Teaching Courses
BOTULINUM TOXIN WORKSHOP TC 13

CORDILLERA – 1 Date: SUNDAY, NOVEMBER 1, 2015 From: 14:00 To: 17:30

Co-Chair: Pedro Chana, Chile

Co-Chair: Daniel Truong, USA

14:00 - 15:30 APPLICATION OF BOTULINUM TOXIN IN NONDYSTONIC DISORDERS
Invited Speaker: Daniel Truong, USA

15:30 - 17:00 OROMANDIULAR DYSTONIA AND SPASMODIC DYSPHONIA
Invited Speaker: Pedro Chana, Chile

17:00 - 17:30 DISCUSSION

OROMANDIBULAR DYSTONIA AND SPASMODIC DYSPHONIA

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UNIVERSIDAD DE SANTIAGO

CHILE

World Congress of Neurology , Santiago, Chile
BOTULINUM TOXIN WORKSHOP TC 13
CORDILLERA – 1 Date: SUNDAY, NOVEMBER 1, 2015 From: 14:00 To: 17:30

Faculty Disclosure

No, nothing to disclose

OROMANDIULAR DYSTONIA
Definition

Is focal dystonia involving the masticatory, lower facial, and tongue muscles and producing spasms and jaw deviation.

The differential diagnosis of tonic spasms included tetanus, trauma, hysteria, brain stem lesions, and hypothermia. Convulsions, rigors, paralysis agitans, facial pain, and chorea were recognized as causes of clonic spasms.

OROMANDIULAR DYSTONIA Epidemiology

Type of focal dystonia	Total no. of cases	F:M ratio
CD	2634	1.5
SD	1411	2.0
BL	739	2.0
UL	296	0.6
oromandibular dystonia	37	3.1

Adapted Movement Disorders Special Issue: Advances in Dystonia Volume 28, Issue 7, pages 926–943, 15 June 2013

OROMANDIULAR DYSTONIA Etiology

	Number case	%
Primary	11	44
Neurodegenerative diseases (Parkinson disease, Huntington disease, other)	9	36
Secondary neuroleptic	3	12
Functional	2	8

