Drooling

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Case Presentation
S. Mncube

- 8 yr old boy with Cerebral palsy
- Eben Donges Feb 07
- Drooling
- Wheel chair
- Poor head control
- Towel draped over his chest.
Bilateral submandibular duct relocation
Drooling

► Involuntary, passive spillage of saliva from the mouth due to inability to handle oral secretions

► Medical, psychosocial and economic effects

► 1.5l/day SMG - 70% - mucinous secretions
   Parotid - 25% - serous secretions
   SLG - 5%
Aetiology

- Normal <2yrs
- 4-6yrs, esp. during teething
- Spontaneous resolution with oro-facial maturation
- >6yrs- neuromuscular disorders
Aetiology of Sialorrhea

► Neuromuscular/ sensory dysfunction
  - Mental retardation - ALS
  - Cerebral palsy - facial paralysis
  - Parkinson's disease
  - Bulbar palsy

► Hypersecretion
  - Inflammation (teething, dental caries, oral-cavity infection, rabies)
  - Medication side effects (lithium, parasympathetics, anticonvulsants)
  - GORD,
  - Toxin exposure (mercury vapor)

► Anatomic
  - Macroglossia
  - Oral incompetence
  - Dental malocclusion
  - Orthodontic problems
  - Head and neck surgical defects (i.e., "Andy Gump" deformity)
System for Assessment of Frequency and Severity

**Severity**

- 0) Dry (never drools)
- 1) Mild (wet lips only)
- 2) Moderate (wet lips and chin)
- 3) Severe (clothing becomes damp)
- 4) Profuse (clothing, hands, tray, objects become wet)

**Frequency**

- 0) Never drools
- 1) Occasionally drools
- 2) Frequently drools
- 3) Constantly drools
Drooling Quotient

Drooling is observed and scored during two periods of 10 minutes separated by a 30-minutes break. The presence or absence of drooling was evaluated at every 15-seconds interval over a 10-minutes period (40 observations) while the patients were awake and sitting erect. An episode of drooling was defined as new saliva leaving the chin. The drooling quotient, expressed as a percentage, was calculated as the number of drooling episodes in 10 minutes divided by 40 (the number of observations).

\[
DQ\% = \frac{\text{no. of drooling episodes}}{40 \text{ observation in 10 min}} \times 100\%
\]
Management

- No treatment
- Oral motor therapy
- Biofeedback
- Situational correction
- Pharmacotherapy
- Radiation Rx
- Bot. tox A
- Surgery
Pharmacotherapy

A systematic review for evidence of anticholinergic drugs to treat drooling.

Arch Dis Child 2003 Jongerius et al

7 articles since 1966
Case reports suggesting benefit

S/E: constipation, urinary retention, blurred vision, glaucoma, CNS excitability, confusion
Botulinum toxin A


Prospective double blinded, placebo-controlled study in pts with neuromusc. disorders with severe drooling

Placebo, 18, 75, 37.5 or 75 MU BTX-A
18 pts, Into substance of parotid

Only group with stat sig ➔ 75MU
Repeat at 3 months
Bot. tox effect on salivary flow rate in children with CP.
Neurology 2004, Jongerius et al

- 45 patients
- Single injection of 30, 40 or 50 MU (relative to pt wt)
- Into the submandibular gland under U/S guidance
- Once off
- 42% decrease in salivary flow rate, with max effect by 8 weeks
- 16 weeks - significant recovery of salivary flow rate.

Others: Both parotid and SMG

- 25 MU into parotid glands
- U/S guidance
- Objective improvement → 7/9
- Subjective improvement → 3/9


- SMG and parotid
- No ultrasound
- Total 10 injections, no adverse effects
Botox:

- Definitely effective
- Optimal dose?
- Sites of injection?
- Duration of effects?
- Need for U/S guidance?
Surgical

- Tympanic neurectomy
- Submandibular duct relocation
- SMG excision
- Parotid duct relocation
- Parotid duct ligation
- Four duct ligation
- SMG excision with parotid duct ligation
Submandibular duct relocation
1969 Laage-Heelman

The management of Drooling

Crysdale WS

522 pts since 1978
Sublingual gland exision since 1998

Complications: 20/522 ranula
6/522 lateral cervical cyst

No caries
No xerostomia
85% success → procedure of choice
Submandibular Gland Excision

- Failed control with duct relocation
- Mucus secretions
- Xerostomia, dental carries, external scar
Parotid duct relocation / ligation

- Relocated post. Using intra-oral approach
- Little affect on basal secretion
- Risk ductal stenosis/sialocele

- Ligation: preferred by Crysdale
  - persistant watery sialorrhoea in pts who have had SMG excision/relocation
Four Duct Ligation

- Concern re: ductal sialoceles/sialadenitis

- **Four Duct ligation:** a simple and effective treatment for chronic sialorrhea. Arch. Otol HNS 1999

- 5 patients
- Simple, quick procedure
- No complications post op.
- Improved drooling
Submandibular gland excision with ligation of parotid duct

- Wilkie 1967: SMG excision and fistulisation parotid duct


93 pts
Follow up 1-10yrs
3/93 post operative parotitis
7/93 xerostomia
15/93 increase caries
ANIMAL LABORATORY

DR. I. PAVLOV

Please don't ring bell

Please knock

Don't touch this!