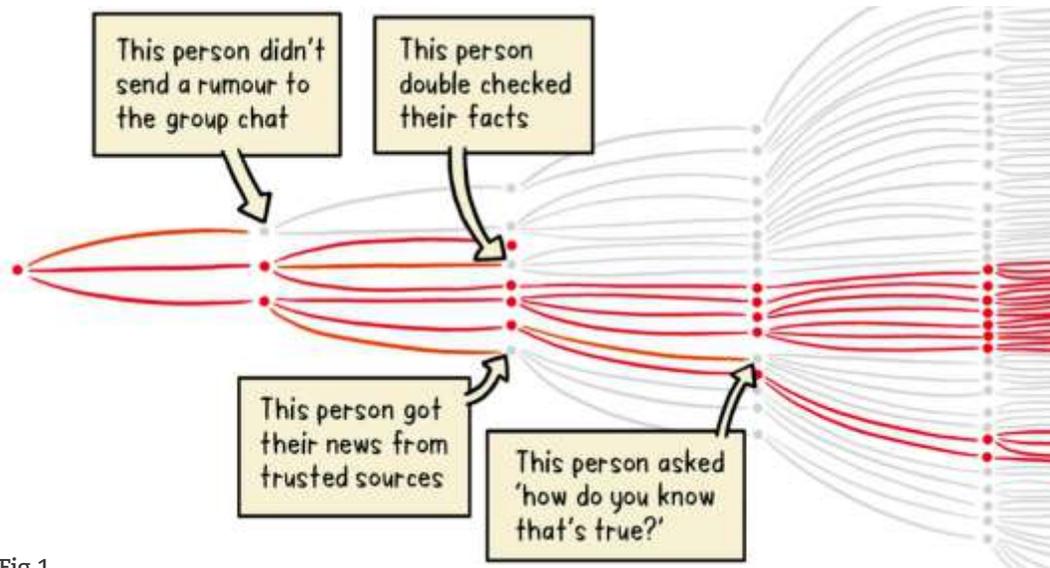


Fig.1  
<https://www.who.int><sup>6</sup>

### Top tips for navigating the infodemic



**1. Assess the source:**  
 Who shared the information with you and where did they get it from? Even if it is friends or family, you still need to vet their source.



**2. Go beyond headlines:**  
 Headlines may be intentionally sensational or provocative.



**3. Identify the author:**  
 Search the author's name online to see if they are real or credible.



**4. Check the date:**  
 Is it up to date and relevant to current events? Has a headline, image or statistic been used out of context?



**5. Examine the supporting evidence:**  
 Credible stories back up their claims with facts.



**6. Check your biases:**  
 Think about whether your own biases could affect your judgment on what is or is not trustworthy.



**7. Turn to fact-checkers:**  
 Consult trusted fact-checking organizations, such as the International Fact-Checking Network and global news outlets focused on debunking misinformation.

Fig.2  
<https://www.who.int><sup>6</sup>

#### 4. Check the date

Sometimes we receive the same messages repeatedly. Once some news enters the vicious cycle of forwarded messages it keeps popping up time and time again. So, we must always check the date to ensure the validity of the news in the present scenario.

#### 5. Examine the supporting evidence.

Make sure that the conclusions of the article is based on evidence based studies and not based on speculations.

#### 6. Check your bases.

This means that you have to put in a bit of your own effort to study into the matter and make your own understanding about it.

#### 7. Use trusted fact checkers.

Many of the official sites for COVID-19 related news has myth busters against fake news for reference. There are also multiple fact checking sites available online such as the Google fact check tool, Snopes. There exists an International Fact-Checking Network (IFCN)

comprising over 92 fact checking organizations which can be utilized for checking the accuracy of information. With the sheer amount of information that is being spewed out, it is no surprise that the fact checking tools fail to process data expeditiously. In a scenario where speed is vital, this is not insignificant. Hence, more advancements are required in this field<sup>8</sup>.

If you come across online content that you believe to be false or misleading, it can be brought to the attention of the hosting social media platform such as Facebook, WhatsApp, Twitter, YouTube, by reporting the content<sup>9</sup>.