January 2014 to Oct. 2015 CETRAM

Muscles possibly involved

Masseter

Temporalis

Orbicularis oris

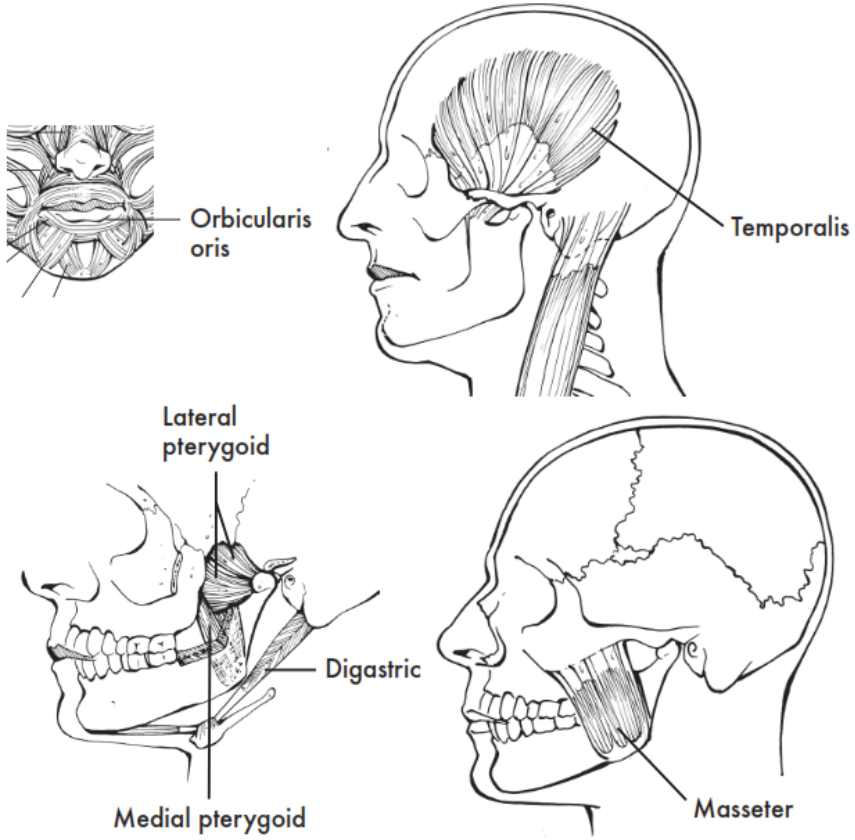
Medial pterygoid

Lateral pterygoid

Digastric

Geniohyoid

Mylohyoid

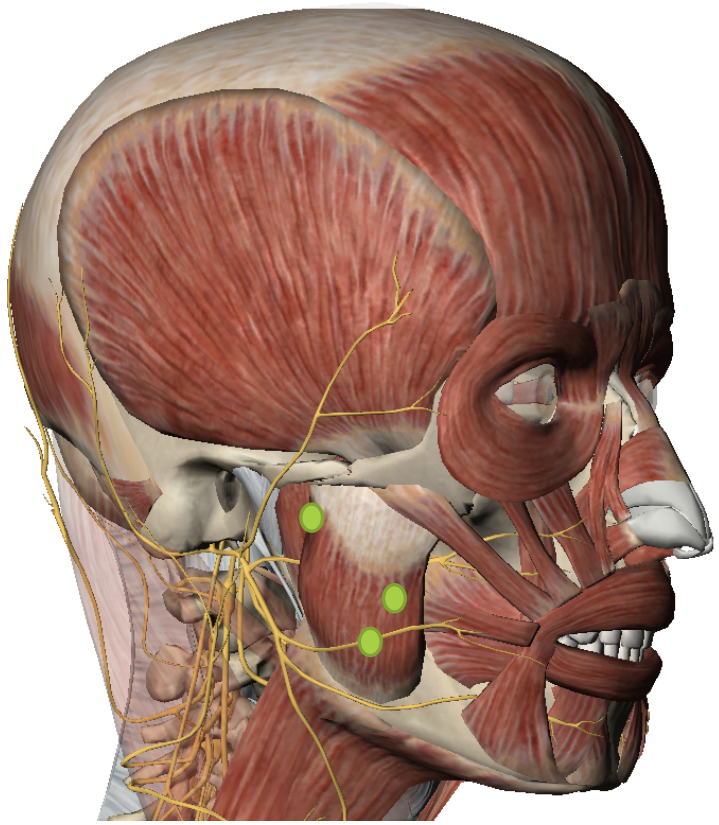


Masseter muscle

Function

Close the jaw by elevating the mandible

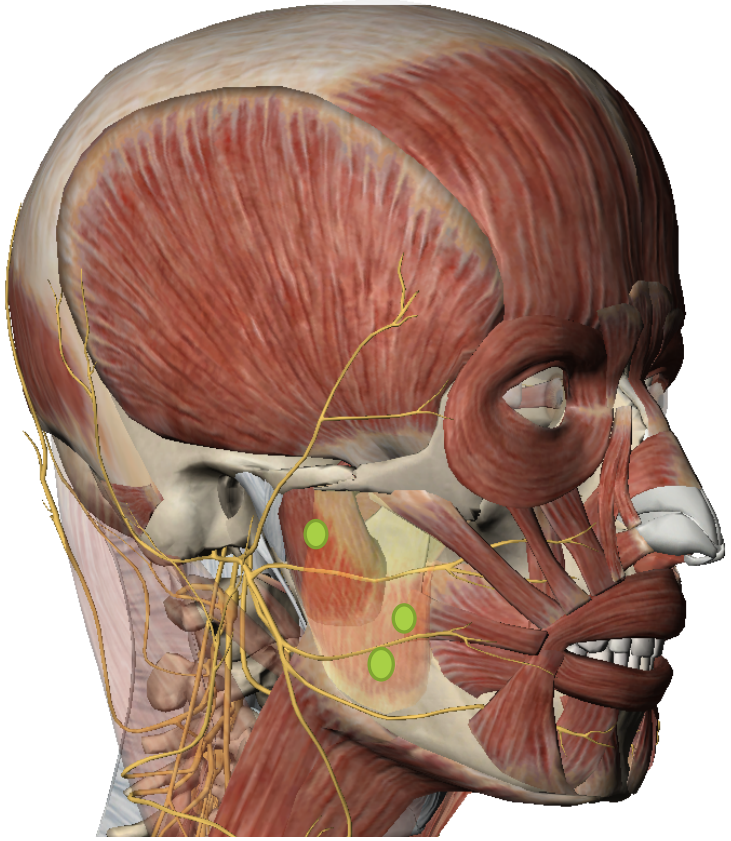
Electromyographic guidance is optional



- The sign denotes approximate injection site.

Masseter muscle

The masseter is a thick quadrilateral muscle consisting of three parts, superficial, intermediate, and deep, which arise from the zygomatic arch and insert into the angle and the lateral surface of the ramus of the mandible

