

# Alleviating Maneuvers (Sensory Tricks) in Cervical Dystonia

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## BACKGROUND

- ❖ Dystonia encompasses a broad range of movements defined as sustained, patterned involuntary muscle contractions causing twisting and abnormal posture<sup>1-3</sup>.
- ❖ Individuals with dystonia often adopt a variety of alleviating maneuvers (AM), otherwise known as the sensory trick or *geste antagoniste*.
- ❖ This AM has traditionally been used to describe a light touch to an area of the body which improves the abnormal posture.
- ❖ There are few studies describing the phenomenology of AM primarily in cervical dystonia (CD) and blepharospasm<sup>4-7</sup>.
- ❖ However these studies were performed in a single center describing a small number of patients.

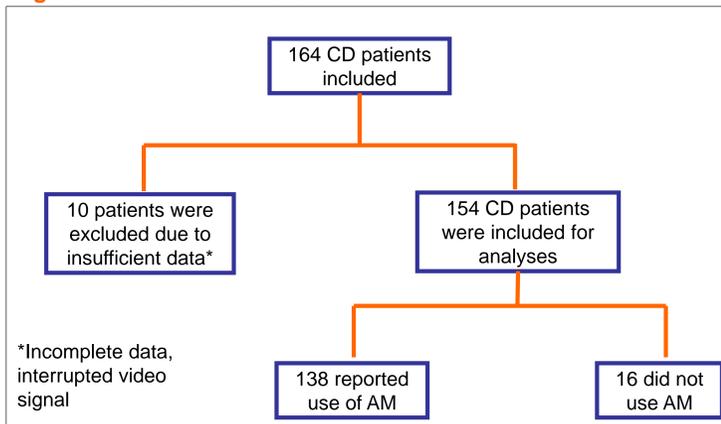
## OBJECTIVES

- ❖ To determine the demographic and clinical differences between patients with and without AM, in a large multicenter cohort of patients with cervical dystonia (CD) enrolled in the Dystonia Coalition registry

## METHODS

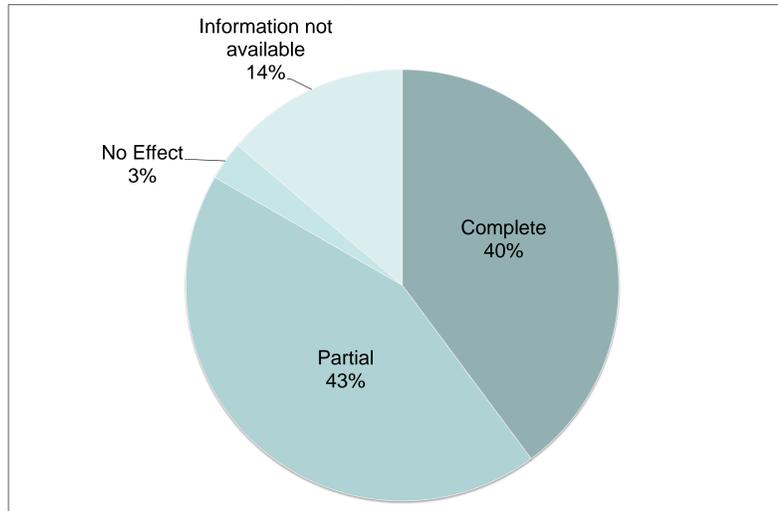
- ❖ This is an institutional review board approved retrospective study
- ❖ We analyzed the data collected from 164 cervical dystonia patients enrolled in 9 sites in the Project 2 arm of the Dystonia Coalition project (<http://clinicaltrials.gov/show/NCT01373424>) by November 2012.
- ❖ CD with effective AM, defined as partial or complete improvement of the abnormal posture, were compared to CD patients without effective AM on demographic and neurologic features and psychiatric diagnoses.
- ❖ Details regarding localization and phenomenology of effective ST and degree of improvement were collected initial data collection:
  - Demographic variables
  - Global Dystonia Rating Scale (GDRS)
  - Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS)
- ❖ Systematic review of standardized video examinations for descriptive details of AM:
  - Site and characteristics of AM
  - Degree effectiveness
- ❖ Analyses used t-test or exact Pearson chi-square tests (for nominal outcomes).

