

## TECHNICAL NOTE

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# Transillumination Enhances Photographs of Retinal Hemorrhages\*

**REFERENCE:** Nolte KB. Transillumination enhances photographs of retinal hemorrhages. *J Forensic Sci* 1997;42(5):935-936.

**ABSTRACT:** Light stand photography with direct illumination of the retina is a common method of demonstrating retinal hemorrhages. The lack of contrast between dark hemorrhages and surrounding dark retina, and the difficulty of photographing into the concavity of an eye limit this technique. Transillumination of a bivalved globe with a bright external light source such as a colonoscope or microscope light yields high contrast superior photographs. This technique is useful to document retinal hemorrhages, and provides quality photographs for courtroom demonstrations.

**KEYWORDS:** forensic science, forensic pathology, transillumination, retinal hemorrhages, photography

Retinal hemorrhages are frequent autopsy findings in children who have been violently shaken or beaten (1). It is often necessary for a forensic pathologist to illustrate these findings during courtroom testimony. Light stand photography with direct illumination of the retina is a common method of demonstrating retinal hemorrhages. However, the lack of contrast between dark hemorrhages and the surrounding dark retina, and the difficulty of photographing into the concavity of an eye limit this technique (Fig. 1A).

In comparison, transillumination of a bivalved globe with a bright external light source such as a colonoscope or microscope light yields high contrast superior photographs (Figs. 1B and 2). Differences in light absorption are apparent between areas of hemorrhage and areas of normal retina. We use a black plastic 2 × 2 × 3 in. photographic slide box with a translucent plastic lid available from film processing laboratories. A hole (sized to accommodate the bivalved eye with a tight seal) is drilled in the center of the black bottom. The box is inverted with the translucent cover resting on the light source. The light source is positioned in the center of a standard camera stand (Fig. 3).

The eyes can be bivalved in coronal, sagittal, or horizontal planes. It is important to trim the extraocular muscles and periorbital fat close to the globe so that the thickness of the globe is

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uniform. Attached pieces of extraocular tissue may artifactually appear as shadows during transillumination and can be misinterpreted as hemorrhage.

Transillumination is used to identify small cutaneous veins in neonates and infants and thereby facilitate venipuncture (2). We believe this technique is also useful to document retinal hemorrhages, and provides quality photographs for courtroom demonstrations.

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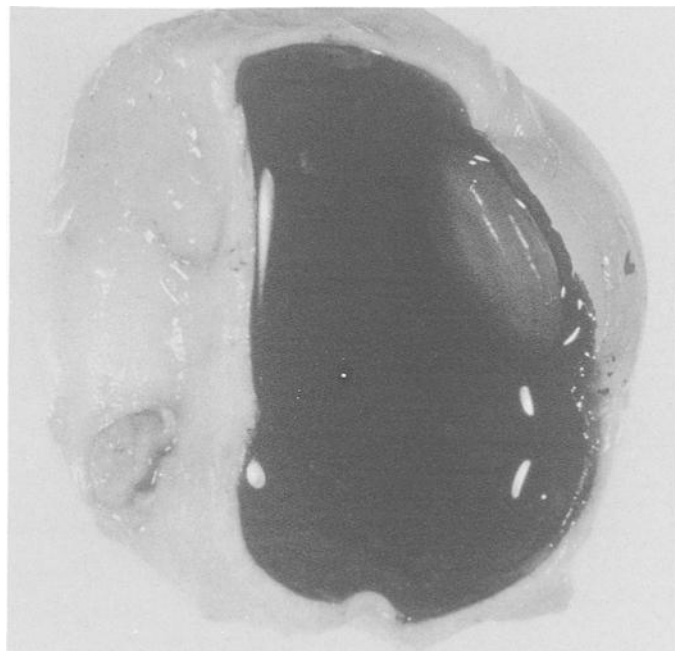


FIG. 1A—Bivalved globe photographed on light stand. Retinal hemorrhages are inapparent.

