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Dr. Shoaib Ulla Khan
Post Graduate Students,
Department of Orthodontics,
Coorg Institute of Dental
Sciences, Coorg, Karnataka,
India

Dr. Vibhu Prasad
Post Graduate Students,
Department of Orthodontics,
Coorg Institute of Dental
Sciences, Coorg, Karnataka,
India

Dr. Goutham Reddy
Professor and Head, Department
of Orthodontics, Coorg Institute
of Dental Sciences, Coorg,
Karnataka, India

Dr. Sunil Muddaiah
Professor, Department of
Orthodontics, Coorg Institute of
Dental Sciences, Coorg,
Karnataka, India

Dr. Sanju Somaiah
Professor, Department of
Orthodontics, Coorg Institute of
Dental Sciences, Coorg,
Karnataka, India

Dr. Balakrishna Shetty
Professor, Department of
Orthodontics, Coorg Institute of
Dental Sciences, Coorg,
Karnataka, India

Corresponding Author:
Dr. Shoaib Ulla Khan
Post Graduate Students,
Department of Orthodontics,
Coorg Institute of Dental
Sciences, Coorg, Karnataka,
India

Positive and negative effects of lockdown due to COVID-19 in ongoing orthodontic cases: A case series

Dr. Shoaib Ulla Khan, Dr. Vibhu Prasad, Dr. Goutham Reddy, Dr. Sunil Muddaiah, Dr. Sanju Somaiah and Dr. Balakrishna Shetty

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Abstract

Introduction: Orthodontic therapy is a multi-visit procedure that lasts a long time. All dental governing agencies from around the world have agreed to reduce or remove basic dental operations and restrict dental services to just acute emergency cases owing to the global breakout of pandemic COVID-19 (coronavirus disease 2019). Orthodontic patients who were left untreated during this pandemic faced major consequences, both positive and negative.

Objective: In this article we have highlighted the positive and negative consequences that were encountered in ongoing orthodontic cases.

Conclusion: The positive and negative impacts of COVID 19 lockdown in ongoing orthodontic patients were demonstrated, with the negative effects outnumbering the positive ones.

Keywords: Pandemic, lockdown, COVID-19, orthodontic treatment, positive and negative effects

Introduction

After been found in Wuhan, China, in December 2019, the coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread fast over the world and created a global pandemic [1].

The lockdown in India went into effect overnight on March 24, 2020, and was first declared to remain in place for 21 days but later extended due to the constant rise in incidence rates [2].

COVID-19 is most commonly transmitted through respiratory droplets or direct touch. Dental practices have elements that expose dental patients and practitioners to high quantities of pathogenic microorganisms and high risks of cross infection, such as intimate face-to-face communication, droplet and aerosol-generating procedures and contaminated surfaces [3, 4]. As a result, orthodontic appointments were temporarily suspended without warning or anticipation. Treatment is rarely considered an emergency in the field of orthodontics [2].

Hence in this extended period of dental service suspension, orthodontic problems such as loosening brackets and arch wires could not be handled timely due to the inability to attend regular appointments, which had a significant influence on the treatment of orthodontic patients [5].

A recent analysis highlighted recommendations for patients dealing with orthodontic emergencies in the short term. The recommendations were, treatment guidance should be conveyed remotely first, and in-person treatment should be given only when absolutely necessary, providing rigorous infection control standards are followed [5].

However, in addition to acute orthodontic emergencies, there are other issues that could arise, each of which could result in different forms of harm as well as benefit in terms of treatment outcomes [6].

This paper will focus on orthodontic instances that showed both positive and negative effects in treatment results because of suspended orthodontic visits.

Positive Effects

Case 1: Driftodontics-Mesial movement of Lower right molars in the extraction space.

Although the concept of physiologic drift (also known as "driftodontics") following first premolar extractions is gaining momentum in the orthodontic world, the exact form and

amount of drift has yet to be thoroughly studied [7].

