WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 9, Issue 14, 189-193. Review Article ISSN 2277– 7105

DISSECTION OF GOAT EYE

***Dr. A. P. Vaijwade and Dr. Shital Rajkumar Meshram**

[1]Associated Professor, Department of Shalakyatantra, Government Ayurved College, Nanded, 431601.

[2]P.G. Scholar, Department of Shalakyatantra, Government Ayurved College, Nanded, 431601.

Article Received on
06 Sept. 2020,

Revised on 27 Sept. 2020,
Accepted on 18 October 2020

DOI: 10.20959/wjpr202014-19016

***Corresponding Author**
Dr. A. P. Vaijwade
Associated Professor, Department of Shalakyatantra, Government Ayurved College, Nanded, 431601.

INTRODUCTION

The human eye is one of the most complex and sophisticated organ in the body. Despite being small & extremely delicate the eye allows us to see our world without any conscious effort on our part. The eye automatically adjusts its light sensitivity, allowing us to see both in starlight & the brightest sunlight. Its unique automatic focusing system outstrips that of any camera while camera lens must be moved back & forth to adjust for distance the lens of the human eye simply changes shape. Each fragile part of the eye work together to provide information to the brain interprets it instaneously giving you a perfect image. It is an amazing process. A goat eye is very similar to the eye of a human, by dissecting & examining the anatomy of a preserved goat eye, you can learn how your own eye forms images, of the world & sends these image to your brain. This goat eye dissection guide it complete enough for a ophthalmic Dept. colleges or the picture can be used to just get an idea of what the eye looks like inside.

PERFORMANCE OBJECTIVES

1) Compare the structures and functions of a goat eye to that of a human eye.
2) Dissect the eye of a goat, noting anatomy, using scientific procedure.
3) Construct a label diagram to model eye structures using technology tools.

MATERIALS

For Dissection

- Goat eye

- Dissecting pan
- Surgical gloves
- Scissors
- Single edge razor blade
- Probe
- Forceps
- Paper towels.

OBSERVATION

- **External Anatomy**

Look carefully at the preserved goat eye. The most noticeable part of the eye is the large mass of grey tissue that surrounds the posterior(back) of the eye & is attached to the sclera.

The second most noticeable part of the eye is the cornea, located in the anterior part of the eye.

On posterior side of the eye, nestled in the fat & muscle tissue, there is a noticeably round protuberance that feels stiffer than the surrounding tissue. This is the optic Nerve & it sends the images collected in the eye to the brain.

- **Internal Anatomy**

1) Place the goat eye on a dissecting tray. The eye most likely has a thick covering of fat and muscle tissue. Carefully cut away the fat & the muscle. As you get closer to the actual eyeball, you may notice muscles that are attached directly to the sclera & along the optic nerve. These are the extrinsic muscles that allow a goat to move its eye up & down & from side to side. Keep cutting close to the sclera, separating the membrane that attaches the muscle to it. After removing the excess tissue, the sclera & optic nerve should be exposed but still intact.

2) Using a sharp scalpel, cut through the sclera around the middle of the eye, so that one half will have the anterior features of the eye(the cornea, lens, iris & ciliary body) & the other half will contain the posterior feature(most noticeably where optic nerve is attached to the eye.)

The inside of the eye cavity is filled with liquid. This is the vitreous humor. Depending on how the specimen was preserved, it will be either a dark liquid that will flow out easily or a

slightly gelatinous material that you can pour out to remove. (In a living eye, the vitreous humor is clear & gel like).

3) Flip the anterior half of the eye over so that the front of it is facing upward. Using a pair of sharp scissiors, cut the cornea from the eye along the boundary where the cornea meets the sclera when the scissors have cut in far enough, a clear fluid will start to seepout, this is aqeous humor. While cutting out the cornea, be careful to not accidentally cut the iris or the lens. After removing the cornea, pick it up & look through it.

Although it is cloudy due to the degrading of the tissue, it is still fairly transparent. Notice the toughness & strength of the cornea. It is designed tis way to protect the more delicate features found inside the eye.

4) With the front of the anterior half of the eye facing up, locate the iris. Notice how the iris is positioned so that it surrounds & overlaps the lens. This position allow the iris to open & close around the lens to allow different amounts of light into the eye. In bright light, the iris contracts to let in less light. In dim light such as at night, the iris expands to let in more light.

5) Flip the anterior half over & examine the back half. Locate the lens & ciliary body. The ciliary body surrounds the lens, allowing it to change the shape of the lens to help the eye focus on the object it is viewing.

6) After examining both sides of the anterior half of the eye, pull the lens out. While the goat was alive, the lens was clear & very Flexible. In a preserved goat eye, the lens will most likely have yellowed & become very hard. However, it may still be possible to look through the lens & see its ability to magnify objects. Try this by placing the lens on a piece of paper with writing on it.

7) On the posterior half of the eye, there is a thin tissue like material that slides easily inside the sclera. This is retina. The retina contains photoreceptor cells that collect the light entering the eye through the lens from the outside world. These image are sent to the optic disc, the spot where the optic nerve attaches to the eye. At this point, there are no photoreceptor cells, there are only nerves sending images to the brain. Because of this place in the eye is often referred to as the blind spot since no images can be formed here.

To compensate for this blind spot, the other eye often see the images that that the first eye cannot see & vice versa. In the rare occasions where neither eye can see a particular spot, the brain "filling in" of the blind spot is not always accurate. To see this in action, try some blind spot experiment.

8) Most of the retina is not attached to the eye instead, it is held in place by fluids in the eye. The tissue of the retina gathers at the back of the eye where it forms into the optic nerve. This is the only place where the retina is attached to the eye. Use a pair of tweezers to gently lift the retina off the inside wall of the eye. The retina may tear because it is very delicate. Underneath the retina you will find a very shiny & colourful tissue. This is the choroid coat. The choroid coat is also known as vascular tunic because it supplies the eye with blood & nutrients. In a human eye, the choroid coat is very darkly coloured to minimize the reflection of light which would cause distorted image.

9) Nice that the choroid coat in the goat's eye is very colourful & shiny. This reflective material is the tapetum lucidum & its reflective properties allow a goat to see at night by reflecting the light that is absorbed through the retina back into the retina. (while this dose allow the goat to see better at night than humans can, it distorts the clarity of what the goat sees because the light is reflected so much). The tapetum lucidum is also responsible for the glowing eyes of animals, such as cats, when a small amount of light reflects off the tapetum lucidum in an otherwise dark room.

DISCUSSION

The first step towards developing surgical competency is a structured surgical education program that helps residents develop the cognitive and psychomotor skills required for ophthalmic surgery. A surgical wet lab that allows good training for cataract operate.

CONCLUSION

Dissection of goat eye simulates the surgical environment to a large extent. This economical technique for surgical training may be useful, especially in the developing world, to train budding Ophthalmologist.

REFERENCES

1. Venkatesh R, Muralikrishnan R, Balent LC, Prakash SK, Prajna NV. Outcomes of high volume cataract surgeries in a developing country.

2. Rogers GM, Oetting TA, LeeAG, Grignon C, Greenlee E, Johnson AT, et al. Impact of a structured surgical curriculum on ophthalmic resident cataract surgery complication rates.
3. Bhagat N, Nissirios N, Potdevin L, Chung J, Lama P, Zarbin MA, et al.