ISSN: 2582-0559

ORIGINAL RESEARCH

Volume No: 10 , Issue No: 2

Orthodontic management of Supernumerary teeth with modified Hooks – A Case Report

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ABSTRACT

A Supernumary tooth present in the midline is called mesiodens. It is a rare case scenario with an Incidence of 1%. A 26-year-old female presented with mesiodens and concerns with her smile. She was treated with Orthodontic Fixed appliance mechanotherapy followed by extraction of mesiodens and pre-molars. The detailed case report is as follows.

Key words: Orthodontic management, Teeth, Hooks

Received : 07.01.2023
Review completed : 09.02.2023
Accepted : 12.02.2023

Supernumerary is any tooth or tooth – like structure which develops additional to the 32 teeth. It is a rare condition with an incidence of 1 – 2%, of which almost 80% occur in the anterior maxilla. The sex predilection is M:F = 2:1. Supernumeraries are the most common cause of failure of eruption of the upper central incisors. Almost 10% of midline diastema occur due to mesiodens.

Etiology:

The etiology of Supernumeraries can be multifactorial, but various theories suggested are – the dichotomy of tooth buds, hyperactive dental lamina and genes.

Types of Supernumerary:
1. Conical
2. Tuberculate
3. Supplemental
4. Odontome – Complex and compound.

Conical:

Conical supernumexrary are small peg shaped teeth. It constitutes 75% of all supernumeraries. The roots are usually well- developed. Mesiodens are usually conical in shape. They have a risk of cystic formation.

Tuberculate:

Barrel shaped tooth and contributes 12% of all supernumeraries. They have no roots and usually remain unerupted. They often occur in pairs. They can often delay or prevent eruption of central incisors.

Supplemental:

Supplemental teeth contribute 7% of all supernumeraries. They resemble crown morphology of adjacent tooth. They commonly occur in the lower incisor region and in primary dentition.

Odontomes: They contribute 6% of all supernumeraries
There are tow types of odontomes:
1. Complex: They are disorganized round mass of enamel, dentin and pulp. They usually impede tooth eruption.
2. Compound: They are four times more common and resemble a tooth.

Investigations: some are clinically erupted and seen on intra-oral examination. Some require additional aids such as an x-ray to identify.

Treatment: Depending on the type and position of the supernumerary, they are often managed by
1. Extraction or
2. Monitoring
The spaces are usually closed by Orthodontic treatment post extraction of supernumeraries.

Case Report:

A 26-year-old female, presented with angle's class I malocclusion on a class I skeletal base complicated by presence of mesiodens, clinically missing 45, class II canine relationship on the right side. She was treated by extraction of 15,25,35 and mesiodens and PAE mechanotherapy. Her retention protocol was upper and lower fixed lingual retainers along with upper Beggs and lower essix retainers indefinitely.

Extra – oral Findings:
On Profile view – Patient presented with
1. Convex Profile
2. Acute NLA
3. Deep MLS
4. Everted lower lip
5. Low FMA

On Frontal View – Patient presented with
1. Reduced Lower third of face
2. Hyperactive peri-oral musculature
3. No gross asymmetry
On Frontal Smiling View – Patient presented with
1. Non consonant smile arc
2. Presence of mesiodens
3. Inadequate elevation of commissure of lips

Intra-oral Findings:

Patient presented with Class I Molar relation bilaterally, with Class II Canines on Right side and Class I canines on Left side, with increased overjet of 7 mm, increased over bite of 6 mm complicated by 2 mesiodens in the upper midline.

Radiographic Findings:
OPG reveals Presence of 31 teeth with adequate bone support and no periapical pathology. Presence of mesiodens

Lateral Cephalogram reveals a skeletal Class I base with Orthognathic maxilla and mandible with Proclined upper and lower anteriors complicated by incompetent lips, everted lower lip and Acute naso-labial angle.

Fig 1 - Pre-Treatment Photographs and X-rays

Fig 1.1-1.3 – Pre-Op Extra oral Photographs

Fig 1.4-1.8– Pre -Op Intra- oral Photographs

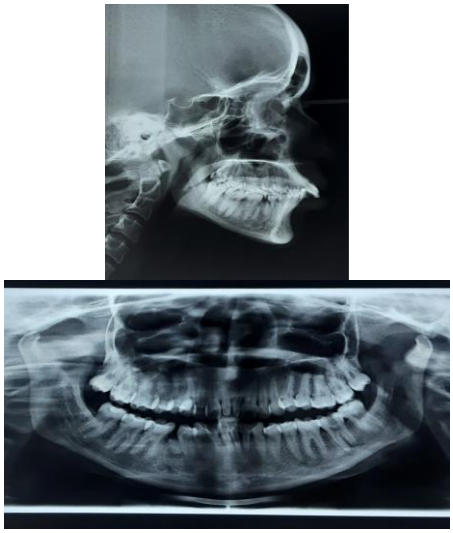

Fig 1.9-1.10 – Pre -Op Lateral Cephalogram and OPG

MATERIALS AND METHODS

Treatment Plan

Patient was treated with extraction of mesiodens, 15, 25 and 35 followed by fixed appliance mechanotherapy (MBT prescription, 022 Slot).

Treatment Mechanics

The space closure between 11 and 21 was done with the help of specialized hooks closer to the center of resistance to aid in bodily movement. Followed by separate canine retraction using friction mechanics. Anchorage was re-inforced with the help of TPA in the upper arch. Final anterior space closure was done with the help of closing loops.

Fig 2 Mild Treatment Photographs

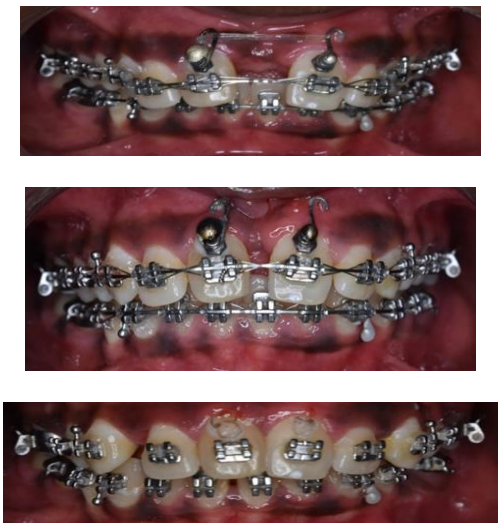

Fig 2.1-2.3 Mid Treatment Photographs showing customized hooks in 11 and 21

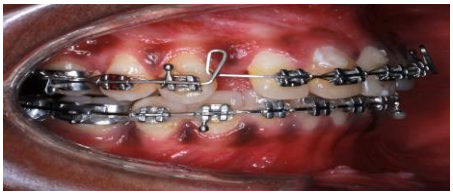

Fig 2.4 Mid Treatment Photograph showing anterior space closure using loops for intrusion and retraction

Fig 2.5-2.6 Near-end Photographs

Fig 3 - Post Treatment Photographs and X-rays

Fig 3.1-3.3 Post Treatment Photographs

Fig 3.4-3.8 Post-Op Intra-oral Photographs

Fig 3.9-3.10 Post -Op Lateral Cephalogram and OPG customized hooks in 11 and 21

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