

Caudal Epidural vs. Superior Hypogastric/ Ganglion Impar Blocks for the Management of Pain in Pelvic Cancers

Arun Kumar Bhaskar¹

Pain Management Centre, Imperial College Healthcare NHS Trust, London, United Kingdom

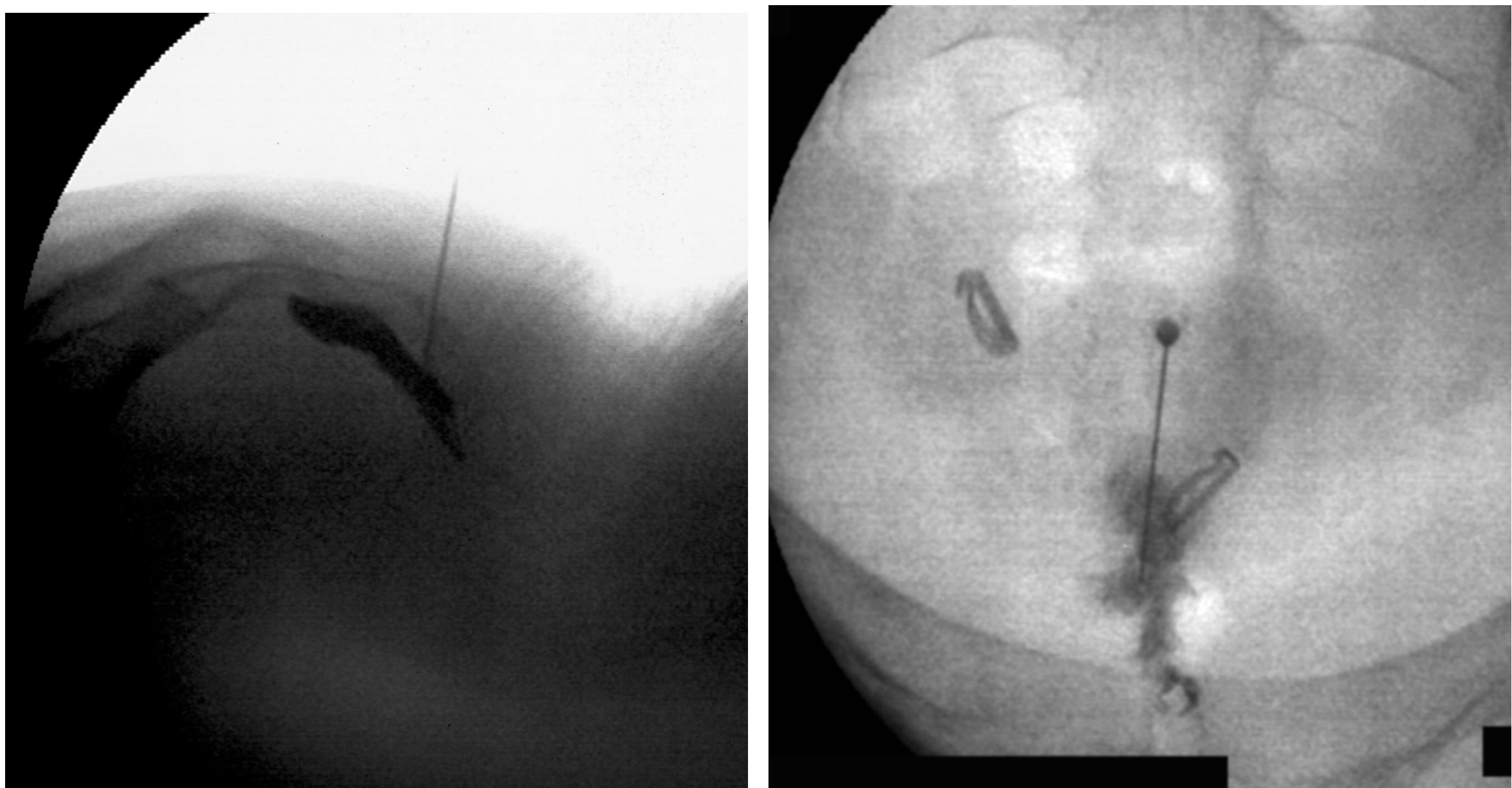
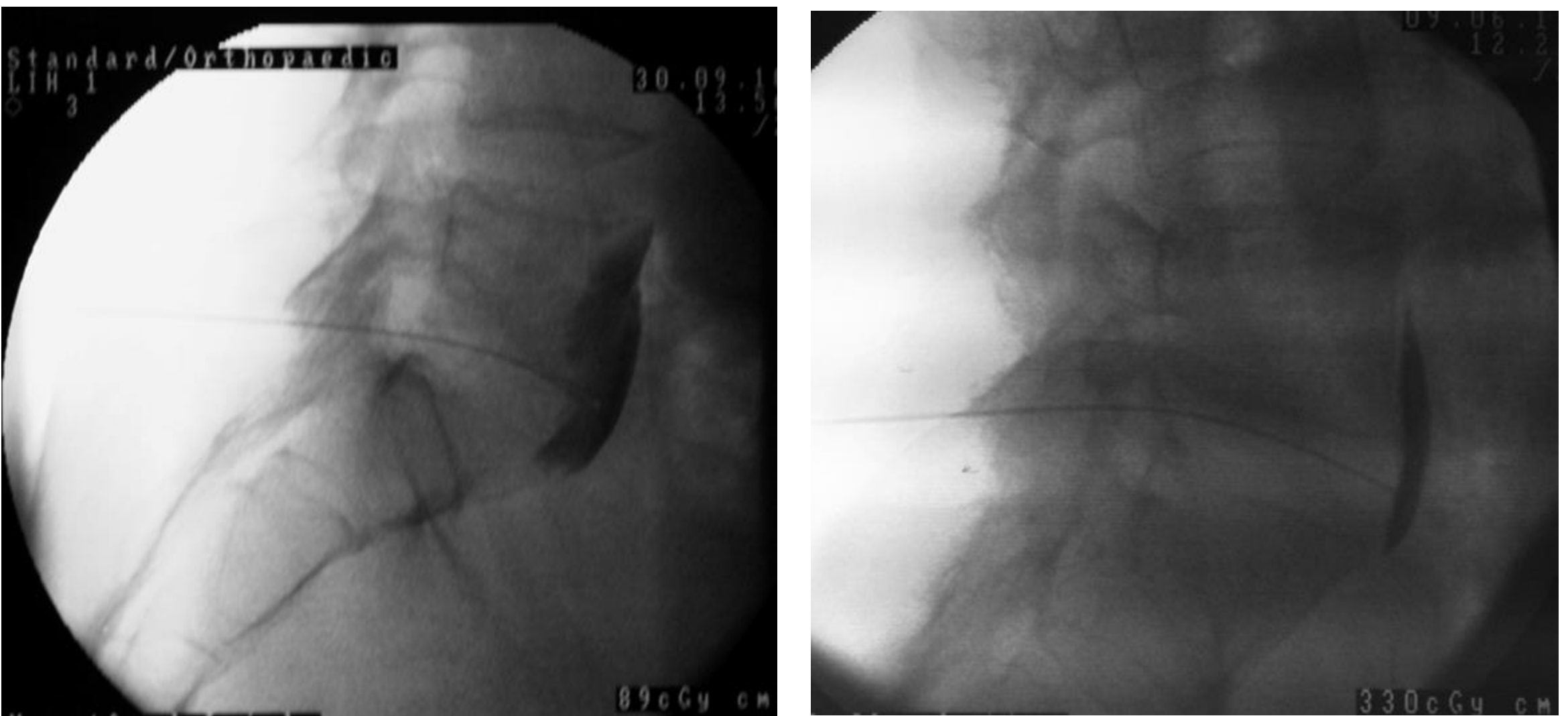


