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## CLINICAL INFORMATION

# Cardiac arrest after epidural anesthesia for esthetic plastic surgery: a case report

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### KEYWORDS

Cardiac arrest;  
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**Abstract** Cardiac arrest during neuraxial anesthesia is a serious adverse event, which may lead to significant neurological damage and death if not treated promptly. The associated mechanisms are neglected respiratory failure, extensive sympathetic block, local anesthetic toxicity, total spinal block, in addition to the growing awareness of the vagal predominance as a predisposing factor. In the case reported, the patient was 25 years old, ASA I, scheduled for esthetic lipoplasty. After sedation with midazolam and fentanyl, epidural anesthesia in interspaces T12-L1 and T2-T3 and catheter insertion into inferior puncture were performed. The patient remained in the supine position for 10 min. Then, she was placed in the prone position, developing asystolic cardiac arrest 20 min after the completion of neuraxial blockade. The medical team immediately placed the patient in the supine position and began cardiopulmonary resuscitation. Spontaneous circulation was achieved after twenty minutes of resuscitation. We discuss in this report the exacerbated vagal response as the main event mechanism. The patient's successful outcome emphasizes the importance of anesthetic monitoring by anesthesiologists, prompt recognition and treatment of rhythm changes on the electrocardiogram.

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### PALAVRAS-CHAVE

Parada cardíaca;  
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peridural

### Parada cardíaca após peridural para cirurgia plástica estética: relato de caso

**Resumo** A parada cardíaca durante anestesia neuroaxial é um evento adverso grave, que pode ocasionar sequelas neurológicas importantes e morte se não tratada em tempo hábil. Os mecanismos associados são insuficiência respiratória negligenciada, bloqueio simpático extenso, toxicidade por anestésicos locais, raquianestesia total, além da crescente consciência da predominância vagal como fator predisponente. No caso reportado, a paciente tinha 25 anos

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e estado físico ASA I e foi programada para lipoplastia estética. Após sedação com midazolam e fentanil, foi feita anestesia peridural nos espaços T12-L1 e T2-T3 e inserção de cateter na punção inferior. A paciente foi mantida em decúbito dorsal horizontal durante 10 minutos. Em seguida, foi posicionada em decúbito ventral, evoluiu com parada cardíaca em assistolia 20 minutos após o bloqueio do neuroeixo. A equipe médica imediatamente colocou a paciente em decúbito dorsal e iniciou as manobras de ressuscitação cardiopulmonar. O retorno da circulação espontânea foi obtido após 20 minutos de reanimação. É discutida neste relato a resposta vagal exacerbada como principal mecanismo causal do evento. O sucesso do desfecho da paciente em questão ressalta a importância da vigilância do anestesiológico, e do pronto reconhecimento e tratamento de mudanças de ritmo no eletrocardiograma.

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## Introduction

Thoracic epidural anesthesia for cosmetic breast surgery, or combined breast and abdomen, provides satisfactory results both peri- and postoperatively. The use of a small number of drugs, early awakening, amnesia, and the possibility of hospital discharge within 24 hours make thoracic epidural anesthesia an excellent technique for this type of surgery, with a higher percentage of survival compared to general anesthesia.<sup>1</sup> This technique showed a reduction in postoperative stress and on systemic sympathetic response, with consequent reduction of adverse cardiac events.<sup>2,3</sup> The incidence of cardiopulmonary arrest (CPA) during neuraxial blockade is associated with good outcomes.<sup>4,5</sup> Although several factors may lead to CPA during epidural anesthesia, increasing evidence suggests the vagal predominance as a common mechanism.<sup>6</sup> In this report we discuss a case of cardiac arrest associated with exacerbated vagotonic response.

## Case report

Female patient, 25 years old, ASA I, scheduled for esthetic lipoplasty. Preanesthetic evaluation was performed in office, when she received the proper orientation and gave written informed consent. In the operating room, the patient was monitored with cardiopleth, noninvasive blood pressure, and pulse oximetry. After establishing venous access in the left arm with a 20G catheter, midazolam 4 mg and fentanyl 50 mcg were used for sedation.

Double epidural puncture was performed in the T12-L1 and T2-T3 interspaces with a 18G Tuohy needle with an insertion of a 18G epidural catheter in the inferior puncture, uneventfully. In the T12-L1 interspace, a local anesthetic bupivacaine S75:R25 (*simocaina*) 0.5% with vasoconstrictor (14 mL), morphine 2 mg, fentanyl 50 mcg, and distilled water (3 mL) were administered. In the T2-T3 interspace, a local anesthetic bupivacaine S75:R25 (*simocaina*) 0.5% with vasoconstrictor (8 mL), fentanyl 50 mcg, and distilled water (2 mL) were administered. There were no complications during the procedures or insertion of catheters.

Subsequently, the patient remained in the supine position for 10 min, at which time a slight decrease in oxygen peripheral saturation from 98% to 92% was observed, which was reversed with two deep breaths instructed by the attending

physician. Then the patient was placed in the prone position, and she even helped herself to move.

About five minutes in the prone position, the patient had a new episode of desaturation (92%), reversed at the request of the anesthesiologist. However, after five more minutes the patient developed cardiac arrest in asystolia noticed by the attended anesthesiologist, who immediately arranged for the patient's repositioning in the supine position and began the cardiopulmonary resuscitation maneuvers recommended by the Advanced Cardiac Life Support (ACLS), with high-quality chest compressions, vasopressor administration, and airway control in a timely manner.

After about 20 min of cardiopulmonary resuscitation, the patient regained spontaneous circulation, and vasoactive drugs were required to ensure hemodynamic stability. In a joint decision, the surgical team and the anesthesiologist opted for the cancellation of the surgical procedure, and the patient was taken to the ICU with the following parameters: HR 120 bpm, sinus rhythm, BP 120 × 70 mmHg, SpO<sub>2</sub> 98%, EtCO<sub>2</sub> 30 mmHg, receiving vasoactive drugs (noradrenaline), sedated (midazolam), and with miotic pupils.

In the ICU, the patient developed oliguria and pulmonary edema, treated with improvement of mechanical ventilation parameters (high PEEP and alveolar recruitment maneuvers) and diuretic. Approximately 24 hours after admission to the ICU, the patient was extubated successfully and maintained the hemodynamic parameters up to a discharge from the ICU to the ward the next day.

## Discussion

The frequency, predisposing factors, and outcomes associated with cardiac arrest during neuraxial anesthesia remain undefined.<sup>5</sup> Auroy et al. found that cardiac arrest during neuraxial anesthesia is associated with good neurological outcomes.<sup>4</sup>

The Neuraxial blockade can reduce perioperative mortality compared to general anesthesia, especially in patients undergoing surgery of moderate to high cardiac risk.<sup>7</sup> Particularly, the use of thoracic epidural anesthesia could reduce the incidence of perioperative myocardial infarction.<sup>8</sup>

Thoracic epidural anesthesia is an attractive approach to cosmetic surgery that became popular in Brazil.<sup>9</sup> We opted for the dual-epidural catheterization puncture due to the need for extensive surgical field coverage, reaching a wide

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