

Ocular injuries by durian fruit

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Received: 2012-04-12 Accepted: 2012-06-20

Abstract

- **AIM:** To report various ocular injuries caused by durian fruit.

- **METHODS:** Three cases of ocular injuries were described in young patients, due to accidental fall of durian fruit on the forehead and face, while they were taking rest/sleeping /playing under the durian tree.

- **RESULTS:** The ocular injuries observed were lacerating injury of cornea with iris incarceration, hyphema, superficial penetrating injury of sclera and angle recession glaucoma in the right eye of first patient; lacerating injury of cornea with iris prolapse in the left eye of second patient; subconjunctival haemorrhage, traumatic mydriasis and superficial penetrating injury of sclera, commotion retinopathy and macular edema in the left eye of third patient. Vision improved to normal in all the eyes following surgical/ medical/optical treatment.

- **CONCLUSION:** Evidence of penetrating injury (because of thorns) and blunt injury (because of weight) can be seen in the eyes when durian fruit falls on the face. Vision can be recovered fully with immediate and appropriate treatment in these cases. The ocular injuries can be prevented by educating the public to wear protective metal frame wide goggles and not to sleep/take rest under the durian tree.

- **KEYWORDS:** durian fruit; subconjunctival haemorrhage; hyphema; lacerating injury of cornea; iris prolapsed

DOI: 10.3980/j.issn.2222-3959.2012.04.25

Reddy SC. Ocular injuries by durian fruit. *Int J Ophthalmol* 2012;5(4):530-534

INTRODUCTION

Durian fruit is a seasonal crop in Southeast Asia; *Durian Zibethinus* is the only species commercially cultivated

on a large scale and available outside of its native region. Durian is distinctive for its large size, unique odour, and formidable thorn covered husk. The fruit can grow to the size of 30cm×15cm (12×6 inches), and typically weighs 1kg-3kg (2-7 lbs). Its shape ranges from oblong to round, the colour of the husk green to brown, and its flesh yellow to white (Figure 1). The edible flesh emits a distinctive odour, strong and penetrating even when the husk is intact. It is mostly found in Malaysia, Indonesia, Thailand, Brunei and Singapore. When cut open, it shows creamy coloured soft yellowish flesh, divided into separate sections containing a large seed. It is eaten fresh as a desert fruit. It is also used in cakes, ice creams. When unripe, it is cooked as a vegetable. The seeds can also be eaten if roasted or boiled^[1,2]. The pungent intolerable smell of the fruit has led to its banishment from public transportation to outside countries. Penetrating and blunt injuries of the eye can be caused due to the sharp thorns and weight of this fruit respectively.

There are no published reports in the literature regarding eye injury by durian fruit, except one case report from Malaysia^[3]. In view of rare occurrence of ocular injury with this fruit, the author reported three patients who sustained various ocular injuries caused by durian fruit and all of them regained normal vision after treatment.

SERIAL CASES

Case 1 A 40-year-old Malay man was referred from a district hospital to the emergency department of a university teaching hospital at 9:00 p.m. He gave history of fall of durian fruit from the tree on his forehead and face at 4:45 p.m. on the same day while he was taking rest under the tree. He complained of redness, pain and diminution of vision in the right eye since the time of injury. He gave the injury to the left eye with a wooden piece 16 years ago following which he developed cataract and then underwent cataract operation. He was not prescribed glasses/contact lens in the left eye following the operation.

Multiple superficial punctured wounds (durian fruit thorns pricks) were present on the forehead, nose and cheeks (Figure 2A). Right eye: Vision was hand movements only. Echymosis of upper eyelid was present. Slit-lamp examination showed a small subconjunctival haemorrhage in the lower nasal quadrant below the limbus, a small lacerating injury of cornea on the temporal side at 8 o'clock

