Corresponding author:
Dr. Roza Baviskar
Post Graduate Student
Dept of Oral Medicine Radiology
M.A Rangoonwala College of Dental Science Pune

Case Report

"Dental Management of Chronic Pulpitis in Down Syndrome": A Case Report

Dr.Vinod V.C[1], Dr.Roza Baviskar*[2] & Harshad Bhagwat[3]

[1]Professor and HOD, Dept. of Oral Medicine Radiology, M.A.Rangoonwala College of Dental Science Pune

[2]Post Graduate Student, Dept of Oral Medicine Radiology, M.A Rangoonwala College of Dental Science Pune

[3]Professor, Dept of Oral and maxillofacial Surgery, M.A Rangoonwala College of Dental Science Pune

Abstract:

This case report presents the dental management of a 21-year-old female patient with Down syndrome, who presented with chronic pain in the upper front region of the jaw. The patient had delayed developmental milestones and exhibited physical characteristics associated with Down syndrome. Due to the COVID-19 pandemic, she had been unable to receive previous dental treatment at a trust-associated dental clinic. The patient was referred to the M.A.R.D.C Pune for further dental evaluation and treatment. Clinical and radiographic examinations revealed over-retained primary maxillary canine and chronic irreversible pulpitis in multiple teeth. This case report highlights the challenges and considerations in providing dental care for individuals with Down syndrome and emphasizes the importance of early intervention and regular dental visits for this population.

Keywords: Down syndrome, dental treatment, over-retained primary canine, chronic pulpitis.

Introduction:

Down syndrome is a genetic disorder caused by the presence of an extra copy of chromosome 21. It is associated with various physical and intellectual disabilities, delayed development, and distinct facial features. Dental care for individuals with Down syndrome requires special considerations due to their unique oral characteristics and potential behavioral challenges. This

case report describes the dental treatment of a 21-year-old female patient with Down syndrome who presented with chronic pain in the upper front region of the jaw.

Case Presentation:

A 21-year-old female patient with Down syndrome presented with a chief complaint of pain in the upper front region of the jaw, which had been persistent for the past 2 years. The patient had delayed developmental milestones and exhibited physical features characteristic of Down syndrome, including a flattened face, almond-shaped eyes, short palpebral fissure, epicanthic folds, short neck, small ears, brachycephaly, hypertelorism, and macroglossia protruded fissured tongue, and small hands and feet. She demonstrated slurred speech and lethargy during episodes of pain. Vitals were within normal ranges, with a blood pressure of 110/70 mm Hg, pulse rate of 78 beats per minute, respiratory rate of 18 cycles per minute, and normal body temperature. The oral cavity examination revealed an over-retained primary maxillary canine in the upper right anterior region, chronic irreversible pulpitis in the upper left and lower right and left regions, chronic reversible pulpitis in the upper anterior incisors and upper right posterior region, deep proximal caries in teeth 11 and 21, occlusal caries in tooth 15, and fusion in the lower right posterior tooth region involving teeth 44 and 45.

