

## Intraoperative Asystole: A Case Report

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### Abstract

Cardiac arrest during spinal anaesthesia is unusual, uncommon and unexpected. The vasovagal reflex may cause hypotension, bradycardia, and cardiac arrest even in patients without cardiac problems. In this paper, we aimed to present a 37-year-old male patient who developed asystole after spinal anaesthesia administered to perform an inguinal hernia repair.

*Keywords: Spinal anaesthesia; Vasovagal reflex; Bezold-Jarish reflex; Asystole; Inguinal hernia*

### 1. Introduction

Vasovagal reflex (Bezold-Jarish reflex) is characterized by an increase in cardiac contractility due to the stimulation of mechanoreceptors in the myocardium in response to the increased catecholamine release during trauma, pain, fear, anxiety, or hunger. Consequently, the venous return cannot meet the demands of this increased contractility, leading to an insufficient blood supply pumped by the heart to the periphery. Hypotension, bradycardia, and cardiac arrest develop eventually [1,2]. Vasovagal syncope has a mortality rate of 6%, especially when the underlying cause cannot be identified [3].

### 2. Case Report

A 37-year-old male patient with ankylosing spondylitis receiving a TNF-alpha analogue medication was evaluated to have an ASA score of 2. The hemogram, biochemistry and coagulation tests, the posteroanterior thoracic radiogram, and the ECG of the patient was normal pre-operatively. He had 10 pack-years of smoking history. He underwent a septorhinoplasty operation under general anaesthesia 5 years ago. He did not have a medical history for any allergies.

The patient was taken to the operating room for the inguinal hernia repair surgery to be performed. The patient was monitored with ECG tracings and measurements of non-invasive arterial blood pressure (NIBP) and oxygen saturation (SpO2). The arterial blood pressure was 138/94 mmHg, the heart rate was 57/min, and SpO2 was 100%. The patient was given 2 mg of midazolam intravenously and a 0.9% of NaCl infusion was started. The patient was then placed in a sitting

position and a 15 mg of bupivacaine heavy was injected into the spinal space between the L-3 and L-4 vertebrae using a 25-gauge spinal needle. During this process, no side effects occurred and the patient was given a supine position. The operation started when the hemodynamic parameters of the patient were stable and when the sensorial block reached the T6 level. An intestinal segment and omentum were contained in the large hernia sac. An asystole developed suddenly after the patient informed that he had subdiaphragmatic pain during the repairing process. After administration of 1 mg of atropine intravenously, the cardiac rhythm normalized without any need for cardiac compression. The arterial pressure was measured to be 100/60 mmHg. No pathological changes were observed in the intraoperative ECG tracing. When the level of the spinal block was checked, it was noted that the sensory block remained at the level of T6 with no further increases in height. After the patient informed that he continued to have pain, general anaesthesia with the intravenous injection of 200 mg propofol and 50 mcg Fentanyl started and a Laryngeal Mask Airway (LMA) was placed in the supraglottic area. After the operation, the patient was awakened and taken to the recovery room. In the postoperative recovery room, the hemodynamic parameters of the patient continued to be stable and then the patient was transferred to the inpatient department. The patient had normal ECG tracings in the postoperative period and was discharged from the hospital on the 2<sup>nd</sup> postoperative day.

### **3. Discussion**

Bradycardia caused by vagal reflexes is a common condition; however, the development of an accompanying syncope together with cardiac arrest is rare. Houk et al. [3] demonstrated that a sudden cardiac arrest might develop not only in return for ischemia, trauma, or local tissue damage, but it might be caused by neurogenic mechanisms as well [4].

The literature review informs that a sudden cardiac arrest may occur during strabismus surgeries, open abdominal operations, needle biopsies, foreign body aspirations or exercise and it may develop associated with psychological reasons as well in patients having no previous cardiac complaints [5-7]. The neuroanatomical pathway and mechanism of developing a sudden cardiac arrest have been clarified only for the oculocardiac reflex, however, the other pathways and mechanisms remain to be established [5]. Many experimental and clinical studies have revealed that the autonomic nervous system is involved in the development of fatal cardiac arrhythmias. Both the sympathetic and parasympathetic innervation of the heart is associated with this process. Kinsella reported that vasovagal syncope develops in association with the neuronal mechanisms rather than developing due to a primary cardiac dysfunction [5]. As our patient felt the subdiaphragmatic pain during the process of omentum reduction, we think that the vasovagal reflex was triggered and an asystole developed due to this pain.

Anticholinergics are the first-line medications for the treatment of bradycardia occurring during anaesthesia. The first-line treatment for the bradycardia emerging during regional anaesthesia is atropine [6]. The use of atropine in our patient normalized the cardiac rhythm without needing a cardiac compression.

### **4. Conclusion**

In conclusion, it must be remembered that a sub diaphragmatic pain may be experienced by patients during the omentum reduction process performed for repairing hernias with big sacs and that pain may induce the vasovagal reflex. Therefore, we are of the opinion that general anaesthesia should be given to patients instead of regional anaesthesia during the repair of hernias with big sacs containing omentum.

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