



Superior Hypogastric Plexus

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Antony R. Tharian, Teresa M. Kusper,
and Nebojsa Nick Knezevic

Introduction

Superior hypogastric plexus neurolysis (SHPB) is an effective measure applied in the management of visceral and sympathetic pain of malignant and non-malignant origin arising from the large colon and other pelvic structures (Table 181.1) [1, 2]. It is indicated for severe unrelenting pelvic and rectal pain unresponsive to oral and parenteral opioids, and other adjuvant medications. Diagnostic blocks help to pinpoint the source of pain, and it may also offer short-term pain relief in select cases, for example herpes zoster infection of the sacral dermatomes. Therapeutic blocks are offered to patients with incapacitating pelvic and rectal pain, who have failed to respond to conventional therapy, and have obtained >50% pain relief with the diagnostic block. The principal advantage of the SHPB is improved pain control, reduction in

Table 181.1 Common indications for performing hypogastric plexus block

Indications for superior hypogastric plexus block
Pelvic pain due to malignancy (large colon, ovaries, uterus, cervix, bladder, prostate, rectum)
Sympathetically maintained pelvic pain (pelvic complex regional pain syndrome)
Radiation enteritis
Endometriosis
Urogenital pain
Tenesmus due to radiation therapy to the rectum
Proctalgia fugax
Acute herpes zoster and post-herpetic neuralgia involving sacral dermatomes

From [1, 2]

opioid dosage and thereby its adverse effects, as well as an overall improved quality of life. Performing the SHPB successfully requires sound knowledge of relevant anatomy and expertise with the technique to avoid potentially devastating complications (Table 181.2) [1, 2].

Functional Anatomy

The superior hypogastric plexus (SHP) is a bilateral paired structure located in the retroperitoneal cavity lying anterior to the L4, L5 and S1 vertebral segments, extending caudally to the upper third of the first sacral body. SHP is considered an extension of the lumbar sympathetic chain, with the sympathetic fibers providing innervation to the pelvic organs (bladder, uterus, vagina, prostate

A. R. Tharian (✉) · N. N. Knezevic
Department of Anesthesiology, Advocate Illinois
Masonic Medical Center, Chicago, IL, USA

College of Medicine, University of Illinois,
Chicago, IL, USA
e-mail: antony.tharian@advocatehealth.com

T. M. Kusper
Department of Anesthesiology, Advocate Illinois
Masonic Medical Center, Chicago, IL, USA

and rectum), and vasculature. Preganglionic afferent fibers innervating these organs originate in the ventral nerve roots of the lower thoracic and upper lumbar regions (T12-L3) and connect with the lumbar sympathetic chain via white rami communicantes. Postganglionic fibers emerge from the lumbar sympathetic chain and join the fibers of the parasympathetic sacral ganglion giving rise to the superior hypogastric plexus. The nerves of the SHP descend along the aortic bifurcation and iliac nerves as the hypogastric nerves, which then continue on each side of the rectum to ultimately form the inferior hypogastric plexus [2] Fig. 181.1.

Table 181.2 Potential complications related to hypogastric plexus block

Complications of superior hypogastric plexus block
Pain at the injection site
Bleeding/hematoma formation
Puncture of the iliac vessels (might cause distal ischemia)
Intravascular injection
Spinal cord or nerve root damage
Epidural, subdural or subarachnoid injection
Damage to pelvic viscera
Rectal perforation
Urinary and bowel problems
Intervertebral disc injury
Discitis
Infection

From [1, 2]

Superior Hypogastric Plexus Block Technique

Different approaches such as anterior percutaneous, posterior paramedian, and trans-discal techniques have been described in the performance of SHB. This block can be performed under fluoroscopic guidance as well as under ultrasound or CT guidance. Irrespective of the imaging modality used, the target for needle placement lies over the anterolateral surface of the L5-S1 interspace. In the fluoroscopic guided, coaxial imaging technique, the patient is placed prone, with the head turned to one side. A pillow is placed under the lower abdomen, above the iliac crest to minimize lumbar lordosis. Antero-posterior (AP) view of the lumbar spine is obtained to identify the L5-S1 interspace. Then the fluoroscopic tube is tilted cephalad in the sagittal plane by about 20 degrees and laterally rotated in the coronal plane approximately 15 degrees, to obtain a coaxial view to a space bordered by the L5 transverse process superiorly, sacral ala inferiorly and the L5 vertebral body medially. The skin overlying the target area is cleansed with povidone iodine and is anesthetized with 1% lidocaine using a 25-gauge needle. A 22-gauge, 5-inch needle, with its distal 1 cm bent 10 degrees to the point of the needle tip, is advanced towards the target located just anterior to the L5-S1 inter-