In India, the Union Health Ministry and respective State Health Authorities have employed various platforms to create awareness about COVID-19, publishing advisories, attempting to curb the dissemination of misinformation, conducting press briefings to keep the media updated<sup>10</sup>. In addition to the role played by the government, Healthcare professionals can also partake in containing a spread of misinformation. Healthcare professionals, being exposed to research findings along with their medical expertise, are perceived by the public as reliable resources and thus they can help in thwarting the spread of unfounded information by correcting false statements found on the social media platforms.

## CONCLUSION

In conclusion, it is critical that each of us fact check the information we receive and make sure that we do not partake in sharing fake news. Just as the combined human resolve will help us tide over this terrible pandemic, let us be wary to not fall prey to the accompanying infodemic.

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# REATTACHMENT OF FRACTURED TOOTH FRAGMENT WITH PULPOTOMY IN IMMATURE TOOTH: A CASE REPORT

## ABSTRACT

Injuries to immature permanent upper anterior teeth is fairly common in the age group of 7 to 10 years. Factors that influence the management of coronal tooth fractures include the site of fracture, size of fractured fragments, periodontal status, pulpal involvement, root maturation, biological width invasion, occlusion. Reattachment of a fragment to the fractured tooth can provide good and long lasting esthetics because the tooth's original anatomic form, color, and surface texture are maintained. Pulpotomy is considered as a treatment for immature permanent teeth with pulp exposure due to caries or trauma that gives evidence of extensive coronal pulpitis. Apexogenesis is preferred over apexification in case of injuries to immature permanent teeth.

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## INTRODUCTION

Injuries to immature permanent upper anterior teeth is fairly common in the age group of 7 to 10 years. When compared to such injuries in adults, the dental management becomes challenging owing to the open apices and thin root walls, the need to maintain vitality of the teeth as much as possible and the age and level of cooperation of the patient.

Factors that influence the management of coronal tooth fractures include the site of fracture, size of fractured fragments, periodontal status, pulpal involvement, root maturation, biological width invasion, occlusion.

One of the options for managing coronal tooth fractures, especially when there is minimal or no violation of the biological width, and the fractured fragment is retained, is the reattachment of the dental fragment. Reattachment of a fragment to the fractured tooth can provide good and long lasting esthetics because the tooth's original anatomic form, color, and surface texture are maintained. Additionally, it generates a positive psychological response and is a reasonably simple procedure that provides a more predictable long-term wear than when a direct composite is used.<sup>1</sup>

The importance of preservation of pulp vitality can never be overstated. Pulpotomy helps to salvage the traumatically exposed pulps preventing the need for further endodontic treatment. It consists of removal of inflamed pulp tissue beneath an exposure to a depth of 1-3 mm, use of bactericidal irrigants to control pulpal bleeding, placement of a biocompatible material to promote healing and maintain vitality of the remaining pulp tissue. It is usually undertaken in teeth with open apices or thin dentinal wall to promote root development. It is not recommended for those cases in which the pulp exposure is extensive or there has been a 2-week lapse between trauma and treatment. It is indicated for teeth having small pulp exposure which is free of caries and treated within 14 days of trauma, only if the tooth has a vital pulp and is asymptomatic.<sup>2,3</sup>

## CASE REPORT

An eight year old female patient with

unremarkable medical history was referred to the practice for management of a fractured upper left central incisor with immature apex.

On taking history, we learnt that the injury had occurred in the bathroom 6 days before reporting to us. The patient had retained the fractured fragment. They had stored the fractured fragment in a plain container without any storage media; it was completely dehydrated when we received it.

Before proceeding with clinical examination, we put the fractured tooth fragment in saline to enable rehydration.

On examination, an oblique fracture was seen on tooth 21, with a small pulp exposure of 1 mm in size. The tooth was vital, responding slightly painfully in a non lingering manner to cold test.

On radiographic examination, 21 revealed an open or immature apex, with no evidence of root fracture/ alveolar fracture/ extrusion.

The following treatment options were discussed with the parents:

### I. Endodontic treatment

- a. Complete pulpectomy and apexification using MTA.
- b. Coronal pulpotomy with Biodentin, a new bioactive material.