Figure 1: Inclusion Criteria



## RESULTS

Figure 2: Effects of Alleviating Maneuver on CD (n=138)



Data was collected through systematic review of video examination by a single examiner. Results may vary from the original data captured at enrollment of the subject.

Table 1: Demographics and Symptom Severity

	Used AM (n = 138)	Did Not Use AM (n = 16)	Test of Difference
Age (years)	59.8 ± 10.6 (29-83)	59.7 ± 10.5 (43-77)	P = 0.98
Duration of dystonia (years)	15.3 ± 11.4 (0-60)	11.3 ± 7.5 (2-27)	P = 0.08*
GDRS (total score)	9.0 ± 5.7 (1-37)	5.9 ± 4.2 (0-13)	P = 0.05**
TWSTRS (total score)	16.3 ± 5.7 (1-29)	13.8 ± 5.9 (4-23)	P = 0.11*
Psychiatric Conditions:			P = 0.42
Present	48 (37%)	4 (25%)	
Absent	83 (63%)	12 (75%)	

\*\* statistically significant for unadjusted variables.

\* Trend towards significance for unadjusted variables

Table 2: Locations and Characteristics of AM

	Upper Face (n = 16)	Lower Face (n = 77)	Chin (n=61)	Posterior Neck (n = 46)	Shoulder (n = 2)
Ipsilateral, LT	13	59	48	29	1
Ipsilateral, FT	1	4	4	3	0
Ipsilateral, UT	2	4	2	5	0
Contralateral, LT	0	6	3	2	0
Contralateral, FT	0	0	0	0	0
Contralateral, UT	0	0	0	0	0
Bilateral, LT	0	4	4	4	0
Bilateral, FT	0	0	0	3	1
Bilateral, UT	0	0	0	0	0

LT= Light touch a gentle touch to improve dystonic posture; FT= forceful touch a forceful pressure applied to improve dystonic posture; URT= unrated touch, ipsilateral= hand touching same side of body; contralateral= hand crossing midline to touch opposite side of the body, bilateral= 2 hands touching body. Data collected through systematic review of videotaped neurological examinations. Some patients demonstrated effective tricks in multiple locations.

## RESULTS (continued...)

- ❖ Patients with AM had significantly higher GDRS total scores compared to patients who did not use ST (p=0.05)
- ❖ However, after adjustment for age, duration of dystonia and presence of psychiatric conditions using multiple linear regression analysis comparing the AM vs. non-AM group.
  - There was no significant difference in GDRS scores (p= 0.13)
  - There was no significant difference in TWSTRS total scores (p= 0.37).

## DISCUSSION

- ❖ To our knowledge this is the largest cohort of patients describing the characteristics of AMs that were systematically determined through clinical examination.
- ❖ Limitations to this study include:
  - Retrospective nature of data review
  - Variability in videotaped demonstrations of AM between centers.
- ❖ The presence of improvement with “forceful touch” demonstrates that the AM benefits may also be present with motor input.
- ❖ Our findings are similar to others in that the benefits of AM may be earlier in the course of the disease<sup>9</sup>.
- ❖ Abnormalities in proprioceptive, spatial and temporal sensory discrimination have been identified<sup>10-11</sup>.
- ❖ In patients with CD a two-phase model in which abnormal head posture is first normalized by counter pressure or volitional antagonistic muscle activity after which the position is stabilized by sensory input<sup>12</sup>.
- ❖ The presence of the AM supports emerging theories that dystonia is a disorder of sensorimotor integration<sup>13-15</sup>.

## CONCLUSION

- ❖ This this is the largest cohort of patients in whom the characteristics of AMs were systemically determined through standardized clinical evaluations and videos.
- ❖ We propose that “alleviating maneuver” is a more appropriate term for the phenomenon that was previously referred to as the “sensory trick”.
- ❖ Future studies should directed towards:
  - Further clarification of the pathophysiological mechanism of the AM
  - Therapeutic strategies that utilize the benefits of the AM

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