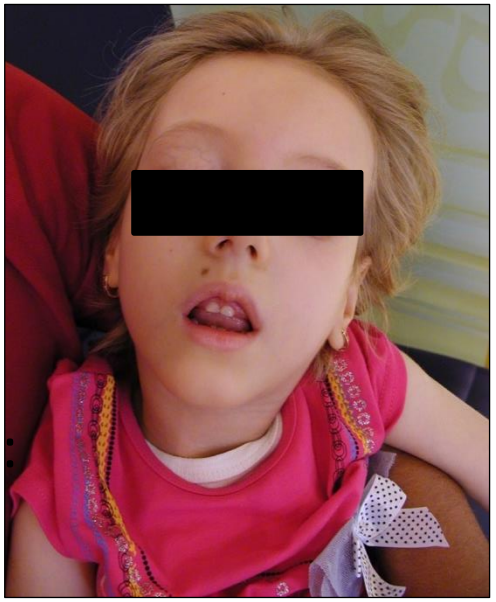
the Child Dental Patient with

Cerebral palsy

Definition

- Non-progressive, non-transmissible permanent motor conditions causing activity limitations, caused by disturbances that occurred in the developing fetal or infant brain.



- The motor disorders of CP - often accompanied by:
  - disturbances of sensation, perception, cognition, communication, behavior
  - epilepsy
  - secondary musculoskeletal problems.

CP classification

- 4 types:
  - spastic – the most common
  - dyskinetic
  - hypotonic
  - mixed

Frequency

CP = the most common cause of severe physical disability in childhood

- 1-4 per 1000 live births
- 10 times higher in premature children
- 25 times higher in underweight at birth children

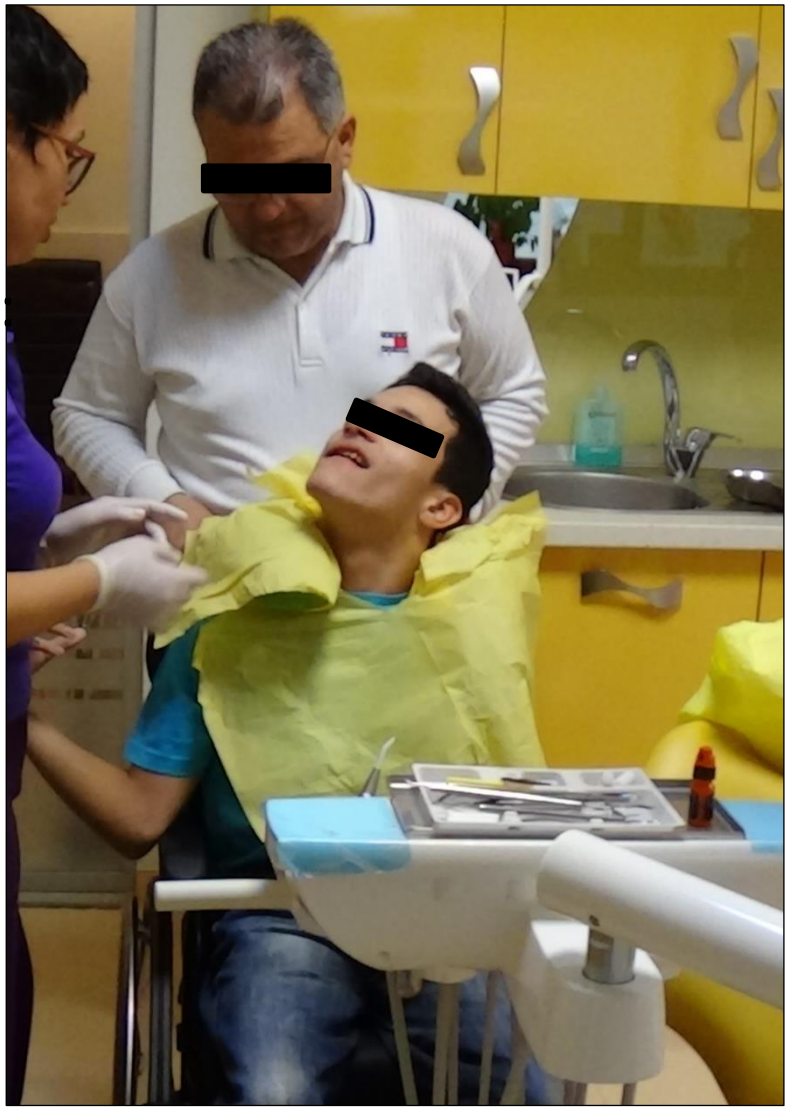
(Raducanu et al, 2008)