BACKGROUND

Pelvic malignancies frequently produce intractable pain not only from direct tumour invasion of pelvic organs and adjacent structures but also due to the various oncologic therapies, including surgical procedures, radiotherapy, and chemotherapy. In patients without metastasis to vital organs, survival can extend for extended intervals, rendering chronic cancer-related pain a prominent and enduring clinical challenge. Conventional pharmacologic approaches, while essential, often fail to achieve satisfactory analgesia and may be limited by systemic side effects and tolerance. Interventional pain management strategies, such as superior hypogastric plexus blocks and inferior hypogastric plexus blocks, have gained prominence as targeted modalities for pelvic cancer pain. These procedures aim to disrupt transmission of pain from the pelvic viscera, providing targeted analgesia with potentially reduced systemic adverse effects. These blocks can complement pharmacotherapy, reduce opioid requirements, and improve functional status and quality of life in selected patients, particularly as part of a multimodal analgesia plan.

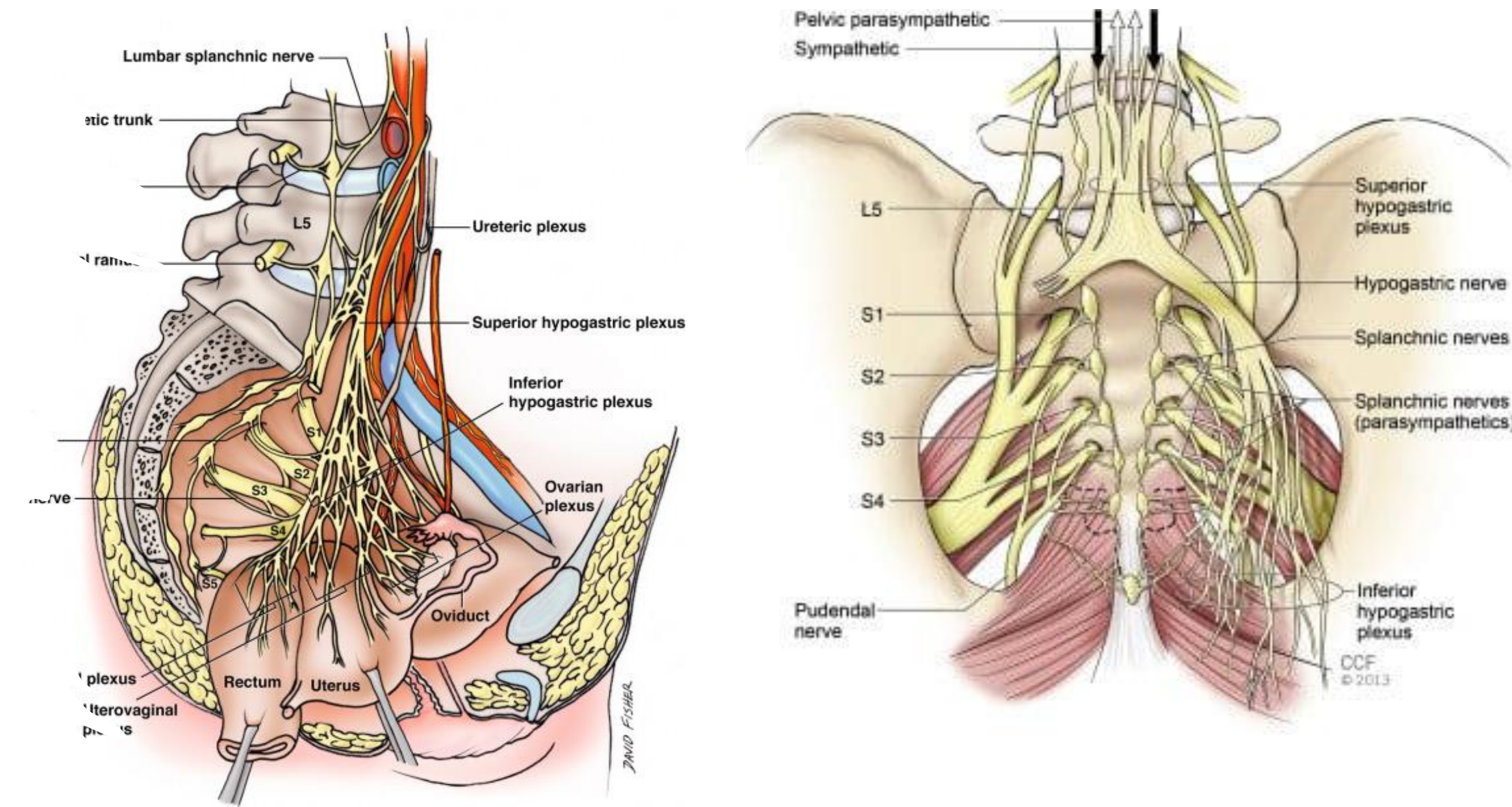


