



Managing a patient with Cerebral Palsy GMFCS grade V – Full mouth rehabilitation under general anesthesia: A case report

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Abstract

Special needs and medically impaired individuals make up a specific population that puts the dentist's knowledge and competence to the test. People with cerebral palsy (CP) need dental care that needs adaption of the abilities we use every day.

There are a large number of oral manifestations associated with motor disorders in patients with cerebral palsy (CP) that makes the dentist a vital member of the multidisciplinary team caring for this population.

The prevalence of CP for all live births varies across high income and low to middle income countries and geographic region, ranging from 1.5 to 3 per 1,000 live births.



This article includes a case report of a 9-year-old patient with Cerebral palsy and history of epilepsy who had a complaint of dental pain for which treatment was planned under general anesthesia with all the necessary precautions.

Keywords : Cerebral Palsy, General anesthesia, dental treatment

Introduction

Neuromotor disorders such as cerebral palsy (CP) has an impact on posture, muscle tone, and movement development. A damage to the developing brain that occurs during pregnancy to neonatal life constitutes the underlying pathophysiology^{i,ii,iii} The prevalence of CP for all live births varies across high income and low to middle income countries and geographic region, ranging from 1.5 to 3 per 1,000 live births.^{iv} Physiologically, cerebral palsy is categorized into a spastic type (affects the corticospinal tracts), and an extrapyramidal type (affects the remaining part of developing brain). Under extrapyramidal type of cerebral palsy there are - athetoid, choreiform, ataxic, rigid, and hypotonic. 1. Spastic (80%) - Increase in muscle tone with passive stretch which is velocity dependent, Joint contractures commonly seen 2. Athetoid – Dyskinetic movements. Joint contractures absent. Dystonia or hypotonia can be seen. 3. Choreiform - Continuous purposeless movements present. 4. Rigid - Hypertonicity seen when hyper-reflexia is absent, spasticity and clonus “Cogwheel” kind muscle stiffness. 5. Ataxic – Co-ordinated movement disturbed, mostly walking. Normal head/neck control 6. Hypotonic - Lower muscle tone and deep tendon reflexes are normal. 7. Mixed - Features belonging to more than one type. No head or neck control.^v

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Gross Motor Function Classification (GMFC) system-

1. Has normal gross motor function (35%)
2. Can walk independently, but has limitations with running and jumping (16%)
3. Uses assistive devices to walk and wheel chair for long distances (14%)
4. Has ability to stand for transfers, but minimal walking ability; depends on wheel chair for mobility (16%)
5. Lacks head control, cannot sit independently, is dependent for all aspects of care (18%)^{vi}

Compared to the general population, such patients have a greater risk of caries and bacterial plaque in milk teeth and permanent teeth due to a number of variables, such as trouble maintaining oral hygiene, a soft diet, and the challenges many of them experience eating and swallowing.^{vii}

This article reports a case of a 14-year-old, male patient with Cerebral Palsy and history of epilepsy who required urgent dental care.

Case report

A 14-year-old male patient reported to the department of Pediatric and Preventive Dentistry with a chief complaint of pain and swelling in the lower right back tooth region.

Medical history – Patient was a known case of Spastic Quadriplegic Cerebral Palsy with GMFCS grade V i.e., lacks head control, cannot sit independently, is dependent in all aspects of care. The weight of the child was only 8 kgs. There was muscle wasting seen in both upper



and lower limbs. Patient was regularly taking Syp Gardenal and syp Baclofen. The family belonged to economically lower class and was not regularly visiting any doctors.

Natal history and post-natal history - Patient gave a history of HIE (hypoxic- ischemic encephalopathy) giving rise to Cerebral Palsy with mental retardation along with microcephalus and myoclonic jerks. Patient did not cry after birth and was admitted in the NICU for 10-15 days. No milestones achieved.



Fig 1- General examination

Anesthetic considerations

Patient was considered to be a high risk for dental treatment under general anesthesia considering 1. Spastic quadriplegic cerebral palsy grade V 2. Weight- 8 kgs. 3. Head tilted on the left side – difficulty in intubation.

Patient was asked to the following tests done – 1 CBC 2. Urine analysis 3. Chest xray 4. Bleeding and clotting tests. 5. Liver and renal functional test 6. ECG 7. EEG 8. 2DECHO.

Except for the EEG and 2DECHO, all the other test results were in acceptable range.

Treatment



Pre-op : Maxillary posterior region



Pre-op : Mandibular posterior region



Dental treatment was then scheduled under general anesthesia and PICU was booked for standby. Before starting the procedure, along with the surgery consent, high risk consent was also taken.

Treatment done was 1. Oral Prophylaxis and fluoride application

2. GIC restoration with 32

3. Extraction with 26, 36, 73, 74, 63, 62, 75, 46, 83, 84, 53, 54, 55, 22 and bleeding was arrested by placing abgel in the extraction socket.

Majority extractions were planned as we did not want any complications later after the procedure as he was a high-risk patient.



Post- op : Maxillary anterior and posterior region



Post - op : Mandibular posterior region



Post- op : Extracted teeth

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DISCUSSION:

Owing to their uncontrollable involuntary movements, communication problems, inability to open their mouths properly, abnormal posture, and the need for several dental surgeries, as was the case in the current case, managing these youngsters is a challenge for the treating dental surgeon.

If a patient is unable to comply during the dental visit, general anaesthesia could make the dental treatment process easier.^{viii} The patient mentioned had a history of swelling twice for which oral antibiotics were prescribed followed by IV antibiotics.

Even with the high risk associated with general anesthesia, it was important to carry out the dental treatment.

The degree of preoperative cerebral palsy and postoperative complications seem to be closely correlated. 63.1% of perioperative adverse events are hypothermia and hypotension-related. The factors that elevate risks are - American Society of Anesthesiologists (ASA)

physical status score of 2 or higher, a history of seizures, hypotonic upper airways, general surgical operations, and adulthood.⁸

It was concluded by Loyola-Rodriguez et al that general anesthesia (GA) with sevofurane, propofol and conscious sedation is an exceptional tool to provide dental treatment to CP patients without major post-operative complications.^{ix}

The best way to manage CP is through a multidisciplinary team because there are so many related disorders and extensive support needs.

CONCLUSION

The role of a child's health care provider is to help families deal with ongoing health problems that may arise and also to give them confidence that they are supporting their child in every way, to reach his potential.

As oral health is increasingly recognized as a foundation of overall health and well-being and a key indicator of dental success, caregivers for patients with special needs are an integral part of the oral health care team and must become knowledgeable and competent home oral health care practice.

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