The management of children with special needs

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Introduction

- Dentistry
  - Fear
  - Pain
- Pain – subjective
  - 1,5-2 years old –low pain threshold
  - 11-12 years old- pain-pressure-discomfort
- Pain relief
  - Local anaesthesia
  - Sedation
  - General anaesthesia

Etiology

- Causes:
  - Anxiety: no definite reason
  - Fear : concrete reason
    - Subjective
    - Objective

Etiology

- Disability:
  - Mental: mild: IQ 50-7o
    medium: IQ < 50
    severe : IQ < 30
  - Phisical (damage of central nervous system)
  - Organic (cardiovascular disease, diabetes, renal disease)
  - Senses (blindness, deafness)

Treatment possibilities

- Fear/Anxiety:
  - Not tired
  - Not too long appointments
  - „get together/introduction”before any treatment
  - Tell, Show, Do
  - Familiar/nice enviroment- waiting room/dental office
  - No long waiting
  - Praise, reward
  - Involve the child in the treatment

Treatment possibilities

- Extraordinary patience, understanding
  - i.e.: Down sy.-kind, good cooperation
- Extraordinary speed
- Simpliest but effective treatment
- Presence of parent
- Prevention

Treatment possibilities

- Phisical disability
  - Wheelchair, problems with movement coordination
  - Access the dental unit
  - Extra assistance needed
    - suction, rinse

- Disability of senses
  - Blindness : touch
  - Deafness : mouth reading (mask) , slow speech

Sedation

- Consciousness „power off” on different levels
- Superficial:
  - Maintain automatic reflexes
  - Conscious/aware
  - Able to response
- Deep:
  - Not maintained automatic reflexes

- !!!!:
  - ***Consent form signed by the parents!!!***

Sedation

- Oral
- Intramuscular
- Intravenous
- Rectal
- Inhalation

Oral sedation

- Benzodiazepins:
  - Diazepam, midazolam
    - Advantage :
      - Preparation at home (responsible parent)
      - Cheap
    - Disadvantage:
      - Absorption - uncertain
      - Paradox reaction
    - Adequate timing, adequate dosage:
      - Diazepam: 0,2-0,5 mg/kg
        - Prolonged effect
      - Midazolam: 0,3-0,5 mg/kg
        - 7,5/15 mg pill or venous inj. sol. swallowed
        - Effective in 30 mins , lasts for 1-2 hours
        - Nasal drops – effect in 10 mins

Sedation

- Intramuscular
  - Faster absorption
  - More cooperation needed
  - Painful
  - If „needle” → veneflon is better
- Intravenous
  - Directly to the blood stream
  - No absorption problems
  - Lower dose
  - More cooperation (veneflon)
- Rectal
  - Scandinavian countries - diazepam solution

Conscious sedation

- N_2O /dinitrogen-oxid/ nitrous oxide
- Discovered: 1793 Joseph Priestley (O_2)
- Name : ”laughing gas” 1799 Sir Humphrey Davy
- For 40 years: „primary use of N_2O was for recreational enjoyment and public shows”
- First clinical use : 1840s: Horace Wells, american dentist, tooth extraction for himself
- First clinical use in Hungary: 1847 János Balassa

Effects of N_2O

- Analgesic
- Anxiolytic, sedative
- Anaesthetic

Characteristics of N_2O

- Good analgetic
- Mild anaesthetic
- Low solubility in blood
- Elimination without metabolism
- Direct cardiodepressive
- Methionin synthetase-, folic acid metabolism- and DNA synthesis inhibitor

Characteristics of N_2O

It can cause:

- Diffuse hypoxia
- Agranulocytosis, bone marrow depression , myeloneuropathy
- Teratogenic

Use in dentistry

- ***2 types of methods:***

  1.) O2 and N2O dosage separately

  2.) O2 and N2O fix 50/50 gas mixture

- Indication:
  - Anxiolysis or sedation
  - Mild or medium strength pain killer

1.) method :O_2 N_2O controllable dosages

- 100 % O_2 inhalation for 2-3 minutes
- Slow raise of N_2O concentration
- 5-25 %- mild sedation and analgesia
  - Mild numbness in hands and legs
- 30 % - explicit analgesia- euphoria
- 35 % < – side effects more often
  - Sweating, restlessness, vomiting, panic, nightmare
- Finishing : 100 % O_2 inhalation for 5 minutes
- Leaving -20 minutes
- *Presence of anaesthesiologist is required!!*

2.) method: set dosage

- N_2O O_2 fix 50-50 % gas mixture
- *Specialized dentist is enough no anaesthesiologist required (in certain countries)*
- No chance of diffuse hypoxia
- O_2 saturation does not decrease during inhalation but increases
- No need for systemic reoxygenation after inhalation