However, these procedures require technical expertise and specialist training, and the risk of complications could be higher due to the distorted anatomy because of the presence of cancer as well as the result of surgery and other cancer treatment. If the conventional approach to superior hypogastric plexus block is not possible due to the presence of tumour or vascular structures, alternative approaches including transdiscal approach and midline transthecal transdiscal approach have also been described.



METHODS

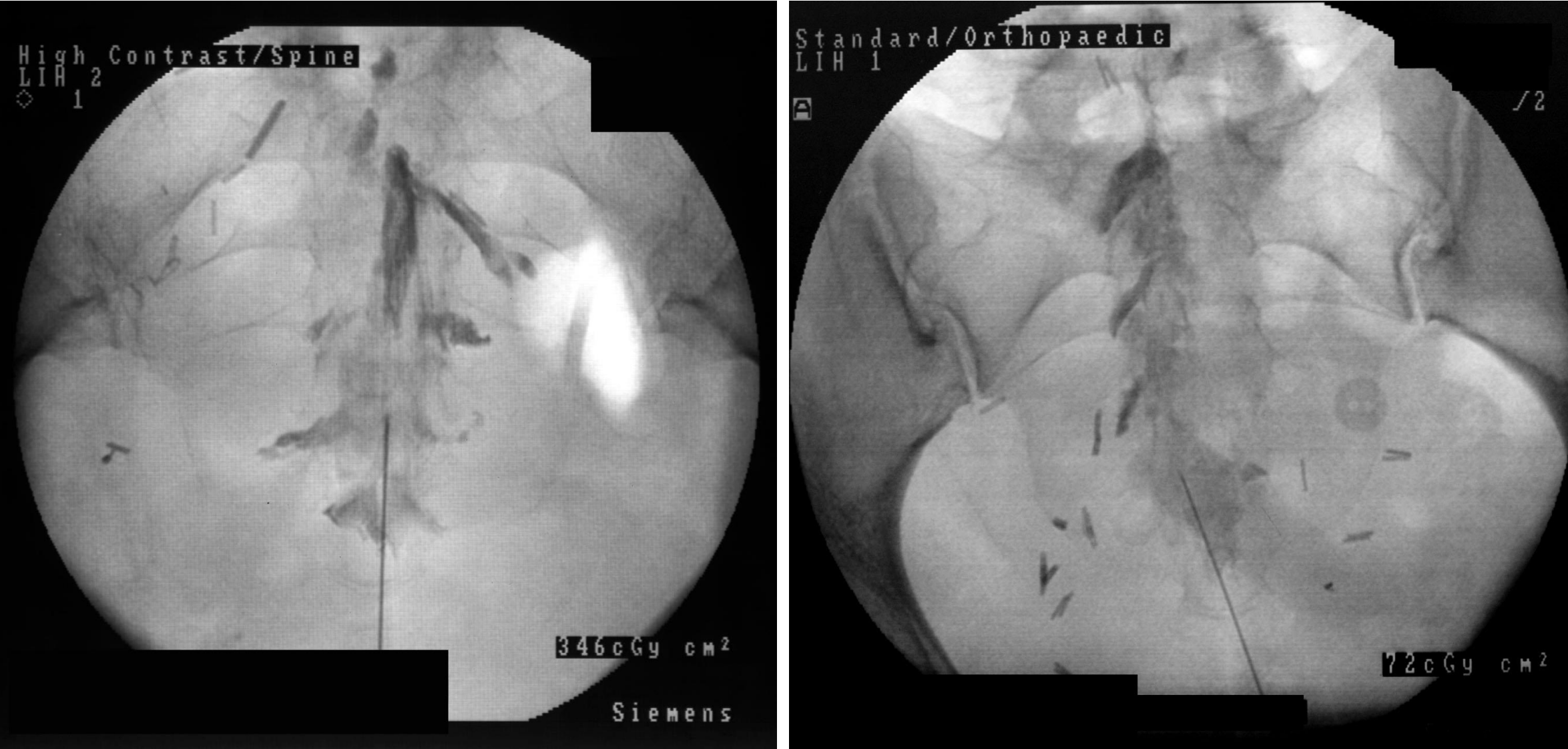
Clinical practice and literature indicate that the injectate volume for superior hypogastric plexus blocks (typically 5 + 5 mL or more) and, to a lesser extent, ganglion impar blocks (3–10 mL or more) often spreads to involve the sacral nerve roots within the pelvis. Similarly, during a caudal epidural block, slow midline injection with sufficient volume can result in the injectate reaching the sacral nerve roots and, to a lesser degree, the autonomic nerves which are situated on the medial aspect of the anterior sacral foramina; the sacral nerve roots exit the foramina and takes an infero-lateral route inside the pelvis.



