A case of orbital emphysema as a sequel of a snowboard related head injury is reported. It is believed that a fracture of the medial orbital wall was caused by the increased intraorbital pressure when the patient hit his forehead on the snowy ground, allowing air to enter the orbit when he blew his nose. Wearing goggles may prevent this type of sports related injury.

CASE REPORT

An otherwise healthy 19 year old man presented with swelling of his left eyelid. He fell while snowboarding and hit his left forehead on the snowy ground. He was not wearing a helmet or goggles. He denied any impact to the orbit or the nose. This blunt trauma did not result in any clinical problem and he continued snowboarding. Four hours later, he felt a “pop” in the left eye while blowing his nose. Immediately after this he became aware of narrowing of the palpebral fissure. He had no pain and no disturbance in his vision. He visited our outpatient clinic in the following day. Examination revealed no abnormality other than inflation of his left eyelid causing ptosis. Computed tomography with 2 mm slice thickness showed accumulation of air in the left orbit and a soft tissue protruded into the left ethmoid sinus. Note that the medial rectus muscle was not involved.

DISCUSSION

Orbital emphysema is a recognised but uncommon complication of diverse types of orbital and facial injury. Its appearance can be delayed until some time after the injury, at which point it is often precipitated by actions causing increased upper airways pressure, such as nose blowing or coughing. Direct blunt trauma to the orbit is a common cause of fracture of the lamina papyracea, presumably caused by the increased intraorbital hydraulic pressure or the buckling force, allowing communication between the orbit and the ethmoid sinuses. Very rarely orbital emphysema with indirect trauma or without any trauma7 has been reported.
Although direct orbital or nasal injury was denied in our case, the abrupt increase in intraorbital pressure appeared to be the cause of the fracture in the medial orbital wall because medial displacement of the fractured fragments suggested the usual type of blow out fracture. We believe that accumulated snow provided a considerable force to the orbit when the patient hit his forehead on the snowy ground, because he was not wearing goggles. Hence, wearing goggles may have prevented the fracture of the medial orbital wall in our case.

With the progress in computed tomography technology, the medial orbital wall, which is known theoretically to be the weakest point of the orbital wall, has been reported to be the most common site of pure orbital blow out fracture. Accumulated snow may provide a considerable force to the orbit when the patient hits his forehead on the snowy ground, because he was not wearing goggles. Hence, wearing goggles may have prevented the fracture of the medial orbital wall in our case.

Orbital emphysema is a benign self-limiting condition. As emphysema usually resolves over a period of about two weeks, no treatment is required unless there are associated visual symptoms. However, it should be realized that compressive or tension orbital emphysema can cause severe visual loss. As fibrosis around the fracture sites of the lamina papyracea is expected to occur within two weeks, possibly closing a sinus-orbital communication, all patients with orbital emphysema should avoid nose blowing, sneezing, coughing, vomiting, or the Valsalva manoeuvre for at least two weeks after the injury. This is probably a good recommendation for all patients who might have medial orbital fractures, because small fractures may not always be readily seen on imaging studies.

As participation in snowboarding rapidly increases, considerable numbers of snowboarders may suffer mild head injuries. Physicians involved with snowboard related head injuries should be aware that a trivial head injury may cause fractures of the lamina papyracea resulting in orbital emphysema following nose blowing. To prevent this sequel, it is recommended that all snowboarders wear goggles.