Etiology

- Multifactorial :
  - prenatal causes (genetic diseases, embryonic anomalies)
  - perinatal causes (hypoxia, Rh incompatibility, premature birth, underweight at birth etc.)
  - postnatal causes (infections, trauma etc.)

Symptoms

- muscular rigidity or spasms
- involuntary movements
- difficulties of the “gross motor skills”
  - walking
  - running
- difficulties of the “fine motor skills”:
  - writing or doing up buttons
  - brushing the teeth

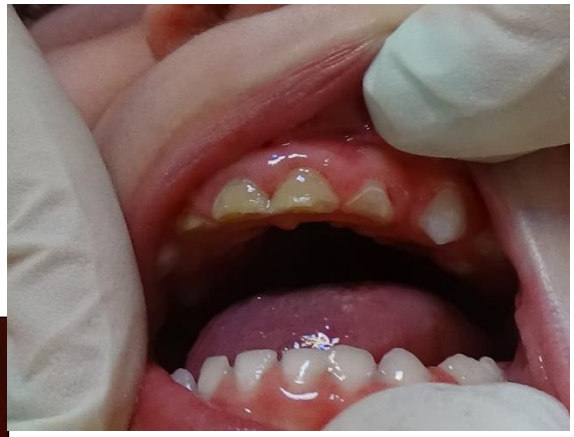


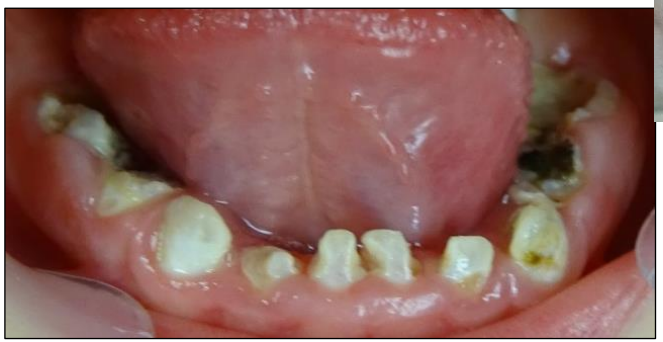
Health issues often associated with CP

- mental retardation
- epilepsy
- sensorial deficiencies (sight and hearing impairment)
- persistent primitive reflexes
- attention-, memory-, learning- and emotional problems
- language and speaking disturbances.

Oral manifestations

CP itself does not cause any specific oral problems. However, **several conditions** are **more common** or more severe in people with CP than in the general population:

