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Case Report

Dental management of a child with perisylvian syndrome and associated cerebral palsy under general anaesthesia: a case report

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ABSTRACT

Cerebral palsy (CP) is a group of non-progressive neurological disorders that affect movement and posture. It is frequently associated with intellectual disabilities, seizure disorders, and oromotor dysfunction. Perisylvian syndrome is a rare cortical malformation that further complicates management due to epilepsy and orofacial motor deficits. This report aims to describe the successful dental management of a child with CP and focal seizures secondary to perisylvian syndrome under general anaesthesia. A male pediatric patient aged 14 years with CP and focal seizures presented with a pain in the upper and lower right posterior teeth for three months. Due to uncooperative behaviour and multiple carious lesions, treatment under general anaesthesia was planned. Dental management included oral prophylaxis, indirect pulp capping, and GIC restorations. The procedure was uneventful, and the patient was discharged with appropriate postoperative care instructions. On one-year follow-up, restorations remained intact, oral hygiene had improved, and there were no new carious lesions or recurrence of symptoms. Comprehensive dental care for children with CP and perisylvian syndrome can be successfully provided under general anaesthesia when conventional management fails. Long-term follow-up demonstrated favourable outcomes, emphasizing the importance of continuous preventive care. This case highlights the importance of a multidisciplinary approach and perioperative planning in delivering safe and effective dental treatment to children with complex neurodevelopmental disorders.

Keywords: Cerebral palsy, General anaesthesia, Paediatric dentistry, Special healthcare needs, Perisylvian syndrome

INTRODUCTION

Cerebral palsy (CP) is the most common cause of motor disability in childhood, affecting 1–4 per 1,000 live births worldwide and about 2.95 per 1,000 children in India.[1,2] CP is frequently associated with intellectual disability, epilepsy, behavioural disturbances, and neuromuscular dysfunction, which complicate overall management.

Among rare cortical malformations, perisylvian polymicrogyria (PMG) (Figure 1) is clinically significant. PMG occurs in approximately 0.02–0.03% of children, with perisylvian variants representing nearly half of these cases, resulting in a prevalence of ~1–1.5 per 10,000 children.[3,4] Children with perisylvian syndrome typically present with speech and swallowing difficulties, drooling, and facial weakness, impairing both daily activities and tolerance of dental procedures.

Because of these neurological and behavioural challenges, conventional chair-side dental treatment is often unfeasible. In such cases, general anaesthesia provides a safe and effective alternative for comprehensive dental care, ensuring adequate treatment while minimizing stress for both the child and the caregivers.[5,6]

This case report is particularly useful for clinicians and readers as it highlights the successful dental management of a child with CP and focal seizures secondary to perisylvian syndrome under GA. It provides practical insights into perioperative planning, anaesthetic considerations, and execution of comprehensive dental

care in a child with complex neurological impairments. The detailed description of preoperative assessment, intraoperative management, and postoperative follow-up serves as a guide for paediatric dentists, anaesthesiologists, and medical professionals working with special needs patients.

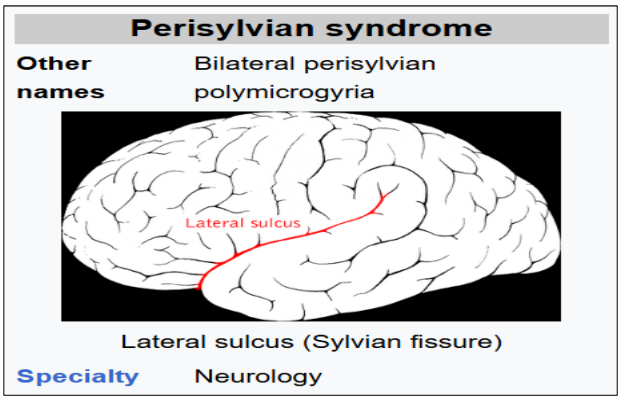

Figure 1: Lateral sulcus (sylvian fissure).

Furthermore, the inclusion of a one-year follow-up adds significant value for readers. Long-term monitoring demonstrates that with caregiver education, preventive reinforcement, and structured recall visits, favourable outcomes can be achieved and maintained.

This report therefore emphasizes not only the feasibility of safe dental treatment under GA but also the critical importance of sustained preventive strategies. For researchers and practitioners alike, it highlights the need for more clinical evidence on the dental management of children with rare neurodevelopmental syndromes such as perisylvian syndrome.

