

IPS WEST BENGAL STATE BRANCH



E- Newsletter / Journal

Vol 1 Issue 2 October 2020



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GUEST Editorial



Dear Colleagues,

It is so very unfortunate that COVID-19 has affected the whole world in ways that none of us could have imagined. What has been just normal and taken for granted like meeting friends, attending marriage function, hanging out with friends and going to a movie theatre has now been considered completely irresponsible. The reason being, possibility of getting contacted with the COVID virus disease.

The scientific and medical world has been involved in intensive research to fight this COVID pandemic. The transmission of this new virus from human-to-human is believed to be, through airborne droplets and direct contact with contaminated surfaces. The propagation of this infection in dentistry is recognized to be high, through aerosols produced by the use of handpieces during dental treatments. Though the data on the real risk of virus diffusion during dental procedures is not very clear, it cannot be totally be discounted. There is no facet of our dental world which has not been affected, and this virus does not differentiate between private practice, academic institutions, or corporate hospitals.

A thorough knowledge on the epidemiology of the disease, its diffusion in dental personnel, risk assessment for patients, risk management, and intervention procedures aiming to control the virus diffusion in the dental setting in the need of the hour. Most importantly the protocols to be followed in a Prosthodontic set up in very essential.

Each one of us as a dental provider are very responsible in formulating protocols to suit our individual needs.. The dental practice has to go through a paradigm shift to address these issues. The transformation will include strict sterilization, buying additional equipment, SOP for each dental treatment, use of disposables, training the assistants, and spacing the treatment appointments. These restructuring will have financial impacts on the business of dentistry, specially if done ethically. A set of common precautions have also been suggested by all the dental associations.

I am sure we will tide over this situation and hope that you all are safe, healthy, and come out on the other side of this pandemic even stronger than before. Best wishes to you, your families, teams, and patients during this difficult time.

Dr. T V Padmanabhan

Chairman

Indian Board of Prosthodontics



THE Editorial



The declaration of COVID-19 as pandemic by World Health Organization in March 2020 have instilled a state of fear and anxiety among prosthodontists. The increase of asymptomatic cases is alarming and practitioners should be vigilant and keep themselves and patients safe. Airborne transmission by droplets or aerosol is suspected but lacks conclusive evidence. Guidelines of sterilization and practice standards provided by IPS head office should be strictly followed while providing patient care. Hope a vaccine will be out in near future and till then pray that everyone is safe. I sincerely thank Prof. Dr. T V Padmanabhan Sir and Prof. Dr. Sanjay Kalra Sir for contributing to our newsletter.

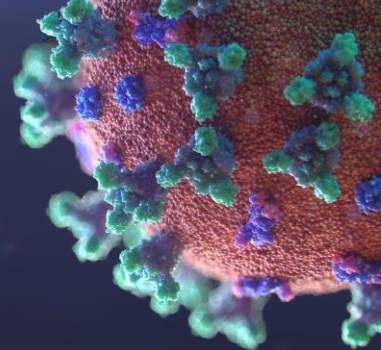
I along with my Co-Editor *Dr Arka Swarnakar* wish everyone a very happy Durga Puja in advance.

Editor

Indian Prosthodontic Society
West Bengal State Branch



MY TRYST WITH COVID-19



I am sharing my experience with Novel Corona virus with my fellow professional colleagues so as to instill confidence and to allay the fears associated with the much stigmatized and the most widely spread disease. The pandemic world over has hit everybody hard and close to home. Till now approx. 34 million people have been affected with over 1 million people who have succumbed to this virus. We as dentists are more susceptible, because our work environment involves close proximity to the patient's nasopharynx and also to the aerosol generated during most of our dental procedures. We have to get accustomed to the fact that this virus is here to stay and the future depends on a lot of unknowns; but life has to move on.

My spouse Dr. Rita and I were quite perturbed on the day we got the news of me being Covid positive. The news hit us pretty hard, but we gathered some semblance of sanity and got ourselves admitted to Civil Hospital, Sector 6, Panchkula. I was in the Covid positive private room and she was admitted as a suspect due to close contact with a known positive.

The fateful evening of Saturday was tense and an evening of retrospection. I had to find the source of infection, but there were many variables involved. I could have contracted the virus from any one of the labourers involved during the renovation of our house. The last phase before my son's wedding had become quite chaotic and maybe there was some sort of lowering the guard on my behalf.

My first symptom was a sudden fall in B.P. (84/50 mm of Hg) which came back to normal within one hour with the help of change in medications as directed by my physician. I had extreme fatigue and backache with no fever, cough or cold. Thinking of it as a part of viral myalgia or exhaustion, I took to resting, but made sure I had a good high protein diet. However, the weird symptom of loss of smell, did ring the first alarm bells. It lasted for a couple of hours and that is when I decided to go and get myself tested. But all my symptoms were short lived, probably it was my body trying to fight the virus. I attribute this to the healthy lifestyle adopted by my spouse and I which involves a good one-hour brisk morning walk, followed by yoga and gardening.

The treating physicians at the Civil Hospital-6 Panchkula started with a loading dose of Ivermectin. Fabiflu was started the next day and Hydroxychloroquine after 3 days. By the very next morning I was feeling better. All my symptoms were gone and I was bravely pacing the length and breadth of my room telling myself that I have to fight this unseen enemy. Having a positive mindset is half the battle won. All my diagnostic tests were normal and I was discharged on request, to be in home isolation for 14 days.

Now the room isolation was the trickiest part. They say an empty mind is a devil's lair, and I had to keep myself busy, which I did so very well. Editing of the wedding pictures and organizing my daughter's home library was the best past time. I kept myself preoccupied in the evenings as I started with my yoga exercises and Pranayam from the 2nd day itself. And also 1 hour of singing in the evenings gave me the much needed solace. They say the strength of a family, like the strength of an army, is in its support to each other and mine were rock solid. The healthy diet plan charted out by my better half and the group video calls during meal times is what kept me sane and helped me fight the virus effectively. I would wash the utensils myself, dip them in the hypochloride solution for 30 minutes, which were then picked up later. Daily cleaning of all surfaces with sodium hypochloride and washing my clothes reminded me of my memorable hostel life in the dental college. The psychiatrist would call once in a while to know about my well-being as isolation can be quite unnerving. I guess my hobbies kept me kicking.

Getting out of isolation after 14 days was like coming out of a long vacation. I had to start the clinic and to be sure that I was negative, I took the test again. We had already undertaken the exercise of revamping the infection control SOP's of the clinic to make it Covid ready. All the staff members were repeatedly trained about the stringent infection control measures. Initially we were a bit hesitant to do procedures which involved aerosol generation; but have resumed the same by strictly adhering to the guidelines laid down by the DCI. After all one has to fend for their bread and butter. I also got my antibody titre done after the 4th week of testing positive. Since the antibodies generated were adequate, I decided to donate my plasma, which was then used for two critically sick patients. Plasma donation has been found to help in the faster recovery of these patients.

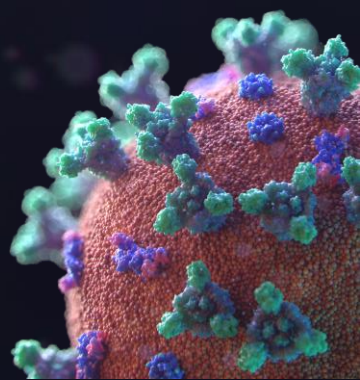
So the take home message is that Covid-19 is here to stay, and the choices made by the government and most importantly by us as individuals is going to determine as to how this pandemic is going to play out. Behavioral changes, including social distancing, adequate sanitization and wearing of masks, should help stem the tide of infection. Maintaining a healthy lifestyle, adopting immunity boosting measures is an added incentive. Most importantly one should know that the mortality rate associated with Covid-19 is very low when compared to the various pandemics that have earlier plagued mankind. Thus it is imperative not to lose hope and have a positive mental makeup.

My sense of personal strength has always come from my family, find yours, and together we shall overcome this seemingly insurmountable crisis.

Dr. Sanjay Kalra

Past President

Indian Prosthodontic Society
Chandigarh Branch





President's Message

Dear members it is my pleasure and privilege to share my view and communicate with you through this newsletter. As you all know we are passing through a very challenging time which will test our grit and spirit. The more the hardship and challenge we face the more the need of communication and solidarity among us.

There are innumerable examples in history where mankind have come better off from the insurmountable challenge it has faced. In 1854 London was hit by huge number of people suffering from Cholera and subsequent death due to drinking of contaminated water and this later led to development of modern sewage system in London. Similarly the Spanish flu which occurred around First World War killed millions of peoples which ultimately led to development of robust public health system. Since Covid 19 has struck us we have seen a new infection control mechanism and it is going to be the new normal of our life. We can now assume that in post Covid 19 era we are going to experience this new infection control protocol for health care professional & patient and we must be apt to adopt it.

Our society strength rests on the health and well-being of members .We are going to come up with new ideas and programme to make our society more relevant among members .Our young editorial team has come out with this newsletter with lots of effort and diligence. I urge all members to contribute to the newsletter and benefit the most from it. Till then let us follow the universal safety protocol let down by our council and government and stay safe and happy.

Jai hind Jai IPS

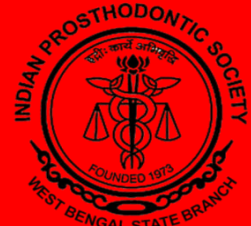
President

Indian Prosthodontic Society
West Bengal State Branch



Words from

President Elect



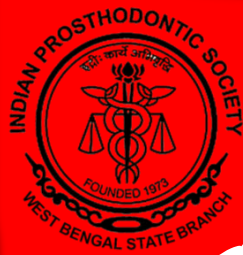
Respected members of IPS WEST BENGAL,

We all woke to a new dawn which heralds a new beginning of “new Normal era” in between the hardships of corona. A new dawn which heralds and signifies that the prosthodontists should once again be together to get back the smile of mankind. For such a noble cause, all scientific work and journal publications must go on. This new dawn also heralds the online publication of the NEWSLETTER /JOURNAL of IPS West Bengal State Branch. A dawn which stands testimony to the years of hardwork, toil, perseverance, grit, determination to survive against all odds of man made obstacles and act of God and providence.

I congratulate as the president elect to the IPS West Bengal Team. I wish and pray for inevitable success of the journal.

President Elect

Indian Prosthodontic Society
West Bengal State Branch



Voice of

Immediate Past President



Dear Colleagues,

At the very outset, let me congratulate the editorial and executive team, for continuing their relentless efforts towards publishing this informative series of Newsletters.

This is undoubtedly the single largest crisis we will all face in our lifetimes. The COVID-19 crisis has had a challenging impact on our Prosthodontist community as well. Yet, the strength of our profession has never been more evident—for now, we may be distant, but we are not disconnected. I am happy that we at our IPS state branch have continued to actively conduct educational activity in the new NORMAL manner inspite of the challenging times that we all have been in .

I understand the fear and anxiety that may still exist as we contemplate re-opening our practices to routine Prosthodontic care. We need to respect all the concerns and remain flexible with our team members as we slowly return to a new normal. I strongly urge my colleagues to re-open at their own pace to ensure the safety of their staff, their patients and themselves. We must exercise our independent professional judgment when deciding when and how to safely start all Prosthodontic treatment procedures.

Our goal is for everyone to safely get back to work as soon as possible.

Prosthodontically yours.

Founder President

Indian Prosthodontic Society
West Bengal State Branch



Statement of

Secretary



Dear colleagues

It is our privilege and responsibility as prosthodontists to promote and exchange the latest ideas to enhance our knowledge and skills. I am very happy that our branch is going to bring out the digital newsletter for the benefit of members. Continuous learning is mandatory for the growth and success of our skill. As prosthodontists we are depending on the progress of material science, biomedical engineering, software and coordination among all service providers.

As we all know that our profession is also affected by the ongoing Covid-19 pandemic and we are all trying to put our best foot forward. Even though the situation is challenging I am sure that we would be able to overcome it and discharge our responsibility as usual. Meanwhile precaution maintaining our council/ society guideline is of utmost importance.

Secretary

Indian Prosthodontic Society
West Bengal State Branch



Treasurer Speaks

Dear all,

At the very outset, I would like to state that today we are passing through a crisis due to the spread of Covid19 in the country and across the globe. Furthermore it has developed into a global pandemic mainly due to non- availability of a known drug for treatment. It is not a time to undergo stress but we need to have a clear understanding of the mode of spread of the said virus. We can only contain the community spread by breaking the chain. It is imperative that we are regularly getting sufficient information and directives from our head office regarding this for which we are immensely indebted to them. I sincerely appreciate and encourage the relentless efforts of our dynamic editorial team in publishing the second E- newsletter of our branch towards enrichment of our knowledge in latest trends of Prosthodontics.

Wishing you all a very happy season of festivals ahead !!!

Stay safe

Treasurer

Indian Prosthodontic Society
West Bengal State Branch

Mantra of MERIT



Doing pre - clinical prosthodontics is of utmost importance in 1st year of post graduation as it reshapes the eye of a prosthodontist . We should try to strengthen our theoretical background as well as practical skills in pg times . Hard work has no other alternative

Dr. RIJU DAS (University Topper 2018-19)



3D .

1. Dedicated towards clinical work and study
2. Determination to achieve goals
3. Discipline is a must in post graduate life

Dr. ANURADHA BARMA (University Topper 2019 – 20)



My message to all the PG students is to “ WORK HARD IN SILENCE AND LET, SUCCESS BE YOUR NOISE”. The secret to achieve that is to love your subject , trust your mentors and believe in the Almighty , your parents and yourself.

Dr. SREYA KUNDU (University Topper 2019 - 20)



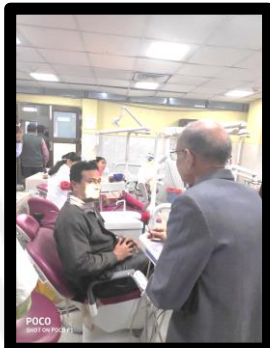
Post graduation - a journey of learning. I thank my respected mentor, all my teachers and my seniors for their valuable guidance and motivation and all my colleagues and beloved juniors for their consistent support. Post graduation truly means a journey which inculcates a lot of confidence and experience to move on the path to achieve your goals

Dr. SEEMA RATHI (RADC Topper 2019 - 20)

Prosthodontist Day 2020

@

Dr. R. Ahmed Dental College and Hospital



Prosthodontist Day 2020

@

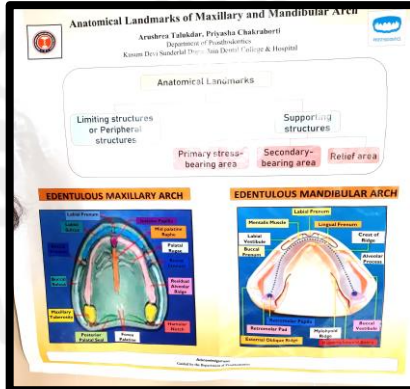
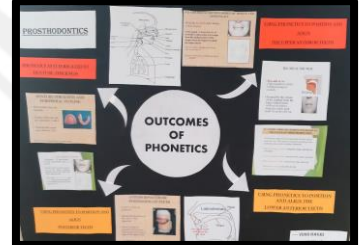
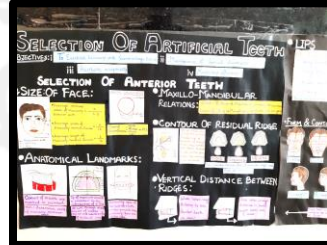
Guru Nanak Institute of Dental Science and Research



Prosthodontist Day 2020

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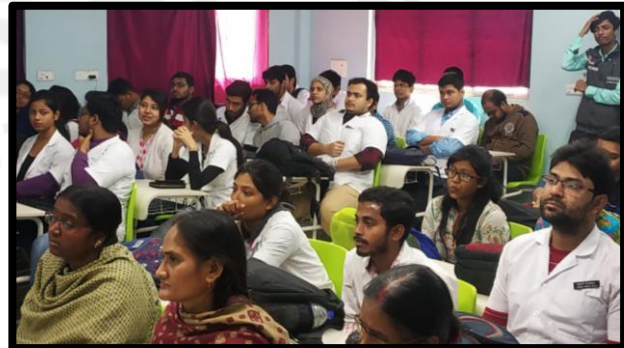
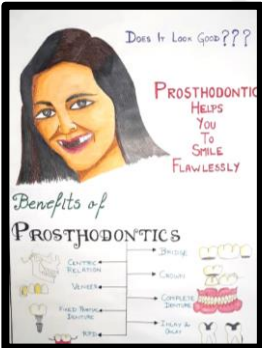
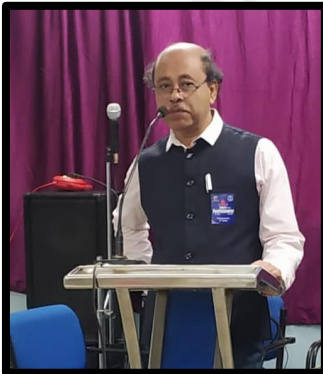
Kusum Devi Sundarlal Dugar Jain Dental College and Hospital



Prosthodontist Day 2020

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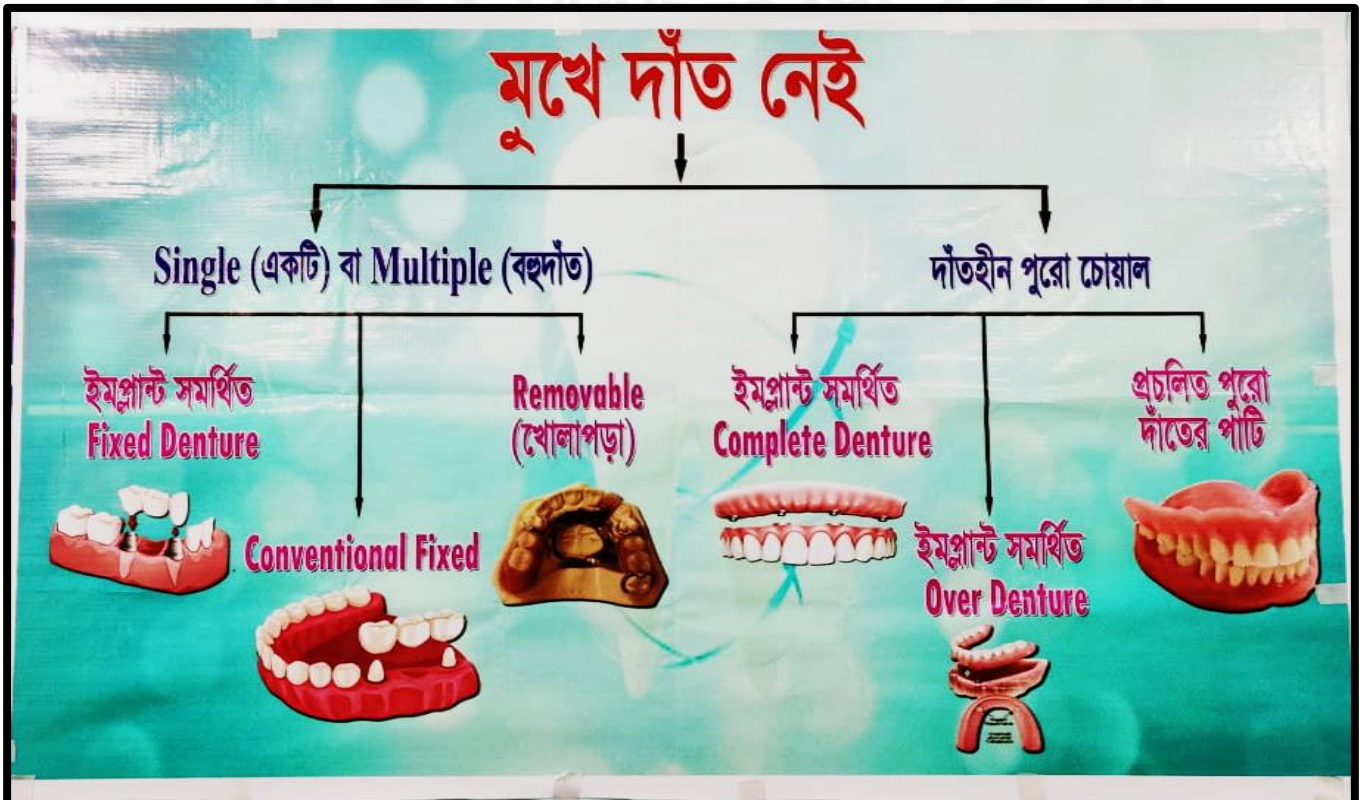
Burdwan Dental College and Hospital



Prosthodontist Day 2020

@

Dept. of Dentistry
Malda Medical College and Hospital



Prosthodontist Day 2020

@

Rotary Club, Bidhannagar



An awareness camp on the occasion prosthodontist day was carried out by **Dr. Priyadarshi Vaibhav**, EC member IPS WB in association with Rotary club of Bidhannagar at Srijan Shova, a home for differently abled individuals located in Mahishbathan, Kolkata on 26th January 2020. Forty five individuals were examined for dental issues and instructed regarding maintenance of oral hygiene and need for prosthodontic treatment. A box containing 100 tooth pastes was also provided to the center.