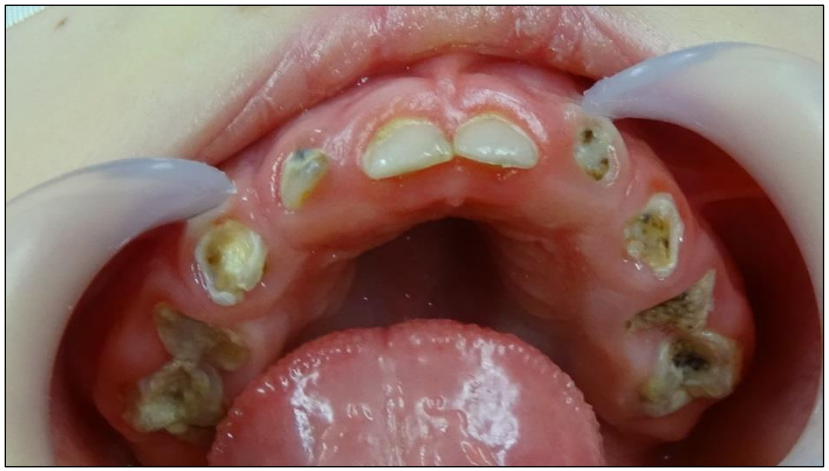




- dental caries
- periodontal disease
- dental erosion
- sialorrhea
- bruxism
- dental trauma
- malocclusion
- enamel hypoplasia
- temporomandibular joint disorders
- abnormal oral habits - tongue thrust, mouth breathing
- hyperactive bite, gag reflexes

Dental caries

- Increased risk of developing dental caries
- Children with more severe neurological insult - greater risk
- Causes:
  - lack of oral hygiene maintenance (due to severe motor incoordination)
  - soft diet
  - sweetened medications
  - mouth breathing
  - food pouching



Periodontal disease

- Gingival hyperplasia and bleeding - higher frequency
- Contributive factors:
  - difficulties in conducting daily oral hygiene
  - intraoral sensitivity
  - oro-facial motor dysfunction
  - use of antiepileptic drugs (phenytoin)

Dental erosion

- Both primary and permanent teeth can be affected, most commonly the upper molars, lower molars and upper incisors.
- Main factors:
  - gastroesophageal reflux disease
  - swallowing difficulties
  - recurrent chest infections

Sialorrhea

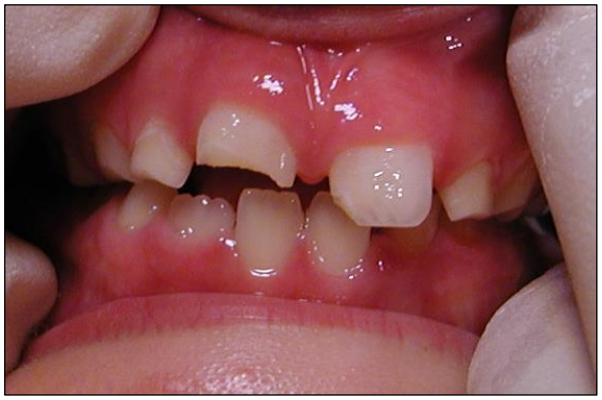
- occurs in up to 30% of children with CP
- Causes:
  - dysfunction in the coordination of swallowing mechanisms (pseudo-bulbar palsy)
  - hypotonia
  - open bite
  - lack of lip seal

Bruxism

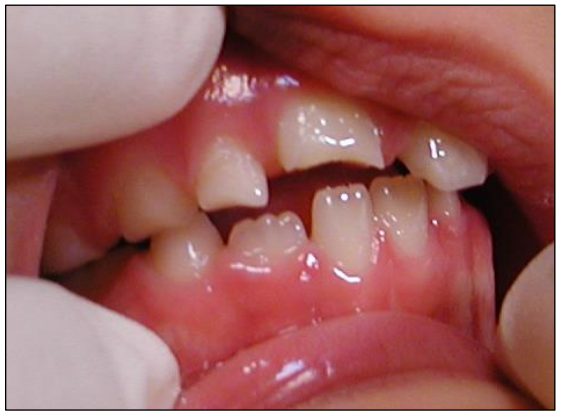
- a common problem in children with CP, particularly those with severe motor and cognitive deficits.
- may lead to teeth abrasion and flattening of biting surfaces.

Traumatic dental injuries

- General risk factors:
  - motor deficits
  - epilepsy



- Local factors:
  - malocclusion with prominent maxillary incisors
  - incompetent lips.