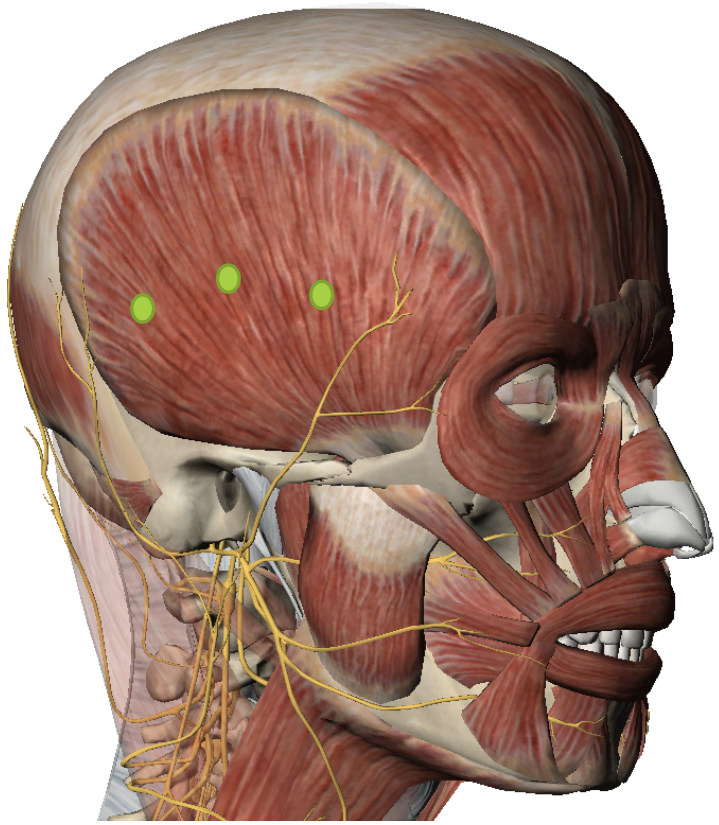


- The sign denotes approximate injection site.

Temporalis muscle

Function
Close the jaw
Posterior fibers retract the mandible
Move jaw to the same side

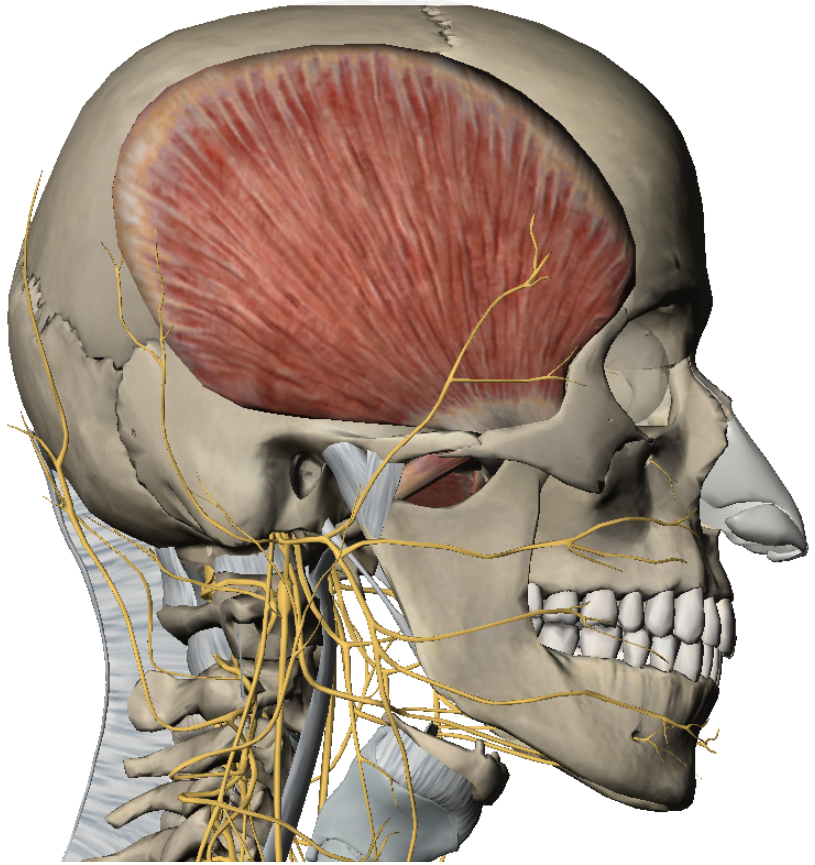
Electromyographic guidance is optional



- The sign denotes approximate injection site.

Lateral pterygoid muscle

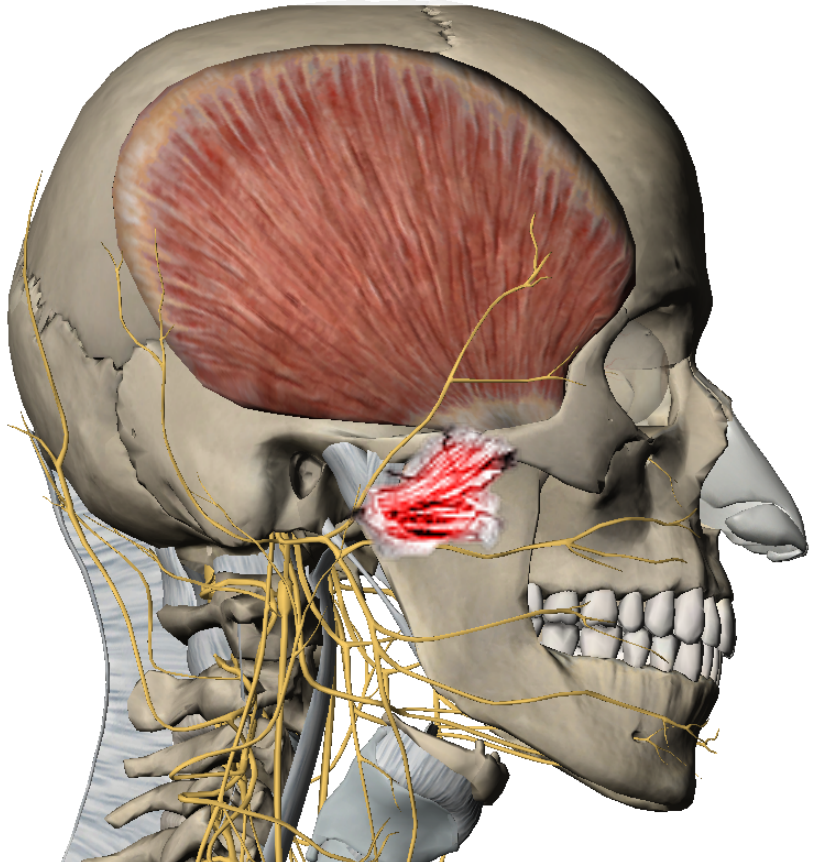
Function
Open the mouth
Protrude the jaw
Move the jaw to the opposite side



