

## The Management of Anesthesia for Breast Surgery in a Progressive Supranuclear Palsy Case

### Progresif Supranükleer Palsili Hastada Meme Cerrahisinde Anestezi Yönetimi

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**ABSTRACT** Progressive Supranuclear Palsy (PSP) is a rare adult-onset neurodegenerative disease presenting with parkinsonian disorders such as; ophtalmoplegia, pseudobulbar paralysis, bradykinesia, rigidity, and behavioral and cognitive findings. In this case report, a 61 years old female patient who has been followed up for PSP for 6 years and who had diffuse rhonchi and decrease in respiratory sounds in both lungs was presented. Chest x-ray revealed atelectasis in lower zones bilaterally. The patient was scheduled for lumpectomy due to breast cancer. By the combination of thoracic epidural anesthesia and pectoral nerves block 1 (PECS 1) sufficient perioperative anesthesia and postoperative analgesia and to prevent the risks of general anesthesia was aimed.

**Keywords:** Supranuclear palsy, progressive; anesthesia, epidural; anesthesia, dental

**ÖZET** Progresif Supranükleer Palsi (PSP) oftalmopleji, psödobulbar paralizi, bradikinezî, rijdite, davranışsal ve bilişsel bozukluklar gibi parkinsona benzer bulgularla kendini gösteren erişkin dönemi başlangıçlı nadir bir nörodegeneratif hastalıktır. Bizim olgumuzda PSP nedeniyle 6 yıldır takip edilen 61 yaşındaki kadın hastaya meme kanseri nedeniyle lumpektomi yapılmıştır. Hastamızın solunum sistemi muayenesinde her iki akciğerinde yaygın ronkus sesleri saptandı ve solunum seslerinin bilateral azalduğu anlaşıldı. Alt zonlarda atelektazi akciğer grafisinde gözlenmekteydi. Olgumuzda ilaç doz ve çeşitliliğini azaltmak amacıyla genel anesteziden kaçınarak perioperatif anestezi ve postoperative analjezi amaçlı yaptığı torasik epidural ve pektoral sinir bloğu (PECS 1) ile başarılı anestezimizi sunmayı amaçladık.

**Anahtar Kelimeler:** Supranükleer palsi, progresif; anestezi, epidural; anestezi, dental

Progressive Supranuclear Palsy (PSP), also known as Steele-Richardson-Olszewski Syndrome, is a rare adult-onset neurodegenerative disease presenting with parkinsonian disorders such as; ophtalmoplegia, pseudobulbar paralysis, bradykinesia and rigidity, as well as behavioral and cognitive findings.<sup>1</sup> General anesthesia is the preferred method in most of the oncological breast surgeries. However; it has some disadvantages such as; inadequate postoperative pain control, opioid-related side effects like postoperative sedation, pruritus, nausea, vomiting, oxygenation impairment, and depression of ventilation. It is known that regional anesthesia enables early mobilization and nutrition; and reduces stress response during surgery, morbidity and mortality compared to general anesthesia.<sup>2</sup> We considered that regional anesthesia would be more appropriate for this

patient with PSP, who had poor swallowing function, atelectasis due to hypoventilation, low communication skills and who had history of multiple drug use effecting cerebral functions.

## CASE REPORT

A 61-year old and 58 kg female patient was evaluated for lumpectomy surgery. She had history of PSP for 6 years and Type II Diabetes Mellitus (DM) for 2 years. Her medical history was including use of levodopa (600 mg/day), propiverin (30 mg/day), benserazid (150 mg/day), amantadine sulphate (150 mg/day) and glimepirid (4 mg/day). Her physical examination revealed limitation of vertical eye movements, dysarthria, rigidity of both upper extremities, dystonia of both lower extremities. Diffuse rhonchi and decrease of respiratory sounds were revealed by auscultation of the lungs. Atelectatic areas were observed at lower zones of two lungs by chest x-ray. Cardiac examination revealed normal findings by physical examination, electrocardiography (ECG) and transthoracic echocardiography (ECHO). All hematologic and biochemical results were also within normal limits.

Respiratory therapy and medical treatment were started 1 week prior to the surgery. Patient was sedated using intravenous 2 mg of midazolam 30 minutes before surgery. After the monitorization of the patient by the ECG, pulse oximeter and non-invasive arterial blood pressure in the operating room, she was positioned in beach-chair position and draped in a sterile fashion. Under strict asepsis, an 18 Gauge Tuohy needle and catheter were inserted into epidural space via loss of resistance technique and the patient was positioned into supine. A test dose of 2 ml of 2% lidocaine was given after which 10 ml of 1.5% bupivacaine with 2 mcg/ml fentanyl was administered through the epidural catheter. After the visualization of pectoral muscles via ultrasonography (USG) PECS I Block was performed by the injection of 20 ml of 2.5% bupivacaine through the fascia between pectoral muscles (Figure 1). Sensorial examination was performed by pin-prick test 20 minutes after