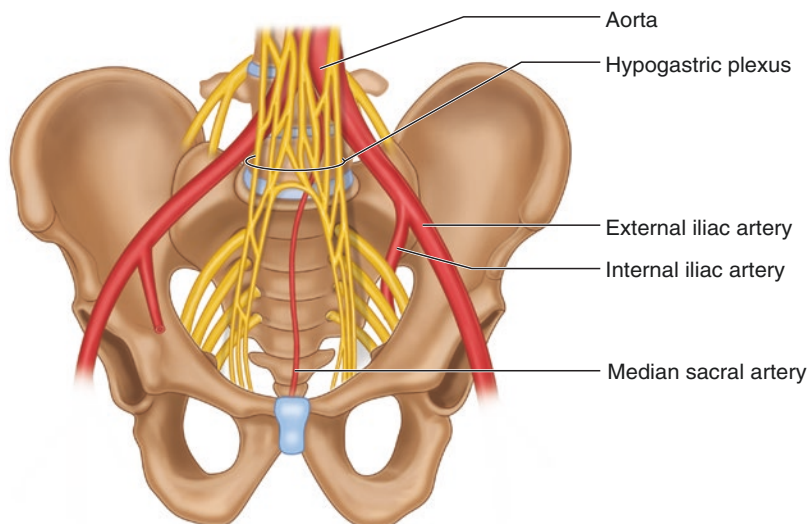
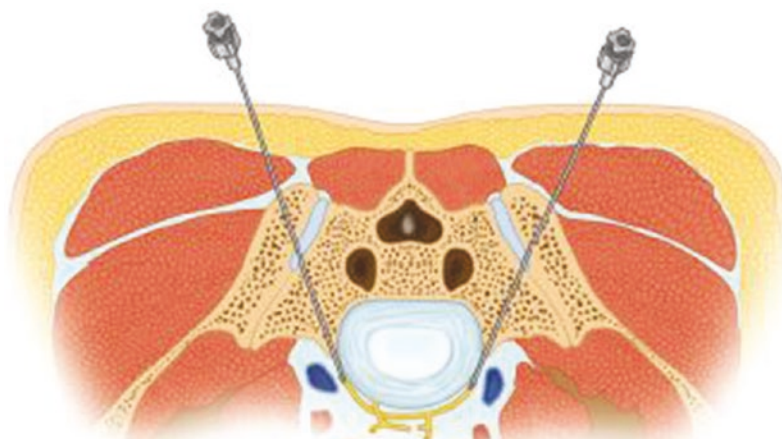


Fig. 181.1 Anatomy of the Superior hypogastric plexus



Hypogastric plexus block

Fig. 181.2 Cross-sectional image at L5-S1 level showing correct needle placement for performing superior hypogastric plexus block

space. Both AP and lateral fluoroscopic imaging is utilized to guide the advancing needle tip towards its target. The procedure is repeated in an identical manner on the contra-lateral side [3]. A small volume (2–3 ml) of radiographic contrast material injected through each of the needles under live lateral fluoroscopy, should reveal dye spread along the anterior surface of the lumbo-sacral junction. Diagnostic blocks are performed with 8–10 ml of local anesthetic solution (0.25% bupivacaine), whereas chemical neurolysis is undertaken with 10% phenol or absolute alcohol injectate. The SHPB can be combined with other blocks, such as celiac plexus or ganglion impar blocks, in cases of widespread abdominal and pelvic pain in advanced malignant disease states. Such an approach may provide pain relief superior to either of the blocks performed alone, Fig. 181.2.

Efficacy of the Superior Hypogastric Plexus Block

The efficacy of the SHPB has been widely investigated and documented in different reports. Plancarte et al. assessed the benefits of the SHPB in 227 patients suffering from pelvic pain who responded favorably to diagnostic blocks with bupivacaine and subsequently

underwent chemical neurolysis with 10% phenol solution [4]. Pain relief was reported by 79% of patients after the diagnostic block and 72% after the therapeutic phenol block. Forty-three percent of individuals reduced their opioid use after the neurolytic block. These findings are supported by a recent randomized controlled trial involving 50 patients with gynecological cancer, which showed greater pain relief in the SHPB group compared to the control (parenteral morphine) group [5].

High Yield Points

- Superior hypogastric plexus block is an effective technique used to ameliorate severe chronic malignant and non-malignant pelvic and rectal pain.
- It is indicated for patients with persistent pain despite oral/parenteral opioid therapy or those unable to tolerate opioids due to their adverse effects.
- Therapeutic neurolytic blocks offer sustained analgesia and are indicated for patients who derived >50% pain relief with diagnostic blocks.
- Target for the needle tip placement is just anterior to the L5-S1 interspace.

- Benefits of hypogastric plexus block include improved analgesia, reduction in opioid dosage and improved quality of life.
- Possible complications are numerous and include pain, bleeding, infection, damage to internal organs, vascular or neural damage, intravascular injection, and discitis.

3. For the successful performance of superior hypogastric plexus block, the needle-tip should ideally be placed anterior to which of the following vertebral inter-spaces?
 - A. L5-S1
 - B. L4-L5
 - C. S1-S2
 - D. L3-L4

Answer: A

Questions

1. Which of the following conditions is **NOT** an indication for superior hypogastric plexus block?
 - A. Endometriosis
 - B. Gastric carcinoma
 - C. Proctalgia fugax
 - D. Cancer of the cervix

Answer: B

2. All of the following are potential complications of superior hypogastric plexus block **EXCEPT**:
 - A. Spinal nerve root damage
 - B. Bladder injury
 - C. Constipation
 - D. Rectal perforation

Answer: C

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