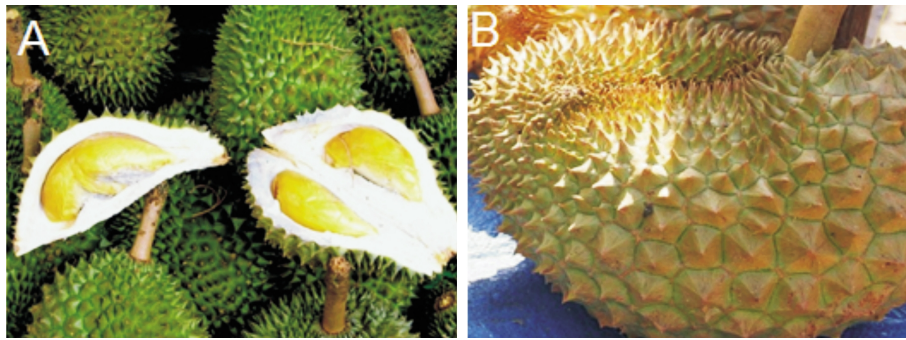


Figure 1 Durian fruits A: Full shape with thorns/spikes and cut open showing seeds covered with yellow edible pulp; B: close view showing sharp thorns.

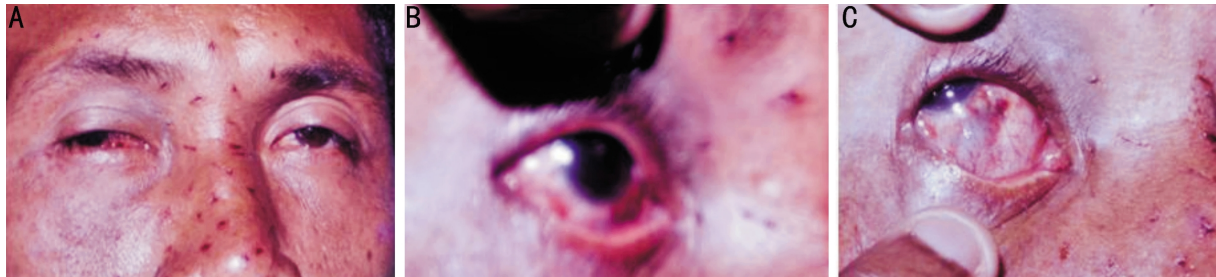


Figure 2 Case 1 A: Multiple superficial punctured wounds on the forehead, nose and redness of right eye; B: Total hyphema and subconjunctival haemorrhage in lower nasal quadrant; C: Small black spot on the sclera below the lower limbus at 6 o'clock position and an eyelash on its medial side.

up to the limbus with iris incarceration and total hyphema (Figure 2B). Iris, pupil and lens were not visible. Intraocular pressure (IOP) was 14mmHg. A small black spot was seen below the lower limbus at 6 o'clock position under the conjunctiva (Figure 2C) and an eyelash on its medial side. Fundus could not be seen because of hyphema. Left eye: Vision was counting fingers at 2 feet. Aphakia with divergent squint present. Fundus was normal. IOP was 18mmHg.

On the next day morning, under general anaesthesia reposition of the incarcerated iris into anterior chamber and suturing of corneal wound was done in the right eye. The conjunctiva was explored in the lower part of limbus, and a 2mm size black foreign body (thorn piece of durian fruit) was found piercing obliquely the sclera. The foreign body was removed from the sclera. There was no vitreous/uveal tissue in the scleral wound. Hence, wound edges were approximated only. An eyelash lying medial to it was removed and then, conjunctiva was sutured. Paracentesis was done at 4 o'clock position and the blood was aspirated from the anterior chamber; and the corneal wound was sutured. Subconjunctival injection of gentamycin (20mg) and dexamethasone (2mg) was given at the end of the operation in the upper temporal conjunctiva. Gentamycin eye ointment was put and the eye was patched.

Postoperatively, vision in the right eye was 6/24. Slit-lamp examination showed inflammatory reaction in the anterior chamber (flare and cells). Hyphema was minimal. Pupil was

circular and slightly dilated. IOP was 16 mmHg. Fundus examination revealed normal optic disc and small preretinal haemorrhage below the macula. The patient was given ciprofloxacin 0.3% eye drops 4th hourly, dexamethasone 0.1% eye drops 4th hourly, atropine 1% eye drops 8th hourly in the right eye. There was no hyphema after one week and vision improved to 6/12. The patient was discharged from the hospital on ciprofloxacin eye drops qid., dexamethasone eye drops qid., and atropine eye drops bd in the right eye.

