

Penetrating Ocular Injury With a Fetal Scalp Monitoring Spiral Electrode

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PURPOSE: To report a penetrating ocular injury resulting from inadvertent placement of a fetal scalp monitoring spiral electrode into the right eye of a preterm male with a face presentation.

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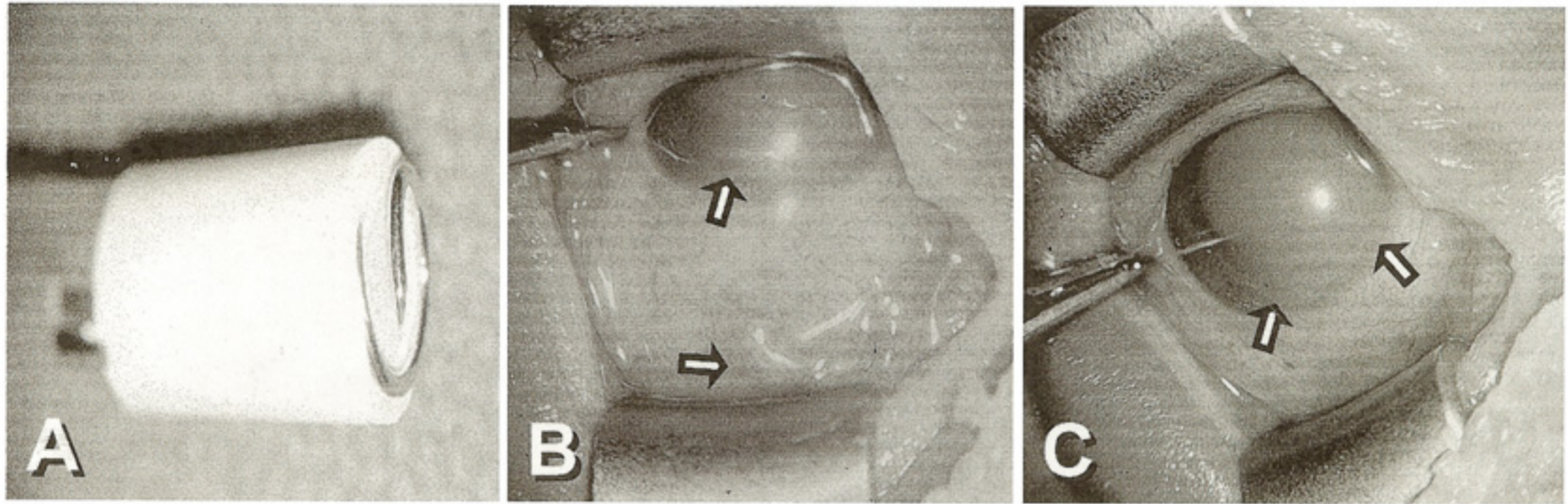


FIGURE 1. (A) The tip of a fetal monitoring spiral scalp electrode. (B) Original penetrating ocular injury to the right eye (arrows point to scleral entry site and traumatic iridotomies). (C) Anterior segment of the right eye with corneal edema extending into visual axis (arrows point to traumatic iridotomies).