### II. Restorative treatment

- a. If doing complete pulpectomy, then a fibre reinforced post and followed by:
  - i. Composite restoration.
  - ii. Reattachment procedure.
- b. If doing pulpotomy, then
  - i. Composite restoration
  - ii. Reattachment procedure

After discussing the advantages and disadvantages of each procedure, it was mutually agreed to perform a pulpotomy (to allow root maturation and apical closure) followed by a reattachment.

Figure 1 and 2 show the initial presentation. The exposed pulp horn can be clearly appreciated in the palatal view.

Figure 3 is the preoperative radiograph. We can see the immature root apex.

Local anesthesia was administered using 2% lignocaine with 1:80000 epinephrine (Lignospan Special, Septodont, France).



Fig. 1



Fig. 2



Fig. 3

Before proceeding with the treatment, the fractured tooth fragment was approximated with the tooth to confirm the fit, and to ensure that there were no chipped enamel bits missing.

Rubber dam isolation is mandatory to achieve an absolutely aseptic field for vital pulp therapy and flawless bonding. Figure 4 shows how this was achieved with the help of a floss tie to secure the rubber dam.

Access into the pulp chamber was established from the fractured incisal surface. The coronal pulp was completely removed using a round bur in high speed, along with copious water spray. Hemostasis and disinfection of the pulp chamber was achieved by placing a cotton pellet moistened with 5.25% sodium hypochlorite in the pulp chamber for 1 minute. Complete hemostasis was verified before proceeding to the next step (figure 5).

For direct pulp capping, Biodentine (Septodont, France) was mixed according to manufacturer's instructions and placed in contact with the pulp and not completely filling the pulp chamber (figure 6). It was allowed to set for 15 minutes.



Fig. 4



Fig. 5

The pulp remnants inside the fractured tooth fragment were cleaned using air rotor burs and a scaler. No additional preparation was done on the fractured fragment.

Access cavity was also cleaned with a scaler. The fractured edge was not prepared. Both the tooth and the fractured fragment were etched using 37% phosphoric acid (Total Etch, Ivoclar Vivadent), bonding agent was applied (Single Bond Universal, 3M, USA) and cured. A dual cure resin (Paracore, Coltene Whaledent) was selected as the cementing medium. It was applied into the pulp chamber and onto the fractured fragment. The fragment was then placed in correct position, excess cement removed, and cured from labial and palatal surfaces.

Occlusion was checked after the rubber dam was removed. Finishing and polishing was done using Soflex discs and strips (3M, USA). Figures 7 and 8 show the immediate post op images.

Figure 9 is the immediate post op radiograph, wherein the Biodentine and resin in the pulp chamber and fracture line can be appreciated.

Although the patient was advised to follow up after 1 month, it was prolonged to 1 year due to the global pandemic. At one year follow up, the patient was completely asymptomatic and the tooth did not show any significant discoloration. It showed delayed, painless, positive response to cold test, which was acceptable, because the tooth lacked coronal pulp. The x-ray shows further maturation of the root apex. A slight dilaceration can be noted, which may be attributable to the trauma (figure 10).



Fig. 6



Fig. 7



Fig. 8

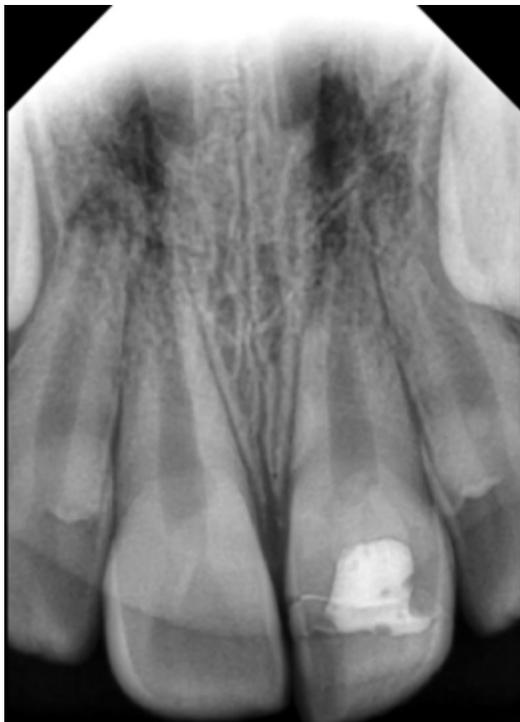


Fig. 9



Fig. 10

## DISCUSSION

Pulpotomy is considered as a treatment for immature permanent teeth with pulp exposure due to caries or trauma that gives evidence of extensive coronal pulpitis.<sup>4</sup> Traditionally, the term "pulpotomy" has implied removal of the pulpal tissue to the cervical line, to be differentiated from "Cvek type" pulpotomy or "partial pulpotomy" in which just a portion of the coronal pulp is removed.<sup>2</sup> In this case, since the pulp exposure was one week old, it was considered safe to perform a complete coronal pulpotomy, as compared to direct pulp capping.