Lateral pterygoid muscle

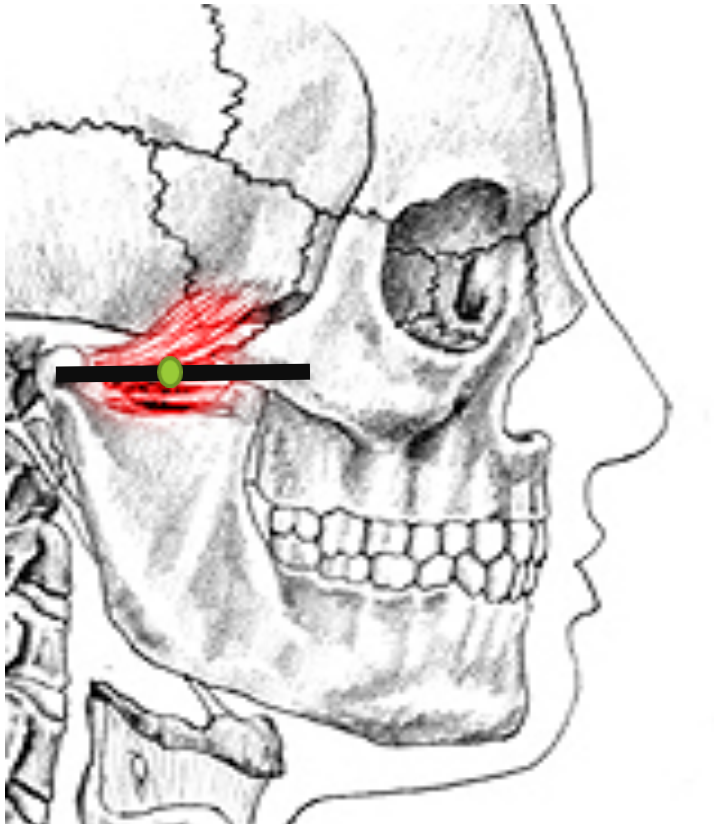
Function
Open the mouth
Protrude the jaw
Move the jaw to the opposite side

Electromyographic guidance is necessary



- The sign denotes approximate injection site.