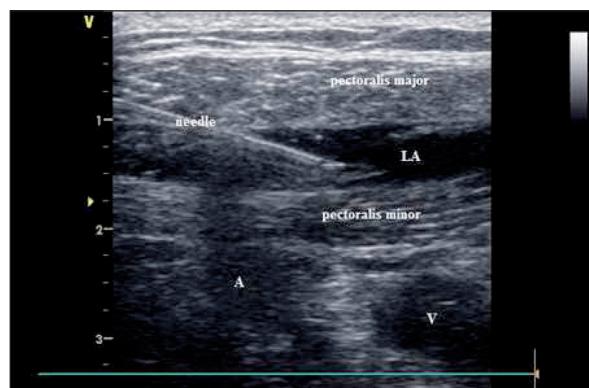


FIGURE 1: PECS block USG view.

epidural injection. Surgery was started when the sensorial block was observed at T2-T7 dermatome area. Just before the operation; conscious sedation is achieved using the propofol infusion 0.5 mg/kg/h. No additional anesthetic or analgesic drug was needed during the surgery. Operation time was 45 minutes. The pain of the patient was evaluated by Visual Analgesia Score (VAS) after the 45 minutes operation period. VAS score (0-10) was 1 until postoperative 15<sup>th</sup> hour.

On the postoperative 15<sup>th</sup> hour, VAS was 3 and epidural Patient Controlled Analgesia (PCA) was initiated. Epidural catheter was removed at post-operative 72<sup>nd</sup> hour and the patient was discharged to home with oral analgesic drugs.

## DISCUSSION

In anesthesia practice, there are a couple of options for breast surgery such as; general anesthesia, epidural anesthesia, or interscalene block combined with epidural anesthesia.<sup>3,4</sup> The advantages of epidural anesthesia are higher quality of postoperative control, less nausea and vomiting, short recovery period after surgery and short hospital stay.<sup>5</sup> On the other hand, high thoracic epidural anesthesia and cervical epidural anesthesia have some negative effects on heart and respiratory functions. And the use of the interscalene block technique, may lead to diaphragm paralysis due to phrenic nerve block and may lead to respiratory problems in patients who have low respiratory capacity.<sup>3</sup> Because of the presence of atelectatic areas on

chest x-ray and low respiratory capacity, it was considered that regional anesthesia would be more advantageous in this case. Additionally postoperative nausea and vomiting might lead to serious complications; therefore the combination of thoracic epidural block and PECS I block was preferred.

In anesthesia practice, combination of either cervical epidural block or thoracic epidural block with interscalene block is preferred in breast surgery in patients with cardiac and respiratory problems.<sup>3,4</sup> Because the anterior thoracic wall is not innervated only by thoracic nerves; combining interscalene block to thoracic epidural block should be preferred.

Sensory innervation of the breast is provided by the anterior and lateral cutaneous branches of the 2<sup>nd</sup>-6<sup>th</sup> intercostal nerves. Lateral cutaneous branches innervate lateral side of the breast skin while anterior branches innervate the medial side. Although 2<sup>nd</sup> and 3<sup>rd</sup> intercostal nerves provide sensory branches to the upper portion of the breast; main sensory nerves of the breast derive from 4<sup>th</sup>-6<sup>th</sup> intercostal nerves. In addition to this, lateral and medial pectoral nerves as well as long thoracic and thoracodorsalis nerve, all deriving from brachial plexus, innervate the anterior thoracic wall.<sup>6</sup>

In recent years PECS I block, PECS II block and serratus anterior block have been increasingly used in postoperative pain block for anterior thoracic wall and axillary regions. All of these three blocks are appropriate for breast surgery. All may affect nervus thoracodorsalis and nervus thoracicus longus. Lumpectomy surgeries performed under thoracic epidural anesthesia and PECS 1 block can be sufficient for postoperative analgesia. PECS 1 block is usually preferred due to its easy perform-

ance and distance of puncture point from the surgical area. In PECS I block; the lateral and medial pectoral nerves, lateral branches of intercostal nerves, long thoracic nerve and intercostobrachial nerves are blocked between pectoral muscles, which provide analgesia on anterior thoracic wall.<sup>7</sup> PECS II and serratus anterior blocks are mostly preferred for the axillary dissection cases.<sup>8,9</sup> However, in this case axillary dissection was not included. The purposes of adding PECS I block to epidural analgesia is to block particularly lateral and medial pectoral nerves, long thoracic nerve and thoracodorsalis nerve, which couldn't be blocked through thoracic epidural block and to provide postoperative analgesia with an already available method.

As a result, the combination of thoracic epidural anesthesia and PECS I block could provide satisfactory anesthesia and postoperative analgesia in patients undergoing lumpectomy for whom general anesthesia is considered to be high risk.

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*The English in this document has been checked by at least two professional editors, both native speakers of English.*

### Conflict of Interest

*Authors declared no conflict of interest or financial support.*

### Authorship Contributions

**Concept:** Muhammet Ahmet Karakaya; **Design:** Kamil Darçın; **Supervision:** Pelin Karaaslan; **Materials-Data:** Esra Kutlu; **Collection and Processing:** Çiğdem Heyik; **Analysis and interpretation:** Pelin Karaaslan; **Literature Search:** Esra Kutlu; **Writing:** Muhammet Ahmet Karakaya; **Critical Review:** Pelin Karaaslan.

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