Biodentine is a calcium-silicate based product which became commercially available in 2009 and that was specifically designed as a "dentine replacement" material. It has a wide range of applications including endodontic repair (root perforations, apexification, resorptive lesions, and retrograde filling material in endodontic surgery) and pulp capping and can be used as a dentine replacement material in restorative dentistry.<sup>5</sup>

Biodentine has been shown to be biocompatible and bioactive in various in vitro and in vivo studies. It induces tertiary dentin synthesis due to the release of a growth factor, namely Transforming factor beta 1 (TGF- $\beta$ 1) from pulp cells incubated with Biodentine. This factor has been shown to be involved in

odontoblastic differentiation and recruitment of pulp stem cells to TGF- $\beta$ 1 production site. Biodentine also reduces inflammation and post-operative pain by reducing odontoblast pain receptor expression and function; and also decreasing the secretion of pro-inflammatory cytokines.<sup>6</sup>

When Compared to MTA, Biodentine is easier to handle, stronger mechanically and has a shorter setting time.<sup>7</sup> Additionally, while discoloration with MTA and its derivatives have been reported in regenerative endodontics and seem to be mainly due to the presence of Bismuth oxide as a radio-opacifier, no discoloration of tooth crown has been reported after 48 months with Biodentine which does not contain Bismuth oxide but Zirconium oxide as a radio-opacifier.<sup>8-11</sup>

Reattachment of fractured tooth fragment can provide good and long-lasting esthetics (because the tooth's original anatomic form, color and surface texture are maintained). It also restores function, provides a positive psychological response, and is a relatively simple procedure.<sup>12</sup> Tooth fragment reattachment offers a conservative, esthetic, and cost-effective restorative option that has been shown to be an acceptable alternative to the restoration of the fractured tooth with resin-based composite or full-coverage crown.<sup>13-16</sup>

Furthermore, this technique is less time-consuming and provides a more predictable long-term wear than when direct composite is used. Clinical trials and long-term follow-up have reported that reattachment using modern dentin-bonding agents or adhesive luting systems may achieve long term functional and esthetic success.<sup>13,18</sup>

A decision was taken not to prepare any additional bevels or layer on the labial surface with composite, because it has been shown that when endodontic therapy is required for teeth with complicated crown fractures, the space provided by the pulp chamber can be used as an inner reinforcement, thus avoiding further preparation of the fractured tooth.<sup>19,20</sup>

## CONCLUSION

This paper presents the most conservative and non-invasive management of an Ellis class 3 fracture in an immature tooth. The dental pulp

is the best root canal filling. An attempt was made to retain the vitality of the tooth and thereby allow maturation of the root apex and thickening of the dentinal walls.

Following up such cases is extremely important, as the chances for failure are high. One may need to resort to other treatment modalities like apexification and conventional root canal treatment.

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# FABRICATION OF ATTACHMENT RETAINED GINGIVAL PROSTHESIS - AN APPROACH FOR MASKING ANTERIOR MAXILLARY ALVEOLAR DEFECT IN CLEFT LIP AND PALATE CASES

## ABSTRACT

Cleft lip and palate often results in impaired aesthetics due to anterior alveolar and mucosal defect. Surgical approach involving hard and soft tissue augmentation can be unpredictable with increased healing time. This article describes a technique for fabrication of fixed dental prosthesis (FDP) with detachable gingival portion as a replacement for missing hard and soft tissue defect. It facilitates oral hygiene and restores lost lip support.

