

Cervical Syringomyelia Over 1 Year After Multilevel Facet Injection: A Case Report

Nicole Hatchard, B.S., Ronald Lincow D.O.

Philadelphia College of Osteopathic Medicine, Philadelphia, PA

ABSTRACT

Cervical syringomyelia has been reported as a complication shortly after facet injections. Literature on patients presenting with cervical syringomyelia occurring over a year after multilevel injections are rare.^{1,2} The objective of this clinical case report is to highlight the consideration of cervical syrinx complication over a year after injection procedures are completed. We report the case of a 67-year-old female who presents with ongoing left arm weakness due to a cervical syrinx from C3 to C6 on MRI 21 months after a complicated bilateral intra-articular cervical facet injection. The patient had anterior cervical fusion from C5-C7 and posterior fusion from C3 to C5 prior to this facet injection. She had a past medical history of chronic back and neck pain, lumbar post laminectomy syndrome, stroke, hypertension, emphysema and past surgical history of lumbar fusion, cervical fusion, epidural injections, and right rotator cuff surgery. A 22-gauge 3.5-inch Quincke-point spinal needle was advanced from a posterior approach into the facet joints at C3-4, C4-5, C5-6 bilaterally under fluoroscopic guidance. 4 ml of 0.25% Bupivacaine and 2 ml of 6 mg/ml of Betamethasone were injected at each level bilaterally. Three days after the procedure at the follow-up appointment the patient presented with left arm weakness and was diagnosed with a brachial plexus injury which slowly improved and then began to decline again. Electromyography revealed severe C5-6 radiculopathy on the left side. Magnetic resonance imaging of the spine revealed cervical spinal syrinx extending from C3-4 to C5-6 to the left of midline. There are many variables that factor into this post traumatic syrinx.^{1,2} It is important to consider delayed cervical syrinx manifestation on imaging after multilevel cervical facet injections in a patient with previous cervical fusion rather than brachial plexopathy. Clinicians must minimize risk factors and optimize diagnostic imaging and study techniques in determining origin of new onset upper extremity weakness after bilateral cervical intra-articular joint injections in patients with a history of cervical fusion.

DIAGNOSTIC TESTS AND IMAGING

Nerve	Patient	Normal ³
Left Median Motor Nerve Latency:	5.2ms	<4.5ms
Left Median Motor Nerve Amplitude:	3.6mV	>4mV
Left Median Motor Nerve Conduction Velocity (Elbow to wrist)	45m/s	>48m/s
Left Ulnar sensory nerve distal peak latency	2.9, 2.5ms	<2.3ms

Table 1. EMG and NCV Patient Results compared to Normal

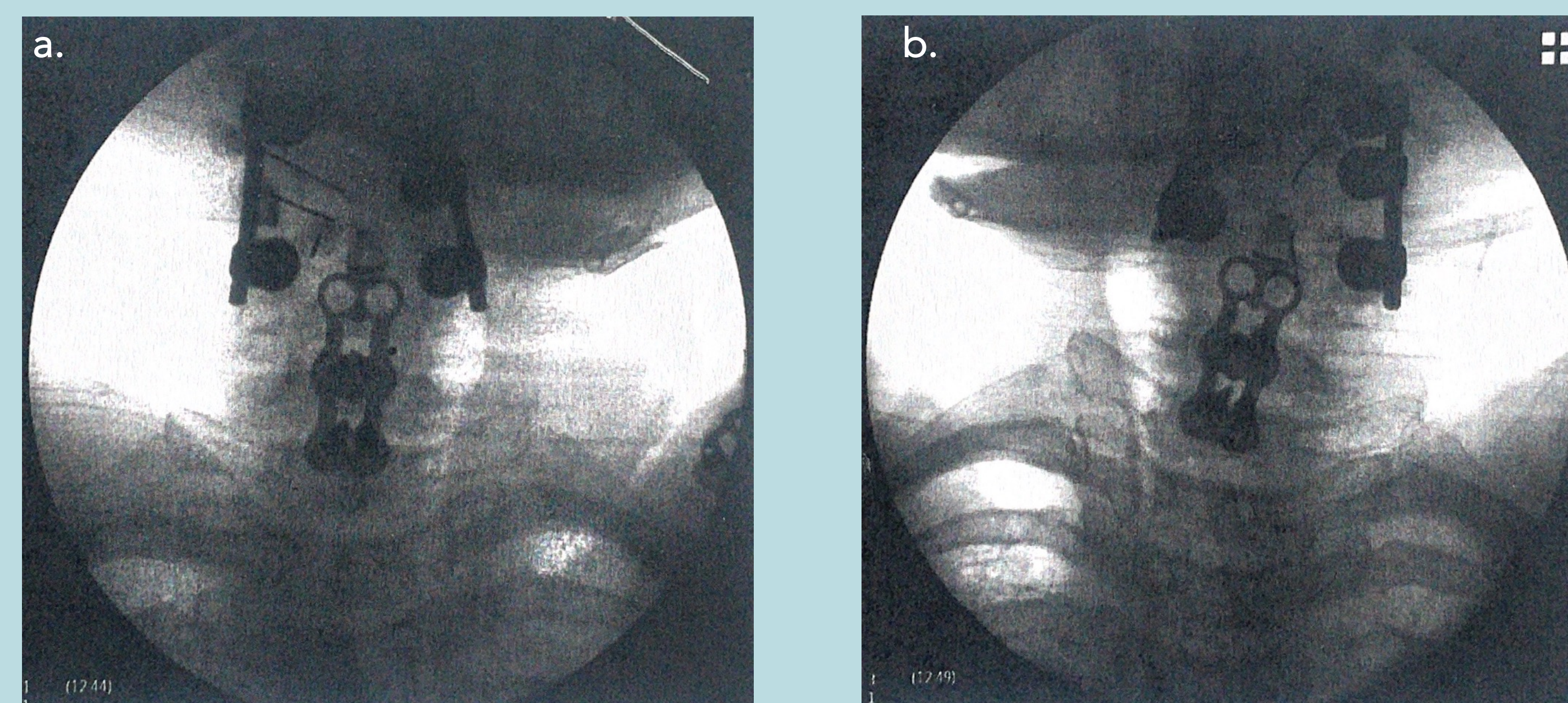


Figure 1. Fluoroscopically-guided bilateral facet injection. a. AP view b. oblique view

