Accidental Ingestion of Nance Palatal Archwire in COVID 19 lockdown

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Abstract

The management of orthodontic patients without a regular appointment in the COVID 19 lockdown situations requires special care, cooperation, and maintenance. Accidental ingestion and inhalation of orthodontic appliances or a part of it may create severe problems in the gastrointestinal tract and airways respectively, proficient management of the occasion would be basic to spare the patient’s life. The objective of the article is to introduce a case of Nance palatal archwire ingestion in a 17 years old girl and its consequences and recommended approaches despite the period of COVID 19 pandemic situations.

Keywords: Nance palatal wire; accidental ingestion; orthodontic emergencies; COVID 19 Lockdown.

Introduction

One of the most challenging management in orthodontic treatment during the COVID-19 pandemic is extreme orthodontic emergencies. The management of orthodontic patients without a regular appointment in the COVID 19 lockdown situations requires special care, cooperation, and maintenance. Accidental ingestion and inhalation of orthodontic appliances or a part of it may create severe problems in the gastrointestinal tract and airways respectively. Stability and retention of the appliance are the main cause which led to this type of serious complication, in which patient face difficulty in breathing, eating, swallowing and associated pain with internal hemorrhage and some special cases may lead to death due to suffocation. Prevention is the best way yet when
occurred, proficient management of the occasion would be basic to spare the patient’s life\(^6\). The objective of the article is to introduce a case of Nance palatal archwire ingestion and consequences and recommended approaches despite the period of COVID-19 pandemic situations.

**Case Report**

A 17-year-old girl presented with the chief complaint of forwardly placing of upper and lower front teeth. During diagnosis and treatment planning, we decided to go for upper and lower first premolar extraction with maximum anchorage preparation for fixed orthodontic therapy to achieve the objectives of the patient. Nance palatal arch was banded in upper dentition and a lingual holding arch was banded in the lower dentition to provide required anchorage. After getting the patient’s information about the ingestion of some part of the appliance, and complications of pain while swallowing, uneasiness in the neck, and difficulty in breathing, we advised reporting in the otorhinolaryngology emergency in our hospital. Meanwhile, the patient is telephonically advised to control the swallowing reflex and turn the head to one side during rest.

Questionnaire and consent for screening patients with the potential risk of infection of COVID-19 as per guideline before any intervention. Under the proper guideline of the COVID-19 outbreak, a radiograph of the frontal and lateral view of the neck was taken to localize the object (Fig.1). The radiographs showed vertical impaction of palatal archwire anterior to C6 and C7 level in the upper oesophageal region. Since the patient had no side effect of injury or perforation, a preservationist approach was liked to perform in the conference with a gastroenterologist, to recover the wire component by endoscopy. At endoscopy, it was found to be in the upper part of the esophagus. By utilizing endoscopic grasper, the wire component was grasped, delicately pulling it out of the upper oesophageal area along with endoscope (Fig.2). The intraoral band or attachment was thoroughly examined with the recovered wire component for any missing part (Fig.3), intraorally we found a band of the right upper first molar was loose, cementation of the band was done, and then the patient was sent to the home with proper instruction of three days home quarantine. These procedures were performed with the proper guideline issued to the handling of these patients. Her sample for the COVID 19 virus testing was done as precautionary measures by experts.

**Discussion**

This case report mainly focuses on extreme orthodontic emergencies while lockdown in the COVID-19 pandemic, in spite of the fact that the frequency of inhalation and ingestion episodes with the orthodontics is fortunately not common. Foreign body ingestion and inhalation can bring about intense clinical and life-threatening emergencies\(^7,8\). Any foreign body whether it is a part of the orthodontic appliance or any other dental prosthesis, in the airway needs to be treated as a serious situation\(^9\). Most of the cases of swallowing or inhalation are associated with patient activated orthodontic appliances or while delivering orthodontic care\(^6\).

In most of the cases, after being swallowed, a foreign body follows a tract of the oropharynx, epiglottic vallecula, pyreform recess, via esophagus to the stomach, and passes through the intestine in stool without any serious complications\(^9,10,11\). The majority of the revealed cases were ingestion; only a few were inhalation. One study reported the ratio of ingested foreign body in the GI tract and tracheobronchial tree was 4:1 while another study revealed more ratio of the same incidence\(^12,13\).

Lack of retention of orthodontic appliances is the main reason for ingestion which happens infrequently in orthodontics\(^14\). Bondable orthodontic components are most commonly ingested among other components and
their loosening rate during a half year has been assessed as 7.4-10.6% and increased up to 15.6-17.6% in one and a half year\textsuperscript{15,16}.

Other than brackets\textsuperscript{17}, a variety of other orthodontic appliances had reportedly been ingested in contemporary orthodontic practice. Among them maximum cases are of expansion key ingestion\textsuperscript{9,18,19} followed by molar band\textsuperscript{20}, piece of arch wire\textsuperscript{21,22}, Transpalatal arch\textsuperscript{23}, Lower spring retainers\textsuperscript{24}, and part of the fractured piece of removable appliances\textsuperscript{25,26} was reported. A rare case of quad-helix ingestion and its surgical recovery had been reported in syndromic patient\textsuperscript{27}. All previous reports suggest that whether the appliance is fixed or removable, metallic, or acrylic and large or small mishaps, in any case, are consistently possible\textsuperscript{28,29}.

In the present case, accidental swallowing of wire component of Nance palatal arch was seen outside the clinic, the patient had been instructed on a video call and asked to report to the hospital immediately, localization and endoscopic recovery had been performed with the proper guideline of prevention of the COVID 19 infection. These types of cases are quite difficult to manage for inexperienced clinicians also the situation is anxious to the patients and difficulty in managing these cases during the COVID-19 pandemic is more difficult for both.

**Patient Survey Information:** Patient-reported negative for RT-PCR (real-time- polymerase chain reaction).

**Conclusion**

1. The orthodontic appliance must be efficient to withstand the masticatory forces throughout the orthodontic treatment.
2. Retention/stability should be evaluated before delivering the orthodontic appliance.
3. Motivation towards the orthodontic treatment for the appliance helps the patient to maintain it and to reduce the chances of such accidents.
4. Early reporting by the patient, early object localization by imaging, immediate management, and referral is always a gold standard to deal with these types of situations.
5. A variety of treatment options related to management has been suggested based on the location of objects and type of emergency.
6. In the COVID-19 pandemic, the management of such cases should be done by the guideline given by the government organization, state authority, and local health regulatory bodies.

**Abbreviations:** COVID 19 – Corona Virus disease 2019

RT-PCR - Real-Time- Polymerase Chain Reaction.

**Consent to participate:** Subject gave informed consent to the work.

**Consent for publication:** All authors consent to the publication.

**Availability of supporting data:** All reviewed and cited articles have been referenced.

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**Reference**


Legend Figure

Fig 1: A-Posteroanterior view of neck shows wire component at the level of C6 and C7; B-Lateral view of neck shows wire component at the level of C6 and C7.

Fig 2: A-Endoscopy confirmed that the wire component with acrylic button was lodged in upper part of esophagus; B-Removal of appliance with the help of endoscopic grasper.

Fig 3: Retrieved Nance palatal arch with wire component and acrylic button.