- Most common type of injuries: enamel and dentine fracture

Malocclusions

- Over-bite, overjet and anterior open-bite - most commonly

Factors

  - mouth breathing
  - lip incompetence
  - long face
  - pseudo-bulbar palsy
  - oro-facial incoordination
  - hypotonia

Malloclusion in patients with CP is associated with: tongue thrusting and excessive drooling

Enamel defects

- enamel defects located in a symmetrical manner in both primary incisors and first molars
- cause: premature birth (<37 weeks)
- high risk for dental caries

Temporomandibular joint disorders

- Risk factors:
  - male gender
  - the presence and severity of any malocclusion
  - mouth breathing

Abnormal habits

- Tongue thrust
- Tongue interpositioning
- Mouth breathing
- Finger sucking

Important for the paediatric dentist

- Clear paths for movement throughout the treatment setting
- Obtain and review patient's medical history; consultation with physician, family, caregivers
- Short appointments, frequent breaks
- Instruments and equipment out of patient's way
- Muscle relaxants when long treatment is needed

Important for the paediatric dentist

- Calm and supportive environment (may reduce the frequency/intensity of uncontrolled movements)
- Do not try to stop patient's movements, anticipate them, work around them
- Gentle but firm pressure on patient's arm/leg if it beging to shake
- Avoid noises, bright lights,sudden movements (explain these stimuli before they appear) → triggers for uncontrolled, forceful movements

Important for the paediatric dentist

- Mouth guards/bite splints for patients with bruxism (uncomfortable/unwearable in patients with gagging/swallowing problems)
- Patients with gag reflex
  - appointments in the morning, before eating/drinking
  - place patient's chin in neutral/downward position

Important for the paediatric dentist

CP + INTELLECTUAL DISABILITIES

- Listen carefully, be patient (sometimes communication is difficult)
- Explanations at a level the patient can understand (+ extra time for instructions/procedures, oral health issues)
- Simple, concrete, repeated instructions, one direction at a time
- **TELL-SHOW-FEEL-DO** technique
- Same staff every time= familiarity + cooperation

Important for the paediatric dentist

CP + SEIZURES

- Seizures usually can be controlled with anticonvulsivant drugs
- Record seizure's history: frequency, medication, triggers
- Seizure management:
  - remove all instruments, clear the area around working place, do not place any objects between teeth during a seizure
  - turn patient in one side, monitor the airway

Important for the paediatric dentist

CP + VISUAL IMPAIRMENTS

- Assistance if patient can’t move safely in the dental office
- Use of other senses, tactile feedback
- Look at the patient when you explain, warn before upcoming
- Written instructions in large print

Important for the paediatric dentist

CP + HEARING IMPAIRMENTS

- Adjustment of hearing aids/turn them off to avoid auditory disconfort
- Patient that reads lips:
  - normal rythm and tone, loud voice
  - remove mask/use of clear face shield
  - eliminate background noise
- Patient that uses sign language: discussion with caregiver about terms and needs
- Visual feedback, eye contact

Important for the paediatric dentist

CP + DYSARTHRIA

- Allow time to express himself-patience
- Discuss with caregiver if you can't understand patient's speech

CP + GASTROESOPHAGEAL REFLUX

- Slightly upright position for treatment
- Recommendations:
  - rinses with plain water/water + baking soda solution x4/day
  - use of fluoride gels,rinse,toothpaste

Dental management

- Dental examination and treatment procedures can be performed on patient's wheelchair
- Travel pillows can be used to help hold patient's head
- Parental help is welcome

Dental management

Treatment in the wheelchair

- can be reclined/molded
- lock the wheels
- sliding/transfer board to support the head and neck

