

Multi-Site Fluoroscopically Guided Onabotulinumtoxin A Injections for Refractory Obturator Internus Syndrome: A Case Series

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INTRODUCTION

- Obturator internus syndrome (OIS) is a subtype of deep gluteal syndrome characterized by nerve entrapment within the deep gluteal space[1]
- Clinically, obturator internus syndrome manifests as deep, retro-trochanteric pain that may mimic sacral radiculopathy[1]
- Existing case series utilizing fluoroscopy for this procedure have primarily focused on single-site steroid and local anesthetic injections[2]
- Consequently, the efficacy of multi-site botulinum toxin A injections, and the diagnostic benefit of targeting multiple muscle positions within the same procedure, remains uninvestigated and has not been reported to our knowledge.
- This case series aims to address this clinical gap by describing our experience with multi-site, fluoroscopically guided botulinum toxin injections in six patients treated for confirmed obturator internus syndrome.

PROCEDURE

- **Diagnostic Criteria:** Pelvic pain, pain on rotation of the hip, and confirmation of digital exam by a gynecologist (female) or pelvic physical therapist (male).
- **Standard Technique:** BTX-A injections under fluoroscopic guidance with the patient in the prone position.
- **Needle Insertion:** Four 25-gauge x 4 ¾ inch spinal needles were inserted along the medial ischial tuberosity and steered into the obturator internus muscle at 12, 3, 6, and 9 o'clock.
- **Contrast Confirmation:** Iohexol 180 contrast was injected into each needle to confirm muscle entry and rule out intravascular placement.
- **Medication Preparation:** BTX-A 100 Units mixed in 20 ml of 0.9% sodium chloride was then aspirated into four syringes of 5 mL (25 units of BTX-A) each.
- **Injection Protocol:** All syringes were attached before BTX-A was injected to prevent erroneous injections due to the close proximity of the needles to each other.

CASE PRESENTATION

- All patients included in our series or their next-of-kin provided verbal consent for anonymous data recording and sharing in relation to this procedure
- This case series comprises six cases of obturator internus syndrome (OIS) refractory to conservative management treated with BTX-A injections

Patient ID	Primary Pain Location & Characteristics	Injections	Reported pain relief[1]	Clinical course / limitations
OI-01	Pelvic and perineal pain with intermittent radiation into the buttocks.	1	45%	Symptoms began returning after 2–3 months.
OI-02	Right obturator internus muscle and right ischial tuberosity area; burning and aching quality interfering with sitting.	5	75%; 80%; qualitative benefit[2]; >50%[3]; >30%	First injection: no improvement by day 21. Latest injection: relief ongoing at day 35.
OI-03	Right-sided pelvic and buttock pain extending into the groin; constant burning and stabbing quality with bladder pressure, worsened by urination, movement, and sitting.	1	90% at day 277	Earlier pain scores indicated 30% improvement at day 87, with waning effect.
OI-04	Left vulvar and tailbone pain, with burning, itching, and tearing sensations.	2	>95%; unquantified	First: symptoms recurred after ~30 days. Second: 3 days of relief; concurrent RFA.
OI-05	Pelvic and obturator internus pain; deep, throbbing quality with referred leg pain and numbness, accompanied by bladder pressure, urinary frequency, and urgency; worsened by sitting.	1	20%	Relief reported at day 54; assessment complicated by intervening hysterectomy.
OI-06	Left lower-to-mid buttock pain following boating-related trauma; stinging and burning quality, worsened by activity and sitting and relieved by ice and heat.	1	25%	Relief began after ~2 weeks and remained ongoing at research follow-up

Table 1: patient characteristics, procedural details, and clinical outcomes

Table notes: [1]Percentages are directly reported relief, listed in worksheet order for repeat injections. Follow-up timing varied; ongoing relief does not establish uninterrupted benefit. [2]Increased activity and sitting tolerance from 5 to 15 minutes.[3]Concurrent ganglion impar block contributed to relief.

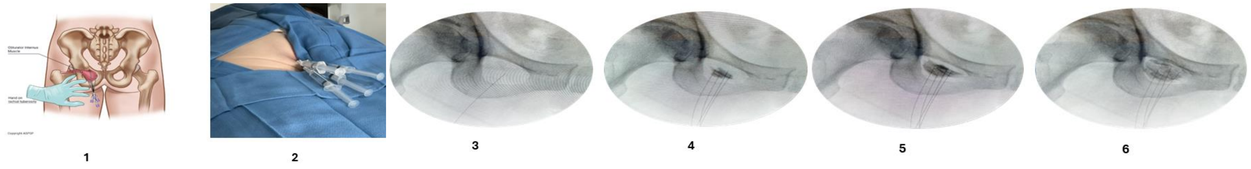


Figure 1: Multi-site fluoroscopic obturator internus injection. Image (1): Anatomical target and skin displacement. Image (2): Clinical setup with four needles and attached syringes. Image (3): Initial needle localization along the ischial tuberosity. Image (4): Multi-needle placement across the 12, 3, 6, and 9 o'clock quadrants. Image (5): Iohexol contrast injection confirming intramuscular placement. Image (6): Final distribution of onabotulinum toxin A.

DISCUSSION

- Across 11 injections in six patients, all patients reported some benefit following at least one injection. Quantified relief ranged from 20% to >95%; three patients, representing five injection episodes, had documented relief >50%.
- To our knowledge, this is the first case series evaluating a multisite, fluoroscopically guided BTX-A protocol designed to facilitate accurate needle placement within the obturator internus muscle belly.
- No serious adverse events were reported.

LIMITATIONS

- Interpretation is limited by variable follow-up, inconsistent outcome documentation, and concurrent interventions in some patients.
- The heterogeneous cohort included patients with varied etiologies and prior pelvic interventions, which may confound BTX-A efficacy assessment.
- Contrast patterns can be misleading, and accurate intra-OI fluoroscopic contrast patterns require further fine tuning and validation[3]
- Higher volumes and multi-site dispersion increase the affected diffusion area and local spread of BTX-A[4]
- Given the robust architecture of the obturator internus, single-site injections are often insufficient[5,6]

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