Key words: polymorphonuclear neutrophil, corneal epithelium, ulceration, wound healing, collagenolysis, electron microscopy

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References


An Improved Method for Restraining Rabbits for Examination of the Eye

David M. Maurice and Tej Singh

Rabbits are strapped to a specially shaped platform with their legs dangling over the sides. This system of restraint allows freer access to the eyes for examination than other methods and prevents the animal from injuring itself by kicking. The animals appear to be quite relaxed and show no signs of harm on release. Invest Ophthalmol Vis Sci 25:1220-1221, 1984

When the rabbit’s eye has to be observed in the slit lamp or a minor diagnostic procedure such as applanation tonometry must be performed, it is necessary to immobilize the animal and to prevent evasive movements of the head as far as possible. The animal may be put under general anesthesia or be tranquilized heavily, but this can upset the normal metabolism, particularly if the observations or measurements have to be frequent or prolonged. Mechanical restraint is generally preferred for those procedures that are painless but can alarm the animal. The same is true for entering an ear vein with a needle and for minor ocular interventions under local anesthesia.

Two forms of restraint are common. The first is to confine the rabbit in a box with its head protruding from a closure around the neck. This has several disadvantages. First, the box blocks slit-lamp observation of much of the eye; second, if the animal is frightened it will struggle and may injure itself; third, it can jerk its head away when a needle is inserted into an ear vein, which requires reentry into a punctured and bleeding vessel. A more satisfactory procedure is to secure the animal firmly in a bag or some other cloth wrap. This prevents it harming itself and allows better access to the eye for observation. However, it is not easy to wrap the rabbit successfully, and this can be time-consuming, particularly if the animal is recalcitrant. Moreover, it still can jerk its head away on feeling a needle prick. We therefore have developed a system of restraint that goes a long way to avoid these disadvantages.

Materials and Methods. The basis of the system is to make the rabbit lie on a narrow platform with its legs straddling it. When its paws have no purchase on a surface, it can only kick into the air, and its
principal escape mechanism is circumvented. A 6-
mm-thick aluminum plate was cut to the dimensions
shown in Figure 1. This was supported about 20 cm
above a baseplate on a pillar, which was located
towards the rear (Fig. 2) so that the center column
of a slit lamp could be accommodated under the
head. The animal is held down by a Velcro strap in
the small of the back and another around the shoul-
ders. The head-rest of a slit lamp was removed
and replaced with a platform arranged to bring the eyes
to the level of the optics. The wide part of the
platform supports the belly of the animal. Two side
pieces are attached to prevent the animal from listing
to one side if it is under general anesthesia; these are
not necessary when it is conscious, since it maintains
its balance, but they do not interfere.

If further restraint is needed, the neck can be tied
down by a cloth ribbon or a narrow Velcro strip, or
a wider strip around the ears can be used to fix the
head.

Animals generally can be mounted on the platform
single-handedly, but this can be difficult if it is
resistant. The process is eased by the use of a loading
hopper. A narrow three-sided box, raised on a stand,
was constructed to accommodate the front extension
of the platform. The rabbit is placed in the top of
the box and is pulled out by the skin of the lower
back and its near legs pushed down to straddle the
narrow part of the platform. The rear strap is then
fixed firmly over the rabbit’s back with the other
hand. The platform and the rabbit are then slid out
together until the front legs clear the box when the
second strap is placed in the same way.

Results and Discussion. There is as much freedom
to examine the animal’s eyes in the slit lamp with
this method of restraint as is permitted by its anatomy.
It has been adopted in the laboratory for several
months and has been found advantageous by its
users.

The mounting procedure can be carried out suc-
cessfully on the first attempt by an untrained person.
The rabbit can be secured for observation within 15
sec of lifting it from the cage. The neck does not
need to be tied for the purpose of examination in the
slit lamp. Although the animals rarely move their
heads when left alone, they become disturbed when
they are rotated about a vertical axis in order to
examine both eyes in turn. If this is to be frequent,
or if total stillness is critical, as in some forms of
fluorophotometry, it is convenient to use chlorprom-
azine as a tranquilizer.

Although the posture of the animal is unnatural,
there is no reason to suppose that it is physically
uncomfortable. The rabbits do not struggle or squirm,
although they can do so if deliberately frightened. On
the contrary, they generally appear to be quite relaxed;
some animals tense their leg muscles before they
become accustomed to the position, but this does not
result in their becoming dislodged. Some rabbits have
been restrained for up to 1 hr. Upon release, they
immediately hopped around in a normal manner, so
evidently there is no undue pressure on the vessels
or nerves of the legs.

We have not had much occasion to use the system
for venepuncture, but if the head is secured, the risk
of jerking away from the syringe seems to be reduced.
The engorgement of the veins can be assisted by
tilting the platform forward so that the animal’s head
is below its body.

Key words: animal restraint, eye examination

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