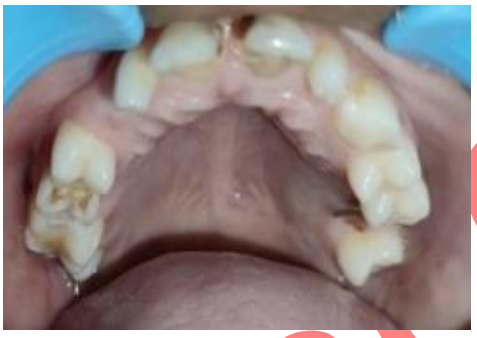

Figure 1: Constricted Maxillary arch

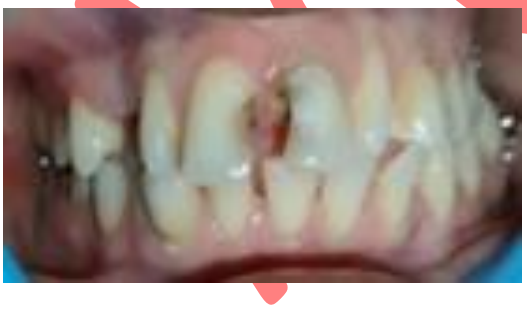

Figure 2: Occlusal examination

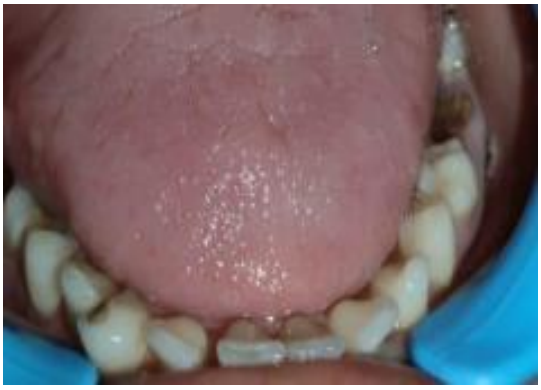

Figure 3: Fissured tongue

The patient had a small mouth and macroglossia, which further complicated the treatment plan. Temporomandibular joint examination did not reveal any clicking sound or deviation.

The patient's medical history indicated non-consanguineous parents and no relevant family history. Routine investigations, including CBC, BT/CT, PT/INR, and HIV tests, were conducted. Specific investigations such as OPG, chest X-ray, 2D echo, and CBCT were also performed to assess the patient's overall health and dental condition. The final diagnosis included over-retained primary maxillary canine (tooth C) and chronic irreversible pulpitis in the upper left and lower right and left regions (teeth 26, 36, and 46). Additionally, chronic reversible pulpitis was identified in the upper anterior incisors (teeth 11 and 21) and upper right posterior region (tooth 15).

Treatment and Management:

The patient's dental treatment plan involved addressing the chronic pulpitis, retained primary canine, and other dental caries. Considering the patient's cognitive limitations and reduced pain tolerance, a multidisciplinary approach involving a pediatric dentist and an anesthesiologist was employed. The treatment plan included pulp therapy, extraction of the retained primary canine, restoration of carious teeth, and oral hygiene instructions for the patient and her caretakers.

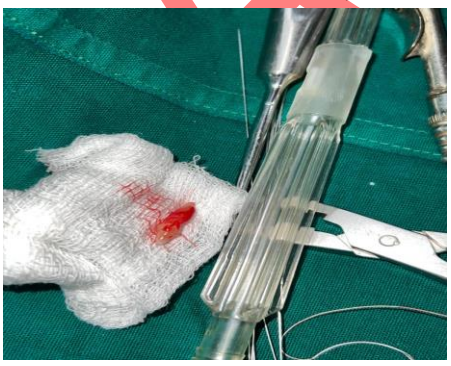

Figure 4: Extracted over-retained primary maxillary canine.

Management of Patient's with Down's Syndrome in Dental Clinic:

In dentistry, managing patients with Down syndrome requires a tailored approach to accommodate their specific needs and challenges. The cognitive limitations and reduced pain tolerance commonly associated with Down syndrome can make dental treatment more complex.

Behavioral management techniques: Patients with Down syndrome may have difficulty understanding and cooperating during dental procedures. Therefore, it is essential to utilize effective behavioral management techniques. Techniques such as positive reinforcement, distraction, desensitization, and tell-show-do can help alleviate anxiety and enhance cooperation. Dentists should employ patience, clear communication, and a calm demeanor to build trust and establish a comfortable environment for the patient.

Sedation and anesthesia: In cases where the patient's anxiety or behavioral challenges make it difficult to perform dental procedures under local anesthesia alone, sedation or general anesthesia may be considered. Anesthesiologists with experience in treating patients with special needs should administer the sedation or anesthesia while the dental team performs the required procedures. This approach ensures the patient's safety, comfort, and cooperation during more extensive or invasive treatments.

Oral health education: Patients with Down syndrome may require additional support and guidance in maintaining proper oral hygiene. Dentists should provide thorough oral health education not only to the patient but also to their caregivers. Demonstrating proper brushing and flossing techniques, recommending suitable oral hygiene products, and emphasizing the importance of regular dental visits are crucial steps in promoting optimal oral health.