CASE REPORT

Patient history and clinical presentation

A peadiatric male patient aged 14 years with a diagnosis of cerebral palsy and focal seizures due to perisylvian syndrome presented with pain in the upper and lower right posterior teeth for three months. The child had been diagnosed with CP at 11 months of age and had not experienced seizures in the last 10 years, being maintained on syrup carbamazepine (200 mg) and syrup brivaracetam (200 mg). No history of recent illness or drug allergies was reported.

Behavioural assessment and treatment planning

On examination, the patient was found to be highly uncooperative and aggressive, likely due to neurodevelopmental impairments and behavioural issues associated with perisylvian syndrome. Behavioural assessment using the Frankl behaviour rating scale indicated a score of definitely negative (--), consistent with refusal of treatment, forceful crying, and extreme negativism. As an intraoral examination could not be completed in the dental chair, and due to the necessity of addressing multiple dental needs in a single session, a treatment plan under general anaesthesia was finalized after obtaining informed consent from the caregivers.[3,4]

Preoperative assessment

Routine blood investigations were conducted, and clearance was obtained from the paediatrician. The child weighed 35 kg and showed stable vital signs: pulse rate 118 bpm, blood pressure 120/80 mmHg, and SpO_2 95% on room air.

No systemic abnormalities were noted, although airway assessment could not be performed due to lack of cooperation. Based on the medical history and clinical findings, the patient was categorized as ASA II according to the American Society of Anesthesiologists Physical Status Classification (ASA, 2014).

Preoperative instructions included continuation of antiepileptic drugs, ICU reservation, and nebulization to minimize perioperative risks.

Anaesthetic management

In the operation theatre, standard ASA monitoring was initiated. A 20G IV cannula was placed, and fluids started. Premedication included glycopyrrolate 0.1 mg IV, ondansetron 3.5 mg IV, and midazolam 1 mg IV. Induction was achieved with propofol 70 mg, fentanyl 125 mcg, and succinylcholine 75 mg.

The patient was nasally intubated (Figure 2) with a 7.0 mm endotracheal tube and ventilated using 100% oxygen. Anaesthesia was maintained using a propofol infusion and intermittent atracurium.

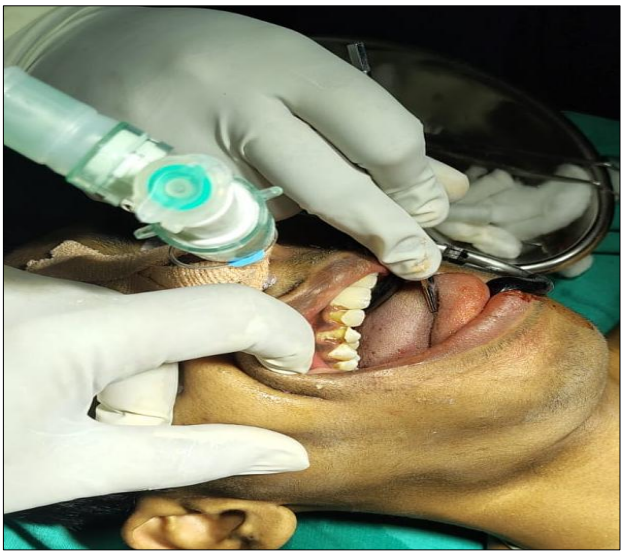

Figure 2: Nasal intubation with a 7.0 mm endotracheal tube.

Dental examination

On clinical examination, intraoral findings were deep dental caries irt 47, class 5 caries irt 11,12,13,14,42,43,44 and calculus were Ca++ (Figure 3).

Clinical procedures performed

Oral prophylaxis was completed first. Clinical findings included deep dentinal caries in tooth 47, and carious lesions in teeth 11, 12, 13, 14, 42, 43, and 44. Indirect pulp capping was done for tooth 47, and GIC restorations were placed in the remaining affected teeth. There were no intraoperative complications, and vital signs remained stable throughout the procedure (Figure 4).

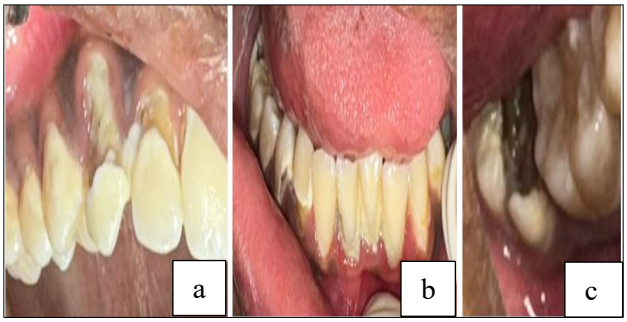

Figure 3 (a-c): Pre-operative images.