Mega Knowledge Exchange Program



Dr. Glenn Mascarenhas



Dr. Nikhita Gandhi



Swashwat Singh



TEAM HILT TATUM



TEAM BRANEMARIK



TEAM PAULO MALO



TEAM SUMIYA HOBO



TEAM STUART ORTON



TEAM DANIEL BUSER



TEAM LINKOW



TEAM JOHN HOBRIK



Felicitation of Prosthodontist Day Winners by Bollywood Celebs



Felicitation of Prosthodontist Day Winners by Bollywood Celebs




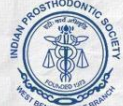

Felicitation of Prosthodontist Day Winners by Bollywood Celebs



WEBINARS

during


PANDEMIC OUTBREAK

Free Live Webinar

Prosthetic Rehabilitation of Velo-Pharyngeal Defects

Dr Sanketh Kethireddy MDS, MSD, MSc



Date: 02.April.2020
 Time: 15:00
 App: Zoom
<https://us04web.zoom.us/j/6549679391>
 Meeting ID: 654 967 9391
 Password: 12345



Note:
 Max 100 Participants only on First Come First Served basis.
 Download Zoom App and join using the above credentials.




MANAGEMENT OF GROSSLY DECAYED TEETH

LIVE WEBINAR

Speakers:

Dr. Udey Vir Gandhi Dr. Ashistaru Saha



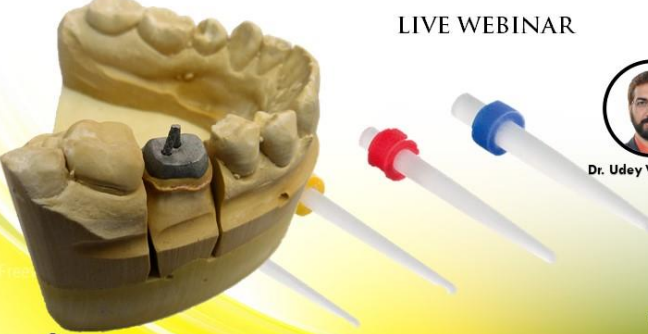
Dr. Arka Swarnakar


3 p.m.

UNLOCK all your Queries in this **LOCKDOWN**

14TH APRIL, TUESDAY

Meeting ID: 417 671 5812
 Password: 12345



On  Download Now

On zoom   Stay informed  

Challenges & opportunities in prosthodontics & dentistry post COVID 19

Dentistry Tomorrow

IPS WB PRESENTS live  Saturday, 02nd may, 11am onwards

Moderator







Dr Udey Vir Gandhi President, IPS WB
 Dr.D.Arunachalam MDS
 Dr. Nirjhar Chatterjee MBBS, MD Cambridge, MA, USA.
 Dr.Himadri Dasgupta MBBS, MD, Cardiologist, USA



E - JOURNAL SECTION

Awareness, Knowledge, And Attitude Of Patients Towards Dental Implants: A Questionnaire Study

Rimsha Ahmed¹, Ashis Bali², Sarah Hasan³, Saad Hasan⁴, Sahil Sethi⁵

ABSTRACT:

AIM AND OBJECTIVES: Technological advancements are invading every discipline and dentistry is no exception to it. Oral rehabilitation trends have changed drastically in recent years. As the use of endosseous dental implants has revolutionized current dental practice, its thorough knowledge is an important requisite for the patient too for successful restorative results. The aim of this article is to assess the knowledge of patients regarding dental implants.

MATERIALS AND METHODOLOGY: A questionnaire was given to 200 patients visiting various dental clinics in Moradabad city and their response was assessed.

RESULTS: A fair share of participants had heard about dental implants and had some knowledge about it.

CONCLUSION: Although patients had some knowledge about dental implants, still an effort on the part of dentist is required to spread proper awareness.

Keywords: Dental Implant, Edentulism, Implantology

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INTRODUCTION:

Loss of natural teeth is a debilitating and irreversible condition and described generally as final marker of disease burden for oral health¹, leading to functional, cosmetic and psychological morbidities. The edentulous state represents a compromise in the integrity of the masticatory system, frequently accompanied by adverse functional and esthetic sequelae, which are varyingly perceived by the affected patient.

Replacement of tooth structure has undergone a revolutionary change from traditional ivory dentures to present day implants. Introduction of endosseous implant treatment has initiated a revolution in oral rehabilitation for both partially and fully edentulous patients. Over a past few years, a paradigm shift in implant planning from “Bone driven implantology” to “Restoration driven implant practice” has taken place.

Due to its high success rates and predictability, its clinical implication is increasing rapidly. Recently, it has become the focus of the patients interest and hence for dentist, it is vital to assess their level of knowledge regarding dental implants. So, the objective of this study was to assess knowledge regarding dental implants in the patients visiting various dental clinics in Moradabad city.

MATERIALS AND METHOD:

Subjects:

This cross-sectional observational study performed on 200 patients visiting various dental clinics in Moradabad city. A consent form was obtained from each participant in this study.

Inclusion criteria: Partially edentulous patients visiting the dentist.

Exclusion criteria: Completely Edentulous subjects.

PATIENT'S QUESTIONNAIRE

A standard close-ended objective type questionnaire of 15 questions was made and the questions are divided into four parts.

Part 1 included: 3 questions regarding demographic data which involved age, marital status and education.

Part 2 included: 5 questions to investigate the level of knowledge about dental implants, involving different ways of replacing missing teeth, information about dental implants, source of information, duration of dental implants, possible disadvantages of implants.

Part 3 included: 4 questions to assess the attitude towards dental implants which included the interest in knowing about the dental implants, the source of information, importance of functional outcome of implants, amounts that can be paid over implants, and importance of dentist in treating implants.

Part 4 included: 3 questions about awareness of patients regarding dental implants, which included oral hygiene for implant-tooth more than normal-tooth, preference replacing normal teeth with implant teeth, need for dentist to provide implants.

Data Analysis: All statistical calculations were done using computer program IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA). P values less than 0.05 was considered statistically significant. Data was statistically described in terms of mean \pm standard deviation (\pm SD), or frequencies (number of cases) and percentages when appropriate. Comparison between the study groups was done using Chi-square (χ^2) test.

RESULTS:

This study included 200 participants of which 100 were males and an equal no. of participants were females.

The participants were in the age range of 19-77 years(fig 1). Most of the individuals were married with a percent of 59.5 % (119), followed by lesser percentage of single individuals 39% (78), whereas only 1.5 % (3) were divorced (fig 2).

Part 2 of the questionnaire was to investigate the level of knowledge about dental implants. It included a total of six questions.

Q1: Are you well informed about the options available for replacing missing teeth?

- a) Well informed 28%
- b) Moderately informed 63.5%
- c) Not informed at all 8.5%

56 respondents thought they were well informed, 127 were moderately informed whereas

17 were not informed at all (fig 3).

Q2: Have you heard about dental implants?

- a) Fair amount of idea 31.5%
- b) Slight idea 64.5%
- c) No idea 4%

63 respondents had fair amount of idea, 129 had slight idea and 8 had no idea at all (fig 4).

Q3: Source of introduction to dental implants?

Dentists 36.5%
 friends and internet 57.5%
 newspapers and another source. 6%
 73 respondents had heard about dental implants from dentists, 115 from friends and internet and 12 from newspapers and another source (fig 5).

Q4: For how much time according to you a dental implant can last?

- a) 5-10 years 21.5%
- b) 10-20 years 39.5%
- c) >20 years 39%

According to 43 respondents, an implant can last upto 10 years, 79 thought it can last upto 20 whereas 78 were of the view that it can last more than 20 years (fig 6).

Q5: What is the reason for not opting for implant supported prosthesis, if any?

- a) High cost 47%
- b) Long treatment time 24.5%
- c) Need for surgery 28.5%

94 respondents were of the view that implant has high cost, 49 think that the treatment time is longer whereas 57 don't want surgical procedure to be done (fig 7).

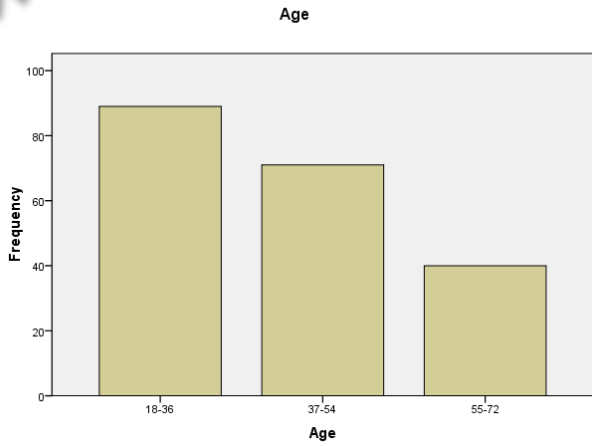


Fig. 1

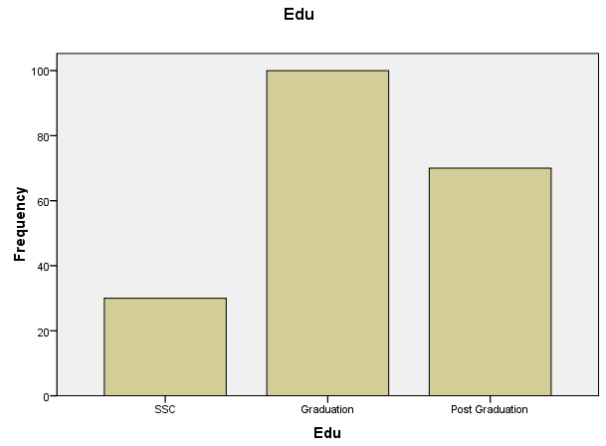


Fig. 2

Are you well informed about the options available for replacing missing teeth?

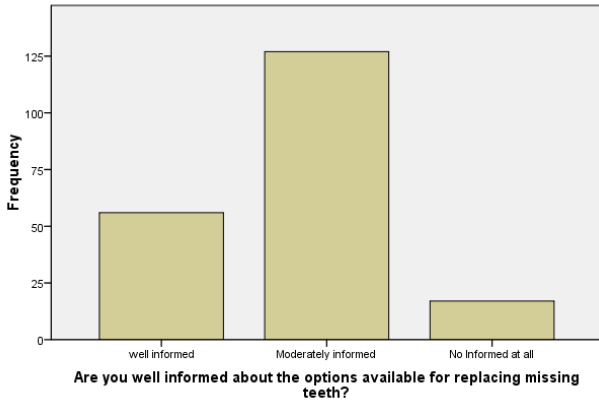


Fig. 3

Have you heard about dental implants?

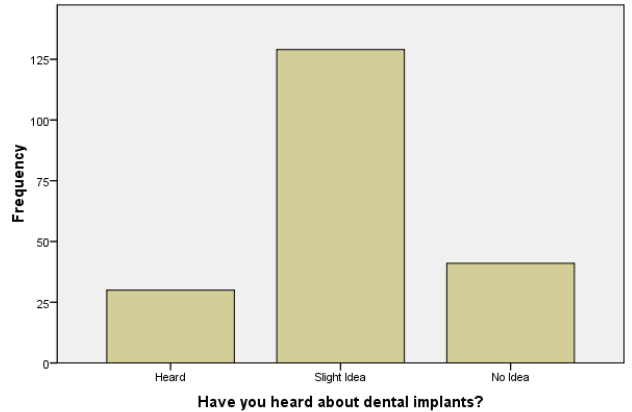


Fig. 4

Source of introduction to dental implants?

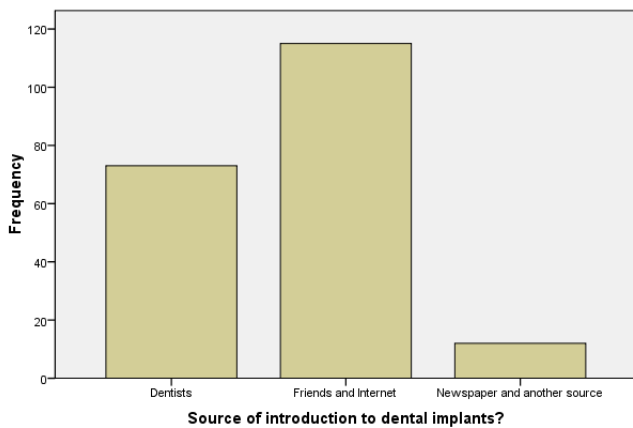


Fig. 5

For how much time according to you a dental implant can last?

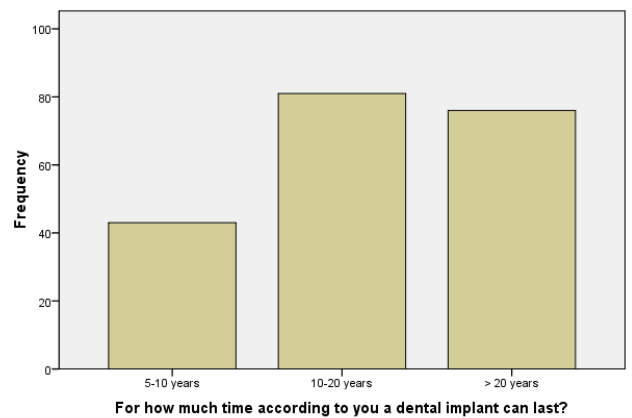


Fig. 6

Part 3 of the questionnaire included five questions to evaluate attitude toward dental implants of the responders.

Q1: Do you want to know more about dental implants?

- a) Yes 67%
- b) No 32%
- c) Not sure 1%

134 respondents wanted to know more about dental implants, whereas 64 had no interest and 2 were not sure about the same (fig 8).

Q2: What should be the preferred source for acquiring knowledge about dental implants?

- a) Dentists 61 %
- b) Friends and internet 28%
- c) Newspapers and another source 11%

122 respondents wanted to know more about dental implants from dentists, 56 from Friends and internet and 22 from Newspapers and other sources (fig 9).

Q3: Do you think functional outcome of implant is important?

- a) Yes 94.5%
- b) No 1%
- c) Not Sure 4.5%

189 respondents think functional outcome of implant is important, whereas 2 had opposite views and 9 were not sure about the same (fig 10).

Q4: Do you think placement of dental implants requires specialist?

- a) Yes 62.5%
- b) No 36%
- c) Not Sure 1.5%

125 respondents think placement of dental implants requires specialist, whereas 72 had opposite views and 3 were not sure about the same (fig 11).

Part 4 of the questionnaire was designed to investigate awareness of participants about dental implants, and it included three questions.

Q1: How much care and maintenance does an implant require?

- a) More than that of normal teeth 48.5%
- b) Similar to implant 42%
- c) Less than natural teeth 9.5%

Most of the participants 97 thought that oral hygiene for caring of the implant is more than that of normal teeth, while 84 thought that both need similar oral hygiene. 19 thought that oral hygiene was less in case of the caring implant (fig 12).

Q2: What is your preference for replacement of missing teeth?

- a) Implant 27%
- b) Fixed dental prosthesis 50.5%
- c) Removable prosthesis 22.5%

What is the reason for not opting for implant supported prosthesis, if any?

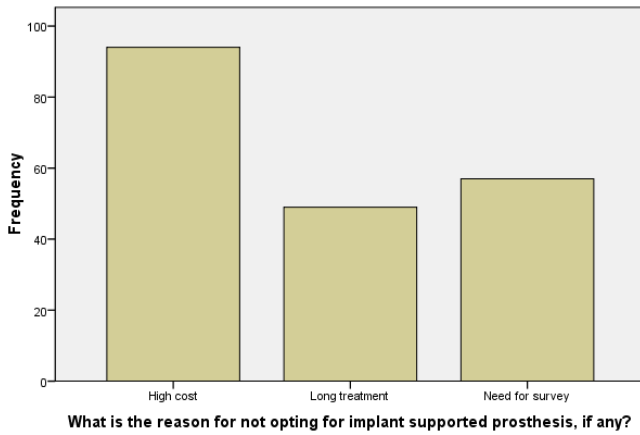


Fig. 7

Do you want to know more about dental implants?