Interdisciplinary collaboration: Collaboration between dental professionals, caregivers, and medical specialists is vital in managing patients with Down syndrome. Dentists should work closely with the patient's caregivers to understand their medical history, any specific concerns, and preferences. Communication and coordination with medical professionals, such as pediatricians, geneticists, and speech therapists, can provide valuable insights and ensure a comprehensive approach to the patient's care.

Accessible and inclusive environment: Dental clinics should strive to create a welcoming and inclusive environment for patients with special needs, including those with Down syndrome. Facilities should be designed to accommodate individuals with mobility challenges, sensory sensitivities, and cognitive impairments. Training dental staff in providing empathetic and patient-centered care to individuals with disabilities can greatly improve the overall dental experience for patients and their families.

By implementing these strategies, dentists can enhance the dental experience for patients with Down syndrome. The individualized approach, collaboration with caregivers and medical professionals, and emphasis on oral health education contribute to achieving optimal oral health outcomes and promoting a positive attitude towards dental care in patients with special needs.

Discussion:

Down syndrome is associated with a higher incidence of congenital heart diseases (CHDs) compared to the general population. Approximately 60% of individuals with Down syndrome are affected by CHDs, making it one of the most common comorbidities in this population.

The presence of an extra copy of chromosome 21 in individuals with Down syndrome leads to altered developmental processes, including cardiac development. This genetic alteration affects the formation of the heart structures and can result in various types of CHDs. Some common CHDs observed in Down syndrome include atrioventricular septal defects (AVSD), ventricular septal defects (VSD), and atrial septal defects (ASD).

The high incidence of CHDs in Down syndrome highlights the importance of thorough cardiac evaluations in affected individuals. Early detection of these cardiac abnormalities is crucial for appropriate management and intervention, which may include surgical repair or medical treatments.

The association between Down syndrome and CHDs has significant implications for clinical practice and patient management. It underscores the necessity of comprehensive medical evaluations and multidisciplinary care for individuals with Down syndrome. Collaboration between pediatricians, cardiologists, and other healthcare professionals is essential to provide optimal care and ensure the best possible outcomes for patients with both Down syndrome and CHDs.

Furthermore, early prenatal screening and diagnosis play a vital role in identifying the presence of Down syndrome and associated CHDs. The integration of measurements obtained during the first and second trimesters, as proposed by Hackshaw et al, can provide a more accurate risk assessment for Down syndrome pregnancies. This allows for appropriate counseling and planning of medical interventions if necessary.

Conclusions:

Down's syndrome or Trisomy 21 is considered as the most common chromosomal abnormality occurring in new born infants. Several theories have been put forward to increase our understanding regarding the insight of the disease. The incidence of congenital heart diseases is significantly higher in individuals with Down syndrome compared to the general population. The presence of an extra copy of chromosome 21 affects cardiac development and increases the risk of various CHDs. Early detection, thorough cardiac evaluations, and multidisciplinary care are crucial in managing CHDs in individuals with Down syndrome. Prenatal screening methods that combine measurements from different trimesters can improve the accuracy of identifying Down syndrome pregnancies, enabling appropriate medical interventions and support. This case report clearly dictates most varied clinical and oral aspects of the conditions which helps in the proper diagnosis of the condition.

References:

1. Hall B, Ringertz H. Variability in mongolism – a comparison of the hand skeleton in mongoloids and normal. Clin Genet 1972;3(6):452-7.
2. Leonard H, Wen X. Epidemiology of mental retardation. Hum Mol Genet 2009; 18:75-83.
3. Bertelli ECP, Biselli JM, Bonfim D, Bertello EM. Clinical profile of children with Down's syndrome treated in a genetics outpatient service in the southeast of Brazil. Rev Assoc. Med Bras 2009; 55(5):547-52.
4. Busciglio J, Yankner BA. Nature 1995;378(6559):776-779.

5. Zigman WB. Atypical aging in Down's syndrome. Dev Disbil Res Rev. 2013;18(1):51-67.
6. Kennard A, Wald NJ, Mc Guire A. Antenatal screening for Down's syndrome. Journal of Medical Screening 1997; 4(4):181-246.
7. Filder DJ. Infants and young children. The Emerging Down's syndrome – Behavioural phenotype in Early Childhood 2005;18(2):86-103