



## Case report

# An eye for a tooth

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**Objective:** To propose a possible link between dental extraction and intra-ocular complications.

**Background:** Several publications in medical literature describe intra-ocular complications after different dental procedures.

**Results:** Retinal detachment and vitreous hemorrhage following dental extraction with an appropriate anesthesia.

**Conclusion:** Systemic complications following dental treatments should not be neglected and proper medical treatment must be provided as soon as possible.

**Keywords:** retinal tear, vitreous hemorrhage, Valsalva maneuver, tooth extraction.

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## The case

A 49-year-old healthy female was accepted to the oral and maxillofacial surgery (OMFS) clinic. A previously treated root canal in the second right upper molar tooth had secondary caries in the cervical area. This was considered unrestorable.

The patient underwent the surgical extraction of the tooth. The procedure was completed uneventfully and included the dissection (separation) of the roots of the tooth for ease of the extraction, under local anaesthesia of lidocaine 2% with adrenaline 1:80 000.

One day after the procedure, the patient felt a strange sensation of blurred vision and threads in the right eye and later of a white curtain covering the same eye.

The patient considered this disability as a transient side effect of the operation and waited for improvement. When the vision did not improve after 3 days, she applied again to the OMFS and was referred to an ophthalmology emergency clinic.

Retinal tear and vitreous haemorrhage in the right eye were diagnosed and appropriately treated

with laser. One week later, the vision in the affected eye was completely restored.

## Discussion

Not exactly as 'an eye for an eye' in the Holy Scriptures<sup>1</sup>, surgical activities create unusual associations of events. Traumatic eye injury after dental procedures was rarely reported in medical literature, including transient blindness after dental extraction<sup>2</sup>, intraocular haemorrhage during dental implant surgery<sup>3</sup> or even retinal tear after teeth cleaning<sup>4</sup>.

As in many other undesirable events following surgical procedures, the causal link is probable rather than certain. This probability is based on the temporal and spatial proximity of the surgery and damage, influences that may be associated with surgery and the possible proneness of patient complications, because of specific, and sometimes hidden, characteristics.

Vitreous haemorrhage, as well as retinal tears, can result from blunt force trauma.

The upper jaw forms the floor of the maxillary sinus. The upper teeth are continuous with the whole midface and the cranium. Therefore, when extracting these teeth, the traction (pressure)

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exerted can be felt all over the face and head, leading to a stressful sensation. Most of the patients experience some stress during the procedure of teeth extraction, perhaps causing elevations in their blood pressure.

In the discussed case, the upper right second molar was extracted by the separation (dissection) of the roots. No exaggerated forces were used during the extraction, but they might have been enough to create ocular vasospasms in this particular patient. Mental stress during the treatment and local epinephrine could cause blood pressure elevation. However, this is no more than an unproven theoretical explanation.

The more serious candidate to be the casual factor for the mentioned vitreous and retinal damages after tooth extraction is Valsalva manoeuvre<sup>5,6</sup>. The first description of Valsalva haemorrhagic retinopathy was published in 1972<sup>6</sup>. During sudden strain from any reason, there is increase in intrathoracic pressure against a closed glottis decreasing venous return to the right heart. Following Valsalva manoeuvre, an abrupt rise in intraocular venous pressure causes retinal capillaries to rupture, and less commonly, vitreous haemorrhage.

Patients with a history of blood dyscrasias, diabetes mellitus, sickle cell anaemia and hypertension as well as those with a history of ocular venous occlusions have an increased risk for Valsalva retinopathy. The prognosis of Valsalva retinopathy is usually good especially with prompt diagnosis and treatment. Conservative treatment includes instructions to avoid anticoagulant medications and strenuous activities, to use stool softeners if constipated and to sleep in a sitting position.

Surgical treatment includes different techniques of laser membranotomy.

As a caution, it may be good advice to patients during dental procedure – not to hold their breath for a long time and rather to take multiple breaths during procedures<sup>7</sup>. It is important for the practitioner to consider such a possible causality between dental operations and retinal damage, for the patient's benefit.

## References

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