Case 1- On the left, there was a class I molar relation, and on the right, there was a class II molar relation. [Figure 1A] To hold the movement, intracoronal retainers were put between the lower left first molar and the second molar, as well as between the upper right first molar and the second premolar.

The lower right first molar was free to move in the extraction area.

Due to the lockdown restrictions, the patient returned to the department after 9 months, and we discovered that the class II molar relationship had changed to End-on, indicating physiologic drift of the lower right molar. [Figure 1B]

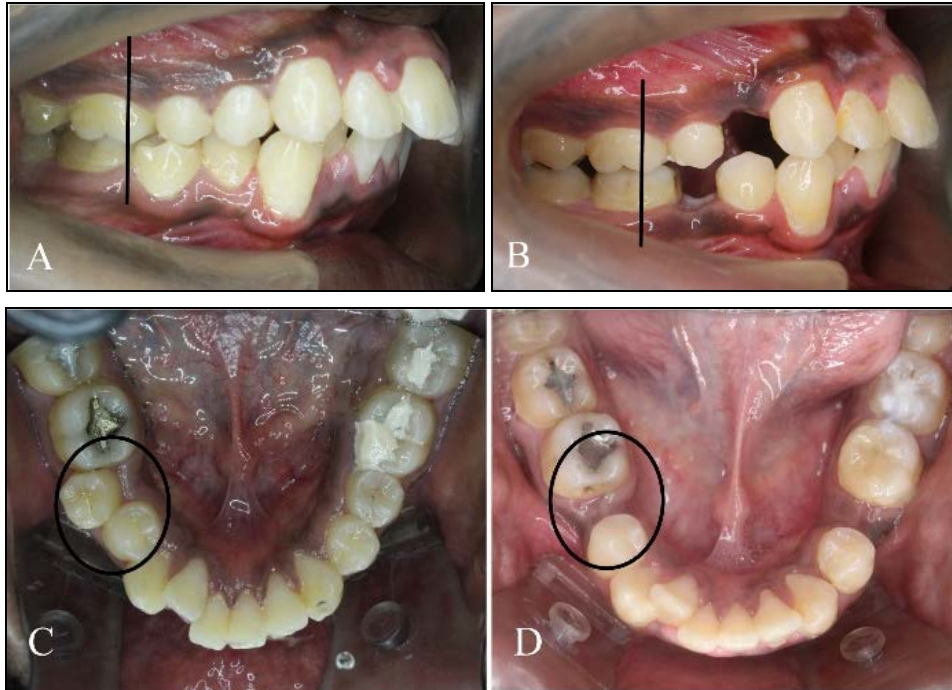


Fig 1: A and C Pre, B & D-after 9 Month (Driftodontics)

Case 2: Trampoline Effect

The tieback is reactivated by intermittent movement or pumping action on the ligature wire during function and chewing. As a result of this phenomenon, it appears that a tieback module with less restricted food bolus access to a buccally positioned ligature has better tooth movement potential than a laceback module with the steel ligature

sheltered by a medial location to the archwire [8].

Patient reported after 6 months, and we have noticed that there was complete space closure in upper arch with 3mm of space closure in lower arch without changing the tiebacks for every 21days, showing the trampoline effect of active tiebacks. [Figure 2].