**Keywords:** Attachment retained; Gingival prosthesis; Maxillary alveolar defect.

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## INTRODUCTION

Cleft palate patients commonly present with congenitally missing anterior teeth and anterior alveolar and mucosal defect (Fig.1). It is possible to create esthetically pleasing and anatomically correct tissue contours when small volumes of tissue are being reconstructed, but this method is unpredictable when a large volume of tissue is missing. Prosthetic replacement, with acrylics, composite resins, porcelains and silicones, is a more predictable approach to replacing lost tissue architecture.



Fig.1 Maxillary alveolar ridge defect.

A conventional fixed dental prosthesis can be used in the prosthetic treatment of a unilateral cleft and palate patient for replacement of missing teeth.<sup>1</sup> A gingival prosthesis is considered for restoring the missing alveolar and mucosal defect when surgical procedure is unpredictable. Consequently, good function and esthetics can be achieved, and the long term success is more predictable.<sup>2</sup>

An alternate treatment option involves implant placement in the area of the defect. But It often involve adjuvant complex surgical procedure like bone augmentation, distraction, sinus lift etc.<sup>3</sup> Another option is application of gingival colored porcelain to crowns to compensate for the loss of soft tissue on the anterior maxilla.<sup>4</sup>

This article proposes a technique to fabricate a FDP with extra coronal attachment to retain a removable gingival prosthesis.

## TECHNIQUE

1. Prepare the teeth to receive metal ceramic FDP and make impression with Polyvinyl siloxane (PVS) impression material (Elite HD,

Light body normal set; Zhermack and Putty soft normal set; Zhermack).

2. Make wax pattern of FDP and attach a resilient attachment (OT Cap Distal attachment; Rhein 83) onto the wax pattern of the framework.
3. Evaluate the metal framework intraorally for extension and location of attachment portion (Fig.2).
4. Fuse porcelain onto the framework, finish and glaze, and cement the prosthesis (Fig.3).



Fig. 2 Trial of metal framework incorporated with attachment component.



Fig. 3 Cemented partial FDP with attachment extension.

5. Make impression in irreversible hydrocolloid (Tropicalgin; Zhermack) and pour in type III dental stone (Labstone; Kalabhai Karson Private Ltd). Fabricate a custom tray over labial surface of teeth and gingiva with autopolymerising acrylic resin (Rapid repair; Pyrax). Do border molding with putty consistency of PVS and use addition silicone PVS material to make impression of labial surface of teeth to sulcus (Fig.4). Pour the impression with type III dental stone.



Fig. 4 Impression for gingival part of prosthesis.



Fig. 7 Removable gingival part attached to FDP.



Fig. 5 Gingival wax pattern trial.

6. Make a wax pattern (Cavex set up hard modelling wax; Cavex) of the gingival prosthesis on cast and evaluate intraorally for extensions, fullness, and lip support (Fig.5).
7. Process the gingival wax pattern in heat polymerized acrylic resin (Acryl-Hi; Pyrax) of appropriate shade, finish, and polish the prosthesis.
8. Attach the Nylon ring (OT Cap; Rhein 83) to



Fig. 6 Removable gingival part with nylon cap.

the tissue side of the gingival veneer by using pick up technique with autopolymerising acrylic resin (Fig.6).

## DISCUSSION

A technique for fabricating a FDP with extra coronal attachment to retain a removable gingival prosthesis in a cleft lip and palate patient is described. It consists of a removable gingival portion attached to a fixed dental prosthesis (Fig.7). In such an approach, with both fixed and removable elements, dental attachment increase support and retention.<sup>5</sup>

The fixed part of prosthesis gives the patient significant comfort and boosts self confidence. The removable portion aids in restoring lost volume of tissue, creates an ideal contour, and facilitates proper hygiene maintenance. This design may be contraindicated in patients who have difficulties in inserting the removable part because of compromised motor skills. Also use of attachment increases cost and treatment time significantly. Alternate methods to enhance retention includes use of magnets; however, corrosion, and size limit their use intraorally.<sup>6</sup> The removable part of the prostheses can be self cleansed by the patient on a daily basis. The fixed part of the prostheses has to maintained as a normal fixed partial denture with adequate mechanical cleansing.

## SUMMARY

A technique is described to fabricate attachment retained gingival prosthesis for providing additional support and retention while maintaining esthetics and allowing ease of cleaning.

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