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(CASE REPORT)

Perioperative anesthetic management of portal cavernoma in a patient undergoing total abdominal hysterectomy with bilateral salpingectomy under fractional combined spinal–epidural anesthesia: A case report

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Abstract

Background: Cavernous transformation of the portal vein (portal cavernoma) is a chronic sequela of portal vein thrombosis characterized by porto-portal collateral formation and portal hypertension. Perioperative anesthetic management is challenging due to altered splanchnic hemodynamics, risk of bleeding, and potential coagulation abnormalities.

Case Presentation: A 38-year-old female with radiological evidence of portal cavernoma and preserved hepatic function was scheduled for total abdominal hysterectomy with bilateral salpingectomy for abnormal uterine bleeding. Preoperative coagulation profile, platelet count, and liver function were within normal limits. Upper gastrointestinal endoscopy excluded varices. After multidisciplinary clearance, she was classified as ASA Physical Status II. A Fractional Combined Spinal–Epidural technique was administered using Hyperbaric Bupivacaine with Nalbuphine and Clonidine. Intraoperative hemodynamics remained stable despite an estimated blood loss of 600 mL. No vasopressors or transfusion were required. The postoperative course was uneventful.

Conclusion: In carefully selected patients with portal cavernoma and preserved coagulation status, Fractional Combined Spinal–Epidural anesthesia provides controlled sympathetic blockade and stable perioperative hemodynamics during major abdominal surgery.

Keywords: Portal Cavernoma; Portal Hypertension; Total Abdominal Hysterectomy; Bilateral Salpingectomy; Combined Spinal–Epidural Anesthesia; Fractional Spinal Anesthesia

1. Introduction

Cavernous transformation of the portal vein develops following chronic portal vein thrombosis and is characterized by formation of multiple periportal venous collaterals that bypass the obstructed vessel. Although hepatic synthetic function may remain preserved, chronic portal hypertension alters splanchnic circulation and increases the risk of perioperative bleeding [1,2].

Patients undergoing non-hepatic major abdominal surgery in the presence of portal cavernoma pose anesthetic challenges related to hemodynamic instability, potential thrombocytopenia secondary to hypersplenism, and occult coagulopathy [3]. The choice of anesthetic technique must balance sympathetic modulation with maintenance of adequate hepatic perfusion.

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We describe the successful use of Fractional Combined Spinal–Epidural anesthesia for total abdominal hysterectomy with bilateral salpingectomy in a patient with portal cavernoma.

2. Case presentation

A 38-year-old female (54 kg, 156 cm; BMI 22.4 kg/m^2), gravida 2 para 2, presented with a two-month history of heavy menstrual bleeding associated with passage of clots and progressive lower abdominal pain. She required 7–8 sanitary pads per day and had been on hormonal contraceptive therapy for one year. She was scheduled for total abdominal hysterectomy with bilateral salpingectomy for abnormal uterine bleeding.

There was no history of diabetes mellitus, hypertension, thyroid disorder, respiratory disease, or cardiac illness.

2.1. Relevant Medical History

Imaging studies demonstrated cavernous transformation of the portal vein with caudate lobe hypertrophy and left hepatic lobe atrophy, consistent with chronic portal vein thrombosis. Upper gastrointestinal endoscopy revealed no esophageal or gastric varices. Gastroenterology consultation advised avoidance of Non-Steroidal Anti-Inflammatory Drugs and Aminoglycosides.

2.2. Clinical Examination

On evaluation, pulse rate was 76 beats per minute and blood pressure 120/80 mmHg. Oxygen saturation was 98% on room air. Cardiovascular and respiratory examinations were normal. Functional capacity exceeded 4 METS. She was categorized as ASA Physical Status II.

2.3. Investigations

Hemoglobin was 11.5 g/dL. Platelet count was 3.84 $\times 10^5/mm^3$. Prothrombin Time was 12.9 seconds with INR 1.0. Activated Partial Thromboplastin Time was within normal limits. Liver and renal function tests were normal. Electrolytes were within physiological range. Two-dimensional echocardiography showed normal left ventricular systolic function with ejection fraction of 55%.

Given preserved coagulation profile and absence of varices, neuraxial anesthesia was deemed appropriate.

2.4. Anesthetic Management

After standard ASA monitoring and intravenous access with an 18-gauge cannula, crystalloid infusion was initiated.

Under strict aseptic precautions, the epidural space was identified at L2–L3 using an 18-gauge Tuohy needle and loss-of-resistance technique. An epidural catheter was advanced and fixed at 10 cm. A test dose of 3 mL 2% Lignocaine with Adrenaline was administered without hemodynamic change.

Lumbar puncture was performed at L3–L4 using a 25-gauge Quincke needle. After confirmation of cerebrospinal fluid flow, 2.5 mL of 0.5% Hyperbaric Bupivacaine with Nalbuphine 2 mg was injected intrathecally. After 45 seconds, 1.5 mL of 0.5% Hyperbaric Bupivacaine with Clonidine 15 µg was administered.

This fractional dosing strategy allowed gradual sympathetic blockade and minimized abrupt hypotension.

2.5. Intraoperative course

Hemodynamic parameters remained stable throughout the procedure. Systolic blood pressure ranged between 86 and 120 mmHg, and heart rate remained between 76 and 80 beats per minute. No vasopressors were required.

Estimated blood loss was approximately 600 mL. Crystalloid replacement was administered judiciously to maintain normovolemia without excessive splanchnic congestion. Urine output was 250 mL. No blood transfusion was necessary. The procedure was completed uneventfully.

2.6. Postoperative outcome

The patient remained hemodynamically stable postoperatively. There was no evidence of excessive bleeding, hepatic dysfunction, or neurological complication. Analgesia was satisfactory, and recovery was uneventful.

3. Discussion

Portal cavernoma represents chronic extrahepatic portal vein obstruction with extensive collateral formation and altered splanchnic hemodynamics. Although hepatic function may remain preserved, these patients are considered high risk during major abdominal surgery due to potential bleeding, occult collaterals, and hemodynamic instability.

In this case, anesthetic management was particularly challenging because total abdominal hysterectomy carries moderate blood loss, and portal hypertension increases the risk of unpredictable hemorrhage. The choice between General and neuraxial anesthesia required careful evaluation. General anesthesia could have increased sympathetic stimulation and portal pressure during laryngoscopy, whereas conventional single-shot spinal anesthesia might have caused abrupt sympathetic blockade and hypotension.

A carefully considered anesthetic plan involved the use of a Fractional Combined Spinal–Epidural technique. Gradual intrathecal dosing allowed controlled sympathetic modulation, preventing sudden reductions in systemic vascular resistance. Stable intraoperative hemodynamics without vasopressor requirement, despite 600 mL blood loss, reflected effective preload optimization and careful fluid titration. Preservation of perfusion pressure likely contributed to the absence of hepatic or cardiovascular complications.

This case demonstrates that with thorough preoperative assessment, normal coagulation profile, multidisciplinary clearance, and carefully titrated neuraxial technique, portal cavernoma can be successfully managed during major abdominal surgery with favorable perioperative outcomes.

4. Conclusion

Fractional Combined Spinal–Epidural anesthesia can be safely performed in selected patients with portal cavernoma undergoing total abdominal hysterectomy with bilateral salpingectomy. Thorough preoperative evaluation, confirmation of normal coagulation status, gradual sympathetic modulation, and vigilant monitoring are critical to favorable perioperative outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Written informed consent was obtained from the patient for publication.

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