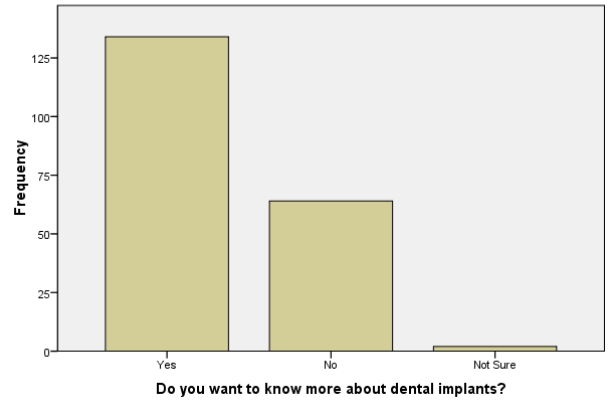


Fig. 8

What according be the preferred source for acquiring knowledge about dental implants?

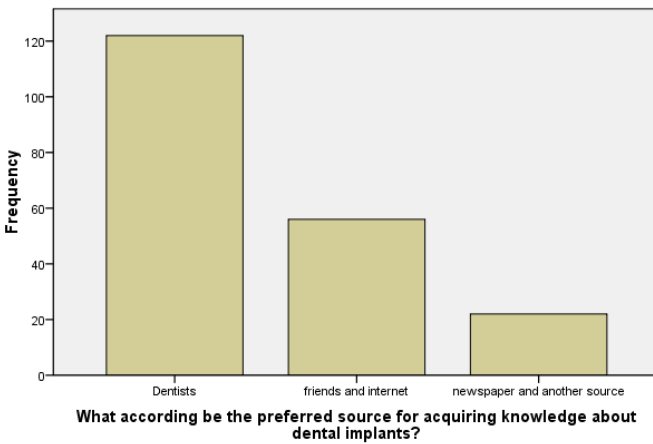


Fig. 9

Do you think functional outcome of implant is important?

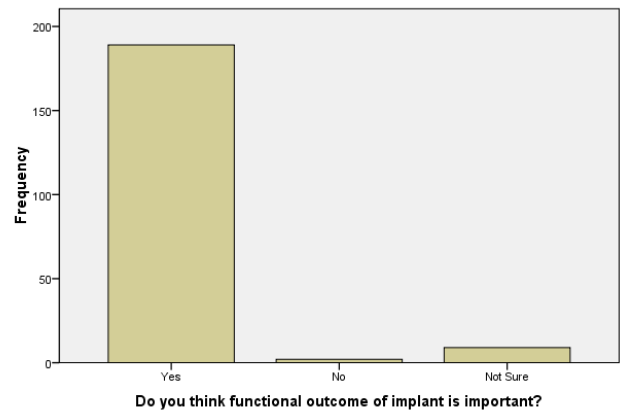


Fig. 10

Do you think placement of dental implants requires specialist?

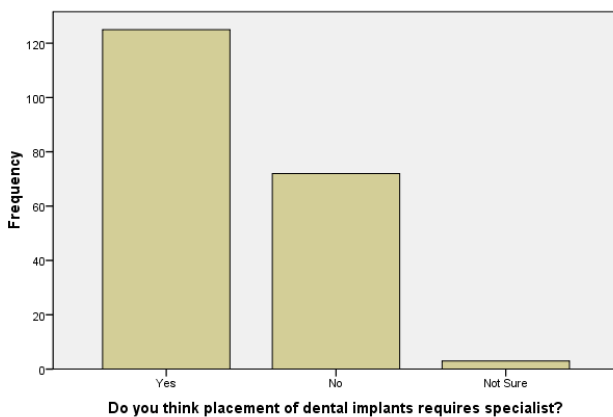


Fig. 11

How much care and maintenance does an implant require?

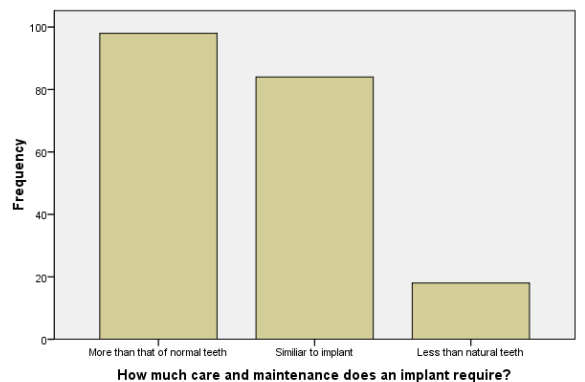
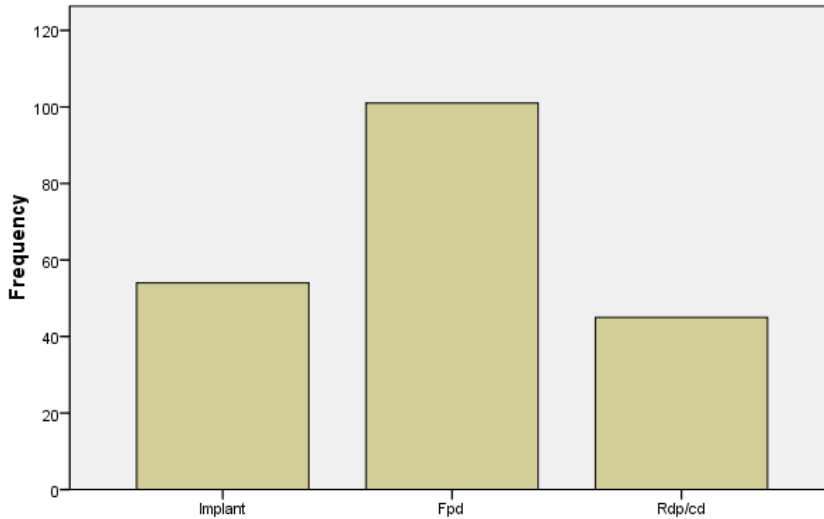


Fig. 12

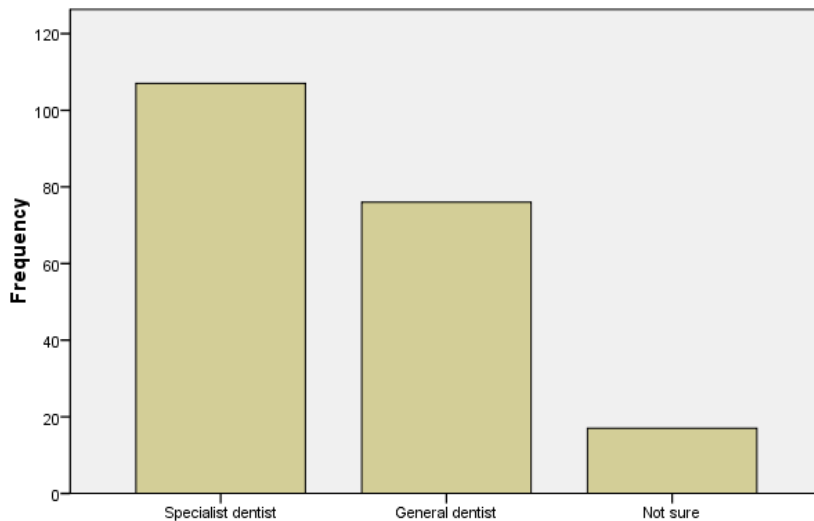
What is your preference for replacement of missing teeth?



What is your preference for replacement of missing teeth?

Fig. 13

Who would you prefer for placing your implant?



Who would you prefer for placing your implant?

Fig. 14

54 respondents preferred implants, 101 Fixed dental prosthesis whereas 45 removable prosthesis for replacement of their teeth (fig 13).

Q 3: Who would you prefer for placing your implant?

- a) Specialist dentist 53.3%
- b) General dentist 38%
- c) Not sure 8.5%

Most of the individuals 107 preferred the specialist dentist to perform implants, 76 preferred their dentists to provide the dental implants while 17 werent sure about the same (fig 14).

DISCUSSION

Dental implant has gained a lot of popularity since the last decade and currently is the prosthesis of choice among partially or completely edentulous patients.

In the present study, a high percentage of participants (96%) heard about the dental implant, while in another investigation,⁵ only 23.24% of urban population heard about dental implants . In general, Turkish population, it was found that a vast majority of ⁶individuals were unaware of the dental implants. The results of this study reflect moderate knowledge of the participants.

Individuals can be provided with information about dental implant by several ways including media, dentists and friends. In a survey conducted in United States 77% people got most of the information ⁷from the press with little contribution from their dentists . Also, a study in Japan revealed that dentists did not provide more than⁸ 20% of the information about dental implants to patients. The opposite was found in our study, where more of participants get their knowledge from their dentists, while lower percentages of participants were found to get their information from newspaper and other sources respectively. Also, most of our participants preferred to get more information from the dentist, and this shows that the dentists have a significant role in awareness of patients as patients trust them.

In a study by Tomruk et al, they revealed that the source of information of the persons was mainly from a dentist, and some from media, friends, and family. In the current study, 30.1% got information from their friends followed by 6.9% by a newspaper. ^{9,10}In a report by Tepper et al., they found that dentist was the source of information of 68% of participants, followed by printed media 23% and finally friends 22%.

In a study that was performed on Austrian general public, it was found that their source of information about implant knowledge was their dentist whereas lower percentage got ¹¹information from media .

The disadvantage of dental implants was the high cost (47%) followed by long treatment time (24.5%) and finally the need for surgery 28.5% in the point of view of our participants. Tepper et ^{9,10}al. reported that the high cost was a significant disadvantage of dental implants; this is in agreement with our study. 21.5 % of individuals in this study thought that implant would last for up to 10 years, while the least percent 39% believed that implants would last for more than 20 years.

In the present study, we found that 48.5% of participants thought that implants need more oral hygiene than healthy teeth, while 42% thought that caring of implants as the same natural teeth.

It was mentioned that the younger public showed better awareness to dental implant strategy, while the old persons ¹²demonstrated less knowledge . It is recommended that dental implants should be placed even if patients are still in good health regardless of the age that is why we included young age participants, although they are young, they may need to use the implant.

The qualified, trained dentist is the one who can practice dental implant treatment, most of the participants in this study thought that, while others thought that this type of treatment needs the specialist. Also, the majority of our participants preferred the only specialist to perform dental implants; this shows that individuals had awareness about dental implants. Only 27% of participants in the present study preferred and chosen to perform implant in case of missing teeth.

CONCLUSION

As stated by DeVan ‘We must first meet the mind of people, before we meet their mouth’. Fair amount of knowledge and awareness regarding dental implants was found in general population in Moradabad City. Most of the participants had heard about dental implants, and they were well informed mainly by their dentists. They wanted to know more about dental implants from their dentists, and they cared about the functioning outcome of the implant. Also, most of them showed that they prefer to choose dental implants. However, more knowledge and awareness should be provided to individuals by their dentist as they have some misconceptions which need to be addressed by the dentist. Also, we can conclude that dentists play an essential role in the patient's awareness.

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Associated Hematological Manifestations In COVID 19- An Analysis Of Disease Sequence

Nikita Parasrampur

Abstract

Research concerning coronavirus disease 2019 (COVID-19) disease is in its infancy and the current global understanding of the pathophysiology, nosology, and symptomology of COVID-19 lacks both depth and universal agreement. In late December 2019, a cluster of unexplained pneumonia cases has been reported in Wuhan, China. A few days later, the causative agent of this mysterious pneumonia was identified as a novel coronavirus. This causative virus has been temporarily named as severe acute respiratory syndrome coronavirus 2 and the relevant infected disease has been named as coronavirus disease 2019 (COVID-19) by the World Health Organization. The infection prevention, early viral detection, associated haematological /laboratory parameters, identification of successful treatment protocols to provide the best approach in controlling disease spread. This review has emphasized the importance of associated haematological findings associated with the disease and to understand the severity and mortality in patients with or without co-bormidities.

Key Words- COVID19, haematological, inflammatory cytokines, viral response, laboratory changes, Antibody function

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INTRODUCTION:

In December 2019, a novel coronavirus (nCoV) outbreak emerged in the city of Wuhan, China. The International Committee of Taxonomy of Viruses then named the disease, severe respiratory syndrome coronavirus 2 (SARS-CoV-2).^{1,2} SARS-CoV-2 is a member of the subgenus *Sarbecovirus* of the genus *Betacoronavirus* in the family *Coronaviridae*^{3,4}. The family, with a large genome of 26–32 kilobases, belongs to a group of enveloped positive-sense single-stranded ribonucleic acid (RNA) viruses, referred to as (+)ssRNA viruses^{5,6}. Consequently, several

diverse classifications have been proposed. Lai⁷ et al distinguished between three forms of COVID-19 manifestation, including (a) asymptomatic carrier; (b) acute respiratory disease (ARD) and (c) pneumonia of variable severity. The first symptoms are commonly recognized as fever, dry cough, tachypnea, and shortness of breath⁸. In another study, confusion, diarrhea, chest pain, vomiting, and nausea were also reported as COVID-19 symptoms⁹. Other symptoms include, sore throat, headache, sneezing, nasal congestion, sputum production, anosmia and

and dyspepsia, rash on the skin, or discoloration of fingers or toes, and viral conjunctivitis. Some laboratory studies have shown the occurrence of cytokine storm, sepsis, and RNAemia in COVID-19^{10,11}

COVID-19 complications include acute respiratory distress syndrome (ARDS), a coagulopathy reminiscent of disseminated intravascular coagulation (DIC) and thrombotic microangiopathy, multi-organ failure (MOF) and ultimately death¹².

Because of the ubiquitous distribution of the main viral entry receptor, namely angiotensin converting enzyme 2 (ACE2), SARS-CoV-2 causes a systemic disease, with possible involvement of the heart, the liver, the pancreas and the kidneys, as well as determines alterations in circulating lymphocytes and the immune system.¹³⁻¹⁶

The purpose of this short review is to familiarize readers with the primary haematological manifestations of the disease which may aid in early detection of COVID-19.

Table 1:

Laboratory biomarkers of importance in COVID-19¹⁸

Figure 1:

Stages of viral response^{19,20}

Figure 2:

Summary of hematological findings²¹

COMPLETE HEMOGRAM

Laboratory abnormalities, particularly haematological changes, allow checking the status of SARS-CoV-2 infection, since the hematopoietic system and haemostasis suffer significant impacts during the evolution of COVID-19.

The most common haematological findings include lymphocytopenia^{22, 24-26} neutrophilia^{23,27,28}, eosinopenia^{26,29,30}, mild thrombocytopenia²⁶ and, less frequently, thrombocytosis^{24,31}. The presence of reactive lymphocytes has been reported only occasionally⁴⁴. The leukocyte count may be normal, reduced^{22,26,34} or increased^{23,24}

Table 2 -Hematologic biomarkers¹³ of importance in COVID-19 infection.

INTERLEUKIN -6

Interleukin 6 (IL-6), promptly and transiently produced in response to infections and tissue injuries, contributes to host defense through the stimulation of acute phase responses, hematopoiesis, and immune reactions.

IL-6 is a soluble mediator with a pleiotropic effect on inflammation, immune response, and hematopoiesis. It is crucially involved in acute inflammation due to its role in regulating the acute phase response.³⁹

IL-6 may also be responsible for the activation of T helper 17 (TH17) cells in the dendritic cell-T cell interaction⁴⁰.

In COVID-19 affected patients, a high TH17 cells activation could result from a virus-driven increased production of IL-6 by the immune system. IL-6 plays a key role in the pathogenesis of the cytokine storm owing to its pleiotropic properties. Several studies showed that the serum levels of IL-6 are increased in COVID-19 patients and that its circulating levels are positively related to disease severity^{41,42}

D-DIMER

The antigen Fibrin D-dimer (DD) is the primary enzymatic degradation product of cross-linked fibrin by plasmin. Systemic values of DD are an index of fibrin turnover in the circulation and a single measurement may be adequate to assess the fibrinolytic status.⁴³

D-dimer generation requires the activity of three enzymes: thrombin, activated factor XIII (factor XIIIa), and plasmin. Plasmin digestion of the fibrin clot results in the D-dimer molecule.⁴⁴

D-dimer is a reliable and sensitive index of fibrin deposition and stabilization. As such, its presence in plasma should be indicative of thrombus formation. Recent studies documenting the laboratory changes of patients with confirmed COVID-19 have noted that elevated D-dimer might be associated with the disease progression of COVID-19. Rapid deterioration was observed in cases with significantly increased D-dimer during the disease progression.

In this regard, pulmonary embolism after deep vein thrombosis detachment should be considered and immediately on the alert, especially when patients presented clinical manifestations such as :

- i. rapid drop in blood pressure,
- ii. sudden deterioration of oxygenation,
- iii. respiratory distress.

In addition to thrombosis and pulmonary embolism, D-dimer might be a manifestation of severe virus infection. The increase of D-dimer may be an indirect manifestation of inflammatory reaction, as inflammatory cytokines could cause the imbalance of coagulation and fibrinolysis in the alveoli, which may activate the fibrinolysis system, and then increase the level of D-dimer^{46,47}. And D-dimer greater than 1 µg/ml was found a risk factor of poor prognosis for patients with COVID-19. Abnormal levels of D-dimer were also associated with 28-day mortality in patients with COVID-19, and low molecular weight heparin treatment might be beneficial to COVID-19 patients with markedly elevated D-dimer (i.e. over 3 µg/ml) with reduced mortality rate⁴⁶

Table 3-

Conditions characterized by increased D-dimer concentrations.⁴⁵

Figure 3-

Formation of D-dimer

LIVER FUNCTION TESTS

Liver test abnormalities were defined as the elevation of the following liver enzymes in serum: ALT >40 U/L, AST >40 U/L, gamma-glutamyltransferase (GGT) >49 U/L, alkaline phosphatase (ALP) >135 U/L, and total bilirubin (TBIL) >17.1 µmol/L.

Mildly abnormal plasma LFTs, especially AST and ALT, are frequently observed in COVID-19 patients on admission and are associated with severe disease and increased inflammatory markers.

Alanine aminotransferase, which is an enzyme produced by hepatocytes, is present at increased level in patients with liver disease. Like many other biochemical markers, it is present at increased level in COVID-19 patients with severe disease and as such may be useful to monitor in patients admitted to the ICU.^{13,15,16} Increased serum bilirubin is identified in a number of disorders involving the liver and biliary apparatus, and increased levels of total bilirubin have been shown to distinguish between COVID-19 patients admitted to the ICU vs those with less severe disease.^{13,16}

The critical COVID-19 patients, hepatic injury may be caused by changes in hemodynamics and oxygen delivery. Hypoxic hepatitis can cause sharp increases in aminotransferases in the setting of respiratory failure, shock, or cardiac failure⁴⁸. During acute cardiac failure,

which may occur in critical COVID-19 patients⁴⁹, the systemic arterial pressure suddenly drops, leading to a reduction in hepatic arterial perfusion and hepatocellular hypoxia.

