

# Ectopic Tooth into the Arch by Piggyback Double Wire Technique: A Case Report

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**Abstract:** This article discusses the importance of comprehensive oral health care for Pediatric dental patients, with a particular focus on the eruption and development of maxillary incisors and canines, often referred to as the social six. These teeth play a crucial role in facial aesthetics and phonetics, making their accurate eruption and alignment essential. The article emphasizes the significance of identifying and managing deviations from the typical eruption patterns, especially in cases of ectopic eruption, which can indicate underlying local or systemic diseases. The authors present a case report of a 9-year-old girl with ectopic eruption of the maxillary incisor and describe the treatment approach using a 2 \* 4 appliance with a piggyback double wire technique. The article highlights the importance of early interceptive orthodontics to achieve optimal outcomes in such cases, improving both dental and psychosocial aspects of a patient's well-being.

**Keywords:** Pediatric dentistry, maxillary incisors, ectopic eruption, interceptive orthodontics, piggyback double wire technique

## 1. Introduction

Comprehensive oral health care for Pediatric dental patients encompasses the guidance of primary, mixed, and permanent teeth eruption and development. This guidance is instrumental in facilitating the establishment of a stable, functional, and aesthetically pleasing occlusion with a focus on achieving a permanent dentition.<sup>1</sup> Notably, the maxillary incisors and canines, commonly denoted as the "social six." play a pivotal role in a person's smile. Being prominently visible during speech. Hence, ensuring the accurate eruption, location, and morphology of these teeth is crucial for both facial aesthetics and phonetics.

Clinicians frequently encounter challenging cases where deviations from the typical eruption sequence, location, or morphology are identified. Such variations can pose complexities, necessitating careful consideration. Given the profound impact of eruption on craniofacial development, and considering that incisors are among the first teeth to erupt in both primary and permanent dentition, abnormalities in incisor eruption may serve as indicators of underlying local or systemic diseases.<sup>2</sup>

Heredity plays an important role in the appearance of dental anomalies.<sup>3</sup> Ectopic eruption refers to the eruption of a tooth in a site other than its normal position within the dental arch.<sup>4</sup> This disease is seen in about 5.6% of cases, with the permanent central incisors accounting for a significant portion of these occurrences. Furthermore, ectopic eruption or impaction of maxillary incisors can occur, presumably due to supernumerary teeth, affecting up to 2% of the population.<sup>5,6</sup>

Following local factors can be probable reasons for ectopic eruption of maxillary incisors:

- Supernumeraries
- Retained deciduous teeth
- Traumatic injury to the primary teeth
- Tooth size arch length discrepancy
- Congenital/developmental disturbance, e. g. cleft of palate, single tooth macrodontia.<sup>7</sup>

Once a tooth (or teeth) is observed to be 'ectopically' erupting, interceptive orthodontics should be performed to lessen the severity of the developing malocclusion, and therapy is dependent on the aetiology, location, aesthetic concern of the patient, and accommodability of the tooth into a suitable place inside the arch.

Treatment options include:

- 1) Opinion for spontaneous correction after removal of the etiological agent.<sup>8</sup>
- 2) Orthodontic intervention by means of either removable or fixed appliance in cases where the ectopically erupted incisors need assistance to be brought into correct position.

Interceptive procedures should be undertaken as soon as sufficient permanent teeth have erupted, as well as co-operation from the child to accept the various steps of the procedure.

The aim of this paper is to report a case of ectopically erupted 21 and its management using 2\*4 appliance with piggy back double wire technique.

## 2. Case Report

A 9 year old girl was reported to the Department of Pediatric Dentistry with a chief complaint of pain and swelling in the upper front lip since two days with no significant medical or dental history. Intraoral examination revealed early mixed dentition with ectopic eruption irt 21 (Fig 1. a, 1. b, 1. c)



Figure 1 (a)



Figure 2 (a)



Figure 1 (b)



Figure 2 (b)

Piggy back wiring was done to engage 21 to align into its correct position. (Fig.3)



Figure 1 (c)



Figure 3

At the next visit arch sequence was followed by 0.014" NiTi wire and excision of the traumatic hyperplastic tissue over the site was performed. (Fig.4. a, 4. b)