Lateral pterygoid muscle percutaneous injection

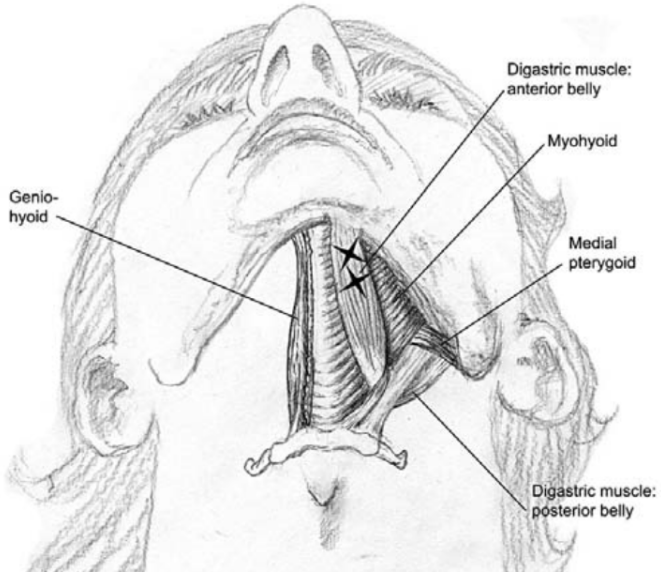


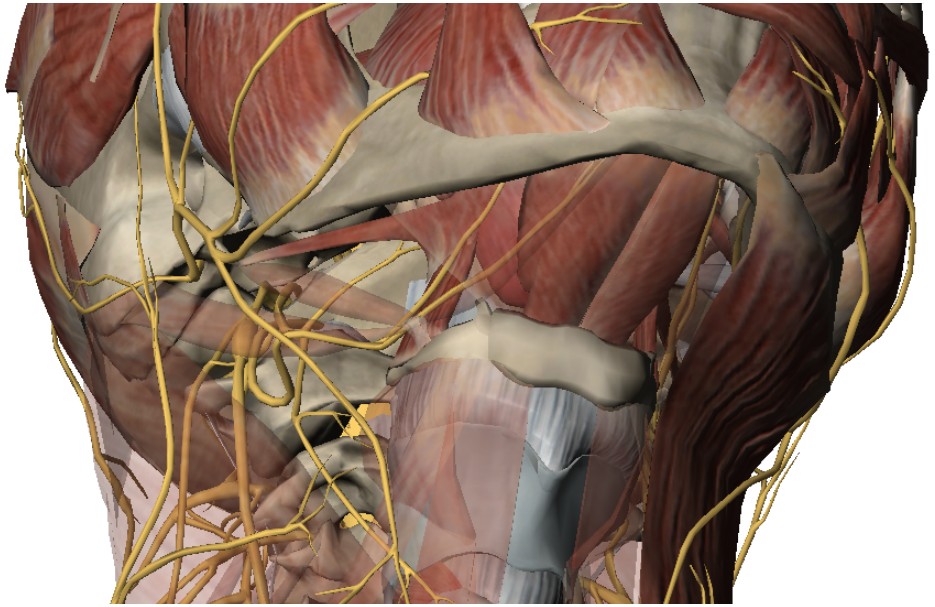
Sub mental complex muscles

Digastric
- Open the jaw
- Elevate the hyoid bone

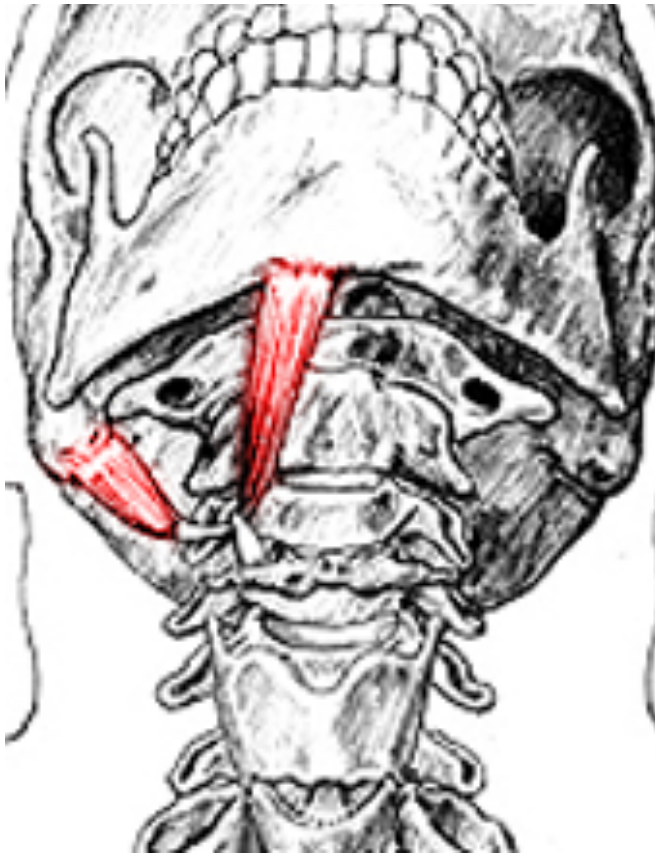
Mylohyoid
- Open the jaw
- Raise the floor of the mouth

Geniohyoid
- Open the jaw
- Elevate and draw hyoid bone forward





Digastric muscle



Oromandibular Dystonia Dosing Ranges

Muscle	Botox (BTX-A) units	
Masseter	40 per side (25–100)	
Temporalis	40 per side (20–60)	
Anterior digastric, geniohyoid, mylohyoid	10 (10–200)	
Medial pterygoid	15 (15–50)	very infrequently injected
Lateral pterygoid	40 (20–100)	

Dilution 100 U/1–2 cc Dispensed in 1 cc siringes
Needle 30 G, 0.5 in to 27 G, 37 mm

MDVU. MD Virtual University. We Move. Adult Dosing Guidelines. Management of Dystonia with Botulinum Toxin Type A (Botox). Edition 2.0. Revised August 2005.

Subtypes of oromandibular dystonia

Jaw-closing oromandibular dystonia

Jaw-opening oromandibular dystonia

Jaw-deviating oromandibular dystonia

Lingual oromandibular dystonia

Pharyngeal oromandibular dystonia

Jaw-closing oromandibular dystonia

Muscle involved	OnabotulinumtoxinA (Botox)	AbobotulinumtoxinA (Dysport)
Temporalis	25 – 50 UI	100- 400 UI
Masseter	25 – 50 UI	100 -200 UI
Medial pterygoid	25 – 100 UI	100 -400 UI

Jaw-opening oromandibular dystonia

Muscle involved	OnabotulinumtoxinA (Botox)	AbobotulinumtoxinA (Dysport)
Sub mental complex	5 – 20 UI	20- 80 UI
Lateral pterygoid	25 – 100 UI	100 -100 UI

Jaw-deviating oromandibular dystonia

Muscle involved	OnabotulinumtoxinA (Botox)	AbobotulinumtoxinA (Dysport)
Contralateral lateral pterygoid	25 – 100 UI	100 -400 UI
Contralateral medial pterygoid	25 – 100 UI	100 -400 UI

Lingual oromandibular dystonia
Tongue protrusion or deviation dystonia

Muscle involved	OnabotulinumtoxinA (Botox)	AbobotulinumtoxinA (Dysport)
Genioglossus	10 – 50 UI	40 -200 UI

The main danger with injecting the genioglossus and overweakening it is pharyngeal airway obstruction especially during sleep.

