

# Total Gastrectomy Under Epidural Anesthesia in a High Risk Patient

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## ABSTRACT

Epidural anesthesia is usually preferred as an adjunct to general anesthesia in patients undergoing intra-abdominal operations. However, preferring epidural anesthesia solely in selected patients with poor general health, severe cardiopulmonary disease or high risk may protect the patients against the possible adverse effects of general anesthesia. This type of anesthesia should be performed to carefully selected patients by experienced anesthetists since it may cause adverse effects, including death. In this case report, we would like to share technical aspects and follow-up of epidural anesthesia in an old patient with high risk and severe pulmonary disease who underwent an upper abdominal operation.

**Key words:** High risk, major abdominal surgery, epidural anesthesia

## Yüksek Riskli Bir Hastada Epidural Anestezisi Altında Total Gastrektomi

### ÖZET

Epidural anestezi sıklıkla batın ameliyatı uygulanan hastalarda genel anestezide ilave olarak uygulanması tercih edilir. Ancak genel durumu düşük, şiddetli karyopulmoner hastalığı olan veya yüksek riskli hastalarda sadece epidural anestezi uygulanması, bu hastaları genel anestezinin olası komplikasyonlarından uzak tutabilir. Bu çeşit bir anestezinin kendisi de ölüm dahil yan etkilere sebep olabileceğinden, seçilmiş hastalarda deneyimli anestezi uzmanlarınca uygulanmalıdır. Bu vaka takdiminde, yüksek riskli, şiddetli kardiyopulmoner hastalığı olan ve üst batın cerrahisi uygulanan bir hastada epidural anestezinin teknik yönlerini ve takibi tartışıldı.

**Anahtar kelimeler:** Yüksek risk, majör batın cerrahisi, epidural anestezi

## INTRODUCTION

The most common postoperative complications in high risk patients are pulmonary or cardiovascular dysfunctions. The incidence of complications depend on the age of patients, severity of comorbidity, type, emergency level and duration of the surgery, and type of the anesthesia. Preoperative pulmonary diseases enhances the possibility of postoperative pulmonary complications in particular, therefore it is especially essential to take precautions in this group of patients in the perioperative period. One of these precautions is selecting the proper type of anesthesia. General anesthesia or epidural anesthesia as an adjunct to general anesthesia are

the most common types of anesthesia for the patients who undergo major abdominal surgery. Anesthesia with neuroaxillary blockage, such as spinal anesthesia, epidural anesthesia or combination of both, are commonly used in orthopedics, pediatric surgery, obstetrics and gynecology, with which respiratory functions are preserved, but is rarely preferred for major abdominal surgery (1-4).

Here in this case report, we discuss the clinical benefits of epidural anesthesia in an old patient with impaired pulmonary functions and high risk for major abdominal surgery who underwent an abdominal operation.

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## CASE

A seventy-five year old male patient with a history of radical subtotal gastrectomy due to gastric cancer, who could not complete his chemotherapy due to health status deterioration, was admitted because of dysphagia and vomiting. His past medical history was significant for long-standing hypertensive heart disease. His body mass index was 22 and he had no abdominal tenderness on palpation. The endoscopic examination revealed a esophageal stricture in the distal esophagus (33 cm). The endoscope was advanced past the stricture into the remnant stomach. A second stricture at the gastroenterostomy site was observed and the endoscope could not be advanced past this stricture. Because dilation and stent placement were not appropriate, surgical management was the treatment of choice. Before the operation, preoperative parenteral nutrition was given for 14 days to treat cachexia and in this time period, further preoperative assessments were conducted.

Echocardiography showed moderate mitral and tricuspid insufficiency and mild pulmonary hypertension. There was bilateral pleural effusion, with more fluid in the right side on his chest radiograph (figure 1) and multiple nodules with irregular margins in the upper lobe of the right lung on his chest tomography which were consistent with metastasis (figure 2), were considered to be secondary to gastric carcinoma and no further evaluation was conducted. Preoperative pulmonary evaluation (FEV1: %50), blood gas results (pH:7.40, pCO<sub>2</sub>:49.6,



Figure 1. Chest radiograph

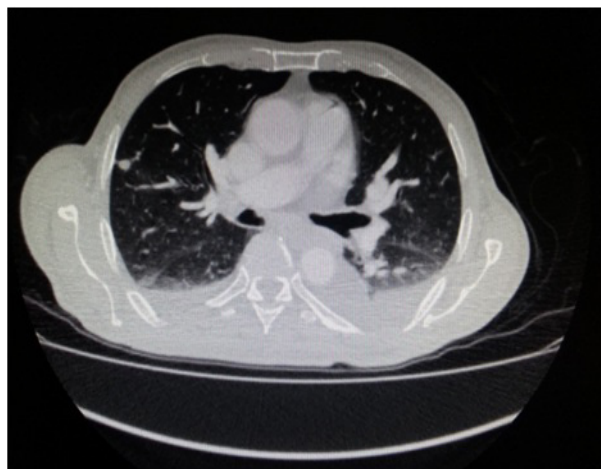


Figure 2. Thoracic tomography (A nodule in the right lung and bilateral pleural effusion)

pO<sub>2</sub>:61.4, sO<sub>2</sub>:90.5) and chest tomography revealed chronic obstructive pulmonary disease. The predicted morbidity rate and mortality rates were %94 and %52.5, respectively, according to POSSUM (Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity) scoring system.