The patient was followed up at weekly intervals. The preretinal haemorrhage got absorbed over a period of 2 weeks after discharge and vision was 6/12. The ciprofloxacin eye drops and dexamethasone eye drops were reduced to bd and atropine eye drops were stopped in the right eye. Three weeks after the injury, intraocular pressure was found to be 28mmHg and the gonioscopy showed 120° angle recession on the temporal side. Ciprofloxacin and dexamethasone eye drops were stopped. Timolol eye drops 0.5% bd in the right eye and Tab. Acetazolamide 250mg tds were given for one week. The intraocular pressure was 18mm Hg in the next follow-up. Tab. Acetazolamide was stopped and timolol eye drops were continued. The patient was followed up once a month for first 3 months and then once in 3 months for next 6 months and later on once in 6 months. The IOP remained 14-18mmHg during the follow-up visits. At the last follow-up (2 years after injury), vision was 6/9 which improved to 6/6 with +0.25D/-0.75D×65° correction.

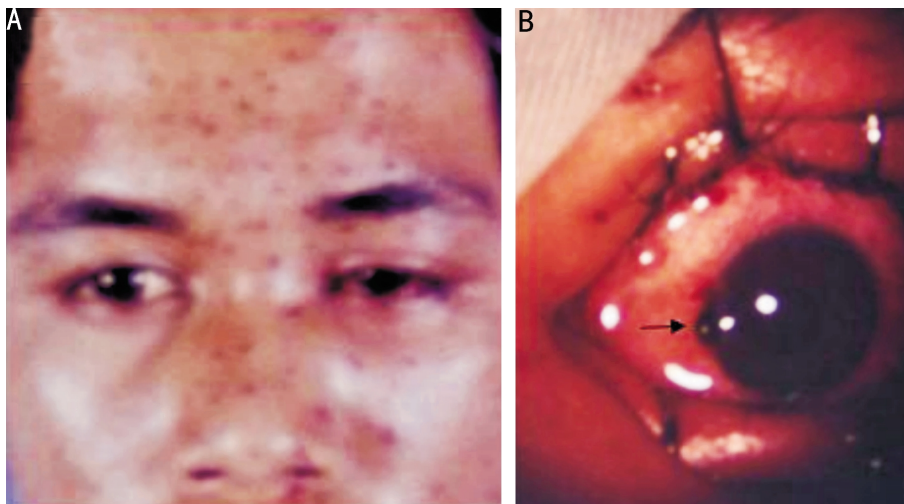


Figure 3 Case 2 A: Multiple superficial punctured wounds on the forehead, nose, left cheek and redness of left eye; B: Iris prolapse at 9 o'clock position (black arrow).

During the follow-up, improvement of vision to 6/18 was noted with aphakic correction in the left eye. Six months after the injury to right eye, scleral fixation posterior chamber intraocular lens (+22.5D) implantation was done in the left eye. Postoperatively, the vision in left eye was 6/18 and could not be improved further. The postoperative period was uneventful and the IOP was 16mmHg. He was advised to come for follow-up once in six months regularly for angle recession glaucoma in right eye.

Case 2 A 20-year-old Malay young man was referred from the emergency department to the eye clinic in the morning at 8:00 a.m., with history of falling durian fruit on his forehead and face one night before when he was sleeping under the durian tree. He complained of pain and diminution of vision in the left eye since the time of injury.

Multiple superficial punctured wounds (thorn pricks) were present on the forehead, nose and left cheek (Figure 3A). Left eye: Vision was 3/60. Slit-lamp examination showed circum corneal congestion. A small corneal laceration was noted on the nasal side (9 o'clock position) near the limbus with prolapsed iris (Figure 3B). Anterior chamber was formed well. Pupil was peaked towards nasal side, sluggishly reacting to light. Lens was normal. Fundus was normal. Intraocular pressure was 18mmHg. Right eye: Vision was 6/6. Anterior segment, fundus and IOP were normal.