Lingual oromandibular dystonia

submandibular approach to inject BTX-A in the left genioglossus muscle using EMG guidance.

Parkinsonism and Related Disorders 16 (2010) 438e441

Lingual oromandibular dystonia Submandibular approach

Case: diagnosis	Maximum genioglossus BTX-A® dose (units-each)	BTX-A® response	BTX-A® side effects	Average duration response (wks)	Total # of genioglossus injections	Average # weeks between injections
1: Primary cranial	7.5	Excellent	None (4)	17.25	4	9.25
2: Primary cranial	15	Excellent	Severe dysphagia (1), none (2)	18.5	3	10
3: Primary cranial	10	Mild (3), moderate (8), excellent (45)	Mild dysarthria (1), mild dysphagia (1), none (54)	10.9	56	12
6: Primary generalized	5	None	Mild-to-moderate dysphagia (1)	N/A	1	14
8: Tardive	5	Excellent	None (6), facial bruise (1)	15	7	15.5
9: Tardive	25	Mild (1), moderate (2), none (4)	Mild dry mouth (2), none (5)	4.3	7	9
10: Tardive	10	None	None (2)	N/A	2	N/A
15: Heredodegenerative	12.5	Excellent	Mild dysphagia (3), moderate dysphagia (1)	N/A	4	N/A
16: Multifactorial	30	Mild	None (5)	1.5	5	6.25

Parkinsonism and Related Disorders 16 (2010) 438e441

Oromandibular dystonia Botulinum Toxin Treatment

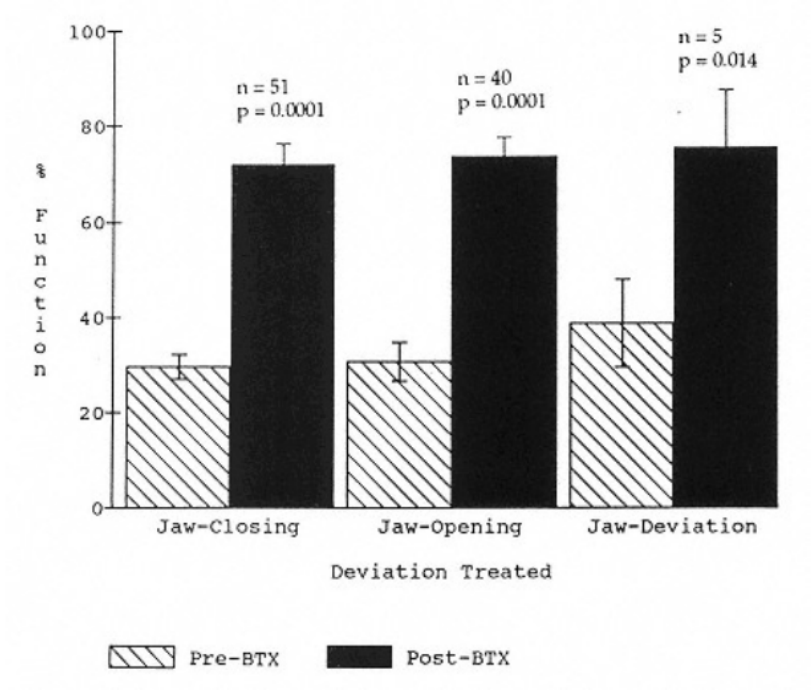


Figure 1
Percent of normal function in patients with oromandibular dystonia before and after treatment with botulinum toxin type A.

32 Oromandibular Dystonia: Treatment of 96 Patients with Botulinum Toxin Type A

Mitchell F. Brin, Andrew Blitzer, Susan Herman, and Celia Stewart

Columbia University College of Physicians and Surgeons, New York, New York

Therapy with Botulinum Toxin edited by Joseph Jankovic and Mark Hallett

Oromandibular dystonia
Botulinum toxin: complications

Table 4 *Botulinum toxin: complications*

Variable	Data
n (%)	51 (31.5)
No. of visits with complications (%)	135 (11.1)
Types of complications, no. of patients/no. of visits	
Dysphagia	44/124
Dysarthria	7/11
Facial swelling	2/2
Difficulty chewing	2/2
Other	15/16
Types of disabling complications, no. of patients/no. of visits	
Dysphagia	5/6
Duration of adverse symptoms, d; mean ± SD (range)	9.3 ± 17.5 (1±90)

NEUROLOGY 1999;53:2102±2107

Oromandibular dystonia Adverse Effects

Deviation	N	Total number of treatment visits	Visits with adverse effects[a] (% visits)	Patients with adverse effects (% group)
Jaw closing	51	290	12 (4.1)	6 (11.8)
Jaw opening	40	172	17 (9.9)	7 (17.5)
Jaw deviation	5	19	0	0

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SPASMODIC DYSPHONIA Definition

- Spasmodic dysphonia is a focal dystonia characterized by task-specific, action-induced spasm of the vocal cords. It adversely affects the patient's ability to communicate. It can occur independently, as part of cranial dystonia (Meige's syndrome), or in other disorders such as in tardive dyskinesia.