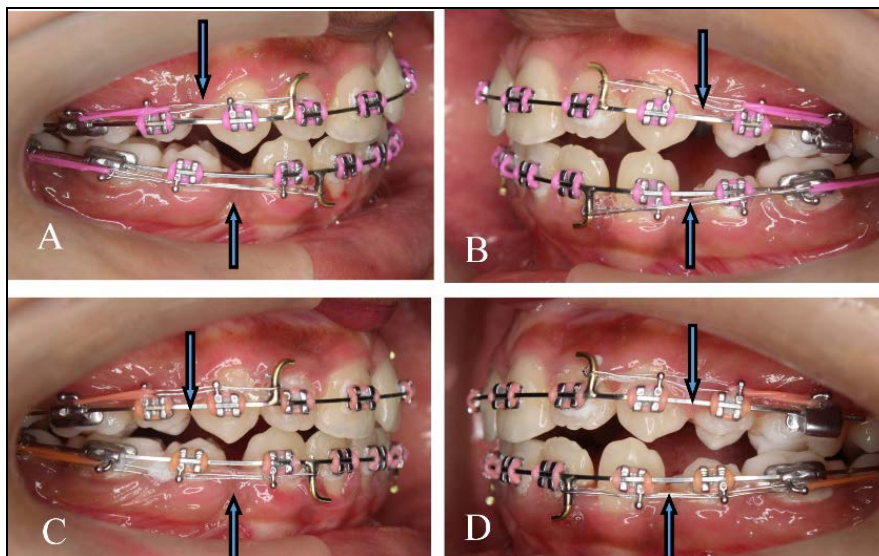


Fig 2: A & B- Pre, C & D-after 3 Month (Trampolin)

Case 3: Low Continuous Force of Niti wires

Some nickel–titanium alloys have super elasticity, which means they have no linear load deflection rate. Under mechanical loading, their internal crystalline structure changes from austenite to martensite (martensitic transition).

In vitro, this feature allows for the long-term application of a constant value force [9-10].

After 7 months, the patient returned to the department with proper alignment and reduced open-bite with only 0.014 Niti wire in the mouth. [Figure 3].



Fig 3: A, C & E- Pre and B, D & E-after 6 Month (Low Continuous Force of Niti Wires)

Negative Effects

Case 1: Anterior bite plane and its effects

The anterior bite plane can reduce masticatory muscular activity, resulting in a healthier elevation musculature, which can help to prevent incorrect condylar position and contribute to a more stable, structurally compatible, and correctly functioning condylar position over time [11]. Patients who use the device for more than the recommended

eight to ten hours per day may have posterior tooth eruption or anterior tooth intrusion. The bite plane should be removed if your patient develops joint pain when loading or if their symptoms appear to increase after wearing it.

As the patient reported to department after 7 months, we have noticed the anterior tooth intrusion and Spacing in the Upper anteriors. [Figure 4].

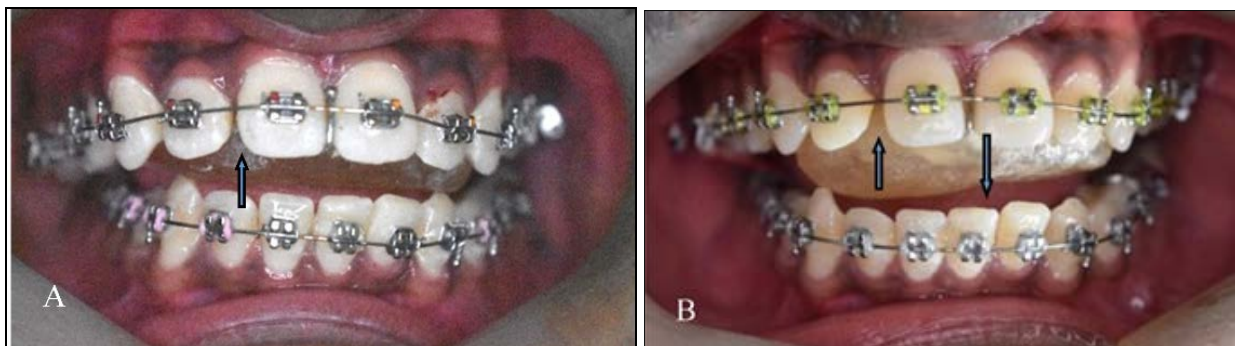


Fig 4: A-Pre & B-After 7 Month (Anterior bite plane causing spacing in the upper Anterior and lower incisor intrusion)

Case 2: Tissue overgrow on elastic chain

The miniscrew head and its attachments (ie, coil spring, elastic chain) can be covered by loose alveolar tissue due to bunching and rubbing [12].

