

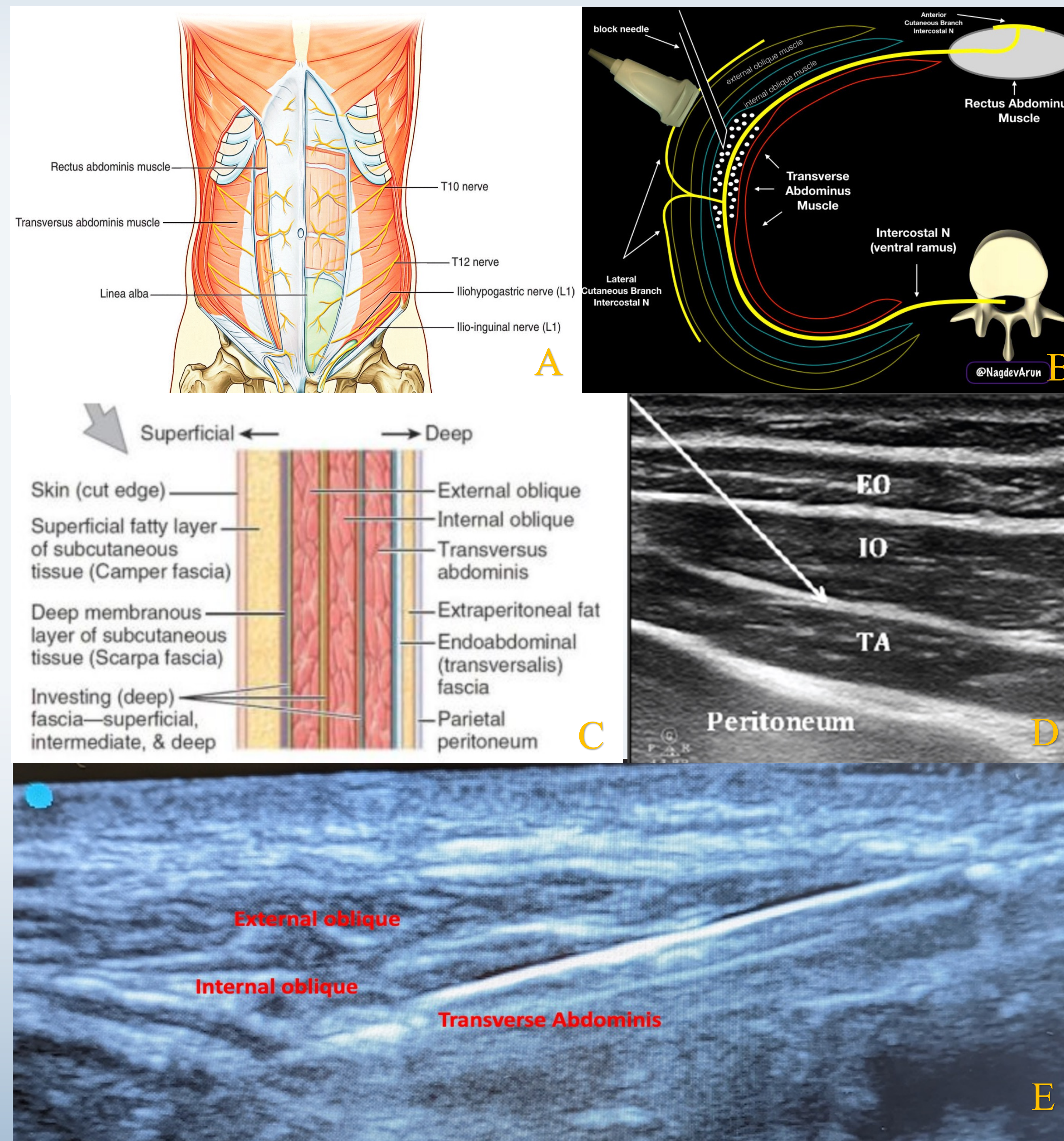
BACKGROUND

- Chronic abdominal pain has a prevalence of 2%, 23 million ED visits^{1,2}
- Functional abdominal pain is pain for 6 months without evidence of underlying physiologic disease
- Anterior Cutaneous Nerve Entrapment Syndrome (ACNES)
 - Intercostal nerves become entrapped and irritated between internal oblique and transverse abdominis
- Prevalence: 15-30%²
- Diagnosis: well localized pain, + Carnett's test, response to TPI
- Traditional treatment: medications, TPI, nerve blocks, neurolysis and neurectomy

CASE

- 50-year-old woman with a history of depression, osteoporosis, pancreatitis, diverticulitis, ulcerative colitis, and GERD presented with abdominal pain
- Surgical history: Nissen fundoplication, C-section, cholecystectomy, Ex-lap 2/2 gastric perforation
- Physical exam: healed midline incision with scarring and fibrosis causing some skin tension
 - Pain at the midline incision, TTP, + Carnett's test
- Failed medications: acetaminophen, gabapentin, pregabalin, amitriptyline, duloxetine, tizanidine
- Intervention: TAP block with 2% lidocaine, 0.5% bupivacaine, and triamcinolone 80 mg
 - Significant short-term relief, repeated every 3-6 months
- Developed adrenal suppression requiring systemic steroids
- Options: medications only, TAP with local only, or peripheral nerve stimulation (PNS) trial
- Anterior cutaneous PNS trial for one week with 85% pain relief
- Underwent permanent anterior cutaneous PNS implant July 2022
- 95% pain relief immediately following the implant, continues to have more than 80% pain relief to this day

IMAGES



DISCUSSION

- ACNES has non-invasive and invasive treatment modalities
 - TPI and nerve blocks demonstrated excellent short term pain relief
 - TAP blocks provide clinically significant improvement in abdominal pain in 80% of patients³
 - Average duration of relief 84 days³
- Peripheral nerve stimulation is an emerging treatment used for phantom limb pain, CRPS, mononeuropathies, and nerve entrapment syndromes
 - PNS offers precision to target a single nerve or nerve plexus
 - MOA is not fully understood but likely gate control theory at play⁴
- The anterior cutaneous nerves of the abdomen reliably lie between the internal oblique and transverse abdominis
- Risks of PNS include infection, hematoma, nerve damage, lead migration, lead fracture, or lead disconnection
- Recommend lead placement superficial to the deep investing fascia to prevent lead migration into peritoneal space

CONCLUSIONS

- Chronic abdominal pain is a common issue causing frequent ED visits and hospital admissions
- Interventional treatment of abdominal pain is relatively short lived and has potential adverse effects
- PNS for ACNES has not been previously described
- Safety and efficacy of this technique requires further investigation
 - Singe case report demonstrates 80% pain relief for more than 1 year

REFERENCES

- Chrona E, Kostopanagiotou G, Damigos D, Batistaki C. Anterior cutaneous nerve entrapment syndrome: management challenges. *J Pain Res.* 2017;10:145-156. doi:10.2147/JPR.S99337
 - Gottfried J. Chronic Abdominal Pain and Recurrent Abdominal Pain. *Merck Manual.* 2022;(Gastrointestinal Disorders)
 - Abd-Elseyed A, Malyuk D. Efficacy of Transversus Abdominis Plane Steroid Injection for Treating Chronic Abdominal Pain. *Pain Pract.* Jan 2018;18(1):48-52. doi:10.1111/papr.12580
 - Ong Sio LC, Hom B, Garg S, Abd-Elseyed A. Mechanism of Action of Peripheral Nerve Stimulation for Chronic Pain: A Narrative Review. *Int J Mol Sci.* Feb 25 2023;24(5)doi:10.3390/ijms24054540
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