- is a rare disorder, with an estimated incidence of 1 case per 100,000 (10). The true incidence of the disorder may be greater, because the diagnosis is often missed. Because of its Spasmodic Dysphonia heterogeneous presentation and paucity of expert laryngeal clinicians, epidemiological data, such as age of onset, race and ethnic prevalence, regional variation, and risk factors, have been difficult to assess.

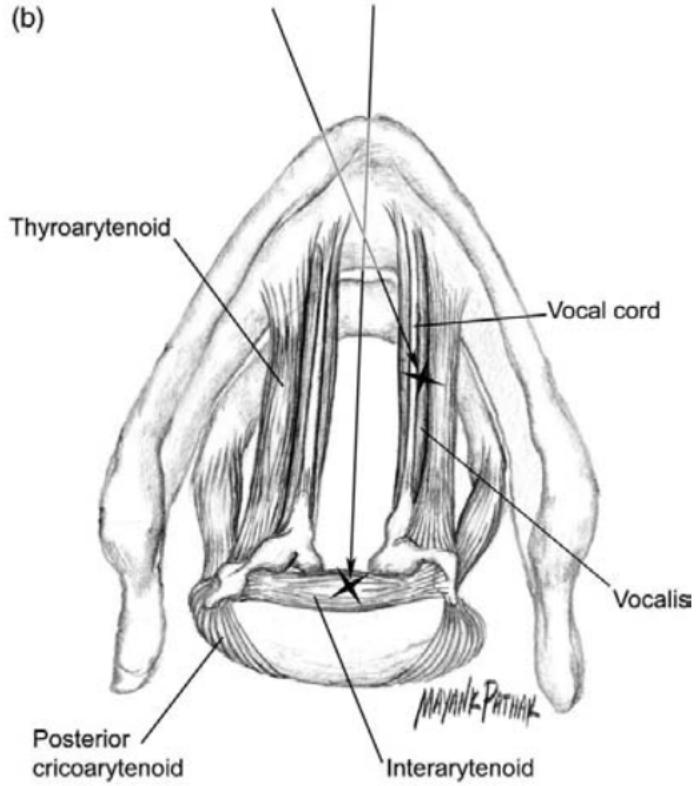
SPASMODIC DYSPHONIA Subtypes

- Adductor spasmodic dysphonia is characterized by a strained-strangled voice quality and intermittent voice stoppage or breaks due to overadduction of the vocal folds, resulting in a staccato-like voice.
- Abductor spasmodic dysphonia is characterized by intermittent breathy breaks, associated with prolonged abduction folds during voiceless consonants in speech.
- Mixed type.

SPASMODIC DYSPHONIA
Adductor spasmodic dysphonia

- Botulinum toxin
  - double-blind study
  - 97% improvement in voice

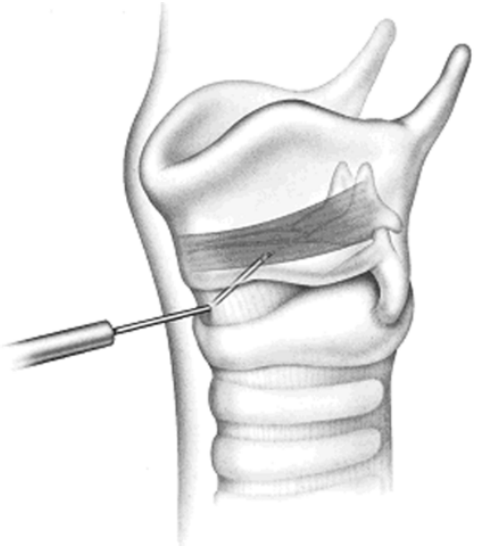
Muscles injected with botulinum toxin is thyroarytenoid muscles mostly injection