Case 2 shows the tissue overgrowth on E-chain because the gingiva is very sensitive to foreign bodies. [Figure 5B] The soft tissue that covered the E-chain was exposed with incision.

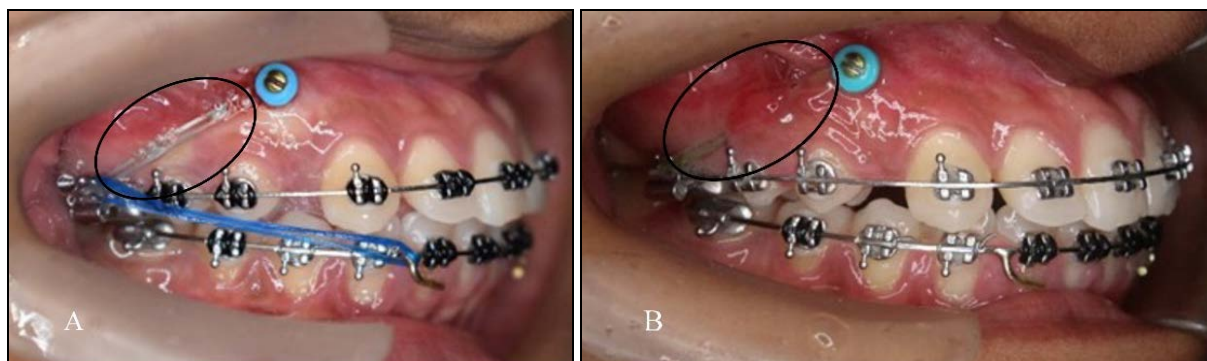


Fig 5: A-Pre and B-Tissue Overgrow on E-Chain

Case 3: Gingival overgrowth on implants with Gingivitis

Orthodontists help to create a healthy environment for teeth and supporting tissues in addition to improving aesthetics by correcting jaw relationships and aberrant tooth positions. Since the patient was left unattended for an extended period of 3 months, this problem worsened. Periodontal disorders and gingival troubles can be caused by unwanted tooth movements, as well as not following thorough and rigorous

oral hygiene precautions due to the long wait — notably in teenagers, who make up the bulk of orthodontic patients [13].

Case 3 illustrates that the patient returned after three months, and one can see gingival overgrowth on the implants that were inserted for upper anterior intrusion, as well as the patient's poor oral hygiene, which would have been exacerbated the gingival inflammation. [Figure 6 B].

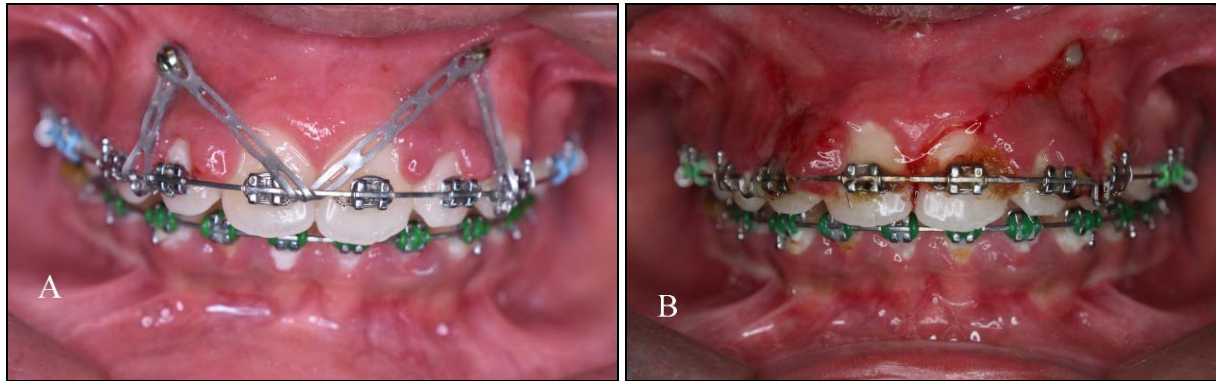


Fig 6: A Pre, B-After 3 Month (Gingival Over-Growth on Implants with Gingivitis)

Case 4: Canine Bracket debonding during space closure and its effects

Inappropriate tooth displacement after debonding of brackets might develop as a result of prolonged periods of time without monitoring or corrections, depending on the stage of therapy [6]. Case 4 shows that the patient who reported back after 5

months following debonding of canine bracket [Figure 7] resulting in malalignment of upper arch.