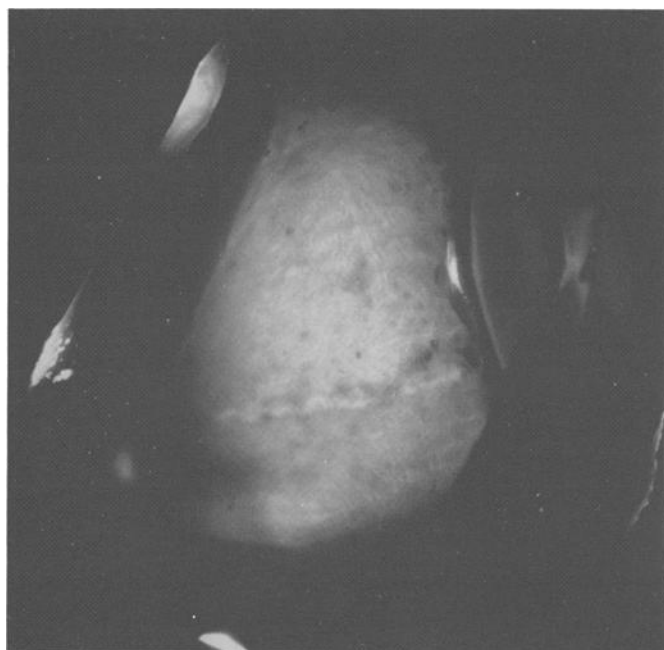


FIG. 1B—Transilluminated bivalved globe, same as Fig. 1A. A few small retinal hemorrhages are visible.

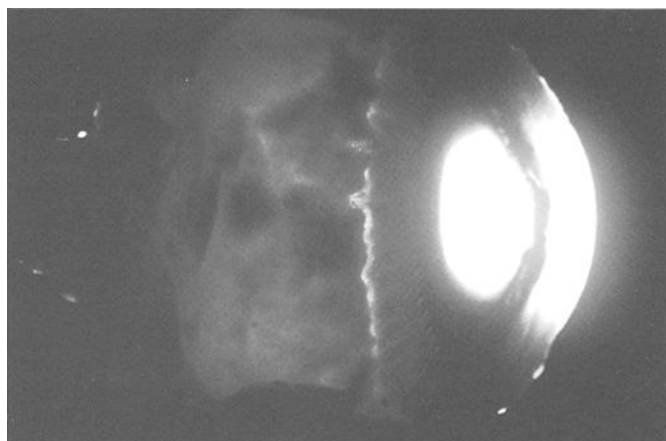


FIG. 2—Transilluminated bivalved globe with extensive retinal hemorrhages.

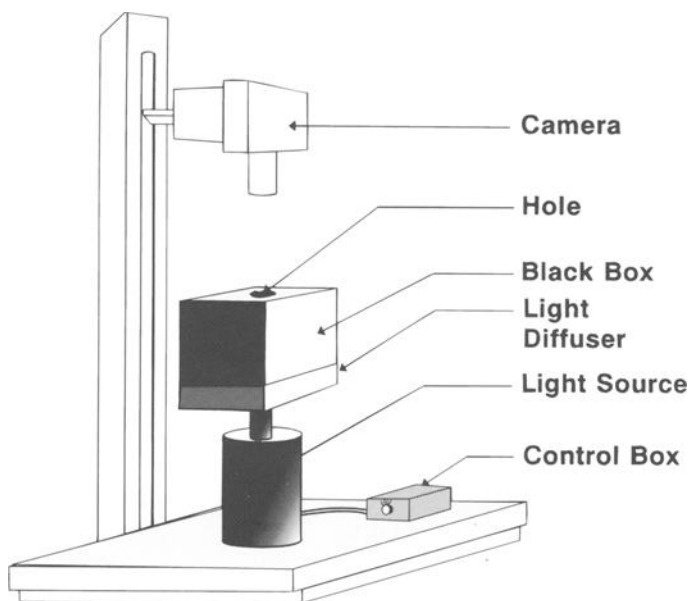


FIG. 3—Transillumination apparatus.

**References**

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