On the same day afternoon, under general anaesthesia reposition of the prolapsed iris into the anterior chamber was done and the corneal wound was sutured in the left eye. Subconjunctival injection of gentamycin (20mg) and dexamethasone (2mg) was given in the upper conjunctiva; gentamycin eye ointment was put and the eye was patched.

Postoperatively, vision in the left eye was 6/12. Corneal wound sealed well. Anterior chamber showed flare. Pupil was circular. Minimal pigmentation of iris was seen on the lens. Lens was normal. IOP was 16mmHg. Fundus was normal. Ciprofloxacin 0.3% eye drops qid, dexamethasone 0.1% eye drops qid and homatropine 2% eye drops bd were given in the left eye. The iris pigmentation on the lens was absorbed and the patient was discharged from the hospital on 5th postoperative day on the same treatment, and was followed up once a week. The vision improved to 6/6 in two weeks time. Ciprofloxacin eye drops and dexamethasone eye drops were reduced to bd; and homatropine eye drops were stopped. The patient was seen after 2 weeks and 6/6 vision was maintained. Eye medication was stopped. Intraocular pressure was 16mmHg. He was followed up once in 2 months for 6 months. The IOP was within normal range. Later on, patient defaulted followed up.

Case 3 A 12-year-old Malay boy was referred from a health centre to the university teaching hospital at 9:30 p.m., with history of falling durian fruit on the forehead and face while he was playing with friends under the tree at 5:30 p.m. He complained of pain and diminution of vision in the left eye since the time of injury.

Multiple superficial punctured wounds (thorn pricks) were present on the forehead, nose and left cheek (Figure 4A). Left eye: Vision was counting fingers 2 feet. Mild echymosis of eyelids was present. Large subconjunctival haemorrhage was seen on the temporal side extending down wards towards the fornix (Figure 4B). Slit-lamp examination showed small corneal abrasion in the lower part. Anterior chamber was normal. Pupil was dilated and sluggishly reacting to light. There was no relative afferent papillary

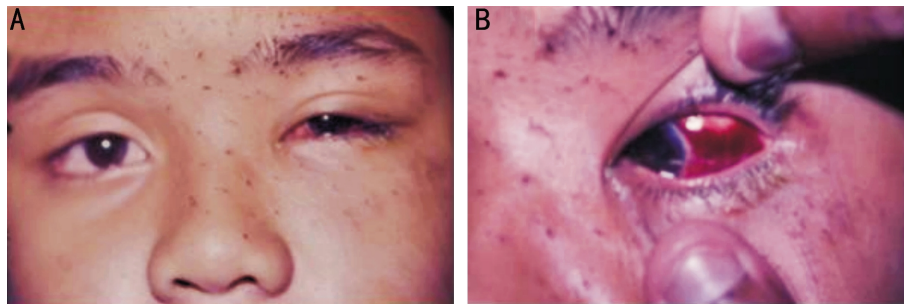


Figure 4 Case 3 A: Multiple superficial punctured wounds on the forehead, nose, left upper eyelid and redness of left eye; B: Subconjunctival haemorrhage on the temporal side.

defect. A small black spot was seen below the lower limbus at 6 o'clock position under the conjunctiva. Fundus examination showed normal optic disc and commotion retinopathy with macular edema. Intraocular pressure was 14mmHg. Right eye: Vision was 6/9; anterior segment, fundus and intraocular pressure were normal.

On the next day morning, under general anaesthesia the conjunctiva below the lower limbus was explored and a small (2mm) thorn was found piercing the sclera. The foreign body was removed from the sclera. There was no vitreous/uveal tissue in the scleral wound. Hence, wound edges were approximated only. The conjunctiva was sutured. Subconjunctival injection of gentamycin (20mg) and dexamethasone (2mg) was given in the upper conjunctiva; gentamycin eye ointment was put and the eye was patched.

Postoperatively, vision was 6/60 in the left eye. Anterior chamber showed flare and cells. Traumatic mydriasis was noted. Lens was clear. Fundus showed macular edema. Ciprofloxacin 0.3% eye drops 4th hourly, dexamethasone 0.1% eye drops 2 hourly and homatropine 2% eye drops tds were given in the left eye. Tab. Prednisolone (0.5mg/kg body weight) was started because of macular edema. The vision improved to 6/18 on 4th postoperative day; ciprofloxacin eye drops and dexamethasone eye drops were reduced to qid, and homatropine eye drops to bd in the left eye. Systemic steroids were continued. The patient was discharged from the hospital on the next day on the same treatment.

