Oculocardiac reflex in an anophthalmic eye

Sir,

Oculocardiac reflex (OCR) is one of the most notorious complications associated with ophthalmic surgeries. We would like to report a case where OCR developed in an anophthalmic socket.

A 15-year-old, 30 kg girl, was posted for removal of an orbital implant. She was a treated case of retinoblastoma. During her first surgery at 4.5 years of age, a 5 mm resection of the optic nerve stump was performed and an implant had been inserted. The four recti muscles were disinserted from the globe and had no attachment to the implant. On follow-up, she developed a contracted socket with implant exposure and was taken up for implant removal.

After attaching standard monitors, she was administered 30 μg of IV fentanyl and general anaesthesia was induced with 70 mg of IV propofol. The trachea was intubated and anaesthesia maintained with sevoflurane in oxygen and nitrous oxide (FIO_2-0.4) at a MAC of 1. Ten minutes after the start of the procedure, when the surgeon was dissecting the conjunctiva from the anterior surface of the implant [Figure 1], her heart rate abruptly slowed from 86 bpm to 54 bpm. The surgical team was immediately informed and they stopped manipulation, which led to the restoration of heart rate. This episode recurred when the surgeon attempted to release the implant from the integrated subconjunctival tenon's tissue. They again stopped manipulation and normal sinus rhythm was restored. Since it was suspected that the bradycardia seemed secondary to OCR, 15 μg of fentanyl was administered and the anaesthetic depth was increased. The implant was explanted and haemostasis was achieved [Figure 2]. Residual neuromuscular blockade was reversed and the trachea was extubated.

OCR in an empty globe has been hypothesised to occur due to the regeneration of the axons of the ciliary nerves from the Gasserian nucleus leading to the establishment of the afferent limb of the reflex.[1] There have been two reported cases of OCR secondary to debridement of the empty orbit and its curettage.[1,2] In our case, the surgeon was dissecting the adherent conjunctiva and tenon's fascia from the implant which are supplied by the branches of the ophthalmic division of the trigeminal nerve. The initial dose of fentanyl administered was 1 mcg/kg as removal of an exposed implant was

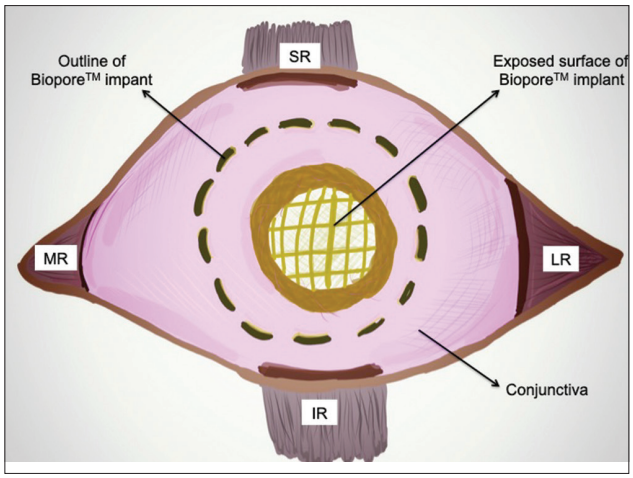

Figure 1: Diagrammatic representation of the enucleated socket with the exposed anterior surface of the implant, adherent conjunctiva on the implant surface and all 4 recti muscles in their respective fornices

deemed to be only mildly painful with minimal dissection. It is unlikely that any of the anaesthetic agents led to the bradycardia as the patient was stable for 20 min post-induction and developed transient bradycardia on manipulation only. While we did not use an objective measure for depth of anaesthesia as it is not a part of routine practice for non-strabismus surgeries, it has been suggested that BIS monitoring may help decrease incidence of OCR by confirming adequate depth.[3] Prophylactic premedication with atropine has been debated over time for OCR prevention. Although it has been associated with a reduction in OCR incidence, the potential for dysrhythmias caused by atropine itself may prove more difficult to manage.[4,5] We did not opt for treatment with atropine as the bradycardia terminated on stopping of manipulation and was not associated with hypotension or sustained effects. We chose to deepen the plane of anaesthesia by increasing the MAC and giving additional analgesia. It is worthwhile mentioning that fast-acting opioids like fentanyl and sufentanil have been associated with an increase in bradycardia and hence should be used judiciously.[6]

Though, in our case, the bradycardia was self-resolving and did not cause haemodynamic instability, it may lead to serious consequences in patients with poor cardiac reserve. An enucleated orbit should not lull the anaesthesiologist into a false sense of complacency and an OCR should be suspected in case of sudden bradycardia.

Figure 2: Empty socket at the end of surgery

Declaration of parental consent

The authors certify that they have obtained all appropriate consent forms. In the form the Parent's has/have given his/her/their consent for his/her/their child's images and other clinical information to be reported in the journal. The parents understand that their child's names and initials will not be published and due efforts will be made to conceal their child's identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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