



## Lower EUS-guided ganglion impar blockade

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### BACKGROUND AND AIMS

The ganglion impar is the first pelvic ganglion of the efferent sympathetic trunk (Fig. 1). It innervates pelvic and perineal structures including the perineum, rectum, anus, coccyx, vagina, vulva, and urethra, from which it transmits nociceptive information. Levator ani syndrome, also termed chronic proctalgia, is characterized by relatively constant or frequent dull anorectal pain without an identifiable physical mechanism. It has a prevalence of 6.6%<sup>1</sup> and most commonly occurs between 30 and 60 years of age.<sup>2</sup> Although the pathophysiology remains unknown, pain may be associated with visceral hyperalgesia.<sup>3</sup>

When the pain is refractory to conservative medical therapy, including neuromodulators, localized nerve injections may be offered. Traditionally, anesthesia pain clinics may perform this procedure through an anococcygeal approach using a bent needle,<sup>4</sup> a lateral paramedian coccygeal approach under fluoroscopic guidance,<sup>5</sup> or transdiscal through the sacrococcygeal disc,<sup>6</sup> typically using a combination of local anesthetic (bupivacaine or lidocaine), normal saline solution, and steroid (triamcinolone or methylprednisolone). Improvement in pain as determined through symptom surveys occurs in 41% to 100% of cases at 1 to 2 months<sup>5,7</sup>; however, potential risks include bleeding, pain (particularly when using a bent needle or corkscrew approach), discitis, and injury to the surrounding pelvic organs. Furthermore, this approach may be limited in patients with obesity and those with sacrococcygeal disc fusion.

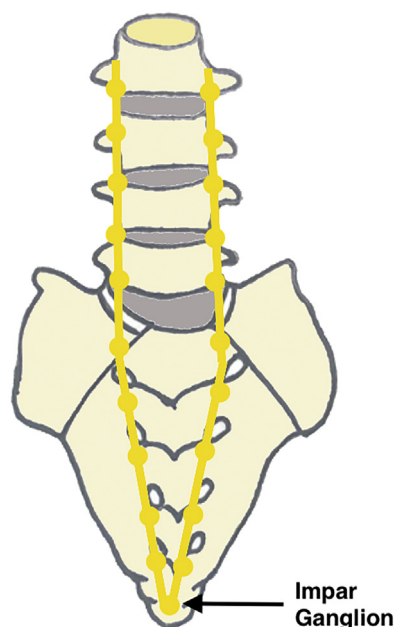
Neurolysis through an EUS approach has long been demonstrated as technically safe and efficacious, most notably in the setting of celiac plexus block to treat pain associated with chronic pancreatitis or pancreatic malignancy.<sup>8</sup> However, ganglion impar blockade has not previously been demonstrated. Given the proximity between the ganglion impar and posterior rectum (Fig. 2), we propose a lower EUS approach to ganglion impar blockade for pelvic pain syndromes (Video 1, available online at [www.VideoGIE.org](http://www.VideoGIE.org)).

This video case presentation highlights a 62-year-old man who presented with a 10-year history of rectal pain. Perianal and digital rectal examination revealed no abnormalities, and flexible sigmoidoscopy was unremarkable.