Many medications used for the symptoms or the management of COVID-19 patients, such as acetaminophen, antivirals, antibiotics, corticosteroids and immunomodulators, are potentially hepatotoxic.

RENAL FUNCTION PROFILE

Serum creatinine is a useful index of renal function. It is produced at a constant rate as a product of protein metabolism in the liver and excretion by the kidney, and increased levels may indicate a decreased glomerular filtration rate.

Increased creatinine is more frequently identified in COVID-19 patients with severe disease compared to those with more mild features, and patients with combined increases in blood urea nitrogen and creatinine had a higher frequency of poor outcome¹⁵

Complete pathogenesis of kidney injury in COVID-19 yet to be elucidated, but it appears to be multifactorial and diverse. Firstly, as some antecodal reports had demonstrated PCR fragments of coronavirus in blood and urine of patients infected with SARS and COVID-19, novel coronavirus may have a direct cytopathic effect of

kidney resident cells.⁵⁰ The spike (S) protein of SARS-CoV-2 uses angiotensin-converting enzyme II (ACE2) and TRMPSS as a cell entry receptor.⁵¹

Secondly, although no histological evidence is available in the literature, kidney damage may also occur by immune complexes deposition of viral antigen or virus-induced antibody.⁵²

Another postulated mechanism is that in critical cases of COVID-19, a very high level of proinflammatory factors such as IL2, IL10, IL7, GSCF, MCP1, and TNF α was found suggesting the occurrence of the cytokine storm that can result in injury to the kidney, heart, lung and other normal cells of the body.⁵³

Figure 4: Overview of Kidney damage⁵⁴

C- REACTIVE PROTEIN

Novel coronavirus (2019-nCoV) seems to increase C-reactive protein (CRP) levels significantly, due to inflammatory reaction and related tissue destruction was also seen in the SARS epidemic in 2002. CRP concentrations on average 30–50 mg/L⁵⁵

Cytokines fight against the microbes but when the immune system becomes hyperactive, it can damage lung tissue. Thus, CRP production is induced by inflammatory cytokines and by tissue destruction in patients with COVID-19.

CRP levels can activate the complement and enhance phagocytosis, thus clearing the pathogenic microorganisms invading the body.

The pulmonary findings from CT scans of COVID-19 patients are similar to H1N1 influenza⁵⁶. In both viral pneumonias CRP level correlates with the severity of pathological findings significantly. The severity of lung CT findings in COVID-19 is also associated with the disease progression^{57,58}.

Furthermore, patients with low oxygen saturation (SpO₂ < 90%) had significantly higher CRP median (82 mg/L) compared to patients with oxygen saturation SpO₂ > 90% (median 11 mg/L), suggesting that patients with more severe lung damage have higher CRP values.

In conclusion, elevated level of CRP may be a valuable early marker in predicting the possibility of disease progression in non-severe patients with COVID-19, which can help health workers to identify those patients an early stage for early treatment.

FERRITIN

Serum ferritin is an iron storage protein that is widely measured as an indicator of iron status, but it is also a well-known inflammatory marker. Therefore, since the serum ferritin level is correlated with the degree of systemic and pulmonary inflammation, it is reasonable that hyper ferritinemia is associated with disease severity in patients with COVID-19.

The mechanisms responsible for the association of hyperferritinemia and disease severity in patients with COVID-19 are unclear, but there are several possibilities for this phenomenon: 1) proinflammatory cytokines such as interleukin- β (IL- β), tumor necrosis factor- α (TNF- α), and IL-6 may increase ferritin synthesis.⁵⁹ Hence, we speculated that SARS-CoV-2-induced production of proinflammatory cytokines (*i.e.*, IL-6, TNF- α), which are known to be elevated in COVID-19, might promote ferritin synthesis early in inflammation. 2) The cellular damage derived from inflammation can promote the leakage of intracellular ferritin, thus elevating serum ferritin.⁶⁰ 3) In acidosis, the microvascular environment and increased production of reactive oxygen species (ROS) might liberate iron from ferritin, and it is this unliganded iron that can participate in Haber-Weiss and Fenton reactions, creating hydroxyl radicals, causing

further cellular damage,⁶⁰ and worsening tissue injury, thus causing a vicious cycle of inflammation. Similarly, one study found that the assembly of Middle East Respiratory Syndrome (MERS) coronavirus nanoparticles is related to chaperone-mediated ferritin.⁶¹ However, further investigations are needed to confirm the role of serum ferritin levels in the pathogenesis of COVID-19.

PROTHROMBIN TIME

APTT

Increased D-dimer and fibrin degradation products levels, and prolonged prothrombin time have been associated with poor prognosis in patients affected by the novel coronavirus⁶²

Both thrombocytopenia and elevated D-dimer can be explained by the excessive activation of the coagulation cascade and platelets. Viral infections elicit the systemic inflammatory response and cause an imbalance between procoagulant and anticoagulant homeostatic mechanisms⁶³. Multiple pathogenetic mechanisms are involved, including endothelial dysfunction, von Willebrand factor elevation, Toll like receptor activation, and tissue-factor pathway activation⁶³⁻⁶⁵. Platelets, upon antigen recognition, become

activated and interact with white blood cells to facilitate pathogen clearance through white blood cell activation and clot formation⁶⁶. Platelets are key mediators of inflammation and sensors of infectious agents through the interaction of cell surface receptors and pathogens (pathogen pattern recognition receptors) or immune system derivatives (immunoglobulin Fc receptors and complement receptors). The activation of and the interactions between macrophages, monocytes, endothelial cells, platelets and lymphocytes play a critical role in the procoagulant effect of viral infections^{64,67}.

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recognition receptors) or immune system derivatives (immunoglobulin Fc receptors and complement receptors). The activation of and the interactions between macrophages, monocytes, endothelial cells, platelets and lymphocytes play a critical role in the procoagulant effect of viral infections^{64,67}.

LDH

LDH is an intracellular enzyme found in cells in almost all organ systems, which catalyzes the interconversion of pyruvate and lactate, with concomitant interconversion of NADH and NAD⁺⁶⁸. The acidic extracellular pH due to increased lactate from infection and tissue injury triggers the activation of metalloproteases and enhances macrophage mediated angiogenesis¹⁰⁸.

Severe infections may cause cytokine-mediated tissue damage and LDH release⁶⁹. Since LDH is present in lung tissue (isozyme 3), patients with severe COVID-19 infections can be expected to release greater amounts of LDH in the circulation, as a severe form of interstitial pneumonia, often evolving into acute respiratory distress syndrome, is the hallmark of the disease. However, the contribution of the different LDH isoenzymes to the LDH elevation observed in COVID-19 has not been determined. Elevated LDH levels seem to reflect that the multiple organ injury and failure may play a more prominent role in this pathology in influencing the clinical outcomes in patients with COVID-19.

PROCALCITONIN

PCT, a glycoprotein, is the propeptide of calcitonin devoid of hormonal activity. Under normal circumstances, it is produced in the C-cells of the thyroid gland. In healthy humans, PCT levels are undetectable (< 0.1 ng/mL). PCT levels are either unmodified or only moderately increased in systemic inflammatory response to viral or to non-infectious stimuli (non-viral infections). Therefore, PCT values were more discriminative than WBC count and CRP in distinguishing a bacterial infection from another inflammatory process⁷⁴. As for COVID-19 patients, more severe cases showed a more marked increase of PCT compared with non-severe cases^{70, 74-77}. A slight increase (much less than 0.5 ng/mL) in PCT levels is an important indicator to distinguish between SARS-CoV-2-positive and SARS-CoV-2-negative patients⁷⁸.

Although initial PCT value may be helpful in the determination of illness severity, it may not always be a reliable prognostic indicator. As PCT values may be influenced by preexisting comorbid conditions, such as CKD and congestive heart failure, baseline values may be high. However, PCT can provide invaluable information if considered within the clinical context⁷⁹.

TROPONIN

Troponin is a component of the contractile apparatus within skeletal and cardiac myocytes. Along with calcium ions, troponin proteins regulate and facilitate the interaction between actin and myosin filaments as part of the sliding filament mechanism of muscle contraction.

COVID-19 is characterised by pneumonia and persons with underlying cardiovascular disease associated with hypertension, diabetes, coronary artery disease or cerebral vascular disease are at higher risk of developing the severest form of the disease and demonstrate the highest rate of mortality .

Cardiac complications include the development of incident heart failure, acute coronary syndrome (ACS) and arrhythmia all of which are associated with elevation in cTn⁸⁰ especially when using high sensitivity immunoassays and confer poor prognosis. Elevations in cTn are common in those with acute infectious respiratory disease and increases correlate with the severity of infection⁸¹.

In the setting of COVID19, myocardial injury, defined by an increased troponin level, occurs especially due to non-ischaemic myocardial processes, including severe respiratory infection with hypoxia, sepsis, systemic inflammation, pulmonary thrombosis

and embolism, cardiac adrenergic hyperstimulation during cytokine storm syndrome, and possibly myocarditis.

Troponin represents a useful marker of disease progression and prognosis in COVID-19.

Therefore, myocardial biomarkers should be evaluated in patients with CVD who develop COVID-19 for risk stratification purposes to potentially lead to earlier and more aggressive interventions.

Multiple mechanisms have been suggested for cardiac damage based on studies on previous SARS and MERS epidemic and the currently ongoing COVID-19

Which include High level of cytokine surge- includes injury to cardiac monocytes

Direct myocardial injury - interaction of SARS-CoV2 with ACE2 can result in changes of ACE2 pathways leading to acute injury to the lung, heart, and endothelial cells

Myocardial oxygen supply/demand mismatch- due to the ongoing hypoxia due to ARDS

Figure 5: Diagrammatic Representation of cardiac injury ⁸²

CONCLUSION –

Analysis Antibody test for Covid 19 post infection⁸³

Longitudinal serological studies are urgently needed to determine the extent and duration of immunity to SARS-CoV-2.

Another type of test assesses the development of the immune response to the virus in patients by detecting the presence of 3 types of antibodies (eg, IgG, IgM, and IgA) that the body produces in response to the infection.

This type of test is a serological (blood) test and documents the presence of antibodies produced by the immune system against SARS-CoV-2

Given the nature of these tests and the current need to ramp up testing, the United States Food and Drug Administration has been granting Emergency Use Authorization for testing modalities, including lateral immunoassay for COVID-19. Antibodies may not be detectable until 6-7 days after symptom onset, molecular tests can accelerate the diagnostic window by up to 9 days.

Therefore, there is a clear role for antibody testing as an important tool in the diagnostic toolbox for COVID-19. Antibody testing can provide important insight to individuals about their functional immunity to the ongoing pandemic, giving peace of mind and assisting with decisions about return to community activities and the workplace⁸⁴

The above review summarises the significant hematological parameters that are integrated with the devastating pandemic. Although diagnosis of coronavirus disease 2019 (COVID-19) is challenging in the early stages due to non-obvious manifestations, haematological signs and symptoms provide clues to aid diagnosis. The paper also highlights the recent developments that are being made on the antibody tests and the predictive outcomes that are accompanied with it. Along with the diagnostic test being done for the covid 19, These results may help the clinician to reach to analyse the co-morbidities , severity and prognosis of the case as well.

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Table 1- Laboratory biomarkers of importance in COVID-19 infection (adapted by the authors from Ref. 18).

Parameter	Clinical significance
CRP	Severe viral infection, including viremia ^{13,15,17}
procalcitonin	Bacterial superinfection ^{13,14,15,17}
LDH	Pulmonary injury/multiorgan damage ^{13,15,16}
aminotransferases	Liver injury/multiorgan damage ^{13,15,16}
bilirubin	Liver injury ^{13,15}
creatinine	Renal injury ^{13,15}
cardiac troponins	Cardiac injury ¹³
albumin	Impaired liver function ^{13,15}
prothrombin time	Consumptive coagulopathy ^{13,18}
APTT	Consumptive coagulopathy ^{13,18}
D-dimer and/or FDP	Consumptive coagulopathy ^{13,18}

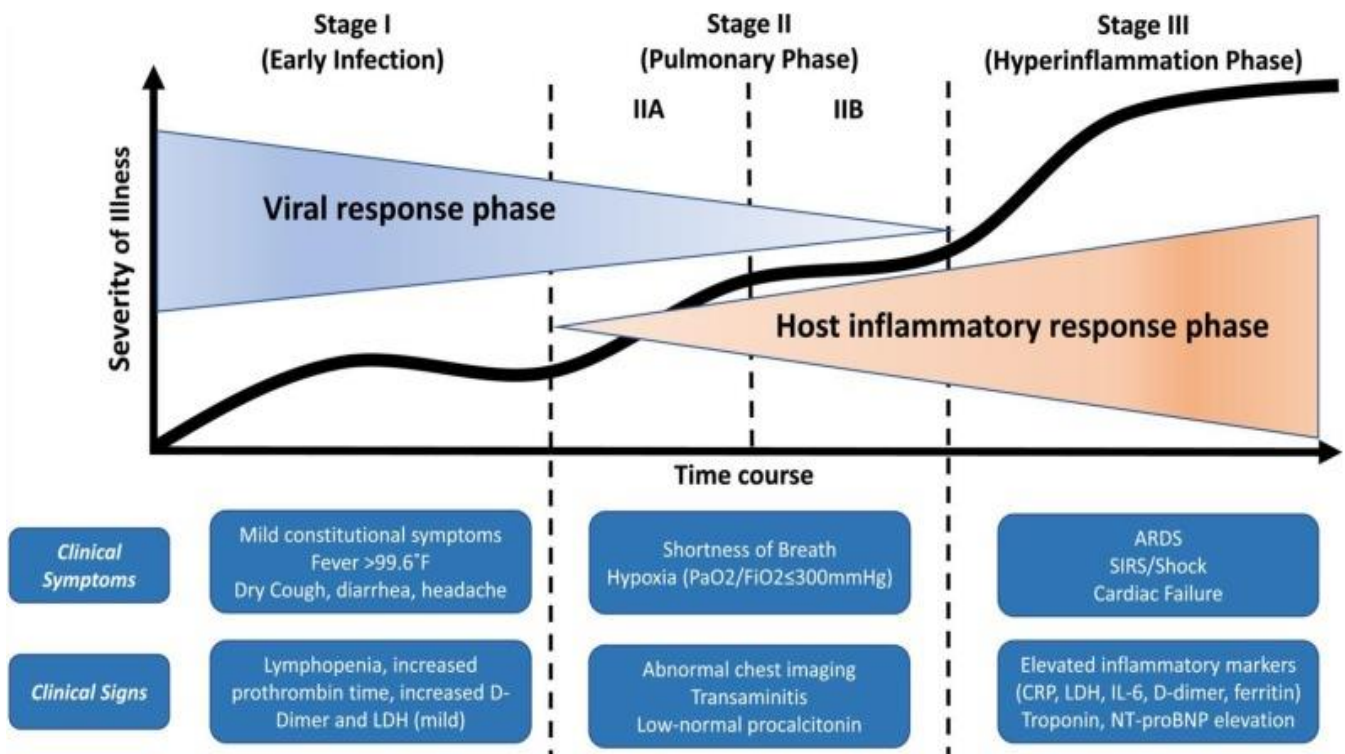


Figure 1 : The stages of viral response

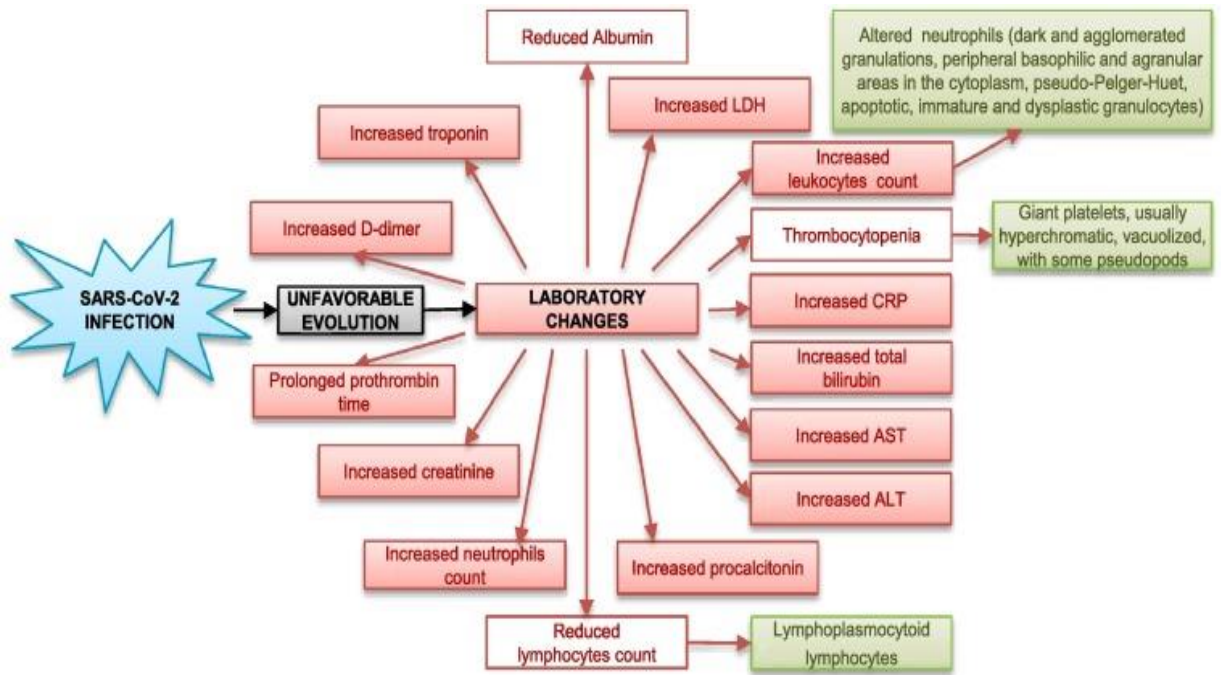


Figure 2: Diagrammatic Representation of the associated haematological findings in COVID 19

Parameter	Clinical significance
Lymphopenia	Defective host response ^{13,14,15}
Leukocytosis	Bacteria superinfection ¹³
Neutrophilia	Bacterial superinfection, cytokine storm ^{13,14,16,35,36}
Thrombocytopenia	Consumptive coagulopathy ^{13,37,38}

