Texas Children's Hospital®

Baylor College of Medicine

Sialorrhea: Considerations and Management

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Outline

- Basics of Salivary Flow and Sialorrhea
- Social and Medical Implications of Sialorrhea
- Pharmacologic Agents
- Botox
- Surgical Interventions

Basics of Sialorrhea

- Unintentional loss of saliva from the mouth
  - Anterior – spilling from the mouth that is clearly visible
  - Posterior – spilling posteriorly creating an aspiration risk
- Generally not due to excessive salivary secretion
  - Dysfunction of the oral phase of swallowing
  - Deficient lip closure
  - Disorganized tongue movement
  - Reduced frequency of swallowing

Effects of Sialorrhea

- Social rejection
- Constant damp and soiled clothing
- Unpleasant odor
- Irritated facial skin
- Oral and perioral infections
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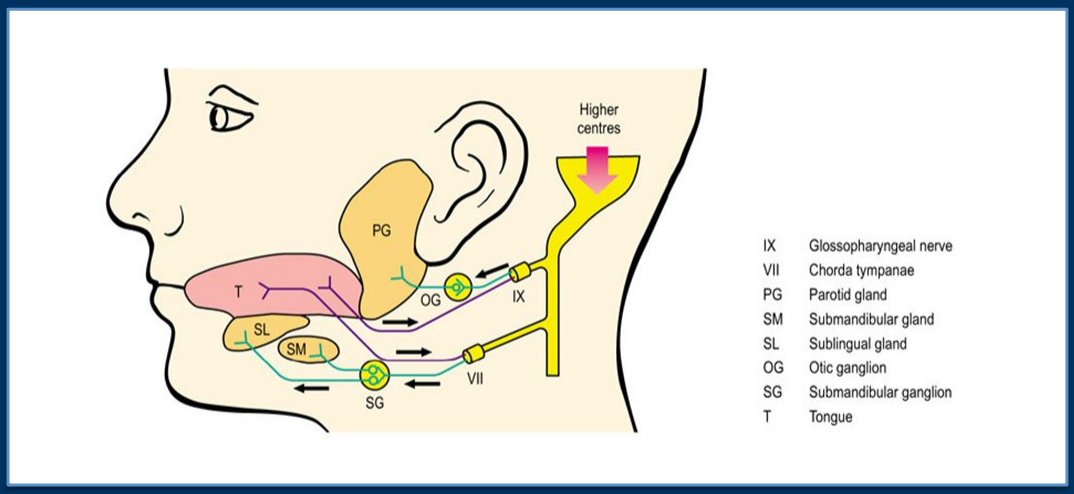
- Dehydration
- Decreased masticatory function
- Damage to books and communication devices
- Aspiration

Interventions for drooling in children with cerebral palsy.
Walshe M, Smith M, Pennington L.
Cochrane Database Syst Rev. 2012 Nov 14;11

Basics of Sialorrhea



Pharmacologic Agents

Muscarinic Anticholinergic Agents

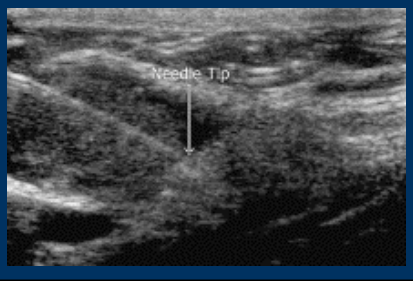
- Glycopyrrolate
- Scopolamine
- Benztropine
- Atropine

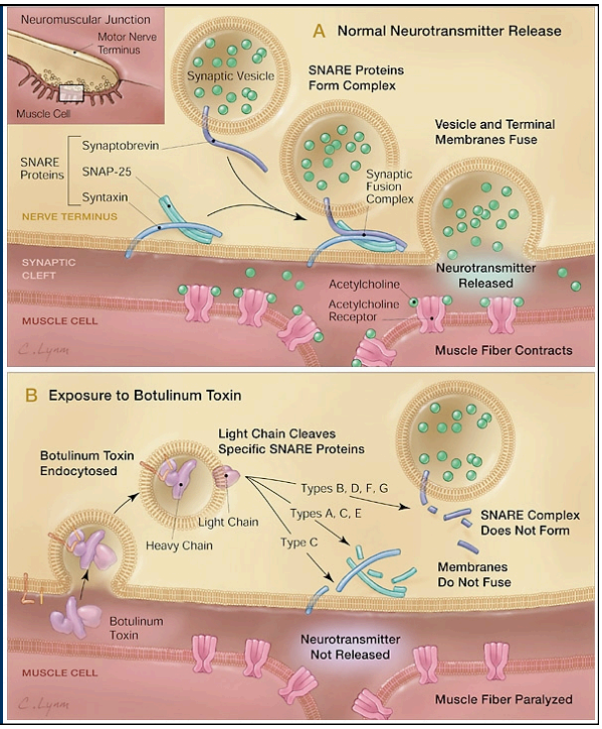
Side Effects

- Xerostomia
- Urinary retention
- Constipation
- Drowsiness
- Behavioral changes