Date	Imaging Modality	Impression
12.21.2017	MRI	1. Anterior spinal fusion C4-C7. 2. Moderate central canal stenosis at C3-4. Mild stenosis at C4-5. 3. Multilevel neural foraminal stenosis, worst at the left C3-4 and bilateral C4-5 levels.
8.28.2020	MRI	1. Syrinx within the cervical spinal cord extending from C3-4 through C5-6 to the left of midline, likely a posttraumatic syrinx. No spinal canal or neural foraminal stenosis at any level. Postsurgical changes of anterior cervical discectomy and fusion from C4-C7 with posterior instrumented fusion from C3-C5. Posterior decompression from C3-C4 and through C5-C6. Hardware causes mild local artifact.
1.18.2021	MRI	1. Unchanged appearance of cervical spinal canal syrinx extending from C3-C4 through C5-C6 the left of midline. No progression. 2. Mild right neural foraminal stenosis at C7-T1, unchanged. No spinal canal stenosis at any level. 3. Anterior and posterior instrumented fusion as described with intact hardware. Unchanged alignment. No significant interval change of detrimental interval change from prior study.

Table 2. Patient Magnetic Resonance Imaging Impressions

CASE

A 67-year-old female with past medical history significant for chronic back and neck pain, lumbar post laminectomy syndrome, stroke, hypertension, emphysema and past surgical history of lumbar fusion, cervical fusion, epidural injections, and right rotator cuff surgery, presented to the outpatient pain management office with complaint of left arm weakness after having had a bilateral C3-C6 cervical facet injection 3 days prior. Procedure methods were as follows: the patient was taken to the operating room and placed in the prone position. The neck was prepped with Betadine and draped in the usual sterile fashion. A posterior approach was taken. All skin surfaces were infiltrated with 6 ml of 1.0% Lidocaine using 25-gauge needle. A 22-gauge 3.5-inch Quincke-point spinal needle was advanced from a posterior approach into the facet joints at C3-4, C4-5, C5-6 bilaterally under fluoroscopic guidance (Figure 1). 4 ml of 0.25% Bupivacaine and 2 ml of 6 mg/ml of Betamethasone were injected at each level bilaterally. The needles were flushed and removed intact. The neck was cleaned, dried, and bandages were applied to the injection sites. The patient was taken to the recovery room in stable condition.

In terms of her new-onset left arm weakness, she had minimal use of left biceps, triceps, and wrist extensors along with minimal motion of her finger flexors and abductors. She reported numbness of the left arm as well compared to the right arm. Physical exam was significant for: left bicep reflex 0/2, left triceps 1/5 strength, left bicep 0/5 strength, left wrist extensors 0/5 strength, left finger flexors and adductors 1/5 strength. Right upper extremity was 5/5 strength. She was diagnosed with brachial plexus injury. At a 3 week follow up appointment, her left arm weakness had improved with left bicep and left tricep 2/5 strength and left hand grip 3/5 strength. She was then evaluated with needle electromyography (EMG) and nerve conduction velocity (NCV) studies (Table 1).

Over time, the patient's left arm weakness persisted, and her left elbow began increasing in pain. Conservative treatment did not help improve the left arm weakness or elbow pain. She then had an MRI of the cervical spine performed in August 2020 which showed a syrinx from C3 through C6. She received a follow up MRI in January 2021. MRI results shown in Table 2 with results from an MRI prior to the onset of the left arm pain for reference.

DISCUSSION

In this patient, MRI imaging was not obtained immediately when the chief complaint of left arm weakness was reported after the procedure. The patient was diagnosed with a brachial plexopathy and received medical testing involving peripheral motor and sensory nerve branches of the left upper extremity. As the left arm strength failed to gradually return with physical therapy, MRI almost 2 years after the injection revealed a cervical syrinx. The syrinx was a new clinical finding when compared to MRI before the patient's last cervical injection.

The patient has since then followed up with a neurosurgeon, in which surgical intervention was not indicated at this time. Her left arm weakness continues to persist without noticeable improvement per patient. She is to continue physical therapy and repeat MRI in 6 months to monitor the syrinx.

It is important to consider the many factors that have implications in this abnormal delayed post traumatic syrinx manifestation on imaging after multilevel cervical facet injections.² This patient had a complicated history including both cervical and lumbar fusions along with many epidural and facet injections which may have impacted this incidence of syringomyelia. An additional consideration is that the original brachial plexus injury may have led to a delayed syrinx myelopathy following the inciting event.⁴ An alternative mechanism for development of spinal cord injury is possible. Another variable to consider is the impact that the COVID-19 pandemic had on access to healthcare and imaging centers. This most likely interrupted this patient's care and timeline of receiving proper diagnostic imaging.

CONCLUSION

Clinicians must minimize risk factors and optimize diagnostic imaging and study techniques in determining origin of new onset upper extremity weakness after bilateral cervical intra-articular joint injections in patients with a history of cervical fusion. In consideration of brachial plexopathy status post bilateral facet injection, magnetic resonance imaging should be completed in full initial evaluation to determine etiology of upper extremity weakness and either rule in or out differential diagnoses.

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