

## CASE REPORT

## A previously unreported serious adverse event during balloon sinuplasty

Nadine Hughes, Jessica Bewick, Renee Van Der Most, Mike O'Connell

Brighton and Sussex University  
Hospitals, Brighton, UK**Correspondence to**  
Dr Nadine Hughes,  
nadhughes@gmail.com**SUMMARY**

Balloon sinuplasty is considered as a minimally invasive procedure for the treatment of chronic rhinosinusitis. In this case report we describe how a patient undergoing balloon sinuplasty sustained an intraoperative cardiac arrest with no cardiac history. Postoperative investigations were all normal. The patient was discharged on the first postoperative day and further outpatient tests were normal. We postulate that this event occurred due to profound vagal stimulation either on instrumentation of the maxillary mucosa or when the orbit was accidentally breached during instrumentation of the right frontal recess. The authors conclude that balloon sinuplasty, despite being minimally invasive surgery, should be performed under the supervision of an anaesthesiologist with the ability of cardiac monitoring and immediate treatment because of possible arrhythmias.

**BACKGROUND**

Balloon sinuplasty is a minimally invasive endoscopic procedure used to treat patients with chronic rhinosinusitis. The ostia of the paranasal sinuses are dilated by causing microfractures to these areas with minimal mucosal damage. Among ear, nose and throat (ENT) surgeons, balloon sinuplasty is a relatively new technique and advocates the report of improved radiological and quality-of-life scores.<sup>1</sup> Its minimally invasive nature has meant that it is deemed to be safe, and even suitable in children.<sup>2</sup> Reported risks include trauma to mucosal tissues, infection and potential injury to the eyes. To date, no serious adverse events have been reported in the literature. We describe a case of cardiac arrest during balloon sinuplasty.

**CASE PRESENTATION**

A 46-year-old woman, complaining of bilateral infraorbital and frontal facial pain which was unresponsive to medical therapy, was offered balloon sinuplasty to improve her symptoms. She was previously fit and well with no reported cardiac history. A preoperative planning of CT of the paranasal sinuses showed no mucosal disease or osteomeatal complex block.

Following informed consent, the patient was anaesthetised and balloon sinuplasty was started. Both maxillary antra and the left frontal sinus were dilated successfully with no complications. During instrumentation of the right frontal recess, asystolic cardiac arrest occurred. Cardiopulmonary resuscitation was started and instrumentation removed from

the nasal cavity. After 30 s there was spontaneous return of circulation, sinus rhythm was recorded and a normal blood pressure was restored. Further instrumentation of the right frontal recess resulted in severe bradycardia (approximately 30 bpm). This was treated with glycopyrrolate (600 µg) and the sinuplasty procedure was abandoned.

**INVESTIGATIONS**

Immediate postoperative recovery was uneventful and no neurological deficit was identified. A postoperative ECG showed sinus rhythm. The patient was monitored on the coronary care unit overnight where all observations and serial ECGs were satisfactory. Troponin levels were normal. A transthoracic echocardiogram revealed good left and right ventricular function, with no significant valvular abnormalities. A right infraorbital bruise was evident on the first postoperative day; however, there were no signs or symptoms of visual impairment. Oral antibiotics were given as it was suspected that there was orbital injury from the balloon sinuplasty.

**OUTCOME AND FOLLOW-UP**

The patient was well and discharged on the first postoperative day. Outpatient serial ECGs and cardiac event recorders were normal, and the patient was discharged from the coronary care unit. An ENT follow-up has revealed that she still has some right frontal numbness, from her hairline to the side of the nose and under the right eye.

**DISCUSSION**

We report an episode of asystolic arrest in a patient with no cardiac history undergoing balloon sinuplasty. We postulate that this event occurred due to profound vagal stimulation either on instrumentation of the maxillary mucosa or when the orbit was accidentally breached during instrumentation of the right frontal recess. The oculocardiac reflex, also known as the Aschner reflex is well recognised to cause bradycardia when traction is applied to the extraocular muscles or pressure applied to the orbit. The reflex is mediated by nerve connections between the trigeminal cranial nerve and the vagus nerve of the parasympathetic nervous system. Afferent tracts are mainly derived from the ophthalmic division of the trigeminal nerve, although tracts from the maxillary and mandibular divisions have also been described. Bradycardia, junctional rhythm, asystole and very rarely death can be induced through this reflex.

**To cite:** Hughes N, Bewick J, Van Der Most R, et al. *BMJ Case Reports* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-007879

Learning points

- ▶ The authors conclude that balloon sinuplasty, despite being minimally invasive surgery, should be performed under the supervision of an anaesthesiologist with the ability of cardiac monitoring and immediate treatment because of possible arrhythmias.
- ▶ Adequate follow-up is essential to investigate other causes of adverse events.
- ▶ An excellent knowledge of anatomy and physiology is paramount when any procedure, deemed easy or difficult, is undertaken.

**Competing interests** None.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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