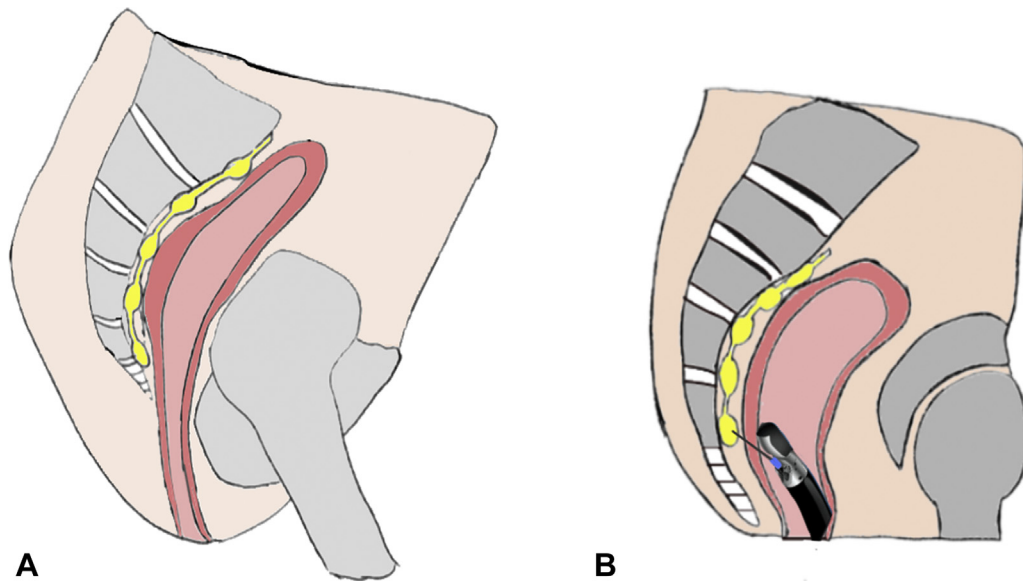
His pain worsened with prolonged sitting and was refractory to topical therapy with sitz baths, steroids, anesthetics, calcium channel blockade, and nitrates. A magnetic resonance imaging scan of the spine demonstrated degenerative disease between L4 and S3, but no nerve compression. Because of chronic proctalgia (levator ani syndrome) and unfeasibility of a percutaneous approach owing to intervertebral degenerative disc disease and sacral fusion, he was referred for lower EUS with ganglion impar block under fluoroscopic guidance.

### METHODS

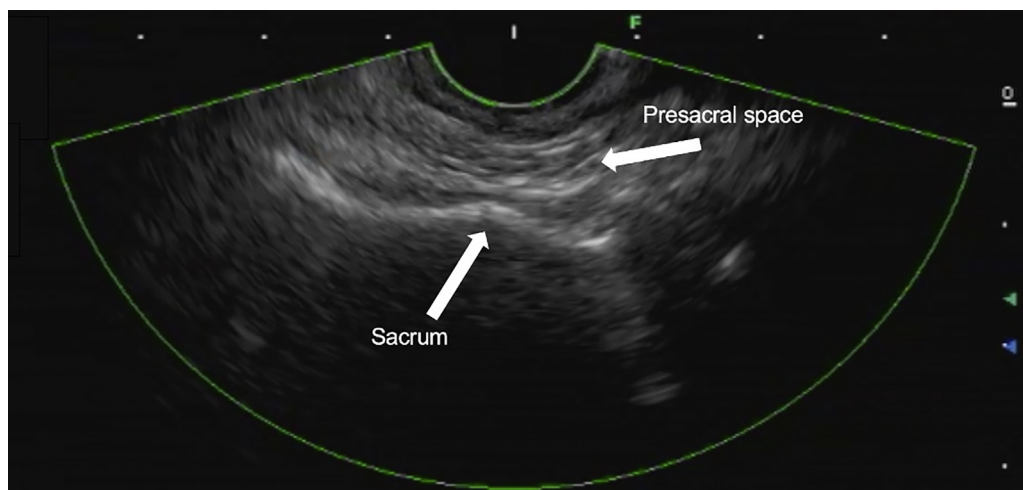
Flexible sigmoidoscopy was performed to exclude abnormalities within the rectum or anal canal. Subsequently, lower EUS was prepared to identify the sacrum echoendosonographically, using color Doppler to evaluate for intervening vascular structures (Fig. 3). If present, an alternative



**Figure 1.** The ganglion impar is the terminal ganglion at the distal tip of the sympathetic trunk and innervates structures within the pelvis and perineum.



**Figure 2.** Lower endoscopic ultrasound approach. **A**, The ganglion impar is the terminal ganglion at the distal tip of the sympathetic trunk. **B**, A linear echoendoscope is positioned facing the posterior rectum to visualize sacrococcygeal landmarks used to identify the location of the ganglion impar.



**Figure 3.** Ultrasound landmarks to identify ganglion impar location. Echoendosonographic visualization of the sacrum is performed to identify the location of the sacrococcygeal junction. Anterior (superficial) to the coccyx lies the presacral space where the ganglion impar resides.