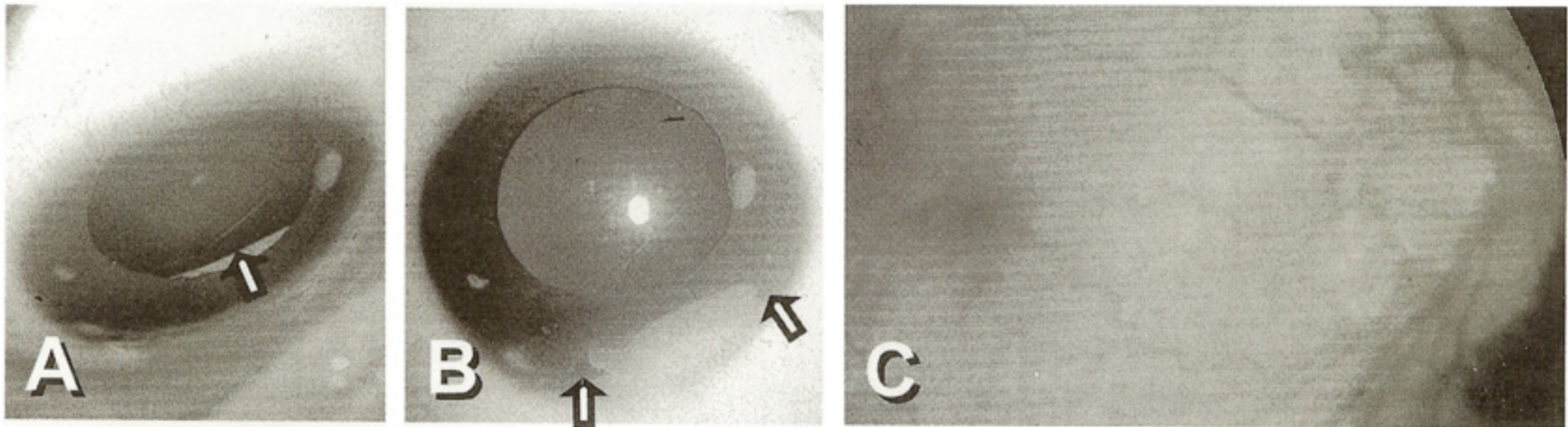


FIGURE 2. (A) Superior lens dislocation of the right eye (arrow). (B) Anterior segment of the right eye with traumatic iridotomies (arrows) and endothelial scarring between them. (C) Posterior segment of the right eye with optic disk tilting and thinning of the macular area.

METHODS: Case report and review of the literature.

RESULTS: A spiral electrode was screwed clockwise into the right eye, tearing the inferior retina and creating two inferior iridotomies. Severe myopic astigmatism resulted from gradual lens dislocation combined with elongation of the eye. Despite persistent occlusive therapy and aggressive optical correction, before and after lensectomy at age 3 years, visual acuity was only 20/200 at age 8 years.

CONCLUSIONS: Although complications from spiral monitoring electrodes are uncommon, this case emphasizes that before inserting a spiral monitoring electrode during labor, face presentation must be excluded to prevent inadvertent ocular injury. (*Am J Ophthalmol* 1999; 128:526-528. © 1999 by Elsevier Science Inc. All rights reserved.)

PERINATAL FETAL HEART MONITORING INVOLVES THE placement of a scalp electrode to detect the fetal electrocardiogram. The spiral scalp electrode is one type of cardiac monitor, which requires the distal end of the

monitor to be screwed into the infant's scalp. Numerous complications arising from this type of electrode have been described. The incidence of face presentation at delivery is 0.2%,¹ and ocular complications from improper placement may occur.

• **CASE:** A 2-day-old infant, born with a face presentation at 29 weeks' gestation weighing 1,100 grams, was seen after a spiral scalp electrode (Figure 1, A) used to monitor fetal distress during labor had been inadvertently placed into and removed from the infant's right eye. The patient was taken to surgery, where an examination disclosed that the electrode had entered the inferior sclera, tearing the peripheral retina, approximately 3 mm posterior to the limbus at 6 o'clock. Then, the electrode had come forward from the posterior segment through the iris at 7 o'clock, scraped the corneal endothelium, and gone backward into the posterior segment at 5 o'clock (Figure 1, B and C). Cryotherapy was applied inferiorly to prevent a retinal detachment.

Over the next few years, the patient was followed closely. The patient was given spectacles for myopic astigmatism in the right eye, which became progressively severe as the lens dislocated² (Figure 2, A), and the eye elongated, creating a tilted optic disk and thinning of the macular area³ (Figure 2, C). The iridotomies and corneal endothelial damage remained unchanged and were out of the visual axis (Figure 2, B). His left eye was vigorously patched. Three years after the injury, best-corrected visual acuity was RE: 20/800 with $-25.00 +8.00 \times 105$ degrees correction and LE: 20/30 without correction. The patient underwent a right lensectomy, complete capsulectomy, and anterior vitrectomy. Postoperatively, the child was given spectacles ($+8.75 +1.50 \times 85$ degrees with a $+3.00$ add right eye and plano left eye), and the left eye was vigorously patched. His visual acuity improved to RE: 20/200, but no further. At last follow-up, at 8 years of age, visual acuity was RE: 20/200 with a contact lens and LE: 20/20 without correction. He was orthotropic at distance and near but had no stereoacuity. The slit-lamp and fundus examinations were unchanged.

Fetal heart monitoring with a spiral scalp electrode is a common practice. Some of the complications from its use include cellulitis or abscesses,⁴ cranial osteomyelitis,⁴ hemorrhage,⁴ meningitis,⁴ sepsis,⁴ and death.⁵ The only ophthalmic injury reported has been a lid laceration.¹ Although face presentation is uncommon and is often accompanied by periorbital edema, which acts as a protective barrier against ocular injury, a direct globe injury is still possible, as this case report illustrates.

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