Dosage- 2.) method

- Nose-mouth mask
- Natural breathing movements define the amount of gas inhaled.
- Suggested flow speed:
  - Children: 3-9 l/min
  - Adult: 6-12 l/min

Patient monitoring -2.) method

- Evaluation of clinical condition
  - Properly relaxed
  - Normal breathing
  - Patient can follow simple instructions

  If sedation is too deep : no verbal feedback/contact-> suspension!!
  - After treatment:
    - Remove the mask
    - 5 minutes relaxing in the dental chair

Application- 2.) method

- Verbal communication with the patient during inhalation
  - If no verbal feedback -> suspension!
- Effect: 3 minutes after inhalation
- Average application time: 30 minutes
- Maximal: 60 minutes
- Repeated use: max 15 days

Indications

- Children older than 3 years
- Adults with anxiety or phobia
- Patients with mild mental disability

Contraindications

- Children under 3 years
- Pregnancy
- ASA III.: severe systemic disease
- ASA IV.: severe systemic disease that is a constant threat to life
- Intracranial hypertension
- Bullosus emphysema
- Pneumothorax

ASA Classification		Examples:
ASA I	A normal healthy patient	Healthy; no smoking, no or very minimal drinking.
ASA II	A patient with mild systemic disease	Smoker; more than minimal drinking; pregnancy; obesity; well controlled diabetes, well controlled hypertension; mild lung disease.
ASA III	A patient with severe systemic disease, not incapacitating	Diabetes, poorly controlled hypertension; distant history of MI, CVA, TIA, cardiac stent; COPD, ESRD; dialysis; active hepatitis; implanted pacemaker; ejection fraction below 40%; congenital metabolic abnormalities.
ASA IV	A patient with severe systemic disease that is a constant threat to life	Recent history of MI, CVA, TIA, cardiac stent; Ongoing cardiac ischemia or severe valve dysfunction; implanted ICD; ejection fraction below 25%.
ASA V	A moribund patient who is not expected to survive without the operation	Ruptured abdominal or thoracic aneurism; intracranial bleed with mass effect; ischemic bowel in the face of significant cardiac pathology..
ASA VI	A patient who has already been declared brain-dead and whose organs are being removed for transplant.	

Contraindications

- Abdominal distension
- After certain eye surgery
  - Use of ophthalmological gases (SF6, C3F8,C2F6)
- Total lack of patient cooperation

Terms of use

- Proper ventillation in the operation room
  - N_2O cc. of air should stay below 25 ppm!
- Proper storage of gas mixture
  - Above zero celsius
  - Fix vertical position of the product

Possible side effects

- Neurological
  - Infrequent (1-10/1000)
    - excitement
    - euphoria
    - headache
    - vertigo
    - Anxiety
    - mood disorders

Possible side effects

- Gastrointestinal
  - Infrequent (1-10/1000)
    - Nausea
  - Rare (1-10/10000)
    i.e.: abdominal distension

Drug interactions

- Potentiates certain CNS drugs
  - i.e opiates, benzodiazepines

Hypnosis

- Conscious modification
- Undesired activities cannot be forced
- Fear control
- Requires hypnotherapist

General anaesthesia

Indication:

- Severe mental/phisical disability
- Severe psychiatric disorders
- Under the age of 3

General anaesthesia

Contraindications:

- Severe
  - renal/cardiovascular/respiratorical/neurological diseases
- Not controlled
  - Anaemia/hypothyreosis/diabetes/adrenocortical insuff.
- Cervical spinal disorders

General anaesthesia

- Premedication:
  - Atropin (parasympatholyticum) 0,2 mg/kg
    - Salivation decreases
    - Respiratory secreation decreases
    - Eliminate vagus reflex
    - *Disadvantages*: tachycardia, dry mucose →/not used/
  - Sedative : diazepam (Seduxen) or midazolam (Dormicum) 0,3-0,5 mg /kg
    - Relaxation
    - Potentiates the narcotics
    - Amnesia
    - prevent postnarcotic consequences
    - prevent convulsion/spasm
    - Suspension: anexate

General anaesthesia

Narcotics:

- Propofol:
  - initial: easy sleep, fast and clear awakening
  - maintained: prolonged awakening
  - No vomit
  - Breathing depression
  - Easy controlled depth of narcosis
  - Lower postoperative side effects
  - Iv. 2-3 mg/kg initially, 6-10 mg/kg/hour maintained
- Inhalation anaesthetics:
  - Sevoflurane (initial/maintained)
  - Isoflurane (maintained)
  - Desflurane (maintained)

General anaesthesia

- Narcotics (earlier)
  - Calypsol:
    - Intravenous/intramuscular
    - Often: agitation, nightmares
    - Recently: propofol
- Other medication:
  - **Pain killers:**
    - *During surgery*: opiates (fentanyl, nalbuphin(Nubain))
    - *After surgery*: non-steroids: algopyrin, ibuprophen, diclofenac, paracetamol

Personal terms of G.A.