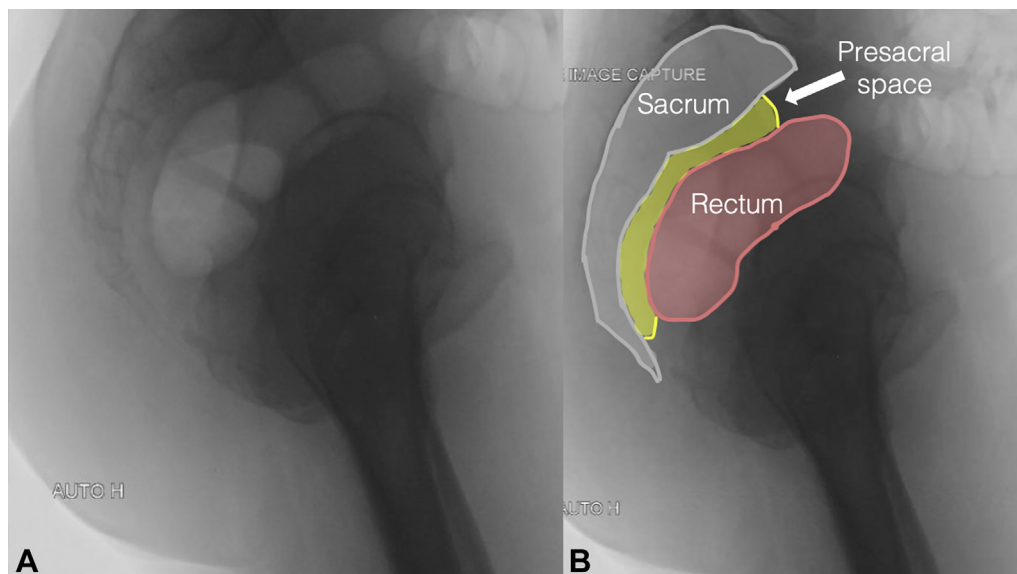
approach would be considered. Positioning was confirmed with fluoroscopy with the patient in the left lateral position.

The ganglion impar is located anterior to the sacrococcygeal disc (Figs. 4 and 5), which represents the target for injection, and lies 2 to 3 cm deep to the EUS probe. Intravenous ciprofloxacin and metronidazole were administered, and a 22-gauge needle (the same used for celiac plexus blockade) was advanced to the area of the ganglion impar with gentle aspiration to identify accidental entry into a blood vessel. A total of 15 mL of 0.25% bupivacaine and 4 mL of triamcinolone (40 mg/mL) were injected for the ganglion impar block (Fig. 6). A total of 5 mL of

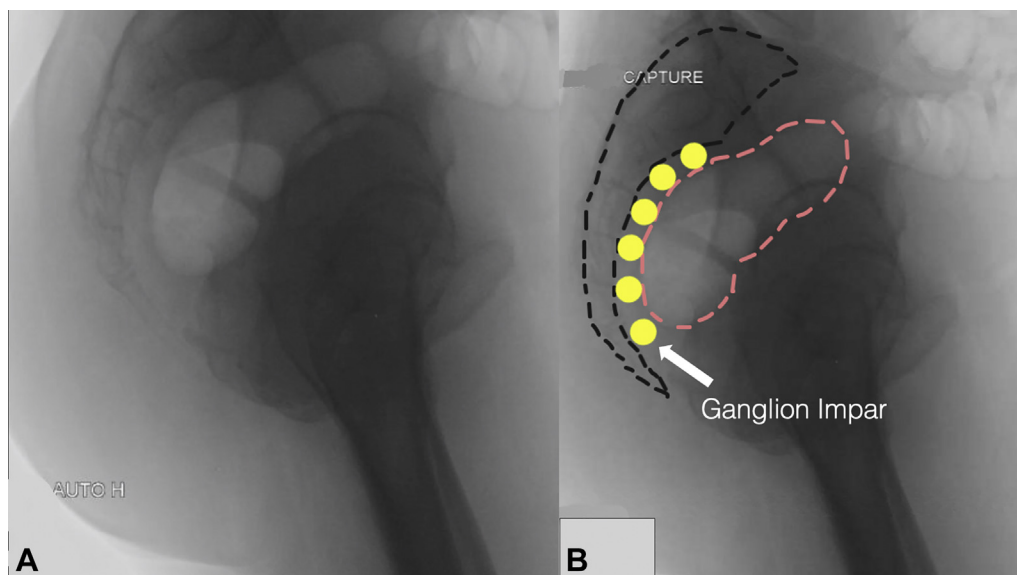
nondiluted contrast was used to aid fluoroscopic visualization. This combination was chosen through consideration of celiac plexus block formulations and consultation with a pain anesthesiologist.