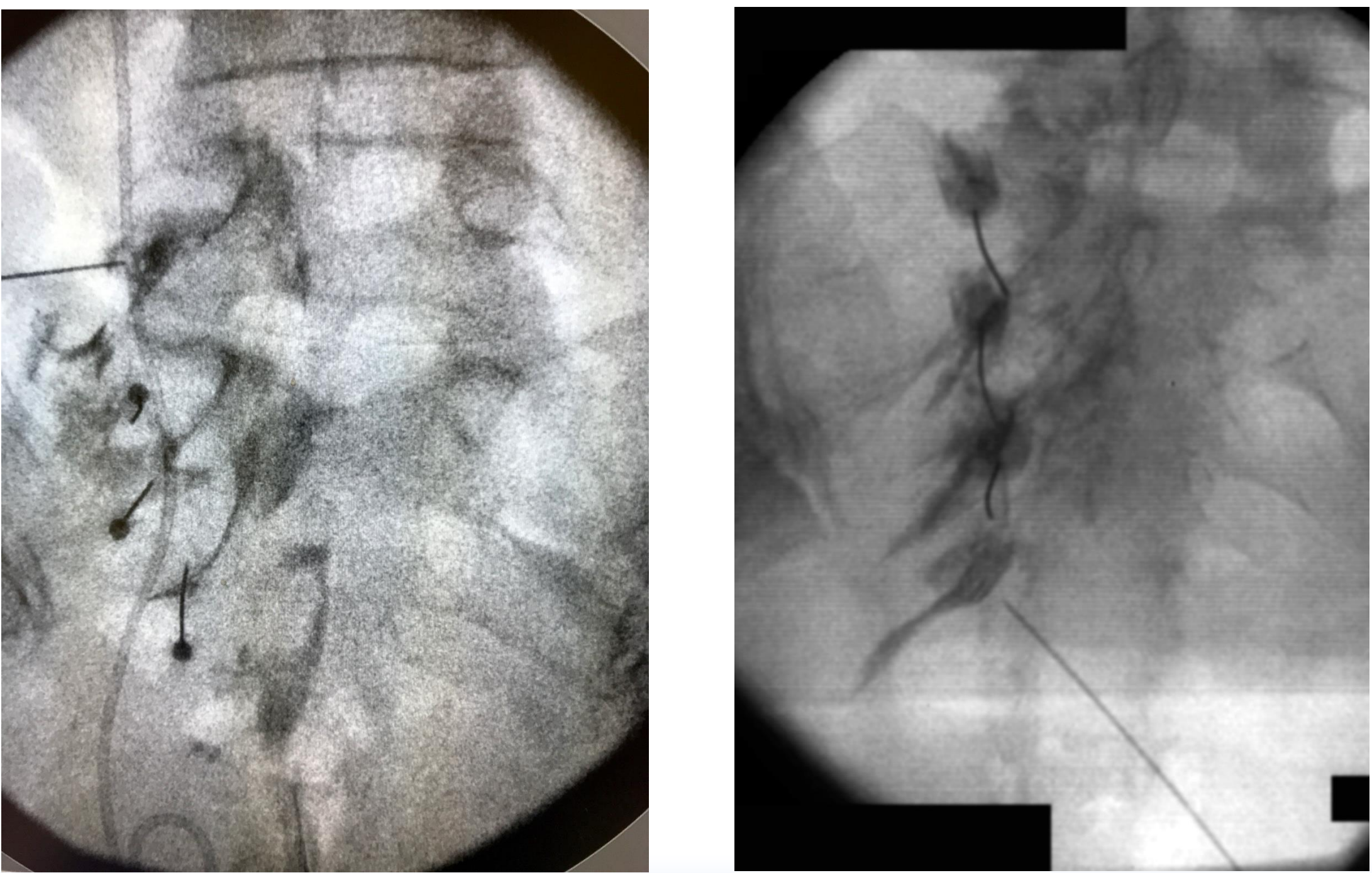
In pelvic cancers, pain most commonly arises from infiltration or injury to the sacral nerves, pelvic floor muscles, pelvic sidewall, or sacrum, often as a direct result of tumour invasion or oncological treatments such as surgery and radiotherapy. Unlike the spasmodic or dull visceral pain seen in non-malignant pelvic conditions, pelvic cancer pain is predominantly constant and neuropathic in nature, suggesting a primarily somatic origin, in contrast to the visceral pain of upper GI malignancies. However, traditionally sympathetic blocks have been utilised in managing pain in pelvic malignancies. This has often resulted in delay in initiating interventional management of pain in these cohort of patients due to the lack of expertise amongst trained pain specialists. The author is proposing that a caudal epidural could be suitable option for first-line management