- Educated anaesthesiologist and nurses
- Educated pediatric dentist and assistant
- Capable patient:
  - No acute respiratory or contagious disease
  - In proper cardiorespiratorical condition
  - Blood test
    - CBC (Complete Blood Count)
    - PTT (Partial Thromboplastine Time)
    - QT / INR / prothrombine time
  - Detailed individual and family anamnesis about haemophilia
  - Current medication? (syncumar, aspirin, clopidogrel, LMWH)

Other terms of G.A.

- Operation room
- Anaesthetic machine
- Pulzoximeter, capnograph
- Blood pressure , EKG
- Dental equipment, exhaustor
- Instruments and medication for resuscitation

Instructions

To the parents:

- No breakfast
- Last drink (1-1,5 dl water/tea) at 7 a.m.
- Take usual morning medication
- After narcosis:
  - If totally conscious and no vomit:
    - First drink – 1 hour
    - First eat – 2 hours
- Terms of leaving the hospital:
  - Full conscious, good strength, after drinking, eating, and urinate, accompanying person present, can be delivered back to the hospital

Consent form

- Parents have to read and sign it with responsibility
- „Status taking”, treatment PLAN – in advance
- Aim : eliminate all possible causes of problems for long term
- Treatment plan is only estimated
  - Changes might occur during surgery
- Preliminary permission for tooth extractions needed

Dental treatments

- Scaling, polishing
- Primary tooth filling, grinding
- Primary tooth extraction
- Permanent tooth
  - Filling
  - Extraction
  - Root canal treatment
- Minor surgeries
  - i.e.: mucocele, supernumerary tooth, wisdom tooth

Problems with treatment and planning

- Examination without sedation - limited
- Quite poor oral hygiene – no hope for improvement
  - Problem solving + prevention
- Severe accompanying diseases – no mastication – no use of teeth
  - Problem solving (long term without pain and inflammation versus conservative treatment)
- Basic disease – relative contraindication for g.a.
- measure cost- benefit ratio

Problems with treatment and planning

- Reasonable order of treatments
  - Calculus, plaque, inflamed, bleedeng gingiva→
  →1. filling
  →2. scaling, pol.
  →3. extractions
- Filling
  - No precise occlusal control
  - Low dimensions/underfilled
- Root canal treatment
  - Unsecure success
  - Anterior teeth (esthetics)
  - In one session
  - No x-ray control (yet)

Problems with treatment and planning

- Real indication for g.a.??
- Careful deliberation
  - i.e.: destroyed milk molars but no sign of inflammation under the age of 8 → extraction would be considered „early” →no mastication for years

    „so called” rct too unsecure

    → no indication for g.a.

    →in case of inlammation→ recall→trepanation or g.a.and extraction
  - Extreme amount of plaque and calculus + no other pb + no hope for improving oral hygiene→ no indication for g.a.(cost/benefit)

Problems with treatment and planning

- Destroyed molar, caries profunda, pulp is very close → extraction
- Indirect/direct pulpcapping not suggested
  - Unsecure success
- Postoperative complaint might be impossible to follow (no clear feed back)
- High speed!!!
  - Experianced dentist, assistant
  - Etching+bonding 2in1, high speed polym. lamp
- Optimal time of narcosis : max. 2 hours
- Aim: everything in one session!

Problems with treatment and planning

- Not able to follow postop. instructions
  - Extraction → suture (resorbable)
  - Inflammation → +antibiotics
  - No local anaesthetics
    - Postop. mucose injuries
- Prosthetics
  - Real indication? / real need?
  - Functional need? (mastication?)
  - Esthetics ? Is it a real issue?
  - Practically possible? (more sessions, impression, occlusion control)

Follow-up

- In case of complaint - immediately
- No complaint → 6 months
- No absolute contraindication of repeated g.a.