## RESULTS

The procedure was successfully performed without periprocedural adverse events, and the patient was discharged the same day with a total of 3 days of postprocedural antibiotic prophylaxis. The patient's rectal pain was subsequently eliminated over 2 months of follow-up.



**Figure 4.** Lateral fluoroscopic view obtained with patient in left lateral position (A) and cartoon superposition of anatomic structures (sacrum, presacral space, and rectum) (B).



**Figure 5.** Lateral fluoroscopic view obtained with patient in left lateral position (A) and cartoon superposition of efferent sympathetic trunk with ganglion impar (B).

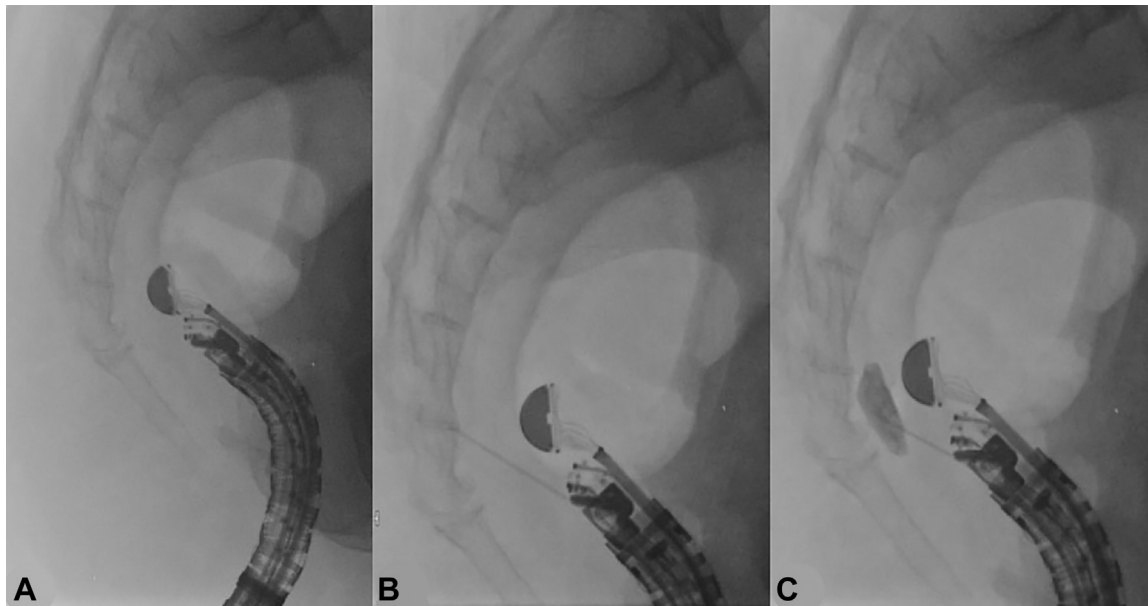
## CONCLUSIONS

Chronic pelvic pain syndromes including chronic proctalgia can be treated with neural blockade at the level of the ganglion impar, which is routinely performed in anesthesia pain clinics. However, its location anterior to the bony sacrum makes a percutaneous approach challenging and poses difficulties in patients with obesity or a fused sacrococcygeal disc. In contrast, the EUS approach offers close proximity to the ganglion, which resides just posterior to the rectum. We demonstrate a technically feasible

and safe approach to ganglion impar block. Further studies evaluating long-term efficacy and safety are required before the procedure can be adopted and disseminated.

## DISCLOSURE

*Dr Chan is on the scientific advisory board for Ironwood Pharmaceuticals and Takeda. Dr Ryou is a consultant for Boston Scientific, Medtronic, Fuji, Pentax, GI Windows, and Enterasense and Ryou does research*



**Figure 6.** Fluoroscopic-guided ganglion impar injection. **A**, Fluoroscopic guidance is used to confirm positioning of the echoendoscope. A 22-gauge needle is advanced to the tip of the sacrum (**B**) and withdrawn slightly to where the tip resides within the retroperitoneal space anterior to the sacrococcygeal joint. **C**, A mixture of 15 mL of 0.25% bupivacaine and 4 mL of triamcinolone (40 mg/mL) is injected to perform the ganglion impar block.

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