According to the treatment plan, gaining of space was achieved with open coil spring followed by placement of brackets in upper central and lateral incisors and wiring using 0.012" NiTiwire. (Fig 2. a, 2. b)



Figure 4 (a)



Figure 4 (b)

After the incisor was brought into its correct position, arch sequence was followed by 0.016" NiTi wire and later into stainless steel for the stability of the arch. (Fig.5)



Figure 5

### 3. Discussion

Ectopic teeth form part of a spectrum of inheritable dental anomalies (Bjerklin et al., 1992; Peck et al., 1994; Baccetti, 1998).<sup>3</sup>

It is quite usual for children to display deviations from the typical eruption patterns of their upper front teeth, known as the maxillary incisors. Because these teeth are clearly

visible, parents may get worried and dismayed if the eruption does not follow what is considered typical. This often leads them to seek treatment in order to prevent any potential psychological impact associated with abnormalities in the upper front part of the mouth. In order to effectively address these cases, healthcare professionals must possess a thorough understanding of the causes, categorization, and appropriate intervention techniques for managing the irregular eruption of maxillary incisors.<sup>1</sup>

Dental ectopia is more frequently seen in girls, but according to Huber there is no evidence for sex prediction.<sup>9</sup> Yet, in this case report female predilection is evident. In maxilla ectopia usually occurs on one side and this also aligns with the present case.

Ectopic eruption of permanent incisors is often suspected in scenarios such as trauma to primary incisors, primary incisors that have undergone pulp treatment, the retention of extra teeth, uneven eruption patterns, and the presence of extra teeth. In some cases, ectopically erupted permanent incisors can naturally correct themselves after addressing the underlying cause. However, in other instances, they may continue to remain misaligned or worsen despite intervention.<sup>1</sup>

In this case the primary etiology was tooth size arch length discrepancy, lack of space for the incisor to erupt into its natural position. So the treatment plan began with the creation of space using the open coil spring spring along with the placement of brackets in upper central and lateral incisors and wiring using 0.012" NiTi wire, i. e., the fixed appliance.

Coil springs are active component of the fixed appliance along side with archwires and elastics. Coil springs may be open or closed type, both of which vary in appearance and clinical application. Open Coil Springs are compressed between two teeth or a group of teeth. The deactivation force is transmitted to the teeth equally on both sides from center of compressed coil via brackets, hence moving dental units apart and opening spaces. In this case open coil spring was used for the purpose was to create space for the gingivally placed incisor to be brought into occlusion along with the fixed 2\*4 bracketing technique.

The 2\*4 fixed bracketing technique is comprised of brackets on the maxillary incisors, bands on the first permanent maxillary molars, and a continuous archwire. It is used in the early mixed dentition for treatment of both anterior crossbites and alignment of ectopic incisors. This technique offers many advantages as it provides complete control of anterior tooth position, is extremely well tolerated, requires no adjustment by the patient, and allows accurate and rapid positioning of the teeth. Care must be taken to avoid untorquing the permanent lateral permanent incisors (ugly duckling stage) and prevent possible root resorption of the laterals against the crown of the unerupted permanent canines.<sup>2</sup>

After the placement of the fixed appliance, piggy back dual wiring technique was applied to engage 21 and bring the tooth into alignment. Piggy back wire technique is a dual

wire technique in which one will be acting as base arch wire (rigid wire) and the other as overlying flexible wire. While the base arch wire stabilizes the arch, the flexible arch wire will be utilized for the intended correction such as crowding or highly placed teeth.

The present case series outlined the effectiveness and versatility of the piggy back dual wire technique, and the treatment objectives were met as specified. Treatment carried out in the early mixed dentition stage with 2\*4 appliance for this case had taken a couple of weeks, but the end results were more effectively and efficiently achieved than if a removable appliance was used.

Definitive treatment will probably still be necessary in the permanent dentition, but the complexity and duration of this may be significantly reduced. In the instance described in this report, the treatment administered to address the ectopic eruption of maxillary incisors successfully achieved the intended goals of interceptive treatment. This included halting the progression of existing issues, creating a more conducive environment for proper growth, and enhancing facial aesthetics to support healthier psychosocial development

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