Table 2- Hematologic biomarkers of importance in COVID-19 infection

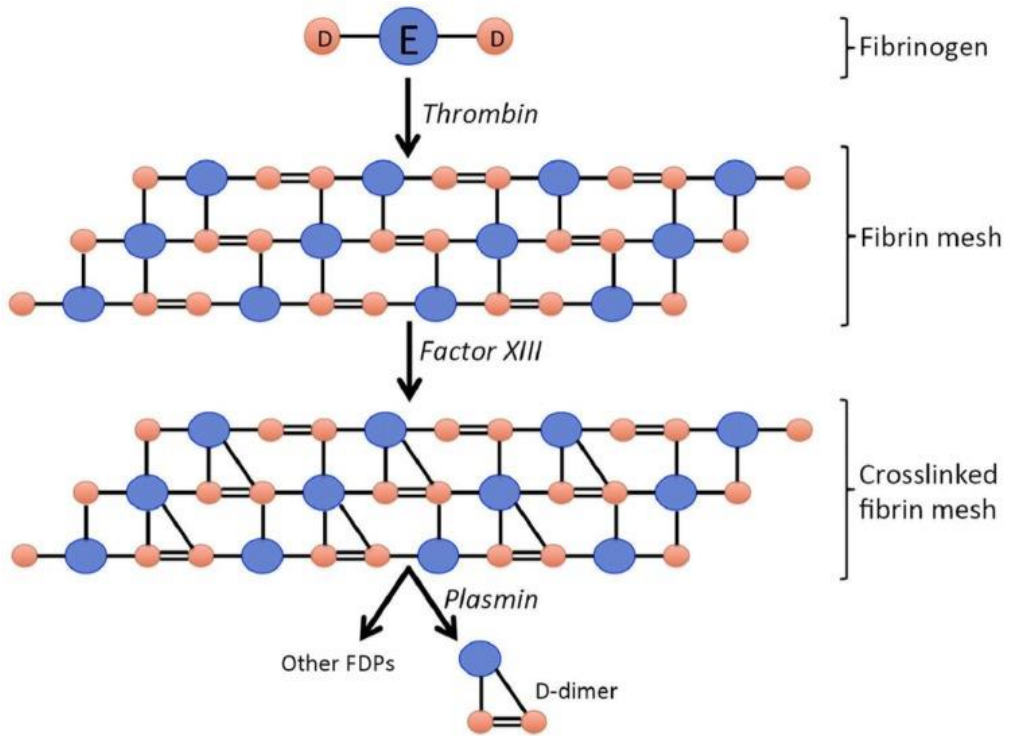


Figure 3 : Formation of d dimer

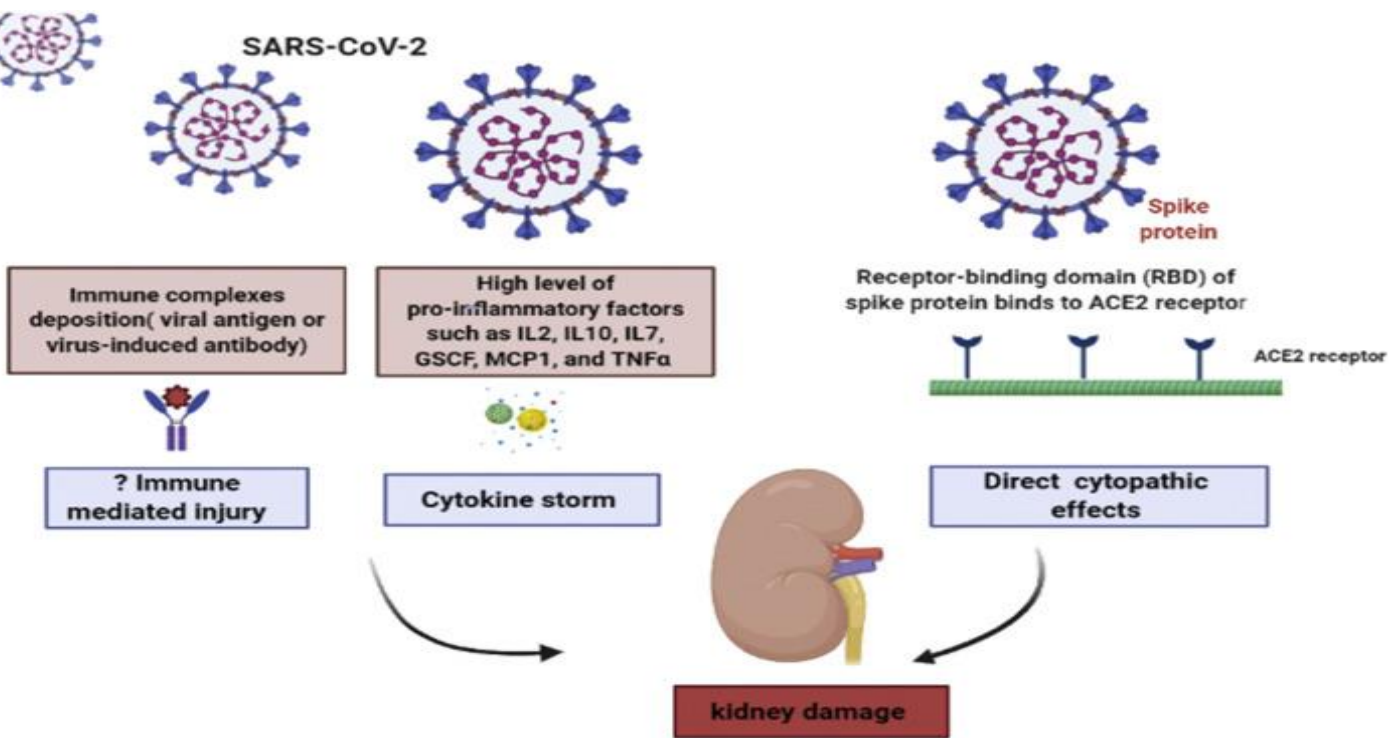


Figure 4 : Overview of Kidney damage

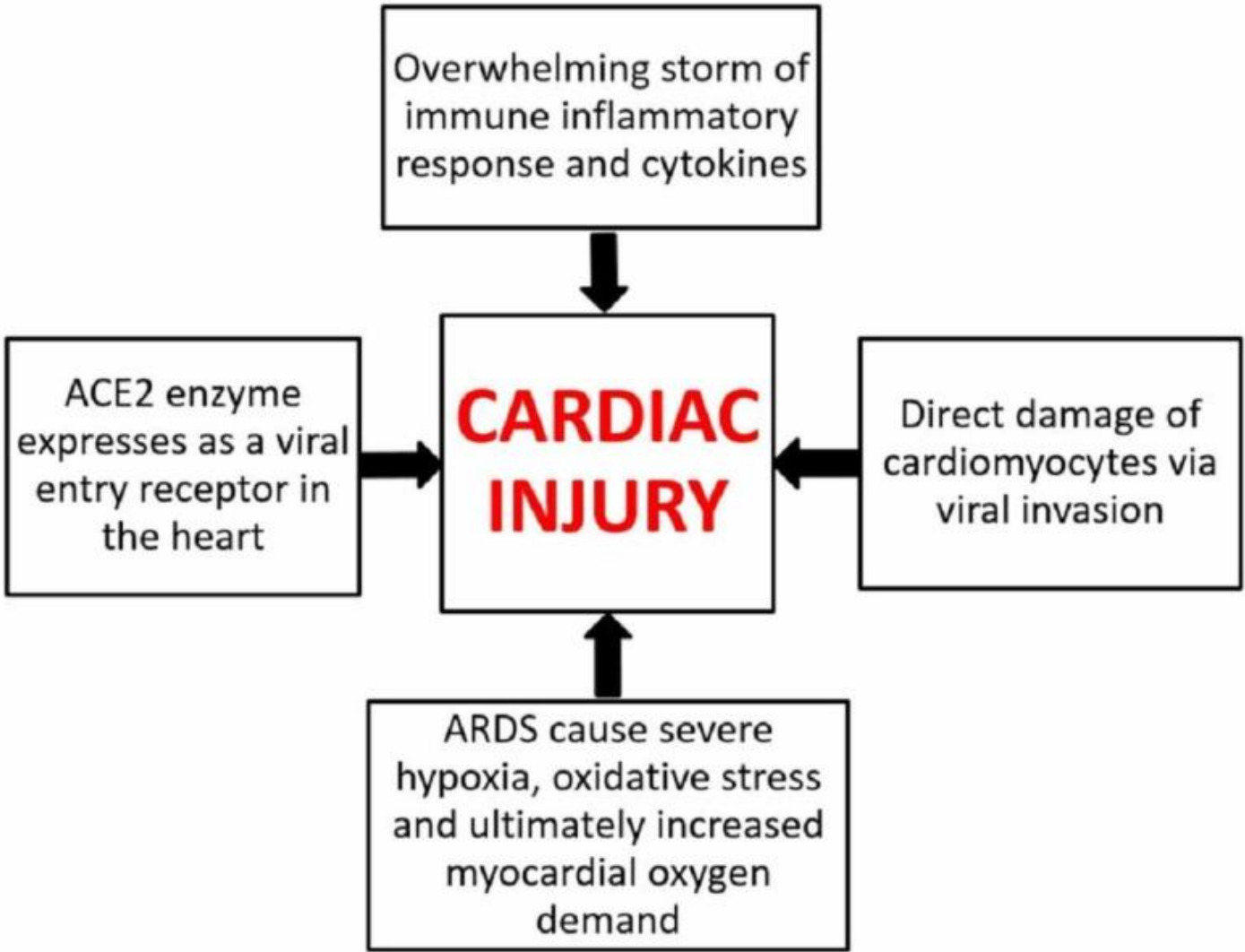


Figure 5: Diagrammatic Representation of cardiac injury

Insight Of The Fundamental Principles Of Psychosomatic Approach In Prosthodontia

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Abstract:

Psychosomatic aspects implies the existing knowledge of concerning the influence of psychological factors upon the function of the body and its disturbances. And accordingly an attempt will be made to present steps on the psychosomatic aspects including approaches, protocols in prosthodontics. The psychological status of a patient undergoing prosthodontic treatment is one of the key determinants of the success of prosthesis. Hence, the understanding the psychology and behaviour management of such patients is of paramount importance for prosthodontist aspiring for success in practice. It is important to understand the thoughts, aspirations and expectations & psychology of patients and their attitudes and reactions during prosthodontic treatments. This article reviews the importance of personality in dentist-patient communication and insight of the psychosomatic component in prosthodontic treatment.

Key Words: Psychosomatic, Drives, Stress, Temperament, Personality, Psychology, Mental attitude, communication

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INTRODUCTION:

The pattern of human development is toward health and maturity, or towards a maintenance of actualisation of potentialities. An individual is concerned with actualizing his potential & tries to protect himself from stress and to expand the least amount of energy in doing so, thus guarding against damage or devaluation. To understand patients, we must understand some foundations of behaviour, with emphasis on individual's accumulation of stress, its effect upon him orally in relation to prosthodontics, and its effect upon his behaviour in general.

Personality might be called the display window of an individual. It is the part of one's true self that others may see. This display window can be pleasing and inviting or it may be so unattractive that few care to investigate further what might be within.¹

De Van [2] stated it well when he said we should meet the mind of the patient before we meet the mouth of the patient. In order to present the best possible treatment for the patients, prosthodontist must not only consider the advanced clinical techniques but must also have a broad insight the psychological factors behind patient's actions & decisions.

It is utmost important for Prosthodontist to understand their patients, because such understandings predisposes the patients to accept the kind of treatment they need. Psychosomatic meaning in Oxford Advanced American Dictionary elicits that (of an illness) caused by mental problems, such as stress and worry, rather than physical problems & *it is* connected with the relationship between the mind and the body.

The term “psychosomatic” implies the dual character of the disease, wherein the patient’s mind—his psyche, determines the character of the disease of the body. The link between the mind and the body in psychosomatic disorders can be observed in the visceral systems as a function of the changes in the emotional state of the patient.^[3,4]

DRIVES ⁵

Every Individual seeks to meet certain needs and to satisfy certain drives which become motivators to behaviour in order to achieve the goal of actualization and protection of self. Psychologically, every individual has a group of primary and secondary drives. These drives are toward certain goals which are of important biological toward life in the basic drives. and psychologically toward satisfaction is the secondary drives. There are two basic drives for an individual.

Biologic drives. The biologic needs includes visceral needs (such as food, oxygen, sleep, and elimination of wastes), safety needs for avoidance of harm.

Psychologic drives. The following psychologic needs are of special importance that all prosthodontist because these are motivators of patient behaviour.

The following psychological needs are of special importance to all dentists because these are motivators of patient behaviour.

1. An individual needs order and meaning in his life, he dislikes ambiguity or lack of structure. He also seeks explanations which, whether accurate or not, provide a sense of order, control and potential prediction.
2. An individual needs social approval—a sense of belonging and status. He tries to become an approved member of the group with which he wishes to identify.
3. An individual needs love and romance. An individual needs self-enhancement and growth.
4. An individual needs security; he strives to maintain conditions which assure the gratification of his needs.
5. An individual needs to feel adequate and competent; he becomes confused and disorganized if he sees his adjustive resources as inadequate to cope with any life situation.

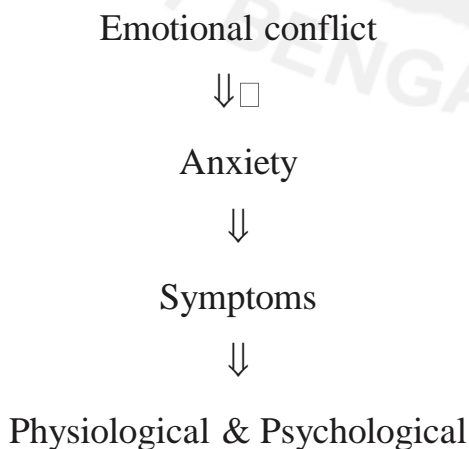
STRESS^[3,4,5]

Prosthodontists who understand these motivating factors can work through them to motivate patients to desire the kind of dental treatment that is essential for their well-being. Problems arise, however, for as man seeks gratification of his needs and pursues his goals, he encounters many internal and environmental obstacles which complicate his efforts to achieve self-actualization. These obstacles create stress and are generally of two types: those which we label frustrations and those which we label conflicts.

Frustrations may be environmental or internal, such as personal limitations, and they occur when desires are blocked.

Conflicts also lead to frustration and stress but they are the result of a pull between two alternatives

Emotional conflicts create anxiety resulting in physiologic symptoms, psychological symptoms or both. These phenomena are illustrated in the following schematic manner:



The most common disorders, which affect prosthodontic treatment are: (1) circulatory disturbances, (2) respiratory disorders and (3) gastrointestinal disorders.

PSYCHOSOMATIC SYMPTOMS

Whitehead et al.^[20] suggested that psychosomatic symptoms be divided into (1) those associated with abnormal physical changes in organs innervated by the autonomic nervous system (for example, peptic and duodenal ulcers and hypertension) and (2) those influenced by environmental events that possess psychologic significance.

ABNORMAL BEHAVIOUR⁵

Prosthodontists must prepare to be confronted with patients who exhibit abnormal behaviour. All forms of abnormal behaviour, ranging from the less severe psycho-somatic conditions to the more severe psychotic patterns, limit the individual's ability to adjust to and derive pleasure from his social interactions and reduce his effectiveness in coping with life. Abnormal behaviour may be due to:

Psychoneurotic disorders
2. Psychotic disorders
3. Personality disorders.

Personality disorders- It is the form of abnormal behaviour pattern of the psychopathic personality, that is not always easy to detect in brief contacts.

It is likely that most prosthodontists have encountered this type of patient. Patients of this type are concerned only with reaping the benefits of prosthodontic treatment. They will have no concern for dentists' feelings, for the costs, or for other patients.

THE TEMPERAMENT THEORY AND HIPPOCRATES⁶⁻¹¹

One novel philosophical concept that was in favour centuries ago, but is seldom mentioned today, is the call to categorize patients according to their human qualities and the subsequent behavioural characteristics they are likely to exhibit. This idea is far from new and was promoted some 2,500 years ago by the Greek physician, Hippocrates (BC 460 to BC 370). This renowned medical practitioner, scholar, and teacher is considered the father of Western medicine and recognized as having established the medical profession as a distinct discipline. Hippocrates developed the "Temperament Theory" of the four humors (fluids) he identified as blood, phlegm, yellow bile, and black bile which then led to the ancient medical concept known as „humorism." In Greco-Roman medicine, these humors were believed to be the influencers of an individual's relative wellness or ill-health, served as a means to classify illnesses, and subsequently guided medical diagnosis and treatment.

Centuries later modifications to Hippocrates' hypothesis were suggested for use in dentistry when selecting denture teeth and later as a means to classify the mental status and personality of complete denture patients.

The Greek physician Galen^[12] (BC130 to BC 210), who rose to fame in the Roman Empire, was said to be a supporter of the theory behind bodily humors, but he played a larger role by perpetuating Hippocratic medicine. In regard to the temperament theory, it was Galen who added names to describe the personalities present in people in whom there was an imbalance of the humors. Distinctions among the different temperaments were said to be responsible for the characteristics of four corresponding personality types.^[10]

Fast forward to the 19th century and J.W. White published an editorial in Dental Cosmos in 1884 pertaining to applications of the temperament theory in dentistry for tooth selection and the improvement of denture esthetics in the treatment of edentulous patients.^[9,13]

More than a decade after White's editorial,^[13] Alton Howard Thompson wrote a book chapter entitled "The Temperament and the Temperamental Characteristics of the Teeth in Relation to Dental Prosthesis". Thomson described a temperament classification system attributed to a physician named

Dr. Johann Gaspar Spurzheim in which patients were categorized as lymphatic, sanguine, bilious, or nervous.^[6,7]

W. M. Randall ^[14] discussed classifying the mental attitude of complete denture patients using the following four new terms: receptive, passive, exacting, and antagonistic.

Receptive patients were described as being “alert to advice and having full confidence in the dentist's ability to render the best service under existing conditions.”

Passive patients were identified as being “quite indifferent to the technical details and principally interested in the end-result with especial interest in the utility and service to be obtained.”

Exacting patients were described as individuals who lay “great store in appearances” and frequently expect, and sometimes, even insist upon “certain things being done by the dentist that are contrary to fundamental dental principles essential to the efficiency, retention, and stability of complete dentures”

Antagonistic patients were said to be those individuals who lack confidence in their ability “to wear new dentures when finished and in the dentist's ability to construct something they will want to wear.” They also are

believed to be unwilling to make the best of an unfortunate condition and are “unwilling to fully cooperate with the dentist in learning to wear artificial dentures when finished.”