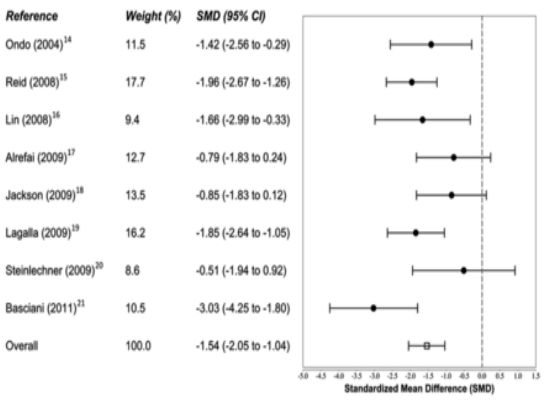
Botulinum Toxin

- Blocks presynaptic release of acetylcholine
- Reduces amount of saliva
- Generally 1U/Kg per gland
- Direct injection versus ultrasound guided





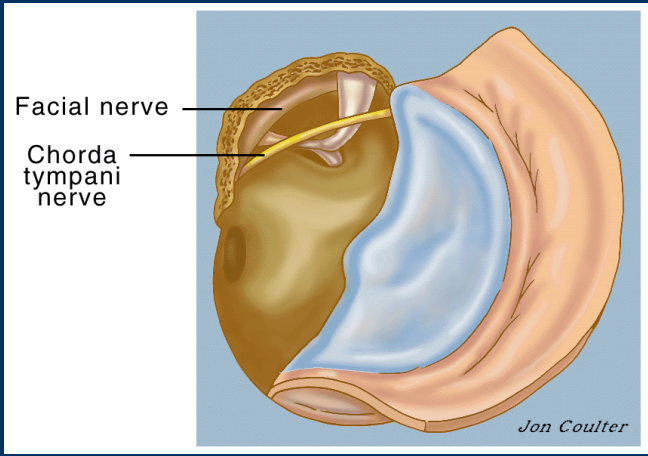
Botulinum Toxin (Botox)



Complication	Number of Events (%; N = 181)
Head and neck complications	
Increased saliva thickness	7 (3.9)
Dysphagia	6 (3.3)
Xerostomia (dry mouth)	6 (3.3)
Increased drooling (transient)	2 (1.1)
Bruxism	1 (0.6)
Burnt taste	1 (0.6)
Chin drop	1 (0.6)
Loose jaw	1 (0.6)
Neck pain	1 (0.6)
Speech problems	1 (0.6)
Other (systemic) complications	
Pneumonia	4 (2.2)
Generalized weakness	2 (1.1)
Percutaneous endoscopic gastrostomy tube placement	2 (1.1)
Shortness of breath	2 (1.1)
Worsened gait	2 (1.1)
Baclofen pump	1 (0.6)
Cardiac arrest	1 (0.6)
Chest infection	1 (0.6)
Deep venous thrombosis	1 (0.6)
Diarrhea	1 (0.6)
Nausea/emesis	1 (0.6)
Seizure (new onset)	1 (0.6)

Vashishta R, Nguyen SA, White DR, Gillespie MB.
Botulinum toxin for the treatment of sialorrhea: a meta-analysis.
Otolaryngol Head Neck Surg. 2013 Feb;148(2):191-6.

Tympanic Neurectomy



Salivary Gland Surgery

- Submandibular Duct Rerouting
- Parotid Gland Duct Rerouting
- Submandibular Gland Duct Ligation
- Parotid Gland Duct Ligation
- Submandibular Gland Excision
- Parotidectomy

Table 2. Results Summary

Characteristic	No. of Studies	Subjective Success Rate (95% Confidence Interval), %
Overall	59	81.6 (77.5-85.7)
Mean follow-up duration		
≥1 year	42	83.9 (78.6-89.1)
<1 year	17	76.6 (68.9-84.4)
Surgical procedure		
BSM duct rerouting	21	84.4 (77.7-91.1)
BSMG excision and bilateral parotid duct rerouting	8	87.8 (80.5-95.1)
BSMG duct rerouting and BSLG excision	8	71.5 (63.6-79.4)
BSMG excision and bilateral parotid duct ligation	9	85.2 (78.6-91.7)
4-Duct ligation	4	64.1 (27.6-100)

Abbreviations: BSLG, bilateral sublingual gland; BSM, bilateral submandibular; BSMG, bilateral submandibular gland.

Surgical management of drooling: a meta-analysis.
Arch Otolaryngol Head Neck Surg. 2009 Sep;135(9):924-31.
Reed J1, Mans CK, Brietzke SE.

Schema in the Management of Drooling in Children

- Review of posture and positioning
- Oral awareness and oral motor skills training (possibly also with an oral stimulation device)
- Orthodontic treatment
- Pharmacotherapy
- Botulinum toxin
- Surgery

Little SA, Kubba H, Hussain SS.An evidence-based approach to the child who drools saliva.Clin Otolaryngol. 2009 Jun;34(3):236-9.

Conclusion

- Drooling or sialorrhea is unintentional loss of saliva from the oral cavity
- There are many social and medical implications that can arise from sialorrhea/drooling
- Pharmacologic agents can have a high number of negative side effects
- Botox injection serves as a localized pharmacologic agent for drooling
- Salivary gland surgery can be effective in many patients

References

- Interventions for drooling in children with cerebral palsy. Walshe M, Smith M, Pennington L. Cochrane Database Syst Rev. 2012 Nov 14;11.
- Vashishta R, Nguyen SA, White DR, Gillespie MB. Botulinum toxin for the treatment of sialorrhea: a meta-analysis.Otolaryngol Head Neck Surg. 2013 Feb;148(2):191-6.
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