

Drooling

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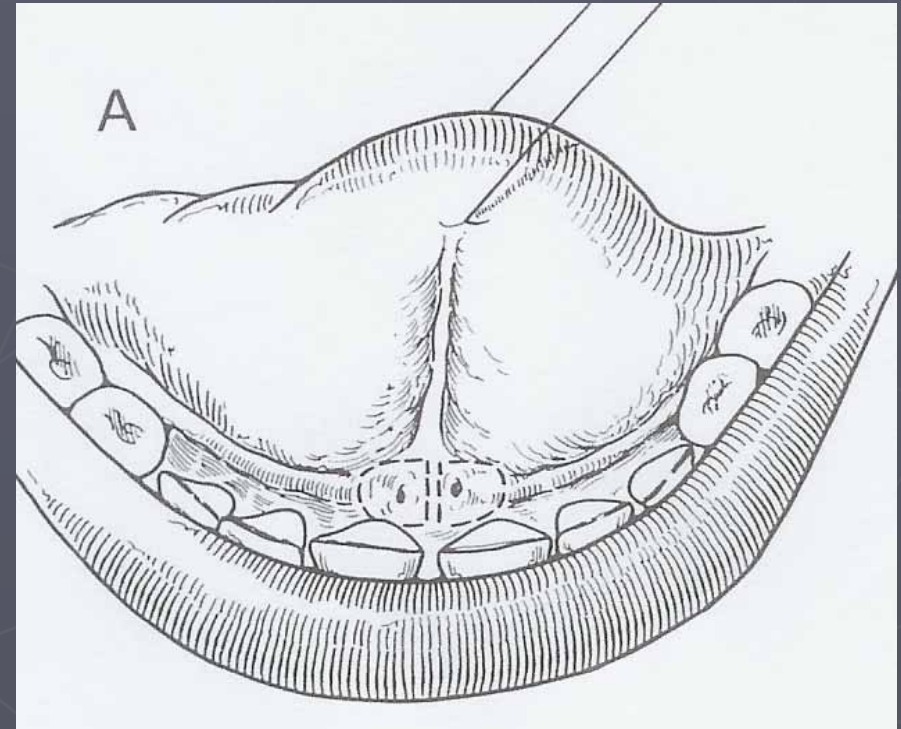
Case Presentation

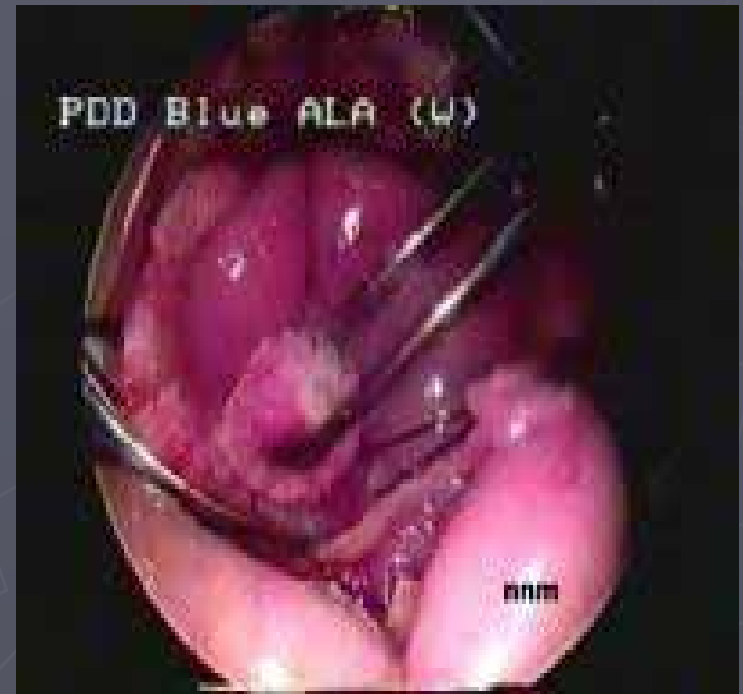
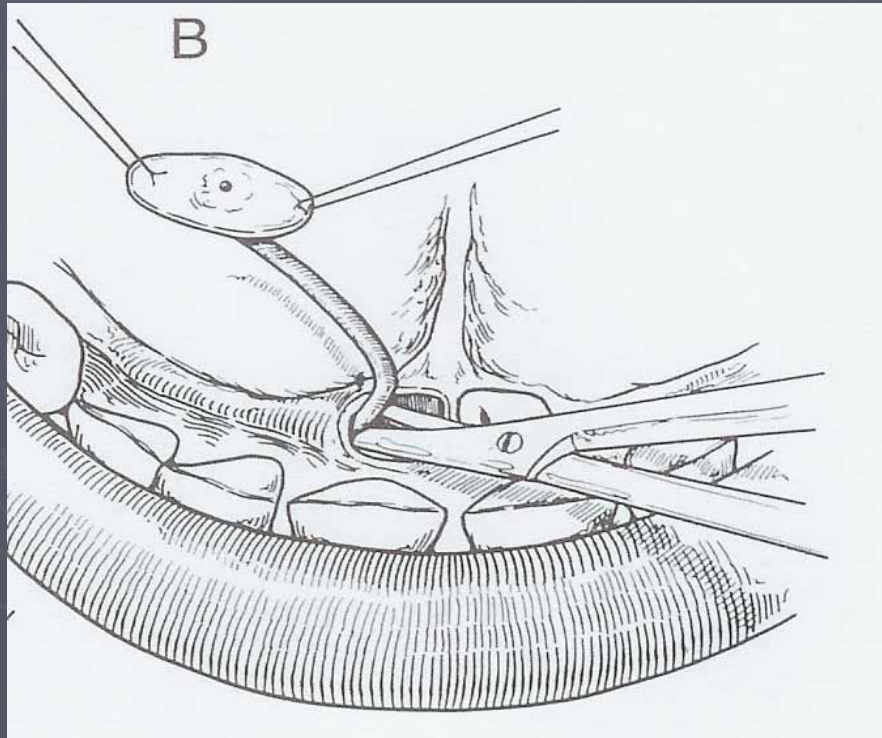
S. Mncube