Neil in 1932 and later by M. M. House in a 1950 booklet based on notes from a study club supervised by House both used the terms philosophical, exacting, hysterical, and indifferent in their “mental classification” of patient.^[15,16]

PERSONALITY TYPES ¹⁷⁻¹⁹

A patient's satisfaction is strongly related to his personality and to his relationship with the clinician.

Dr. M. M. House classified patients' psychology into four types:

Class I: Philosophical- Philosophical patients anticipate the need for treatment with dentures and are willing to rely on the dentist's advice for diagnosis and treatment. These patients will follow the dentist's advice when advised to replace their dentures.

Class II: Exacting -Exacting patients are usually in poor health and need a great deal of treatment, but they are unwilling to accommodate suggestions from the dentist or physician to extract hopeless teeth and become denture wearers. Exacting patients also doubt the dentist's ability to make dentures

that would satisfy their aesthetic and functional needs. Often, the exacting patient demands extraordinary efforts and guarantees of treatment outcome at no additional cost. [SEP]

Class III: Hysterical- Hysterical patients are neglectful of their oral health, dentophobic and unwilling to try to adapt to wearing dentures. Although these patients may try to wear dentures, they often fail to use the prosthesis because they expect it to look and function like natural teeth.

Class IV : Indifferent -Indifferent patients tend not to care about their self- image and are not motivated to enjoy eating. They have managed to survive without wearing dentures.

COMMUNICATION

For the prosthodontist to pin-point or integrate the multiple factors involved in presenting prosthodontic problems in a practical dynamic way, including acceptance by the patient of the prosthodontist as a person, his analysis, the projected financial outlay, repeated chair services, and eventually any artificial denture restoration (fillings, jacket crowns, fixed bridges, inlays, partial dentures, full dentures, and obturators), it is essential for him to develop a workable concept of the longitudinal life line of the patient with emotion.

The approach of the prosthodontist to the patient is actually the second step- the confirming step- in the establishment of a transactional relationship, an interpersonal contract.

The first step is, after all, the patient's approach to the prosthodontist.^[4] Psychologic understanding is a special kind of understanding, with technical tools of access. But prosthodontics is not only a specialty: it is also a point of view in medicine. It is today, we believe, impossible to make sharp distinction of mind and body which has so long prevailed- a separation The prosthodontist with a holistic view never forgets that these eyes, nose, ears, and mouths, and their contents belong to persons, to personalities. The concentration upon the interaction of all parts of the body and all parts of human living constitutes what is referred to as "togetherness" of mind and body^[4]

PATIENT'S ATTITUDE TOWARDS PROSTHODONTIST⁴

The neurotic dental patient- The neurotic dental patient differs from most dental patients in that he is likely to have dysarthrosis of the temporomandibular joints which involves not only his interpersonal relationships, and his means of communication, but his psychologic processes- intellectual, emotional, and instinctual.

The temporomandibular diseases and bruxism, gagging history are related to stress and psychological status of an individual, so in prosthodontic treatment it is important to correlate with the patient's history.

PROSTHODONTIC AND PSYCHOLOGICAL FACTORS IN TREATING PATIENTS WITH CONGENITAL AND CRANIOFACIAL DEFECTS ²¹

Providing maxillofacial prosthetic treatment for patients with congenital and craniofacial defects should not only address physical and functional deficiencies but, ideally should also evaluate the possible psychological effects of these deformities. The treatment of patients with congenital craniofacial defects presents psychosocial as well as technical challenges. Persons with a congenital or craniofacial defect are unique, and oral problems must be evaluated individually to the most ideal treatment. The changes in appearance, function, and psychological well-being have an enormous impact on patients' personal lives and are rewarding for the maxillofacial prosthodontist providing this care.

GERIATRIC PSYCHOLOGY IN PROSTHODONTICS²²

Dental problems of geriatric prosthodontic patient differ from others because the psychological factors are

associated with them. Prosthodontist must understand & realize the psychological aspects of geriatric patient as it influences the decision making & treatment plan. The geriatric patient have both the greatest level of need for prosthodontic services & greatest degree of complicating psychological factors. The emotional & psychologic make up of the geriatric patient must be kept in mind during the entire procedure.

Success in geriatric prosthodontic dentistry can be the result of building up the patient's confidence in clinician.

As patients seek gratification of their needs and drives and pursue their goals. they encounter obstacles which lead to stress.

Whitehead et al ^[20] has suggested that T M J dysfunction, the gag reflex, and denture intolerance are representative of the etiologic categories of psychosomatic symptoms, which most often arise from environmental stressors.

CONCLUSION

Patient psychology forms an important aspect in prosthodontic treatment. Success and failure are decided by the way the thinking process of patient works. Dentists must have a sense of real concern for the health, comfort and welfare of the patients to establish necessary mutual confidence.

A “tender loving care” approach towards patients should be taken before treatment is started and continued throughout the treatment planning and the treatment itself. We can help patients with psychological problems by acquiring respect for the individual concern and understanding.

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Prosthetic Options For Gingival Masking: A Review

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Abstract:

Periodontal disease, trauma and congenital defects can result in both hard tissue and soft tissue defects that can present with aesthetic problems. The preservation or reproduction of optimal muco-gingival aesthetics can be difficult to achieve from both a surgical or prosthetic perspective. An increasing patient awareness of the importance of gingival and smile aesthetics has resulted in the development of both surgical and prosthetic techniques aimed at improving or maintaining these aesthetic characteristics. This article discusses about the available techniques that are documented for the fabrication of gingival prosthesis and an evaluation of distinct advantages and disadvantages associated with fabrication of gingival veneers.

Keywords: aesthetics, gingival prosthesis, gingival veneers

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INTRODUCTION:

The holistic approach towards dental aesthetics as of today does not merely encompass the teeth. A paradigm shift has been observed about the perception of aesthetics per se and the pink counterpart or the gingival component is now given equal weightage if not more than the white component of the restoration that is the teeth, requiring correct restoration for the overall dento-gingival appearance, enhancing a patient's smile. Various surgical and nonsurgical approaches have been proposed till date to provide satisfactory reconstruction of interdental papilla. Dental esthetics is a perception which comprises of the hard and soft-tissues as a whole and not as isolated entities. Periodontal disease leads to loss of alveolar bone and apical migration of the gingival marginal tissues resulting in unsightly black triangles and sensitivity of teeth. Black triangles are rated as the third most disliked esthetic problem below caries and crown margins. ^[1] Interdental spaces may also result in phonetic problems due to venting of air. ^[2] Isolated gingival recessions are corrected by various surgical root coverage procedures. Nonsurgical approaches which includes correction of traumatic hygiene procedures, orthodontic

approach and restorative/prosthetic approach. Complete restoration by reconstructive surgical procedures is achieved in isolated defects and loss of papilla related to soft tissues only. [2] In the case of periodontal disease with alveolar bone loss and multiple teeth affected complete reconstruction is generally not achieved. Gingival prosthesis (gingival mask or gingival veneer or gingival epithesis) is a flexible removable periodontal prosthesis used to replace the lost part gingiva due to periodontal surgery, gingival recession or to hide black triangle spaces between teeth.

Gingival veneers are especially useful when a large volume of tissues requires replacement, allowing proper cleaning by the patient. Materials used for gingival prosthesis include pink auto cure and heat cured acrylics, porcelains, composite resins, and thermoplastic acrylics as well as silicone based soft materials. [3,4,5,6]

The aim of this article is to throw some light on the available techniques that are documented for the fabrication of gingival prosthesis and an evaluation of distinct advantages and disadvantages associated with fabrication of gingival veneers.

VARIOUS TECHNIQUES OF FABRICATING GINGIVAL PROSTHESIS:

CASE REPORT 1:

Tomar BS et al(2015)in their case report presented a successful rehabilitation of gingival aesthetics in a 25 year old lady with Miller's class III recession defect . They made preliminary impressions with alginate (Algitex, DPI, India) and the cast was poured using type III dental stone (Dentstone, Neelkanths Healthcare Products, India). On the primary cast, wax spacer was adapted covering the entire span between first premolars such that it extends from vestibule upto the incisal surfaces. Three tissue stops were placed:(one anteriorly - the incisal edge of central incisor, and two posteriorly- on the occlusal surface of first premolars).

A labial special tray [Figure 1a] was fabricated using cold cure acrylic resin. To restrict the flow of impression materials through the embrasures, a silicone putty barrier [Figure 1b] was used on the palatal aspects of teeth (Express, XT, Penta, Putty, 3M ESPE, India, Limited). Wax spacer was removed and perforations made before final impression. The final Impression was made from double mix single impression technique using addition silicone impression material [Figure 1c](Express Putty and

lightbody 3M ESPE US). Casts were made in type III dental stone (Dentstone, Neelkanths Healthcare Products, India). After evaluating lip length, lip line and support the cast was marked to delineate the contour of prosthesis. A 1-mm thick baseplate wax (Modeling Wax, Hindustan, India) was adapted on the cast to desired shape and size and tried onto the patient. Flasking and dewaxing was done such that it was embedded in plaster and reverse was formed in dental stone. The room temperature vulcanization (RTV) silicone was then used with intrinsic colourations to mimic the patient's adjacent tissues and packed for overnight curing at room temperature following which a short curing cycle at a temperature of 74°C inside the hot water bath for 3 h ensured thorough curing. The RTV silicone gingival prosthesis was then deflasked [Figure 1d]. Silicone trimming wheels were used for finishing and polishing. All necessary instructions were given and was advised to insert the prosthesis by placing it interdentally and pressing it into position. The final prosthesis in place. [Figure 1e].

CASE REPORT 2:

Ramanujam C et al (2015) in their case report presented successful prosthetic rehabilitation to mask the unaesthetic black triangle present between the central incisors of a 35-year-old female patient (Figure -2a). They measured the

distance between crest of the ridge and the contact area to be 8 mm. They opted for gingival veneers as patient did not want surgical procedures. Diagnostic impressions were made from irreversible hydrocolloids and casts poured in type III gypsum (dental stone). Sectional special tray was prepared only for the labial side (Figure- 2b). A Split impression technique was used where the impression of the palatal portion was made from addition silicone putty to restrict the flow of the final impression material from the labial side and for the labial impression polyether as final impression material was used. The impressions were assembled outside the patient's mouth (Figure - 2c) and master cast was poured in type IV die stone. Further Wax-up was done in the master cast for the prosthesis, the final prosthesis was fabricated from gingival-coloured indirect composite restoration material (Figure - 2d). The final prosthesis was checked for proper fit and esthetics and phonetics.

CASE REPORT 3:

Thumati P et al (2016) in their case report documented an innovative two part prosthesis to successfully rehabilitate a 71 year old woman with anterior maxillary defect following marsupialisation of radicular cyst in right upper central incisor region. [figure: 3a]

They made Preliminary impressions using alginate impression material (Tropicalgin, Zhermack) and a conventional removable prosthesis was made onto the labial flange of which a pre-fabricated male component of press button was attached. The prosthesis was then seated intraorally for a further pick-up impression of the same. A model was prepared from this impression using type 4 die stone (Kalrock) [figure:3b]. On this model they fixated the female part of the assembly [figure: 3c] following which wax-up was done [figure: 3d]. The prosthesis was processed further using heat cure acrylic resin (DPI) [figure: 3e]. They successfully delivered both the parts of the prosthesis to the patient [figure:3f]

DISCUSSION:

Gingival veneers are viable prosthetic treatment options in specifically the aesthetic regions where large soft tissue defects, gingival recession, lack of interdental papilla causing unsightly black triangles or a failed periodontal surgery needs to be aesthetically covered up. Case selection is of utmost priority for the predictable success of the treatment plan formulated. [9] Gingival prosthesis as the literature suggests can be of various forms with respect to their technique of fabrication, materials used and their use/indications which are well documented by various authors [2-14]. Various materials that are used commonly ranges from pink cold cured and heat

cured acrylics, pink porcelains, composite resins, and thermoplastic acrylics resins to the newer soft materials like silicones. Greene PR (1998) in his report described a two-stage impression techniques for the fabrication of two identical gingival masks. These two masks are to be used for alternative days in rotation. [4] Brygider in his report (1991) documented the precision attachment retained use of gingival acrylic veneers in fixed implant prosthesis. [14] Barzilay and Irene (2003) in their report presented an innovative method for the use of pink materials in gingival prosthesis which could simulate the natural gingiva providing with an esthetic outcome. [3] Lai et al. (2003) thoroughly studied the in-vitro stain resistance, colour stability, and water sorption in four different materials used for fabrication of removable gingival flange prosthesis to concluded that gingival flange prosthesis comprising of silicone or polyamide materials are more prone to staining with coffee and tea than any other traditional denture base acrylic resins in use.

A fixed prosthesis in stills in the patient a significant boost in self-confidence, comfort and a sense of natural feeling. This psychic boost precludes the use of fixed prosthesis whenever possible. However, their application mandates certain specific clinical scenarios where oral hygiene is manageable by

the patient, the desired aesthetic outcome is achievable or aesthetics not that crucial, and when a fixed prosthetic option has already been planned for the replacement of the area. With a removable prosthesis, there are distinct advantages like hygiene maintenance of prosthesis is not a problem even when large bulk of tissue needs replacement. Removable prosthesis are easier to contour compared to fixed options moreover the tissue bed adjacent to it needs minimal to no modifications therefore remains unperturbed thus leading to better aesthetic results. With a treatment plan for replacement of missing teeth with fixed denture prosthesis, a combined approach can be used with both fixed and removable elements, with dental attachments being used to increase support and retention.¹⁸

The indications for gingival prosthesis are as follows: [\[7\]](#)

Where interdental spacing with loss of papilla is present due to gingival recession from periodontal disease or after periodontal treatment.

As a provisional coverage prosthesis before definitive restorations are placed thus acting as a temporary splint.

In implant supported prosthesis to augment gingiva.

Where flaring of anterior teeth is present along with mild gingival recession.

As an interim aid in cases where the final treatment plan has been delayed

Relative contraindications to the use of gingival prosthesis includes⁷:

1. Poor or unstable periodontal health.
2. When oral hygiene is considerably poor.
3. In patients with high caries index.
4. Known allergy to silicone or PMMA.
5. Heavy smokers.

There are no documented absolute contraindications for the gingival prosthesis.

CONCLUSION:

Aesthetics as a whole gets significantly jeopardised owing to gingival recession caused due to periodontal reasons. Dental esthetics is based not only on the "white component" of the restoration, but also on the "pink component." A clear understanding of the true science behind aesthetics lies in proper contour, colour and form that is essentially required to fabricate life-like prosthesis. Gingival veneers are good viable prosthetic options in multiple /generalised recession cases. Prosthetic option in the form of gingival veneers mimics the natural appearance of gingiva in a predictable and cost-efficient way. This review helps to effectively sum-up some of the varied techniques used and materials suggested by different authors to successfully fabricate gingival veneers.

TABLE 1: COMPARISON OF GINGIVAL PROSTHESIS

Characteristics	Removable prosthesis	Fixed prosthesis
1. Cost :	Additional to the original cost of prosthesis(if a secondary prosthesis is being made)	Only cost part of original prosthesis.
2. Stability & Retention :	Prosthesis is mobile ,so retention is derived from attachments or adhesives	Prosthesis fixed and therefore always stable.
3. Oral hygiene :	Easy access to interproximal embrasures.	Hygiene more difficult because of lack of space for instrumentation.
4. Staining :	Porous prosthetic material stains easily.	Prosthetic material(glazed porcelain)stains less and easily cleaned.

TABLE 1: COMPARISON OF GINGIVAL PROSTHESIS

Characteristics	Removable prosthesis	Fixed prosthesis
5. Long-term prognosis : (wear, damage, loss)	Prosthesis may wear, become damaged or lost.	Minimal wear, with no danger of damage or loss.
6. Complications : (Ingestion and inhalation)	Prosthesis susceptible to ingestion or inhalation.	Prosthesis not subject to ingestion or inhalation
7. Psychological aspects:	Patient may not feel like himself or herself (typical of a removable prosthesis)	Patient feels like himself or herself.
8. Function :	Patient may experience movement or discomfort during function.	Functions without any discernible movement.
9. Aesthetics :	Larger volumes of tissue can be replaced, and adequate bulk can be created for esthetic appearance.	Esthetics may be less pleasing because of limited applicable volume (must leave interproximal areas open for oral hygiene); the prosthesis must be cleanable, therefore ridge lapping needs to be avoided.
10. Ability to retrofit :	Prosthesis can be adjusted as tissue changes.	Tissue portion of prosthesis cannot be adjusted easily.

Case Report 1



Figure 1a – Labial customised tray



Figure 1b – Silicone putty barrier



Figure 1c – Final impression with addition silicone



Figure 1d – Silicone gingival prosthesis



Figure 1e – Postoperative intraoral view with gingival prosthesis

Case Report 2



Figure 2a: Preoperative intraoral view



Figure 2b: Labial special tray



Figure 2c: Assembled final impression



Figure 2d: Postoperative intraoral view

Case Report 3



Figure 3a: Intra oral photograph depicting the defect



Figure 3b : Model prepared using type IV die stone



Figure 3c: Female Component of Press Button System Attached



Figure 3d :Wax Pattern Prepared



Figure 3e: Removable Prosthesis with gingival mask



Figure 3f : Postoperative intra-oral view: Acrylic gingival mask

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Implant Retained Mandibular Overdenture: A Viable Treatment Option For Resorbed Mandibular Ridge.

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Abstract

The prosthodontic management of the edentulous patient has long been a challenge. Although, complete maxillary and mandibular dentures have been a common treatment modality, nevertheless, most of the patients report problems adapting to their mandibular denture due to a lack of comfort, retention, stability and inability to masticate. Over the past few years, implant-retained overdentures have been routinely used for edentulous patients with predictable and good clinical results. The present case report deals with the rehabilitation of resorbed edentulous mandibular ridge using an overdenture retained by four freestanding mandibular implants placed in the inter-foraminal region with ball abutments opposing the conventional maxillary complete denture. This resulted in a significantly improved denture retention and masticatory efficiency compared to the conventional complete denture prosthesis. Thus, implant retained overdenture is a much simpler, affordable and minimally invasive procedure to treat majority of the patients.

