



Content available at: <https://www.ipinnovative.com/open-access-journals>

IP International Journal of Ocular Oncology and Oculoplasty

Journal homepage: <https://ijooo.org/>



Guest Editorial

Importance of grossing in ophthalmic pathology

Dipankar Das^{1,*}

¹Dept. of Ocular Pathology, Uveitis and Neuro-Ophthalmology, Sri Sankaradeva Nethralaya, Beltola, Guwahati, Assam, India



ARTICLE INFO

Article history:

Received 13-02-2021

Accepted 25-02-2021

Available online 28-04-2021

© This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Ophthalmic pathology is a sub-specialty of pathology which deals with various ophthalmic tissues.¹ The Principle of ophthalmic histopathology starts with grossing of the specimen received in ocular pathology laboratory.¹ It include proper handling of the tissues, confirmation of requisition form with patient details, surgical descriptions and fixative used in the specimen.^{1,2} Most common fixative used in ocular pathology specimen is 10% neutral buffered formalin.¹ Ophthalmic tissues (lid, conjunctiva, corneal button, orbital, choroid and retino-choroidal tissue, enucleated, eviscerated exenterated specimens) and other specimens include crystalline and intraocular lens, anterior chamber or vitreous fluid, trabeculectomy and vitrectomy specimens.^{1,2} In many occasions, frozen section specimen for eyelid and conjunctival tumor cases, map biopsies and other non- specific specimens such as parasites, foreign bodies and various other fluids requires gross specimen examination under the different objective of grossing and compound microscopy.¹⁻³ Ophthalmic pathologists should pay attention to the patient's profile in the laboratory requisition form (s) which includes clinical summary and diagnosis.^{1,2} Name of the patient, age, type and site of tissue, eye involved (right or left), date and time of surgery and surgeon's name need to be clearly mentioned in the requisition and grossing form (s).^{1,2} It is very important to note that if the specimen is subjected to electron microscopy, it needs not be fixed in 10% neutral buffered formalin and

preserved in 2% glutaraldehyde solution.^{1,2} For cytology, a specimen is immediately centrifuged then smeared in 95% alcohol.¹ In case of impression cytology by Millipore filter paper, the fixation is done by 95% methanol or ethanol.¹ In retinoblastoma specimen, if genetic study has to be done from the eyeball then trephining of tumor is done in a fresh eyeball without fixation.¹ Immediately after the trephining procedure, the site of the trephine is marked with tissue tek pencil and after that specimen is sifted to the bottle containing 10% formalin.¹

Gross pathologic examination of enucleated eyeball includes side determination to confirm which eye was involved and sent.¹ External features of the eyeball are documented meticulously. Measurement of globe in anterior- posterior, horizontal and vertical meridian is done with measurement of cornea in horizontal and vertical diameter. Pupil diameter and optic nerve (Length and diameter) are measured. All measurements are best done by digital vernier caliper. Transillumination test is done to know in which plane eyeball has to be cut. Cut end of the optic nerve is submitted separately. Pupil -optic nerve section is made in the main eyeball and documentation of cut section of the eyeball is made under the grossing microscopy. For retinoblastoma, three calottes are being made in one half of the eyeball by the bread loaf technique.⁴ Intraocular tumor measurement in relation to base and height of the mass along with documentations of other additional features are made. The abnormalities are described from anterior to posterior side of the eyeball. For

* Corresponding author.

E-mail address: dr_dasdipankar@yahoo.com (D. Das).

choroidal melanoma, vortex vein exits are seen carefully.

Grossing of other biopsy specimens are done with external documentations under grossing microscope and digital camera. If the specimens are very small, a drop of Eosin is put on the specimen before processing for its future identification during processing. Corneal buttons are measured in diameter and thickness and one half is submitted for processing. For map biopsy, all specimens have to be taken as per surgeon's diagram drawn in the form and submitted for further processing. Frozen section biopsy is very important particularly to demark its margins and base of the tumor.

Recent innovation in grossing documentation:⁵ Author had developed a novel cost effective and rapid staining of raw specimens in ophthalmic pathology by using sodium fluorescein dye.⁵ We know that some of the ocular structures are transparent. Cells in them can be visualized with this staining technique.⁵ After grossing the specimen, a tiny piece of tissue is cut and placed on an uncoated glass slide with a drop of sodium fluorescein dye.⁵ The drop is delivered by using a syringe with needle.⁵ The stained tissues are immediately seen in different objective of a compound microscope.⁵ The contact time of stain and tissue is around 30 to 45 seconds.⁵ Author was able to get significant results in documenting eyelid tumors like sebaceous gland carcinoma, benign sebaceous gland hyperplasia, retinoblastoma and choroidal melanoma seeds, septate fungus, few viral inclusions bodies, parasitic bodies, drusens, retinal pigment epithelium and uveal and dendritic cells in peripapillary optic nerve etc.⁵ For pathology of retinoblastoma, special precautions were taken not to distort anatomy of the tumor morphology in the calottes.⁵

To somup, grossing of ophthalmic tissue is very important step before practical histopathology, special histochemical and immunohistochemical staining.

Ophthalmic pathologist should be versed with each and every step in gross pathology for the optimum result.

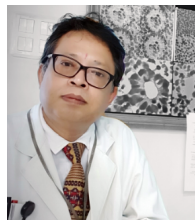
1. Conflict of Interest

None.

References

1. Eagle RC. Eye pathology: An Atlas and text. In: 2nd Edn. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins; 2011.
2. Bancroft JD, Gamble M. Theory and Practice of Histological Techniques . In: 5th Edn. Churchill Livingstone; 2002.
3. Chayen J, Bitensky L. Practical Histochemistry. Chichester: Wiley; 1991.
4. Sastre X, Chantada GL, Doz F, Wilson MW, de Davila M, Rodríguez-Galindo C, et al. Proceedings of the Consensus Meetings From the International Retinoblastoma Staging Working Group on the Pathology Guidelines for the Examination of Enucleated Eyes and Evaluation of Prognostic Risk Factors in Retinoblastoma. *Arch Pathol Lab Med.* 2009;133(8):1199–202. doi:10.5858/133.8.1199.
5. Das D, Deka P, Bhattacharjee H, Deshmukh S, Gupta P, Deka A, et al. Fluorescein dye as a novel cost-effective approach for staining raw specimens in ophthalmic pathology. *Indian J Ophthalmol.* 2020;68(10):2175–8. doi:10.4103/ijo.ijo_2153_19.

Author biography



Dipankar Das, Senior Consultant & HOD:
Uveitis-Ocular Pathology Services

Cite this article: Das D. Importance of grossing in ophthalmic pathology. *IP Int J Ocul Oncol Oculoplasty* 2021;7(1):3-4.