Treatment of Aberrant Odontogenesis in a Child with Orofacial Cleft

Silva J*[1], Puranik CP[2], Flaitz, CM[3], Stubbs A[4]

1*Doctor of Dental Surgery Program, 2Children's Hospital Colorado and Department of Pediatric Dentistry, 3Division of Diagnostic Sciences, University of Colorado's School of Dental Medicine and 4Private Practice.

Children's Hospital Colorado
Affiliated with University of Colorado Anschutz Medical Campus

Background and Purpose

- Orofacial clefting (OFC) is a common congenital malformation of hard and soft tissues.
- The incidence of OFC is one in 700 live births.
- OFC can be an isolated incident (non-syndromic) or they may be part of a syndromic condition.
- OFCs are common in males than females (3:2 ratio)
- OFCs are prevalent amongst Asians and Native Americans (1/500) as compared to Caucasians, Latinos, and Africans.
- OFC's can present have multiple clinical presentations (cleft lip alone, cleft palate alone, cleft lip and palate, as well as unilateral and bilateral presentations).
- OFC can arise from the failure of maxillary processes fusing in utero at 6 weeks of gestation.
- Genetics, gender, ethnicity, parental weight, nutrition, presence of chronic or acute disease, physical or psychological stress, licit or illicit drugs, alcohol, smoking, pollutants and contaminants are all documented risk factors for OFC
- Dental abnormalities associated with OFC's are bifid uvula, agenesis of teeth, supernumerary teeth, enamel defects, Microdontia, peg laterals incisors, Taurodontism, rotations, and impactions.
- Treatment of OFC is a multidisciplinary approach to establish stability and function.
- Developmental enamel defects have been associated with primary lip closure surgery due to trauma and lack of blood supply to area.
- It is interesting to note that there have been no documentation of fusion or gemination associated with OFC.
- The purpose of this case report is to describe rare dental anomalies observed in an OFC case
- Furthermore, this case reports describes an innovative approach to treat the dental anomaly: aberrant odontogenesis.

Case Report

- This case reports provides information on a twelve-year-old, Hispanic female child with right unilateral cleft lip, incomplete cleft palate, bifid uvula, mild nose deformity, and hearing loss.
- Surgical cleft lip repair at 4 months and cleft lip revision at 3 years.
- Dental findings included missing tooth #13, over-retained #J, previously extracted #7', 8' fused to #8, and generalized Radiculomegaly.

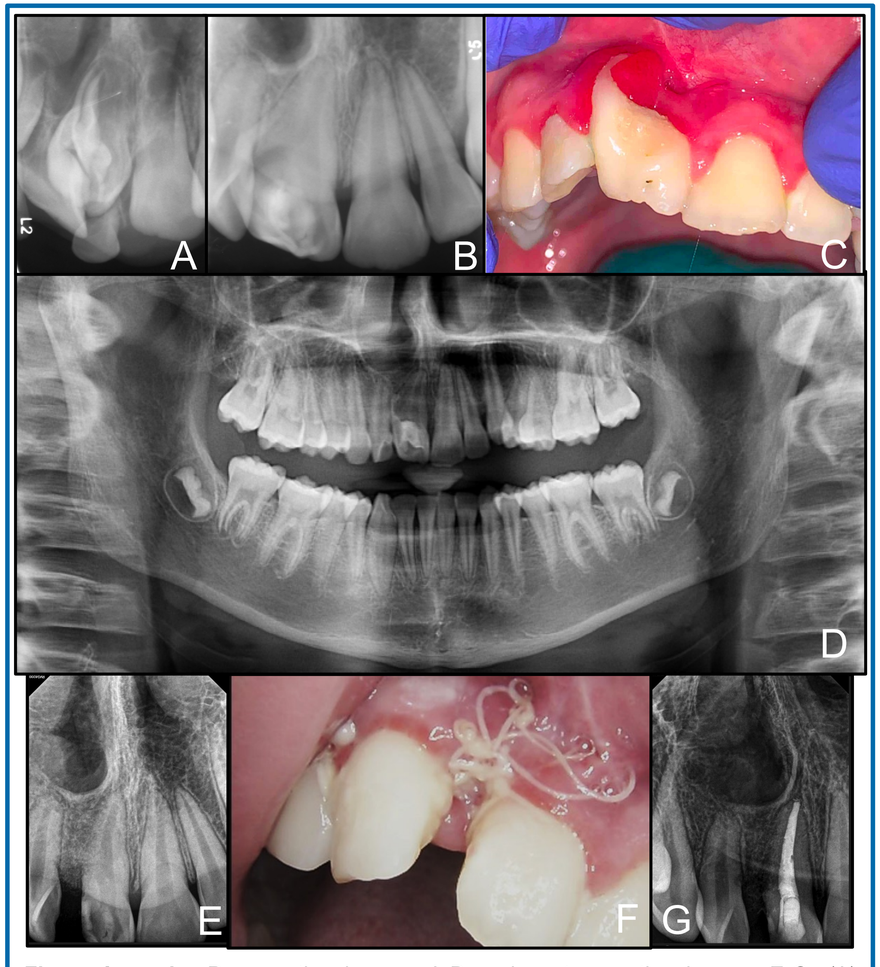

Figure legends: Preoperative images A-D and post operative images E-G. (A) Periapical (PA) radiograph of unerupted tooth #8 and supernumerary teeth. (B) PA of tooth #8 exhibiting wide root dimensions. (C) Clinical photo of affected tooth showing malformation and presence of enamel along tooth root. (D) Panoramic image showing missing tooth #13, radiculomegaly, right sinus bony defect. (E) PA showing tooth recontouring following root amputation and mucosal and bone grafting. (F) Clinical image showing recontoured tooth with gingival and bony defects. (G) PA taken after root canal therapy and prior to phase II orthodontic treatment.

Aberrant Odontogenesis and Treatment

- Tooth #8 had facial concavity with enamel hypoplasia and blunted root compared to unaffected #9.
- Tooth #8 has mesiodistally wider root structure compared to #9.
- Fusion of 8' to distofacial aspect of #8 with enamel cervical projection noted on distofacial with lack of gingival attachment and localized juvenile spongiotic gingival hyperplasia.
- Surgical amputation of distal extension of tooth (coronectomy) was performed and contoured to a more normal root anatomy and improve esthetics and function.
- Pulp exposure was noted during recontouring, and conventional root canal treatment was performed.
- Bone and mucosal graft was placed at site of amputated root structure and phase II orthodontic treatment was undertaken.

Conclusion

- In the present case, multiple dental anomalies including generalized radiculomegaly, and fusion of teeth have not been previously reported.
- Reporting of such novel aberrant odontogenesis in patients with orofacial clefts makes this case a unique one.
- Diagnosis of these dental anomalies and pathoses may provide future insight into the genetic basis for phenotypic variations in non-syndromic orofacial clefts.
- As the genetic basis of such deviant phenotypic findings are not known it may be important to investigate this further to understand the molecular basis of such findings.
- Innovative and multidisciplinary treatment of orodental anomalies in our child with non-syndromic orofacial clefting are needed to best prepare for present and future function and esthetics.
- It is important to discuss with the family a need for a surgical implant at the site of #8 a in the future.

References

1. Marzouk T, *et. al.* JDL Clinical &Translational Research 2021.
2. Fonseca-Souza G, *et. al.* Clinical Oral Investigations 26:5089-5103, 2022
3. Korolenkova M, *et. al.* Eur Arch Paediatr Dent.2019.
4. Inchingolo A, *et. al.* MDPI Children 2022.