RESULTS

The author possesses nearly two decades of experience performing interventional procedures for cancer-related pain. In the early phase of his career, he routinely conducted neurolytic superior hypogastric plexus blocks for pelvic malignancies and ganglion impar blocks for anal malignancies. Despite achieving satisfactory injectate distribution under fluoroscopic guidance with targeting of sympathetic neural structures, a substantial proportion of patients continued to experience pain. Notably, several cases demonstrated pain relief following a straightforward caudal epidural block. Consequently, the author adopted a combined therapeutic approach—integrating a caudal epidural block with local anesthetic and a sympathetic blockade using a neurolytic agent. This combined modality yielded complete pain relief for periods of 12–48 hours; however, in some instances, pain recurred with a qualitatively different character.



Based on these experiences, the author adopted diagnostic caudal epidural blocks as the initial-line treatment for pelvic cancer pain. In cases presenting with unilateral pain, selective unilateral sacral root blocks using local anesthetic alone or local anesthetic with corticosteroids were employed as first-line interventions. The majority of patients achieved clinically meaningful analgesia and subsequently underwent longer-term interventions, including pulsed radiofrequency or chemical neurolysis of the sacral nerve roots using 6% aqueous phenol. The incidence of refractory or spasmodic pain was <10% of patients, with some of these cases responding to either superior hypogastric plexus block or ganglion impar block.