  BUT

  regarding the *general risks of g.a.* → repetition is suggested as rare as possible

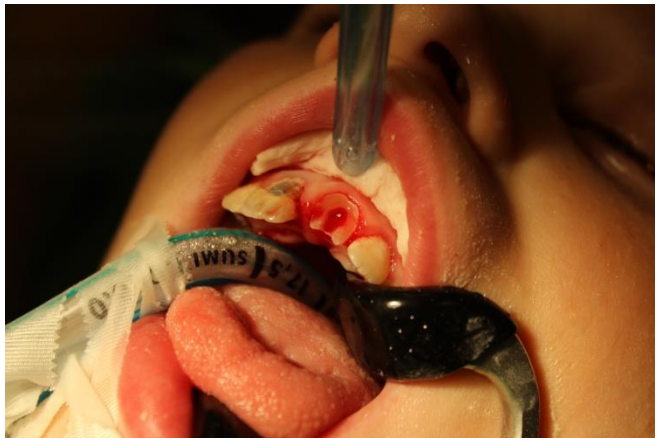
➢Aspiration→asphyxia, pneumonia

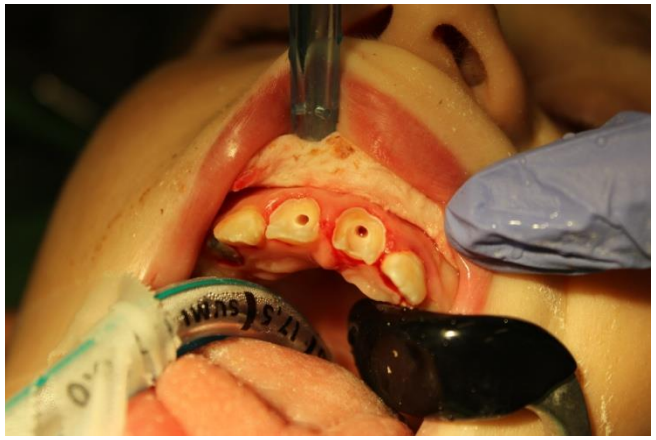
➢Bronchospasm/ laryngospasm→asphyxia

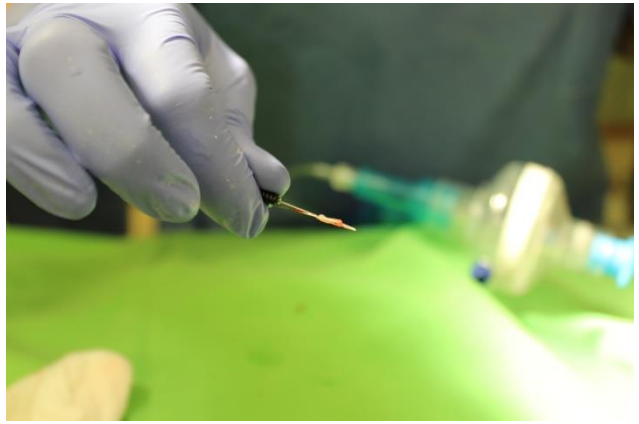
➢Nerve injury (laying) → paralysis

Case report

11, 21 caries penetrans →rct →apex locator →Preparation→ cleaning , drying

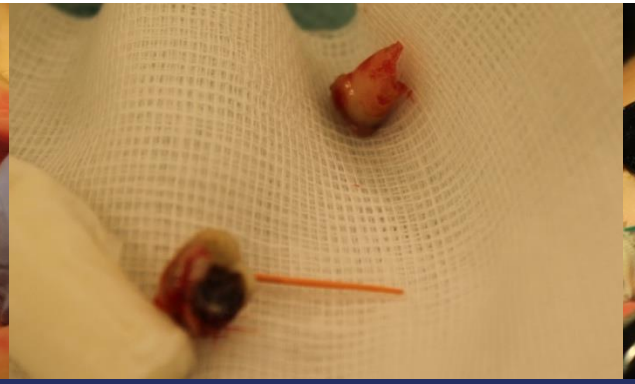




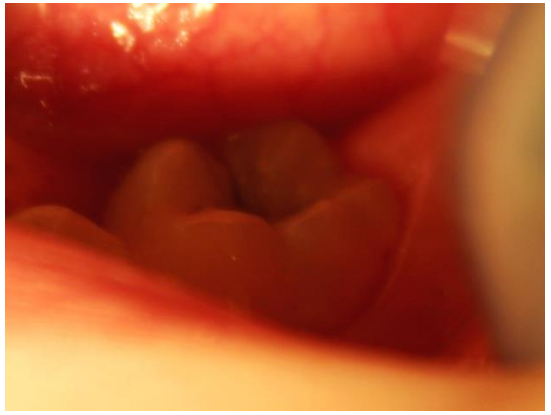


Case report

- Fluid guttapercha technique (fluid gp + gp point)
  - No lateral condensation
  - Fast
  - Set in 30 mins
- Temporary filling for 30 mins, meanwhile other treatments:
  - 63, 65 radix extraction
  - suture



Case report





36, 35 composite filling , GIC liner

Case report

53, 55, 46 radix extraction

11, 21 remove temp. filling, GIC base, Composite filling

Thank you for your attention!

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