

# Improvement in Camptocormia following Botulinum toxin injection to the External Oblique Muscle

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## INTRODUCTION

- Camptocormia, also referred to as “bent spine syndrome,” is characterized by an abnormal posture of the trunk with marked flexion of the thoraco-lumbar spine (>45 degrees), which increases during walking and abates in the recumbent position(1).
- Camptocormia can be due to Parkinson disease (PD), dystonia, lesions in the lenticular nucleus or neuromuscular disorders(1-3).
- The exact pathogenesis of camptocormia in PD is not clear but potential etiologies include dystonia, myopathy, and disproportionate rigidity.
- Improvement of dystonic camptocormia following onabotulinumtoxin-A(BTX) injections to rectus abdominis (RA) is well established(3) and response to iliopsoas BTX injection have also been previously reported(4).
- We describe a case of camptocormia refractory to BTX injection to the bilateral RA muscles, but which responded well to external oblique (EO) muscle and RA injection.

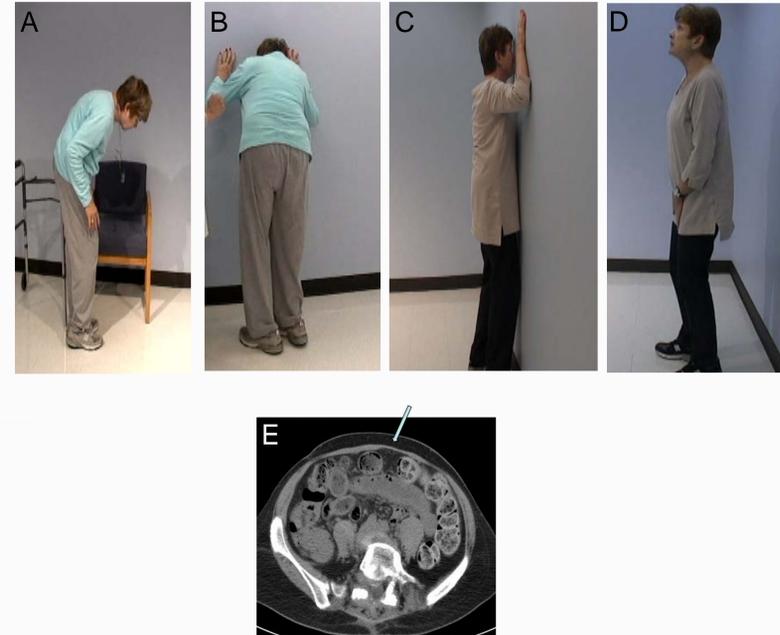
## CASE REPORT

- A 66 year old woman with PD for 7 years presented with camptocormia of two years duration with painful abdominal contractions. In the past she had a left Transverse Rectus Abdominis Myocutaneous (TRAM) flap procedure for breast reconstruction.
- Her medications at the time of initial evaluation were pramipexole 0.5 MG tab 1 tab tid and benzotropine 0.5 MG tab 1 bid.
- Baseline examination was remarkable for scoliosis and 45-degree forward flexion of the spine and MDS-UPDRS-III of 64. There were palpable abdominal contractions when standing and she could not lie flat on her back (Figure A & B).
- Camptocormia did not improve with sensory tricks. Benzotropine was discontinued and carbidopa/levodopa 25/100 mg tab 2 tabs tid was added prior to the first injections. Parkinsonism improved but painful abdominal contractions did not. Adjunctive onabotulinumtoxin-A(BTX) injections were performed.

## RESULTS

- 200 units of BTX were injected under EMG guidance to each RA muscle. EMG activity during voluntary contraction of the RA was robust on the right and minimal on the left.
- 8 weeks later, there was marked reduction in right but not left abdominal painful contractions and limited improvement in posture with medications “on”.

## RESULTS Cont.



A-B - Camptocormia prior to carbidopa/levodopa and BTX injections and (B)- Showing difficulty in “climbing the wall”  
C- After 4 sessions of BTX injections she is able to “climb the wall” with ease and (D) stand straight with a sensory trick by placing the palms on either thighs.  
E- CT Abdominal showing a thin left rectus abdominis muscle on the left due to surgical excision

- CT scan of the abdomen 7 weeks after BTX injection confirmed surgical excision of the left RA, which measured 2-6 mm in thickness, compared to 6-9mm on the right (Figure E).
- Subsequent EMG guided BTX injection revealed marked muscle activity of the left EO muscle. An injection of 200 units to the left EO and 200 units to the right RA resulted in more robust improvement in painful contractions and posture. Compensated truncal flexion “on” medications was 20 degrees, she could lie flat on the exam table, and could stand erect with a sensory trick(Figure C & D).
- She continued to experience motor fluctuations related to PD medications, with worsening of painful contractions and posture when “off”, though never to her pre-BTX severity. Medications were increased to pramipexole 0.75mg – 0.75mg – 0.5mg – 0.5mg, and , carbidopa-levodopa 25-100 MG, 3 tabs qid.
- She has received 4 sessions of BTX injections (q3mos) to date. Her last MDS-UPDRS-III ON score was 8, with 15-20 degrees of camptocormia during unassisted ambulation. MDS-UPDRS-III OFF was 26 with 30 degrees of camptocormia.

## DISCUSSION

- Camptocormia can be the most disabling symptom in PD, as in our patient.
- In this case, a dystonic etiology for the camptocormia was suggested by the patient's description of painful abdominal contractions with subjective sensation of being pulled down, tightness of the abdominal muscles on palpation and response to sensory tricks.
- Camptocormia fluctuated with medication state but pain and posture remained insufficiently controlled, requiring BTX injections.
- Dystonic camptocormia is usually treated with BTX injections to the bilateral RA muscles. However, the EO muscles also function to pull the chest downwards and compress the abdominal cavity.
- The robust improvement in camptocormia following combined BTX injection to the left EO and right RA muscles suggests that that EO muscle contraction contributed substantially to the overall camptocormia.

## CONCLUSION

- EO muscle injections could be considered in cases of dystonic camptocormia refractory to usual RA injections.

## REFERENCES

1. Azher SN, Jankovic J. Camptocormia: Pathogenesis, classification, and response to therapy. *Neurology* 2005;65:355-359.
2. Revuelta GJ. Anterocollis and camptocormia in parkinsonism: A current assessment. *Current neurology and neuroscience reports* 2012;12:386-391.
3. Finsterer J, Strobl W. Presentation, etiology, diagnosis, and management of camptocormia. *European neurology* 2010;64:1-8.
4. Colosimo C, Salvatori FM. Injection of the iliopsoas muscle with botulinum toxin in camptocormia. *Mov Disord.* 2009 Jan 30;24(2):316-7.