Keywords: Implant retained overdenture, ball attachment, resorbed ridge

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INTRODUCTION

Resorbed ridges pose a great clinical challenge towards the fabrication of a successful prosthesis. With, the introduction of osseointegrated implants and implant-retained prostheses, there has been a paradigm shift for the management of edentulism, especially mandibular edentulism, where the problem of advanced alveolar resorption and difficulty in providing stable, retentive and functionally comfortable prostheses seems to be questionable.¹⁻³

A number of randomized controlled trials (RCTs) have demonstrated increased patient satisfaction and acceptance along with reduced negative impact on the quality of life with implant retained overdentures as opposed to conventional dentures in the mandible.¹⁻³ Other studies have reported an improvement in chewing ability, bite force and in serum nutritional and anthropometric parameters (such as skinfold thickness, waist hip ratio and body mass index).^{2,3} Literature abounds in

favourable evidences that support a decline in the rate of bone resorption with use of overdenture as compared to conventional dentures, implying less frequent need for relining and rebasing procedures. The long-term efficacy of implant-supported overdentures has been established in many retrospective and longitudinal trials.⁴⁻⁶ Thus, multitude of benefits to the edentulous population from implant overdentures is overwhelming in terms of improved function, emotional stability, physical health and esthetics.

This clinical report describes a method to rehabilitate a patient with resorbed mandibular ridge with implant retained overdenture.

CASE REPORT

A 65-year-old male patient reported to the department of prosthodontics with the chief complaint of ill-fitting lower denture which caused him inability to eat and speak properly. Past medical history was insignificant. His dental history included extraction of the periodontally and endodontically involved teeth and their replacement with maxillary and mandibular conventional dentures. Evaluation of the existing dentures revealed inadequate denture extensions, poor retention and stability. The patient was screened according to protocol

for his general health and treatment possibilities. On intra-oral examination, it was noted that the patient was completely edentulous and had a moderate degree of alveolar ridge resorption in posterior region of mandible (figure 1). Due to the resorption pattern (figure 2), the patient was informed about the poor prognosis of constructing a conventional mandibular denture. Different treatment options were put forward to the patient including implant therapy which would be best suited for him. After obtaining consent from the patient, it was decided to fabricate conventional complete denture in the maxillary arch and a 4-free standing implant retained overdenture in the mandibular arch. Position A, B, D, E were selected for implant placement considering the resorption of the posterior region.

Treatment procedure: Maxillary and mandibular complete dentures were fabricated with conventional method and bilateral balanced occlusal scheme was given. Deflecting contacts in both centric and eccentric movements were eliminated. Denture placement was done followed by hygiene instructions. The mandibular denture was duplicated in a duplicating flask using agar. This was followed by fabrication of a template of clear auto-polymerized acrylic resin (DPI self-cured Acrylic resin, Clear) which was used as a surgical template during implant placement. Planned implant position

and angulations were marked on the surgical template with an indelible ink pencil (figure 3). Vertical space analysis of the denture was performed. Adin (Touareg S) implants of length 11.5 mm and width 3.75 mm were selected. Ball attachments were selected as means of retention for the present case. Two-stage surgical protocol was selected. The osteotomy sites were prepared in the A, B, D and E region with the help of surgical template under local anaesthesia. Guide pins were used to ensure that the implant were parallel to each other (figure 4). The selected implants were placed at the prepared sites and cover screws were placed. The wound was closed (figure 5) by means of single sutures (Vicryl, Johnson and Johnson Medical Inc., Arlington, TX, USA). The patient was asked to discontinue wearing the lower denture for 15 days after the surgery. Antibiotics were prescribed to the patient along with mouth wash (Hexidine) 3-5 times daily. Oral hygiene maintainance instructions were given. The sutures were removed on subsequent appointment i.e. after 15 days. The intaglio surface of the denture was relined using tissue conditioner (GC Reline Soft TM) according to the manufacturer's recommendations. Denture placement was done after finishing and polishing. The patient was asked to continue wearing the removable

prosthesis during the period of osseointegration. Three months later and after confirmation of the osseointegration, the second stage surgery was done.

At this stage, the implants were exposed, the surgical cover screws were removed and the sites were irrigated with sterile normal saline. Healing abutments were screwed, and the gingival tissues were allowed to heal for one month. After one month, the fit of the dentures was checked before the addition of attachments. Ball and socket over-denture attachment of 2 mm diameter was selected. Seating of the attachments was verified (figure 6). The attachments were placed and the metal caps were seated. Acrylic resin from the intaglio surface of the denture was removed to allow passive fit of the denture against the tissue. A number six round bur was used to vent the pick up space toward the surface of the denture. The vent was situated lingual to the denture teeth. The pick-up space was half filled with self-cure acrylic resin and the denture was placed over the abutments that were blocked using a separating sheet. The complete seating of the denture was verified and the patient was asked to maintain light occlusal pressure in the centric relation position while the resin polymerized. The pick-up resin was trimmed and polished (figure 7).

Final occlusion was rechecked and post-insertion instructions were given to the patient (figure 8). Patient training to place and remove the dentures was done properly. First recall appointment was given after 24 hours. The regular follow up was advised every six months. Patient was instructed to remove their prosthesis at night. A soft brush and denture cleaning solution was advised for maintaining hygiene.

DISCUSSION

A severely resorbed residual ridge is an adverse anatomical presentation for proper functioning of conventional complete dentures. Mandibular edentulous ridge in contrast to maxilla is subject to greater bone resorption, both during the first year of tooth extraction and in the following years. To add, the disadvantageous ratio of denture bearing area to its circumference for mandible, as compared to maxilla, puts mandibular denture into a compromised position and at bay with retention and stability.

The success of oral rehabilitation with implants requires planning the case with consideration of the stomatognathic system as a whole, in order to promote favourable biomechanics, masticatory efficiency, implant longevity and aesthetics.⁷⁻⁹ The design of the implant-retained overdenture can be carried out in two ways.⁸⁻¹⁰ In the first approach

, implants are splinted with a rigid interconnecting bar that incorporates an attachment mechanism for the overdenture retention. In the other approach, implants are not connected to each other, and the retention mechanism is provided by an abutment that incorporates some form of retentive mechanism. A major advantage of the freestanding implants is the fact that they allow for the use of the prefabricated stock retentive abutments. In the present case report, ball attachments were employed because, it has been reported that ball attachments are less costly, less technique sensitive, and easier to clean. The potential for mucosal hyperplasia reportedly is more easily reduced with ball attachments.^{8,11,12} Another advantage of the prefabricated stock abutments is that the abutment itself can be easily replaced in case of abutment failure. Because stock abutments are identical, their replacement does not require remaking the overdenture. On the other hand, if the implant interconnecting bar has to be remade in the case of failure, it usually requires remaking the overdenture. Performance data of the implant-retained overdenture indicate that most of the complications and prosthodontic maintenance are related to the attachment components of the overdenture.^{9,13,14}

Another dilemma associated with overdenture treatment is the technique of incorporating the attachment matrices into the overdenture. One approach includes incorporation of the matrices into the overdenture in the dental laboratory. This method ensures acceptable fit of the

CONCLUSION

overdenture. However, it requires additional clinical time and is technique sensitive. The other approach is intra-oral pick-up in the clinic.¹⁴⁻¹⁷ In the present case, four free standing implants were placed in A,B,D and E position. As the posterior ridge was resorbed, it was thought that it would not offer any support to the denture. In two implants retained overdenture the rotational movement is of PM6 type, which is harmful for the implant as well as to the residual ridge.

Therefore, support was obtained from four free standing implants. Due to financial constraints the patient was not ready for the fixed type of restoration immediately. The same implants can be used for the fixed restoration in future after placing the implant in C position.⁷

Aftercare and maintenance is vital for success of the overdenture. It requires thorough treatment planning. The final placement of the implants should follow the principles of ideal implant parallelism and maximum initial stabilization, path of placement and removal.

An implant supported overdenture excels conventional complete denture at various fronts viz. retention, stability, chewing efficiency and phonation.^{10,15}

Restoration of the edentulous mandible is a challenge. Amongst different treatment options, an implant-retained overdenture is a simple, reliable and cost effective solution in the rehabilitation of the edentulous mandible. Also, the future possibility of conversion to fixed prosthesis is a potential advantage. Moreover, improved esthetics, phonetics, bone preservation and comfort result in an improved quality of life for the patient.

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Figure 1: Pre-operative intra-oral view



Figure 2: Pre-operative panoramic radiograph



Figure 3: Placement of surgical stent



Figure 4: Guiding pins at the time of implant placement



Figure 5: Post-implant placement surgical site

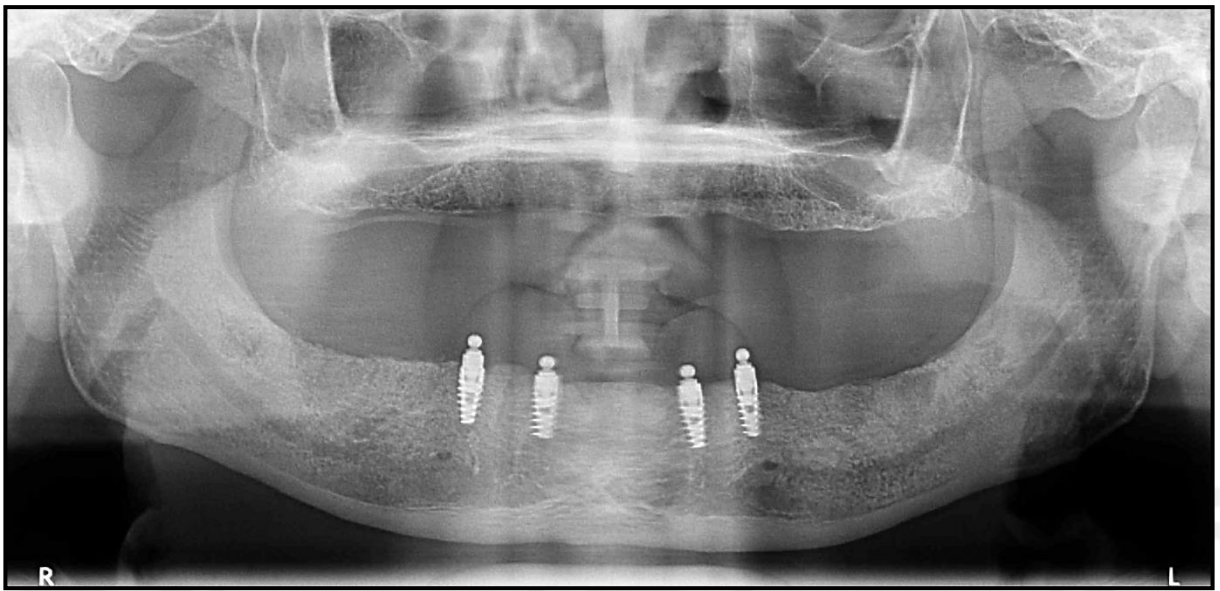


Figure 6: Post-operative radiograph of the patient



Figure 7: Metal housing picked up
in mandibular denture



Figure 8: Pre-operative and Post-operative
extraoral view of the patient

Breaking The Bonds In Breath: Obstructive Sleep Apnoea – A Case Report

Khushbu Gupta¹, Surjargha Mukherjee¹, Tapan Kumar Giri², Sugata Mukherjee³

ABSTRACT

Obstructive Sleep Apnea (OSA) is the most prevalent type of sleep apnoea and Oral Appliances (OA) can be used as a treatment modality. Mandibular Advancement Devices (MAD) are recommended for the treatment of mild and moderate OSA. Fabrication of MAD is simple and cost effective; customization and modification of MAD can be done for therapeutic effect of mandible advancement. In our case report, we have attempted to provide a two-piece oral MAD for a patient in order to alleviate symptoms related to OSA after the diagnosis was made through proper history taking, clinical examination and conducting Polysomnography (PSG).

Keywords

Obstructive Sleep Apnoea, Mandibular Advancement Device, Polysomnography, Tongue Retaining Device, Continuous Positive Airway Pressure.

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INTRODUCTION:

Sleep has a pivotal role to play in not only the maintenance of health and well-being but is also quintessential for our survival as a species. The cessation of breathing during sleep, thus, may cause the quality of sleep to be hampered leading to myriad effects on our physical and mental well being.

Sleep apnea is one of the sleep-related breathing disorders. It can be divided into two types: obstructive sleep apnea (OSA) and central sleep apnea. OSA is characterized by intermittent upper airway obstruction experienced as complete or partial events during sleep and is defined as the occurrence of five or more episodes per hour of sleep (≥ 5 events/ hour), each apnea being ≥ 10 seconds duration.¹

In Indian studies, the prevalence of OSA varied from 4.4% to 13.7% and Obstructive Sleep Apnoea Hypopnoea Syndrome (OSAHS) varied from 2.4% to 2.8% .² OSA in Indian males varied from 4.4 % to 19.7% and in females it was between 2.5% to 7.4% as reported by various studies.³

The diagnostic modality for detection usually involves the use of a questionnaire named Epworth Sleepiness Scale (ESS) and Sleep study in the form of Polysomnography (PSG) is the gold standard for the diagnosis of OSA.

While there are multifarious modalities of treatment of OSA, the Continuous Positive Airway Pressure (CPAP) is

considered to be the first option in case of severe OSA. However, CPAP suffers from poor patient compliance because of portability problems, pump noise, dryness of airway, and mask discomfort. Due to these disadvantages, the Oral Appliance (OA) therapy has gained popularity in recent years and thus integrating and emphasizing the role of Prosthodontists in the management of Obstructive Sleep Apnoea patients. OA's are recommended for milder cases, like primary snoring or mild OSA, or as a secondary treatment for CPAP or as an alternative in CPAP failures.⁴

The compliance of patients to various Oral Appliances (OA) has been reported in studies to range from 51% to as high as 88%.⁵ Among these OA's, the compliance to the Mandibular Advancement Device (MAD) has been reported to be the best.⁶ MAD's are attached to the teeth and works by bringing the mandible forward, thereby increasing the airway volume. It can be either fixed (predetermined advancement), titratable (adjustable) or either a one-piece or a two-piece appliance.

The titratable MAD has an adjustable mechanism that allows progressive advancement of the mandible after initial construction until the optimal mandibular

position is achieved.⁷ In the following case report, we have attempted to treat an OSA patient using a customized, titratable two-piece MAD.

CASE REPORT

A 30 year old female patient was diagnosed as a case of OSA at the Department of Pulmonary Medicine, R. G. Kar Medical College and Hospital, Kolkata and was referred to the Department of Prosthodontics and Crown and Bridge, Dr. R. Ahmed Dental College and Hospital, Kolkata for the appropriate management after the failure of CPAP therapy. She had a chief complaint of increased daytime somnolence and snoring for the last one year. When questioned further, it was revealed that there was frequent disruption in the sleep cycle characterized by waking episodes, forgetfulness and loss of concentration at work. On examination, it was found that the patient was obese (Body Mass Index was 28.7kg/m²) having a large neck (Neck circumference was 34cm) (**Fig. 1**). Intra- oral examination revealed that the patient had a full complement of permanent teeth in both arches with good periodontal health and crenations on the lateral borders of tongue (**Fig. 2**) suggestive of macroglossia (Mallampati Classification – Class III).

Her ESS Score was 12 and the PSG report revealed AHI (Apnoea Hypopnea Index) Score of 9.7. Also, a lateral cephalogram was done preoperatively which showed narrowing of the upper airway (**Fig. 3**). After preliminary examination and taking patient's consent, the decision to fabricate a custom made, titratable two-piece removable MAD was taken.

For this purpose, impressions of the upper and lower arches were made with alginate (Algitec, DPI) and the casts were poured using Type IV Gypsum product (Ultralith, B N Chemicals). Facebow record of the patient was obtained (**Fig. 4**) and the casts were mounted in Centric Relation in a Semi adjustable articulator (Hanau Wide Vue, Whipmix) (**Fig. 5**). Then, the protrusive records were taken and programming of the articulator was done subsequently. The patient was asked to protrude the lower jaw to the maximum extent possible and this distance was measured with a metal scale (from the most posterior contact to the maximum protrusion possible) which was found to be 9 mm.

Next, for fabricating the OA, two occlusal splints were made using autopolymerising acrylic resin (DPI) with full occlusal coverage of the upper and lower arches.

The thickness of the splints was adjusted in the articulator so that the posterior separation between the arches was 1mm and the anterior separation was 3mm (approximately 0.75mm thick splints). Shallow cavities were made on the buccal sides of the first molar regions of the lower splint and two orthodontic molar tubes were fixed using the autopolymerising acrylic resin, one on each side. Another shallow cavity was prepared in the central incisor region of the upper splint and a metal hook was secured into it using the acrylic resin.

With the splints in place on the casts in the articulator, the mandibular cast was brought 5mm (50% of maximum protrusion) into protrusion and the centric locks were secured at this position. Now, 0.7mm S.S. Wire (Smith S.S. Wire, K.C. Smith & Co.) of appropriate length was taken and passed through the buccal tubes fixed in the lower splint. Then, the middle of the wire was pulled up and engaged in the hook placed in the upper splint. The ends of the wire were then bent distal to the molar tubes to secure the wire in this position, thus maintaining the predetermined protrusive relation (**Fig. 6**). The appliance was inserted into the patient's mouth and she was trained to successfully protrude her lower jaw and engage the hook with the wire (**Fig. 7**).

After the patient showed no obvious signs of discomfort with the appliance in place, she was instructed to wear it during sleep and was recalled after 2 weeks. Patient reported with significant improvement in the quality of sleep as evidenced by lesser number of waking episodes and decreased snoring. After one month, the patient was recalled and the device was titrated to 75% of the maximum protrusion (7mm) because this was the maximum tolerable limit for the patient. This was done by adjusting the wire length of the appliance.

She was submitted to a PSG with the MAD in place six months after initial delivery of the appliance. The AHI was reported to be 1 (**Table 1**). A post-operative lateral cephalogram was also done which showed a significant widening of the post-pharyngeal airway space (**Fig. 8**).

DISCUSSION

OSA is an emerging menace of the society because of the increasing trend of sedentary lifestyle in recent times. Avenues are opening up in managing such patients in a holistic way through the integration of different disciplines. Prosthodontists are gradually coming to play a key role in the treatment of OSA patients when other methods are failing due to varied reasons mostly non-compliance.

The present study reports a successful treatment of OSA using a two-piece customized, titratable MAD when initial CPAP therapy had failed. This report is important as it broadens the potential uses of the MAD.

According to 2005 Oral Appliance Treatment Guideline, for patients with severe OSA, the usually recommended first line treatment is CPAP or surgical treatment (4). For the treatment of mild OSA cases, tongue retainers are frequently used but these devices have a low patient compliance⁸ which can be attributed to its design that uses suction to position the tongue anteriorly inside a bulb.⁹ MADs have a higher compliance and success rates than the tongue retaining devices and have more scientific evidence to support its use.¹⁰ In a randomized crossover study by Deane et al., 91% of the patients preferred a MAD over tongue retaining devices and were more satisfied with the use of the former, its compliance rate being 81.8% as compared to the tongue retaining device which had a compliance rate of 27.3% only.⁹

A two piece MAD was chosen for this patient as it can be easily titrated and any alteration in the protrusion could be made without the need for refabricating the appliance. A monobloc MAD on the other hand could not be titrated and any discomfort with its use would lead to rejection of the appliance as a whole. Also, the one-piece appliance is bulkier

and may even cause difficulty in breathing. The customized, titratable MAD appliance used for this patient was easily fabricated with very limited armamentarium and was cost effective. It had a good patient compliance as it was easy to wear and remove from the mouth. MAD's are anchored to the teeth and therefore their efficacy is directly related to the retention of the device to the dental arches.¹¹ In this case report, the patient had a full complement of teeth having good periodontal health and hence, the retention of the device was excellent.

