Primary failure of eruption (PFE)

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DESCRIPTION

A 15-year-old boy presented with difficulty chewing. Clinical examination revealed a bilateral posterior open bite with anterior deep bite and multiple submerged posterior teeth (figures 1–3). OPG (orthopantomogram) X-ray revealed submerged premolars and molars, in absence of ankylosis or other mechanical obstruction (figure 4). The case was diagnosed as primary failure of eruption (PFE). PFE is a non-syndromic eruption disorder where the permanent teeth fail to erupt in the absence of any mechanical obstruction.[1] In these cases, even though resorption of the alveolar bone and the roots of the deciduous teeth is normal, the permanent teeth do not follow the eruption path. The posterior teeth are more frequently affected. This condition manifests as a posterior open bite, which increases with time despite normal vertical facial growth.

Figure 1 Intraoral photographs.

Figure 2 Intraoral photographs.

Figure 3 Intraoral photographs.

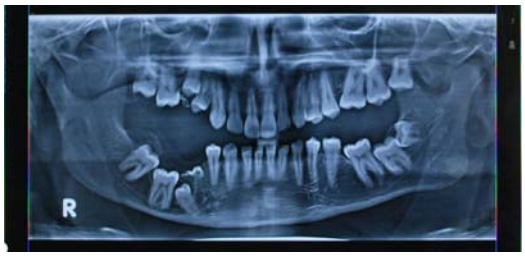

Figure 4 Orthopantomogram (OPG).

The aetiology of PFE is not known, however, genetic disturbances associated with mutations in parathyroid hormone receptor 1 (PTH1R) have been implicated.[2]

Diagnosis should rule out mechanical failure of eruption (MFE) due to any obstruction in the path of eruption from retained deciduous teeth, supernumerary teeth or fibrous gingiva. Genetic analysis of PTH1R confirms PFE.

Teeth with PFE are unresponsive to orthodontic mechanics and ankylose when subjected to orthodontic force.[1] Prosthetic rehabilitation is the only viable treatment option in these patients. Surgical procedures such as distraction osteogenesis (DO) or segmental osteotomy are useful treatment options; however, their use in routine practice is limited due to the associated complications.

Learning points

- Primary failure of eruption is a rare non-syndromic condition where the erupted posterior teeth are submerged, in the absence of mechanical obstruction, resulting in posterior open bite.
- The teeth do not respond to orthodontic treatment and therefore the affected teeth cannot be moved into their correct positions.
- Prosthetic rehabilitation is necessary to achieve good posterior occlusion.

Competing interests None.

Patient consent Obtained.

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