Therefore, patients who are in an active stage of orthodontic treatment should be evaluated and monitored carefully and be given priority to be seen with high sense of urgency.

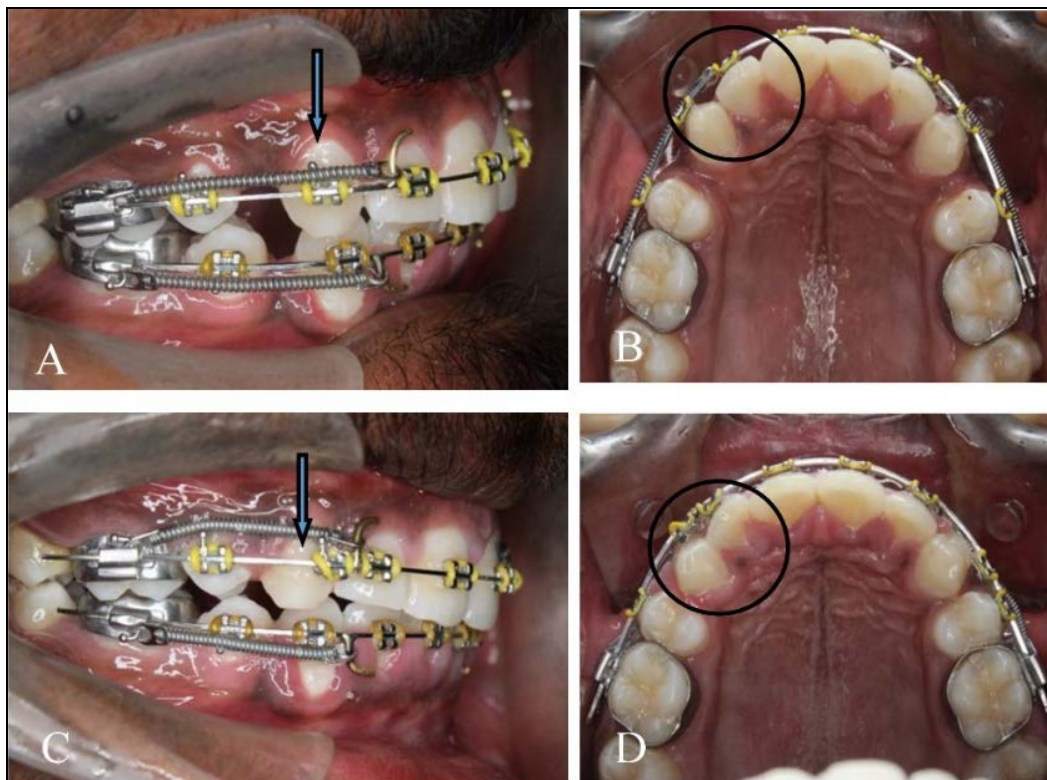


Fig 7: A & B- Pre, C & D-A-After 5 Month (Canine bracket debonding during space closure and its effects)

Conclusion

Although the risks and problems associated with orthodontic therapy are not life-threatening and are less severe than those associated with other medical interventions, patients have been documented to experience functional, social, and psychological impairments. Prolonged therapy appointments have both favourable and negative consequences, with the

negative consequences outnumbering the favourable consequences.

Besides from acute emergency scenarios, orthodontists must be aware of the possible damages to treatment results that may happen as a consequence of unsupervised orthodontic therapy.

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