He was followed up at weekly intervals. The ciprofloxacin eye drops and dexamethasone eye drops were reduced to bd and homatropine was stopped after 2 weeks. Systemic steroids were tapered off as vision improved. At 4 weeks follow-up, vision was 6/9, fundus showed normal macula; systemic steroids were stopped. He was followed up monthly for 3 months and then 3 monthly for the next 9 months. The IOP was within normal range during the follow up period. At the last follow up after one year, the vision improved in both eyes to 6/6 with correction (left eye $-0.75/-0.50 \times 15^\circ$

and right eye $-0.50/-0.50 \times 180^\circ$). In the left eye, pupil was dilated due to traumatic mydriasis; IOP was 12mmHg; fundus showed pigmentation in the macula.

DISCUSSION

Durian trees grow in hilly remote areas of South East Asia. They usually grow to an average height of 12 meters; when mature the tree can bear 400-500 fruits. The fruit takes about four months time (after pollination of the flowers) to drop down from the branch of the tree. The mode of cropping is by harvesting the ripe fruit which has dropped on the ground^[4]. Durian farms are also located in Philippines, Cambodia, Laos, Vietnam, Sri Lanka, India, West Indies, Florida, Hawaii, Papua New Guinea, the Polynesian islands, Madagascar, southern China (Hainan island), and northern Australia^[1].

Due to the tree height, weight of the fruit and its thorns, this fruit can cause blunt injury as well as penetrating injury to the eye when it falls accidentally on the forehead and face. In the case reported by Aziz *et al*^[3] the injury to the eye occurred when the fruit from the tree fell on the face when the person was collecting the ripe fruits on the ground. However, the mode of injury is different in three cases reported by the author i.e. the first patient sustained injury to the eye when he was taking rest under the tree; the second patient when he was sleeping under the tree; and third patient while he was playing with friends under the tree.

The ocular injuries observed were lacerating injury of cornea with iris incarceration, superficial penetrating injury of sclera (penetrating injury), total hyphema anterior chamber angle recession (blunt injury) in the right eye of first patient; lacerating injury of cornea with iris prolapse (penetrating injury) in the left eye of second patient; subconjunctival haemorrhage, traumatic mydriasis, commotion retinopathy, macular edema (blunt injury) and superficial penetrating injury of sclera (penetrating injury) in the left eye of third patient. Immediate surgical intervention followed by medical treatment and prescription of glasses have improved the vision to normal in all the patients.

The literature search revealed that in patients with open globe injuries (penetrating eye injuries), the factors likely to predict a poor visual outcome are mechanism or type of injury, poor preoperative visual acuity, time lag between injury and surgery, presence of relative afferent papillary defect, size and location of the wound, presence of hyphema, uveal prolapse, vitreous prolapse, retinal detachment, and vitreous haemorrhage^[5-8].

The treatment of blunt injury and perforating injury in the patients reported was similar to the standard management practiced. Even though there was total hyphema in the first patient, surgical intervention was not done because of normal IOP and the hyphema got absorbed in few days time. Immediate surgical intervention of iris prolapse was done in the second patient. In both of them, postoperative medical treatment and prescription of glasses have helped to improve vision. In the third patient, there was commotio retinopathy and macular edema; treatment with systemic corticosteroids and prescription of glasses have helped to improve vision to normal in this patient. Visual outcome was good in cases 1 and 2 because the perforating injury was of very small size and at the limbus; and the time lag between the injury and surgery was less than 24 hours; and postoperatively there were no complications.

In conclusion, the evidence of both penetrating injury and blunt injury can be seen in the eyes due to durian fruit. Vision can be recovered fully with immediate and appropriate treatment in these cases. The ocular injuries can be prevented by educating the public to wear protective metal frame wide goggles and not to sleep/take rest under the durian tree.

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