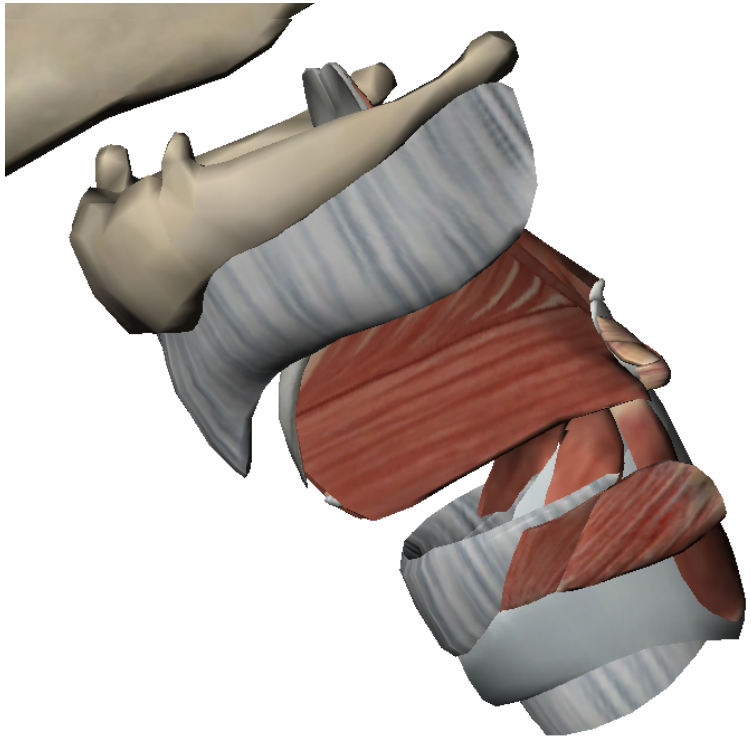


SPASMODIC DYSPHONIA
Adductor spasmodic dysphonia

- Injection techniques
  - Percutaneous (Miller et al.,1987)
  - Transoral (Ford et al., 1990)
  - Transnasal (Rhew et al., 1994)
  - Touch injections (Green et al., 1992).

Adductor spasmodic dysphonia
Thyroarytenoid muscles
Percutaneous approach

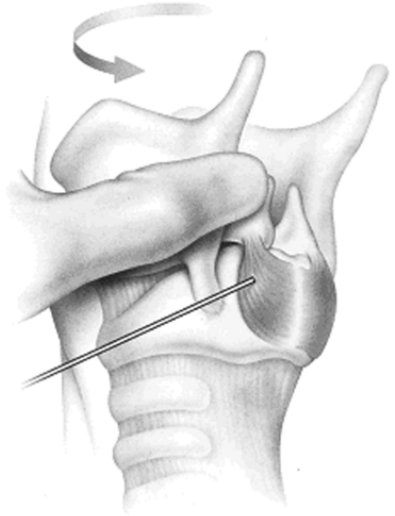


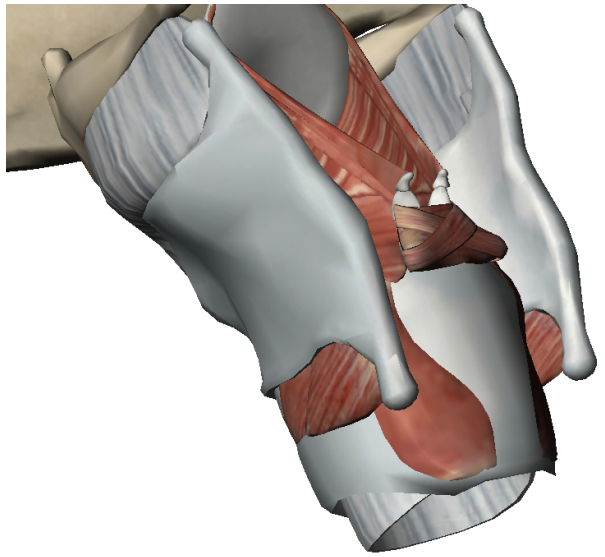


Sulica L, Blitzer A. Botulinum toxin treatment of spasmodic dysphonia. Op Tech Otolaryngol Head Neck Surg 2004;15:76–80.

Abductor spasmodic dysphonia Posterior cricoarytenoid muscle Percutaneous approach

Laryngeal rotation technique for botulinum toxin injection to the posterior cricoarytenoid muscle for abductor spasmodic dysphonia.





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SPASMODIC DYSPHONIA
Botulinum Toxin Treatment

TABLE II.
Botulinum Toxin Treatment.

Laryngeal Spasms	No.	Visits (n)	Dose Injection Per Session	Onset of Effect (d)	Peak Effect (d)	Duration Benefit (w)	Percent of Normal Function		
							Initial	Final	Final –Initial
Adductor	639	4621	3.096 ± 3.1 (.005–30)	2.4 ± 4.3	9.0 ± 12.7	15.1 ± 12.3	52.4 ± 22.0	89.7 ± 13.0	37.3 ± 20.7
Abductor	108	840	2.163 ± 1.07 (0.5–6.25)	4.1 ± 5.5	10.0 ± 12.5	10.5 ± 12.2	54.8 ± 21.9	66.7 ± 23.4	16.3 ± 11.7

The Laryngoscope
Volume 108, Issue 10, pages 1435–1441, October 1998

SPASMODIC DYSPHONIA
Adverse Effects

Breathiness

Choking

mild swallowing difficulty

(Truong et al., 1991; Brin et al., 1998).

Gracias….