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Trigemino-cardiac reflex during bilateral sagittal split osteotomy

**KEYWORDS**

Bilateral sagittal split osteotomy;
Bradycardia;
Orthognathic surgery;
Trigemino-cardiac reflex

Trigemino-cardiac reflex (TCR) occurs by pressure or stretching of the branches of the trigeminal nerve, and causes severe bradycardia or asystole. Oral and maxillofacial surgery as well as neurosurgery and ophthalmologic surgery can trigger this response. However, TCR during mandibular orthognathic surgery is even rarer.^{1–3} We report a rare case with TCR during bilateral sagittal split osteotomy (BSSO).

A 31-year-old female with mandibular protrusion underwent Le Fort I osteotomy and BSSO under general anesthesia. There were no past and present medical histories. Preoperative electrocardiogram and laboratory values were within normal limits. Her preoperative blood pressure and heart rate (HR) were 110/74 mm·Hg and 75 beats/min, respectively. This surgery required controlled hypotension with a target mean arterial pressure of 90 mm Hg. BSSO after Le Fort I osteotomy was performed, and there was a sudden drop of her HR down to 29 beats/min during the splitting of the right mandibular ramus with a separator. Because the HR returned to normal after surgery was stopped, the ramus splitting with the separator was performed again. However, HR dropped down to 30 beats/min suddenly again. The HR was recovered after the cessation of the surgery and intravenous administration of 0.5 mg atropine. Because this severe bradycardia was considered by TCR of the inferior alveolar nerve, the mandibular nerve block was performed. After that, the

right mandibular splitting and fixation could be performed without severe bradycardia. TCR did not occur during the left mandibular surgery. The postoperative course was uneventful.

Incidence of TCR in maxillofacial surgery was reported as 1.6% (8/502 cases),⁴ and bradycardia or asystole consequently occurred during Le Fort I osteotomy or temporomandibular joint surgery.⁴ Classification of the potential risk of TCR in craniomaxillofacial surgery is divided into 3 groups (low, medium, and high risk),² but BSSO is not included in this classification. To our knowledge, there were only 2 cases with TCR during BSSO in English language literature.^{3,5} Lang et al.⁵ reported 2 episodes of asystole that occurred when placing a channel retractor subperiosteally along the medial aspect of the mandibular ramus. After mandibular nerve block and administration of the anticholinergic agent, asystole did not occur. Kim³ reported a remarkable arrhythmia followed by bradycardia that occurred during BSSO. The heart rhythm recovered when the surgery ceased, but bradycardia was reproduced when the surgery resumed. The bradycardia did not occur after the administration of lidocaine and an anticholinergic agent. The present case had 2 brief periods of severe bradycardia during the mandibular splitting. However, the bradycardia did not occur after mandibular nerve block. A randomized controlled clinical trial to assess TCR during BSSO showed HRs during ramus splitting and setback manipulation decreased significantly in the ramus without mandibular nerve block compared with the blocked ramus.¹ Although mandibular nerve block could not prevent a decrease in HR, it could minimize the decrease. Oral surgeons and anesthetists must be mindful of TCR during BSSO, and mandibular nerve block is recommended.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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