DISCUSSION

In clinical practice, block procedures targeting the superior hypogastric plexus and the ganglion impar are frequently performed with relatively large volumes of local anesthetic. This approach risks unintended blockade of the S2–S4 nerve roots and somatic nerves in proximity to the sympathetic chain, given their anatomical closeness. The observed analgesic effect is often attributed to sympathetic blockade; however, our investigations indicate that the dominant component of pelvic pain originates from infiltration of somatic nerves and the structures they innervate. We demonstrated that diagnostic caudal epidural blocks performed with local anesthetic reliably abolish somatic pain pathways, thereby enabling differentiation of somatic versus autonomic contributions. This diagnostic approach has facilitated a transition to unilateral neurolytic procedures, which can preserve bladder and bowel function in selected patients and avoid the need for indwelling urinary catheters or urinary diversion. Based on these findings, we advocate midline caudal epidural blockade as a first-line interventional strategy for the management of pelvic pain in patients with pelvic malignancies. This approach prioritises the preservation of autonomic and somatic function while providing effective analgesia, and it can guide subsequent targeted neurolytic interventions when appropriate.

CONCLUSIONS

Superior hypogastric plexus and ganglion impar blocks are technically demanding procedures that are not widely performed by many pain clinicians, in contrast to caudal epidural blocks, which are routinely performed even by anaesthesiologists without formal pain medicine specialisation. In this context, when pharmacological strategies are suboptimal or patients develop tolerance or adverse effects to analgesics, including opioids, a caudal epidural block may be appropriately considered as a first-line interventional option, thereby enhancing accessibility to effective non-systemic analgesia. This approach aligns with the goal of reducing systemic medication burden and improved quality of life by providing targeted treatment for pain due to pelvic malignancies.

REFERENCES

- Plancarte-Sánchez, Ricardo & Guajardo-Rosas, Jorge & Núñez, María. (2005). Superior hypogastric block and ganglion impar (Walther). Techniques in Regional Anesthesia and Pain Management. 9. 86-90. 10.1053/j.trap.2005.05.007.
- De Silva P, Daniels S, Bukhari ME, Choi S, Liew A, Rosen DMB, Conrad D, Cario GM, Chou D. Superior Hypogastric Plexus Nerve Block in Minimally Invasive Gynecology: A Randomized Controlled Trial. J Minim Invasive Gynecol. 2022 Jan;29(1):94-102. doi: 10.1016/j.jmig.2021.06.017. Epub 2021 Jun 29. PMID: 34197956.
- Urits I, Schwartz R, Herman J, Berger AA, Lee D, Lee C, Zamarripa AM, Slovek A, Habib K, Manchikanti L, Kaye AD, Viswanath O. A Comprehensive Update of the Superior Hypogastric Block for the Management of Chronic Pelvic Pain. Curr Pain Headache Rep. 2021 Feb 25;25(3):13. doi: 10.1007/s11916-020-00933-0. PMID: 33630172.
- Sivori M, Dempsey B, Chettouh Z, Boismoreau F, Ayerdi M, Eymael A, Baulande S, Lameiras S, Couplier F, Delattre O, Rohrer H, Mirabeau O, Brunet JF. The pelvic organs receive no parasympathetic innervation. Elife. 2024 Mar 15;12:RP91576. doi: 10.7554/eLife.91576. PMID: 38488657; PMCID: PMC10942786.
- Plancarte R, Amesua C, Patt RB, Aldrete JA. Superior hypogastric plexus block for pelvic cancer pain. Anesthesiology. 1990 Aug;73(2):236-9. doi: 10.1097/0000542-199008000-00008. PMID: 2382849.

Contact

Corresponding author: akbhaskar@btinternet.com