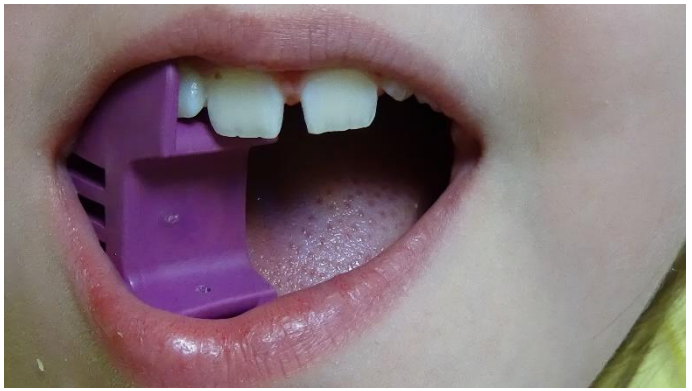
Transfer from wheelchair to dental chair

- padding/pillows for easier transition
- smooth transfer
- place and maintain the patient in the center of the chair
- arms and legs in natural, comfortable position

Safe wheelchair transfer

1. **Determine the patient's needs** (preffered transfer method, ability to help, special paddings/device for collecting urine, probability of spasms)
2. **Prepare the dental operatory** (remove dental chair's armrest/move it out, dental chair's position- the same height/slightly lower)
3. **Prepare the wheelchair** (close and parallel with dental chair, special padding/equipment)
4. **Two-person transfer** (patient support & safe transfer)
5. **Position the patient after transfer** (in the center of dental chair)
6. **Transfer from the dental chair to wheelchair**

Dental management



- Mouth prop can be used while performing dental examination and simple dental procedures (not suitable for patients with impaired swallowing)
- Conscious sedation with N_2O during dental care controls stress in CP patients, as verified by a decrease in heart rate, and does not promote respiratory depression. Higher concentrations of N_2O are recommended for CP patients with tachycardia (Baeder et al, 2017).

Dental management

- For uncooperative patients / patients who require extensive dental treatment - dental treatment under sedation or GA.

Radical treatment options are recommended (→ limit need for reintervention) – e.g. extraction versus pulpotomy

Orthodontic treatment

- May not be an option→ high risk of caries & enamel defects
- Almost impossible in patients with moderate/severe cerebral palsy

  BUT CP should not represent a barrier
- Good oral hygiene daily → succes of orthodontic treatment

Preventive measures

- Primary PREVENTION – early age – DENTAL HOME
- Regular dental checkups → every three months
- Topic fluoridation
- Sealants

- Parents/caretakers – to be informed of the importance of:
  - oral hygiene maintenance
  - healthy dietary habits – limited sugar consumption

Suggestions for family/caregivers

- Patient should drink water often, use sugar-free drugs and rinse with water after taking medicines
- Find alternatives to sugary foods and beverages as rewards
- After every meal: rinse with water to remove food and medicine from the mouth
- Clean the remaining food with a finger wrapped in gauze
- Emergency attitude in case of oral trauma (early presentation to the dentist, localization of missing pieces of a fractured tooth, permanent tooth replantation/tooth-saving kit)

Daily oral hygiene

- Encourage independence
- Hands-on demonstrations
- Use of antimicrobial agents,

  e.g. Chlorhexidine – spray, bottle /toothbrus
- Advice for caregivers
  - proper brushing demonstrations
  - flossing techniques
  - sitting/standing positions
  - same location, timing, positioning

Dentist demonstrating flossing to mum:
- support child's head
- use of floss with holder

Toothbrushing

- Use toothbrushes with modified handle – better grip

- Electric toothbrushes can help, especially for children with limited cooperation

Toothbrushing

For children who are unwilling or unable to cooperate – use restrain methods:

- child is placed in the parent's lap to stabilize the head with one hand while using the other hand to brush the teeth
- an older child - recline on a chair or bed; the parent angles the head backward with one hand while the teeth are brushed with the other hand
- for a more difficult to manage child - the patient's hands will be restrained by a second or third person

Link catre Parents' Corner – video Tudor , video Vlad