The patient was classified ASA class III and was considered to have high risk of increased duration of mechanical ventilation and length of stay in intensive care unit if general anesthesia was performed. Therefore epidural anesthesia was preferred. A T4 sensory block was performed with 0.5% bupivacaine (Marcain, Astra Zeneca) with 2 ml fentanyl (Marcaïn, Astra Zeneca) via a thoracic epidural catheter. After confirmation of sensory blockade, epidural infusion of bupivacaine and intravenous infusion of propofol (Propofol/ Fresenius) were started at rates of 1 ml/h and 0.5-1.5 mg/kg/h, respectively.

The bispectral index (BIS) was maintained within 70-80. His blood pressure was 130-100/89-60 mmHg and heart rate was around 55/min and he was hemodynamically stable during the whole procedure. Oxygen at a flow rate of 3 l/min was administered with a Hudson mask and oxygen saturation level was kept at 97-99%.

The patient underwent distal esophagectomy and total gastrectomy with Roux-n-y esophagojejunostomy and the duration of the procedure was 4 hours. After the operation, the patient was transferred to the intensive

care unit. Postoperative analgesia was maintained with epidural infusion of 0.1% bupivacaine and 2 mcg/ml at a rate of 10ml/h for 36 hours. The patient was transferred to his room after 48 hours of follow-up in the ICU and discharged on postoperative day 9.

## DISCUSSION

High neuroaxial blockade became more popular after it has been shown that it is associated with lower rate of respiratory dysfunctions, especially in patients with pulmonary diseases (5). Satisfactory results of epidural anesthesia as an adjunct to general anesthesia have encouraged practicing regional anesthesia solely in patients with severe pulmonary diseases (6). Retrospective and prospective studies have shown that it is possible to preserve the pulmonary functions in patients with severe COPD, using neuroaxial blockade instead of general anesthesia, as good as in patients with no pulmonary dysfunction (7-9). Functional residual capacity is reduced following abdominal surgery. Regional anesthesia preserves thoracic wall compliance and diaphragmatic contractility, thereby vital capacity. Additionally, neuroaxial blockade is beneficial in patients with congestive heart diseases and pulmonary hypertension by reducing preload and afterload (6).

Total neuroaxial blockade, local anesthetic toxicity and thoracic sympathetic block may cause cardiac arrest (10). Therefore, it is essential to be cautious to maintain perioperative hemodynamic stability. In our case, invasive artery blood pressure, central venous pressure and urine output were monitored and no hemodynamic instability was observed. Propofol-induced sedation was performed under BIS monitoring. Supplemental oxygen was administered with a mask and no finding of respiratory dysfunction was observed. In addition to anesthetic precautions, the operation should be performed by an experienced surgeon to minimize the metabolic responses to trauma and the duration of procedure.

In conclusion, regional anesthesia with neuroaxial block is a good option for patients with severe pulmonary diseases and high risk for general anesthesia, who undergo major abdominal surgery, to reduce morbidity and mortality.

## REFERENCES

1. Lassen K, Hannemann P, Ljungqvist O, et al. Patterns in current perioperative practice: survey of colorectal surgeons in five northern European countries. *BMJ* 2005; 330:1420-1.
2. Maurer SG, Chen AL, Hiebert R, Pereira GC, Di Cesare PE. Comparison of outcomes of using spinal versus general anesthesia in total hip arthroplasty. *Am J Orthop* 2007; 36:E101-6.
3. Kim GS, Song JG, Gwak MS, Yang M. Postoperative outcome in formerly premature infants undergoing herniorrhaphy: comparison of spinal and general anesthesia. *J Korean Med Sci* 2003; 18: 691-5.
4. Popham P, Buettner A, Mendola M. Anaesthesia for emergency caesarean section, 2000-2004, at the Royal Women's Hospital, Melbourne. *Anaesth Intensive Care* 2007; 35: 74-9.
5. Askrog VF, Smith TC, Eckenhoff JE. Changes in pulmonary ventilation during spinal anesthesia. *Surg Gynecol Obstet* 1964;119:563-7.
6. Savas JF, Litwack R, Davis K, Miller TA. Regional anesthesia as an alternative to general anesthesia for abdominal surgery in patients with severe pulmonary impairment. *Am J Surg* 2004; 188:603-5.
7. Tarhan S, Moffitt EA, Sessler AD, Douglas WW, Taylor WF. Risk of anesthesia and surgery in patients with chronic bronchitis and chronic obstructive pulmonary disease. *Surgery* 1973; 74: 720-6.
8. Mitchell CK, Smoger SH, Pfeifer MP, et al. Multivariate analysis of factors associated with postoperative pulmonary complications following general elective surgery. *Arch Surg* 1998; 133:194-8.
9. Arozullah AM, Khuri SF, Henderson WG, Daley J. Development and validation of a multifactorial risk index for predicting postoperative pneumonia after major non-cardiac surgery. *Ann Intern Med* 2001; 135: 847-57.
10. Pollard JB. Common mechanisms and strategies for prevention and treatment of cardiac arrest during epidural anesthesia. *J Clin Anesth* 2002; 14: 52- 6.