Figure 4 (a-c): Post-operative images.

Postoperative management

Anaesthesia was reversed with myo-pyrolate 3.5 ml. The patient was extubated without complications and transferred to PACU for postoperative observation. Postoperative care included NPO for 6 hours, oxygen at 5 l/min, IV fluids at 75 ml/hour, and analgesia with paracetamol 500 mg IV. Discharge instructions included oral hygiene maintenance with a powered toothbrush, fluoridated toothpaste, and warm saline rinses. The patient was recalled at 1 month, 6 months, and 12 months post-treatment. Caregivers reported adherence to oral hygiene instructions with assistance. At each follow-up, restorations were intact, gingival health was satisfactory, and no fresh carious lesions were detected. At the 12-month follow-up, the patient remained asymptomatic with improved oral hygiene status, reflecting positive reinforcement by caregivers.

DISCUSSION

Dental management in children with CP is particularly challenging because of neuromuscular impairment, cognitive delay, and behavioural difficulties, which hinder cooperation during treatment.[7,8] Poor oromotor coordination further contributes to feeding difficulties, drooling, and compromised oral hygiene. When perisylvian polymicrogyria (BPP) coexists, these difficulties are amplified due to the presence of pseudobulbar palsy, oromotor dysfunction, and a high burden of epilepsy.[9,10] These neurological impairments complicate both day-to-day care and specialized dental interventions.

Bilateral perisylvian polymicrogyria is a well-recognized malformation of cortical development. It is strongly associated with spastic diplegia or quadriplegia, with studies reporting cerebral palsy in 60–90% of affected individuals.[9,10] Epilepsy is another prominent feature, occurring in 75–85% of patients, typically presenting as drug-resistant focal seizures that begin in early childhood and are often difficult to control.[4,10] The neurological burden is compounded by oromotor dysfunction, pseudobulbar palsy, swallowing difficulties, and cognitive impairment, all of which significantly impact quality of life and make delivery of routine dental care extremely difficult.

From a dental perspective, these children frequently lack the motor coordination required for effective oral hygiene practices, leading to high caries risk, periodontal problems, and delayed reporting of dental pain due to reduced pain expression. Orofacial hypotonia and drooling further predispose them to enamel demineralisation and poor oral health. Because of their neurological instability and limited cooperation, traditional behaviour management techniques often fail, making in-office dental treatment unsafe and ineffective.[7,8]

In such patients, general anaesthesia (GA) is often the only feasible method to deliver comprehensive dental care.[5,6] GA ensures a controlled environment, allowing safe completion of multiple procedures in a single session while minimizing psychological and physiological stress. However, these children present significant anaesthetic challenges: they may exhibit altered pharmacodynamics, abnormal muscle tone, increased airway secretions, and a high risk of airway compromise. In addition, perioperative seizure control, drug interactions, and postoperative recovery require special consideration.[5,6] Careful multidisciplinary collaborations among paediatricians, neurologists, anaesthesiologists, and paediatric dentists is therefore essential to optimize outcomes and ensure safe, effective treatment.

The one-year follow-up in this case confirmed the durability of restorations and overall stability of oral health when preventive measures were reinforced by caregivers. Previous studies emphasize that periodic recall visits play a pivotal role in preventing recurrence of disease in children with cerebral palsy. This highlights the necessity of structured preventive programs, caregiver education, and consistent long-term monitoring to sustain treatment outcomes.

CONCLUSION

Children with CP and underlying neurological disorders such as perisylvian syndrome require tailored, multidisciplinary care. When behavioural and conventional methods fail, general anaesthesia remains the most effective and humane approach for delivering dental treatment. This case illustrates not only the successful integration of dental and medical care under GA but also the favourable one-year follow-up outcomes, underscoring the importance of preventive strategies and long-term recall visits in ensuring continued oral health.

Recommendations

Children with cerebral palsy and associated neurological disorders often require general anaesthesia for comprehensive dental treatment. This case demonstrates that with proper evaluation, anaesthetic planning, and interdisciplinary collaboration, safe and effective treatment can be achieved.

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