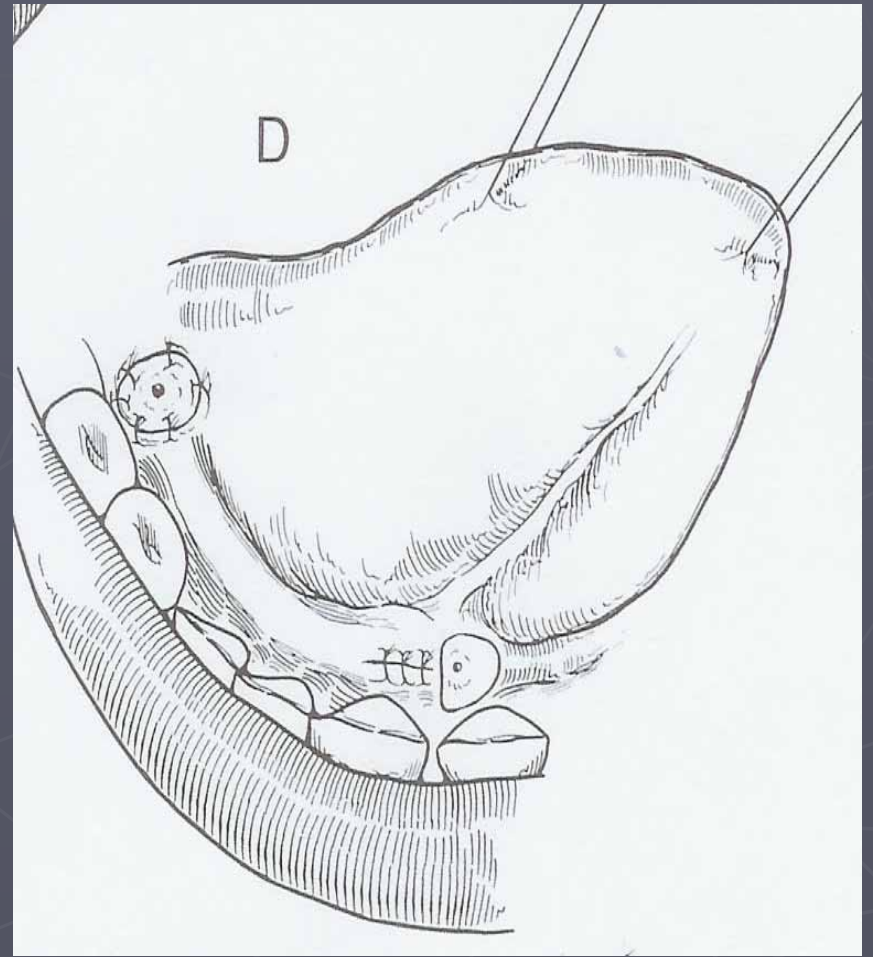
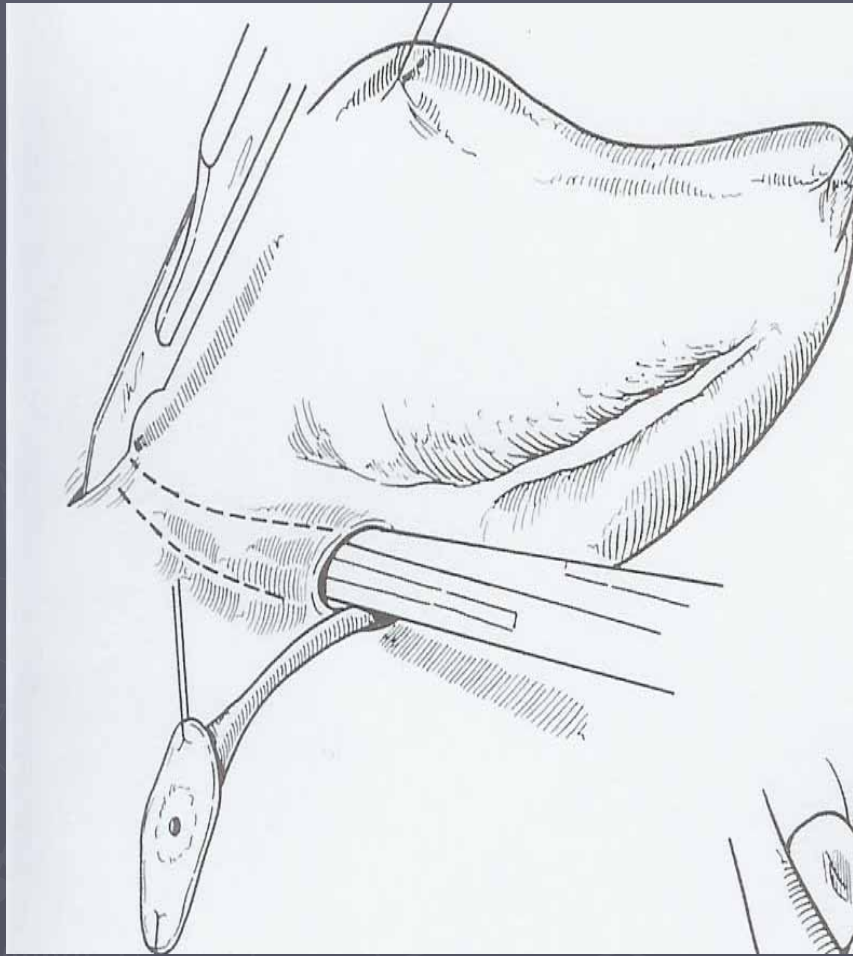
- ▶ 8 yr old boy with Cerebral palsy
- ▶ Eben Donges Feb 07
- ▶ Drooling

- ▶ 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, psychocosocial 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 Sialorrhoea

▶ 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 minute divided by 40 (the number of observations).

$$\text{DQ) (\%)} = \frac{\text{no. of drooling episodes}}{40 \text{ observation in 10 min}} \times 100\%$$

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

- ▶ A randomised trial of Bot Toxin A for treatment of drooling (Neurology 2003) Lipp, A et al

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 8weeks
- ▶ 16 weeks – significant recovery of salivary flow rate.
- ▶ Others: Both parotid and SMG

Bot tox injections for children with excessive drooling. J Child neurology 2005. Hassin-Baer et al

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

Bot. tox into salivary glands: Two children with severe CP. Arch. Phys Med Rehab. 2006. Kim et al

- ▶ 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
2002.Paed.Otolary.(2002)

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

Four Duct Ligation

- ▶ Concern re: ductal sialocoeles/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

Bilateral SMG excision and parotid duct ligation for
treatment of sialorrhoea: long term results.
Arch.Otol.HNS 2002. Stern et al

93 pts

Follow up 1-10yrs

3/93 post operative parotitis

7/93 xerostomia

15/93 increase caries