The mandibular advancement position that is used in the fabrication of MAD is usually between 50-75% of the maximum protrusion¹², depending upon the maximum tolerable limit of the patient without any discomfort. Therefore, the two-piece titratable MAD has an advantage as it can allow for the gradual increase in the degree of protrusion till the maximum tolerable limit in the same appliance.

CONCLUSION

Treatment of mild and moderate OSA case can be attempted with MADs. However, dental clinicians cannot diagnose OSA and fabricate an OA without prior diagnosis by medical professionals. Hence, dentists need to cooperate with medical practitioners

and acquire accurate knowledge about patients sleep and OSA before treating such cases. This case report showed a modified method for the fabrication of a MAD and the evaluation between pre-OA and post-OA therapy by using AHI from PSG and lateral cephalometric radiographs. Hence, MADs can be considered for patients suffering from OSA as long as the protruded position of the mandible allows the patient to breathe comfortably and decreases the respiratory disturbances.

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Fig. 1 – Extra oral appearance of patient



Fig. 2- Intra oral appearance of the dental arches and tongue



Fig. 3 – Pre-operative lateral cephalogram

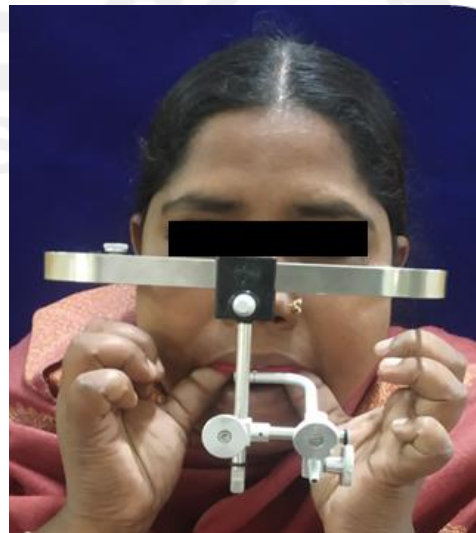


Fig. 4 – Facebow recording



Fig. 5- Casts mounted in Centric Relation



Fig. 6 – Fabricated MAD on articulated cast



Fig. 7- MAD placed intraorally in position



Fig. 8- Post-operative lateral cephalogram with MAD

TABLE 1- PSG Result before and after use of MAD

VARABLES	PRE-TREATMENT	POST-TREATMENT
SLEEP EFFICIENCY (%)	86.2	92.3
N1 (%)	1	2.5
N2 (%)	96.3	67.9
N3 (%)	0.4	12.2
REM (%)	2.3	17.4
AHI	9.7	1.0
AI	4.4	0.1
HI	5.3	0.9
MINIMUM O ₂ SATURATION (%)	70	89

REM: RAPID EYE MOVEMENT; AHI: APNOEA-HYPOPNOEA INDEX; AI- APNOEA INDEX; HI- HYPOPNOEA INDEX; N1,N2,N3-STAGES OF NON-RAPID EYE MOVEMENT (N-REM SLEEP)

A Modified Resin Bonded Bridge To Restore Missing Lateral Incisor: A Case Report.

Prateek Bhatia¹, Anukriti Dimri²

Abstract

Resin bonded fixed partial denture (RBFDP) offers a more conservative approach than conventional fixed prosthesis for restoring edentulous short span. In recent years composite resin bonded fixed partial dentures have gained increasing acceptance in mainstream prosthodontics as viable alternatives to alloy-based restorations. In this case report a composite bonded anterior bridge incorporating a novel design is described.

Keywords: Fixed Partial Denture; Resin Bonded, Maryland bridge

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INTRODUCTION:

Conventional procedures for the preparation of abutment teeth often involve major removal of tooth structure. It is difficult to justify extensive preparation of adjacent teeth to support a conventional fixed partial denture.¹ Unquestionably one of the disadvantages of a conventional fixed partial denture with either full veneer or partial veneer crown retainers is the sacrifice of tooth structure required for retainers.² A single-tooth implant is an alternative for patients with adequate bone dimensions and who are willing to undergo a minor surgical procedure. However, when dental implant is not a treatment option then resin-bonded fixed partial denture (RBFDP) offers a possible solution.¹

Resin bonded or resin retained bridges (RBBs/RRBs) are minimally invasive fixed prostheses which rely on composite resin cements for retention.³ These restorations have been first defined in 1970s and meanwhile they have substantially developed. The first type of RBFDPs was the Rochette Bridge, which depend on the retention produced by resin cement tags through a specific perforated metal retainer. However, the longevity of this type was limited, and different procedures have been introduced to alter the metal surface for improving micromechanical retention. The term Maryland Bridge resulted from the development of electrochemical etching technique at the University of Maryland.⁴

From a clinician's perspective, the main advantage of RBBs is that, in comparison to conventional bridge preparations, they are conservative of tooth structure. By using a RBB it is possible to provide a fixed replacement for missing teeth which is essentially reversible and does not compromise the abutment tooth. This is especially important for young patients who may be more likely to experience endodontic complications as a result of extensive tooth preparation.³

Thus in recent years, regardless of whether the location is posterior or anterior, RBFDPs, as well as dental implants, have been accepted as an alternative to conventional fixed partial dentures when intact abutments are present and minimal intervention is desired.⁵

The purpose of this clinical case report is to present the use of resin bonded fixed partial denture in a patient where the missing tooth is to be replaced keeping the compromised space into consideration along with maintaining the esthetic and conservative value of the treatment.

CASE REPORT

A twenty two year-old patient reported to the department of Prosthodontics and Crown & Bridge for the replacement of a missing

anterior tooth. During examination patient gave a history of trauma four weeks back leading to the loss of the tooth. Intra oral examination revealed missing maxillary right lateral incisor, with crowding present in both maxillary and mandibular anterior teeth (Fig. 1, 2). The mesiodistal space of missing tooth was compromised.

Radiographic investigations were done to verify the conditions of selected abutment teeth.

Being a young patient he was advised for orthodontic correction followed by implant prosthesis for maxillary right lateral incisor, which he intends to undergo later because of shortage of time in his schedule. Hence a light cured composite resin bonded fixed partial denture was planned to restore the edentulous space to keep time limit along with esthetics into consideration and also without preparation of adjacent teeth.

PROCEDURE

1. Diagnostics impression were made using irreversible hydrocolloid impression material (Dentsply-Zelgan 2000) and diagnostic casts (Kalabhai Kalstone) were obtained. A diagnostic wax up of the missing teeth was done keeping the contra-lateral side into consideration.

2. Also, dovetail/wing like retentive tags were waxed on the palatal aspect of adjacent teeth for bonding the resin bonded FPD with light cure composite.

3. The cast with wax up is duplicated with duplicating material and a fresh stone cast was obtained onto which a 1.0 mm rigid thermoplastic sheet was adapted to make a template (Fig. 3, 4).

4. The template is well cut to about 2 mm above the cervical margin of maxillary teeth. Now the template is placed back on the cast with missing tooth and a window is cut on palatal aspect of teeth to be built with light cure composite resin.

5. Template is removed and concerned area is coated with thin layer of petroleum jelly to avoid any sticking of composite to gypsum. Template is placed back on the cast and the empty space is packed with packable composite in increments.

6. Flowable composite (Ivoclar Te-Econom) is used to pack the retentive tags space to avoid any void formation due to incomplete packing. Before curing the final increment the cut out piece(window) of template from palatal part is placed back on its place to maintain the palatal shape of teeth and light curing is done (Fig. 5,6,7).

2. Also, dovetail/wing like retentive tags were waxed on the palatal aspect of adjacent teeth for bonding the resin bonded FPD with light cure composite.

3. The cast with wax up is duplicated with duplicating material and a fresh stone cast was obtained onto which a 1.0 mm rigid thermoplastic sheet was adapted to make a template (Fig. 3, 4).

4. The template is well cut to about 2 mm above the cervical margin of maxillary teeth. Now the template is placed back on the cast with missing tooth and a window is cut on palatal aspect of teeth to be built with light cure composite resin.

5. Template is removed and concerned area is coated with thin layer of petroleum jelly to avoid any sticking of composite to gypsum. Template is placed back on the cast and the empty space is packed with packable composite in increments.

6. Flowable composite (Ivoclar Te-Econom) is used to pack the retentive tags space to avoid any void formation due to incomplete packing. Before curing the final increment the cut out piece(window) of template from palatal part is placed back on its place to maintain the palatal shape of teeth and light curing is done (Fig. 5,6,7).

7. The prosthesis is retrieved from the cast, finishing and polishing is done and then bonded into patient's arch with conventional etching and bonding method (Fig. 8, 9, 10).

8. Patient is given proper oral hygiene instructions and also explained about the care and precautions regarding the prosthesis.

DISCUSSION

One of the basic principles of tooth preparation for fixed prosthodontics is conservation of tooth structure. This is the primary advantage of resin-retained fixed partial dentures. Precision and attention to detail are just as important in resin-retained fixed partial dentures as they are in conventional prostheses. To provide an efficient prosthesis, the practitioner must plan and fabricate a resin-retained restoration with the same diligence used for conventional restorations.⁶

In this clinical case, other treatments could have been provided to the patient but because of time constrain and overseen pending orthodontic treatment, resin bonded fixed partial denture was preferred. Advantages of RFPDs can be summarized as less invasive and reversible treatment opportunity with little or no tooth preparation, which decrease damage to abutments teeth. Patient preference

with such options because require shorter total chair time, and less financial commitment. Another point this type of restorations is easy to fabricate, making impression, bite registration, and shade selection.

Despite the acknowledged advantages of RBFPD, the role of these restorations as definitive treatment remains controversial due to a lack of long-term prospective data concerning success. The importance of careful case selection cannot be over-emphasized. Even with abutment tooth preparation, these restorations rely heavily on adhesive retention, so occlusal forces should be carefully controlled and night protection should be provided for patients with parafunctional activity.⁷

Aesthetics is another issue associated with this type of restorations with incisal shine through of metal especially when opaque cement is not used. When diastemas or large/ small pontic space are present, it is often difficult to distribute the suitable space between the abutment teeth and pontic. Small edentulous span is usually more successful than larger ones.

Temporization of the restoration is not possible, this limitation prevents the evaluation of aesthetics, occlusion, and speech. The most undesirable concern with such prostheses is the debonding from

retainer/abutment teeth, which in turn decrease the longevity of these restorations.⁴

Biological reasons for failure include caries and periodontal disease but these occur relatively rarely. If a bridge debonds there are two options: remake or recement. If a one off event such as trauma has resulted in decementation, recementing the restoration may well be appropriate. However, studies have shown that once a bridge has debonded it is more likely to fail again and recementing for a second time is generally ill advised as replacing the bridge has been found to have a higher success rate.

CONCLUSION

The treatment described in this case report appears suitable as a conservative alternative to the more traditional prosthodontic strategies such as removable partial dentures, ceramo-metal bridges and implant supported crowns. In concert with their alloy-based counterparts, fixed-fixed indirect resin-bonded fibre reinforced resin composite may also have a role to play in the array of treatment options for the replacement of single teeth in young patients.⁸

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Figure 1



Figure 4



Figure 2

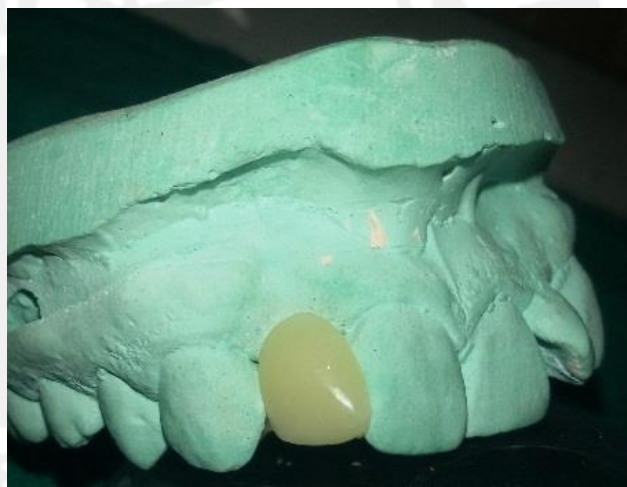


Figure 5



Figure 3



Figure 6



Figure 7



Figure 8



Figure 9

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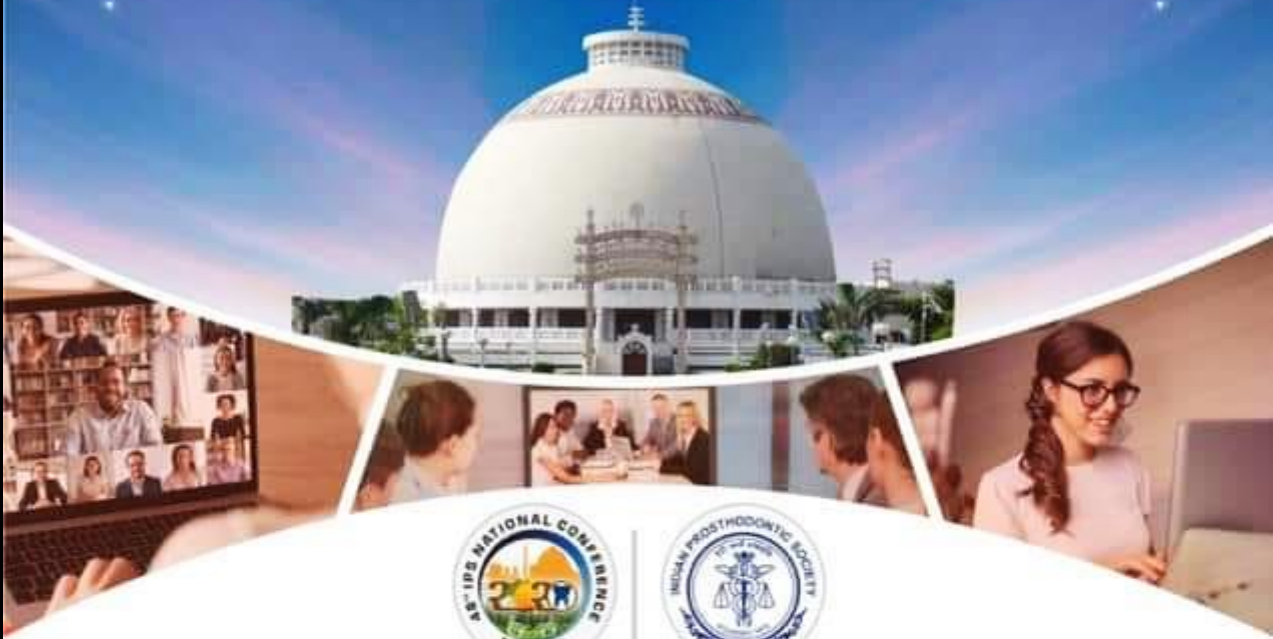
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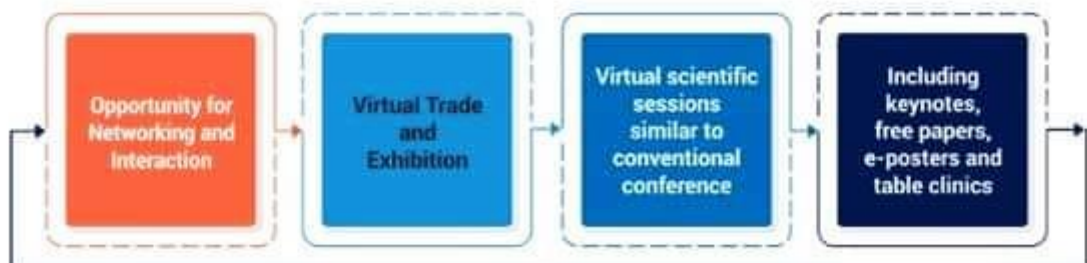
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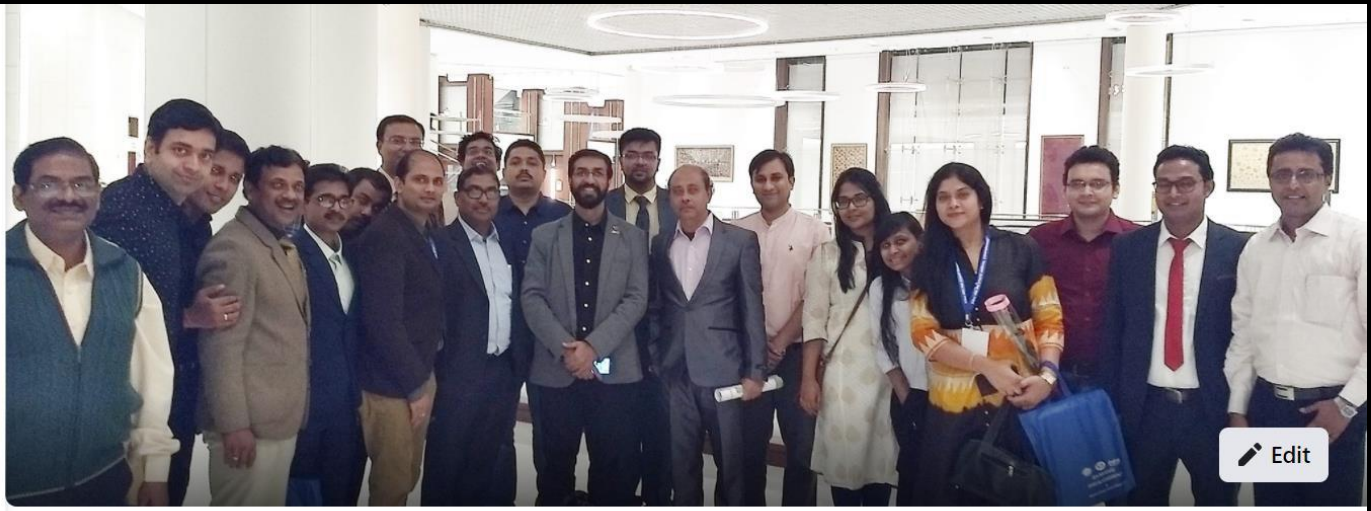
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