The Royal College of Ophthalmologists

Ophthalmic Services Guidance

OPHTHALMIC PATHOLOGY

Background

Diagnostic ophthalmic pathology is integral to the work of all ophthalmic departments/units in which tissue or fluid is removed during diagnostic or therapeutic procedures, in order to provide a timely, high quality diagnostic opinion and to avoid delayed or missed diagnosis of disease. Ophthalmic pathology (ophthalmic histopathology, ocular pathology) is a subspecialty of histopathology, as it makes use of materials, methods and expertise that allow morphological, chemical, immunological, and, in some cases, molecular genetic analysis of glass-mounted sections of tissue or fluid preparations, obtained from biopsy, excision, aspiration or scraping. Electron microscopy may also be used. Pathologists and biomedical scientists within ophthalmic pathology provide a specialty diagnostic service from a laboratory that is similar in almost all aspects to a general histopathology laboratory and which may be embedded within such a larger laboratory unit which serves a variety of histopathology subspecialties.

In England, ophthalmic pathology is a nationally commissioned specialised service (National Specialist Ophthalmic Pathology Service – NSOPS) funded centrally by the National Commissioning Group (NCG) of the NHS.[1, 2] In Scotland the Scottish Executive (SE) centrally part-funds the Scottish Regional Ophthalmic Pathology Service. Thus the four NSOPS laboratories and the single Scottish Regional Ophthalmic Pathology Service laboratory provide a diagnostic service which is free of charge for specimens generated within NHS units within England & Scotland respectively. Details of the pathologists and laboratories which provide the National Specialist Ophthalmic Pathology Service (NSOPS) and Scottish Regional Ophthalmic Pathology Service are available on the EyePathUK website.[3]

Currently, in the UK, in addition to the above centrally funded services, specialist ophthalmic pathology diagnostic expertise is provided by histopathologists and neuropathologists who are members of the British Association for Ophthalmic Pathology (BAOP). Whilst the five centrally funded laboratories provide centres of excellence and expertise free of charge, the geographically more disparate BAOP pathologists provide a more locally based service but have access to the NCG and SE funded laboratories. All NSOPS and BAOP pathologists participate in the UK National External Quality Assurance Scheme (UKNEQAS) in Ophthalmic Pathology and the BAOP annual meeting at which EQA case discussion is held.

Guidance

This Ophthalmic Pathology Chapter is based on the joint guidance document of the Royal College of Ophthalmologists (RCOphth) and the Royal College of Pathologists (RCPath) on referral of ophthalmic pathology specimens[4]. This information is also contained within

an article published in the RCOphth Focus series.[5] It provides recommendations for ophthalmologists concerning when to send tissue removed during procedures for histopathological assessment and in order to avoid delayed or missed diagnosis of disease; and recommends which pathologists should receive specimens in order to ensure consistent, high quality and accurate diagnosis. The document addresses submission of histopathology and cytology specimens, but not specimens sent for other purposes (e.g. microbiology, molecular diagnostics, or research). Guidance for histopathologists on the reporting of ophthalmic pathology specimens is provided by the Royal College of Pathologists.[6]

Who should report Ophthalmic Pathology specimens?

The guidance provided by the Royal College of Pathologists [6] states that pathologists reporting ophthalmic pathology specimens should participate in an appropriate external quality assessment (EQA) scheme (in most cases this will be the UK National Ophthalmic Pathology EQA Scheme). Pathologists reporting ophthalmic pathology specimens should be encouraged to participate in the annual meeting of the British Association for Ophthalmic Pathology (BAOP), where the results of the Ophthalmic Pathology UKNEQAS are discussed. Submitting specimens for examination by specialist pathologists both ensures that the specimen is handled by an expert in the field, allows the specialist to maintain and increase his/her level of expertise,[7] and facilitates training opportunities for histopathology trainees who wish to develop an interest in ophthalmic pathology. It is also appropriate for specimens of some tissues adjacent to the eye to be sent to a pathologist with expertise in another relevant subspecialty of pathology, e.g. dermatopathology, ENT pathology, neuropathology, or paediatric pathology.

What specimens should the Ophthalmologist send?

Recommendations for different procedures and tissue types are listed below. For therapeutic procedures it may be acceptable to discard some tissue and these specific circumstances are described within the list.

1. Small lid biopsy All tissue should be sent for histopathological examination **EXCEPT**

Chalazia – In a patient under age of 40 years with an otherwise typical chalazion it is acceptable to discard the first two samples unless there are any clinical suspicions. The second recurrence (i.e. third sample) should be sent. In a patient over the age of 40 years with otherwise typical chalazion it is acceptable to discard the first sample unless there are any clinical suspicions. The first recurrence (i.e. second sample) should be sent.

Blepharoplasty – excess skin removed for blepharoplasty can be discarded unless there is any clinical abnormality. Other cosmetic procedures e.g. lid lowering,

tightening etc – if tissue is removed it can be discarded unless there is any clinical abnormality.

2. Full thickness lid resection All tissue should be sent for histopathological examination **EXCEPT**

Ectropion/Entropion repairs – these excisions should only be submitted if there is any evident clinical abnormality (but the threshold for sending should be low).

3. Corneal specimens and Conjunctival biopsies (including caruncle, pterygium and pinguecula) these should all be sent for histopathological examination.

4. Trabecular meshwork These can be discarded unless the case is of particular research interest (the majority of tissues contain scleral tissue only).

5. Iris, Ciliary Body, Choroid These should all be sent for histopathological examination with the exception of peripheral iridectomy tissue from glaucoma or cataract surgery.

6. Lens An intact lens removed in intracapsular cataract extraction may be sent for histopathological examination. Material from phacoemulsification should be discarded.

7. Vitreous This fluid should be sent in any case in which there is a suspicion of inflammatory disease (after bacteriological samples have been taken) or malignancy (e.g. lymphoma). Histological examination is not appropriate for removed intravitreal blood or vitreous opacities such as asteroid hyalosis (although the latter may be useful for research or teaching).

8. Epiretinal membrane These should all be sent for histopathological examination in centres where there is a research interest.

9. Subretinal membranes Excisions of disciform scars are of research and teaching interest only.

10. Eviscerations and enucleations These should all be sent for histopathological examination. There is a very small but appreciable risk of a blind eye with opaque media harbouring occult malignancy.

11. Orbital Biopsies These should all be sent for histopathological examination **EXCEPT**
Normal soft tissues - removed during orbital decompression and squint surgery.

12. Lacrimal Gland Excision/Biopsy and Lacrimal Sac Excision These samples should all be sent for histopathological examination.

13. Orbital Exenteration Specimens These should all be sent for histopathological examination.

14. Cytology Impression cytology of the conjunctiva and cornea, and fine needle aspiration cytology of periocular or intraocular masses; these samples should all be sent for histopathological/cytological examination. For aspirates of intraocular fluids see vitreous (above).

15. Other Biopsies This is not a prescriptive list and, obviously, any material taken for the purpose of diagnosis (e.g. aqueous tap, temporal artery biopsy) should be submitted for histopathological/cytological examination. Temporal artery biopsies need not necessarily be submitted to an ophthalmic pathologist. In some cases electron microscopy is appropriate (e.g. confirmation of diagnosis of microsporidial infection). Ophthalmologists are encouraged to discuss with their local BAOP pathologist or an NSOPS ophthalmic pathologist any matters involving uncertainty regarding whether or not to submit tissue for diagnosis.

Additional issues

Communication: Communication with the laboratory is paramount. If the clinician is unsure of how to handle a particular specimen, if an urgent pathology opinion is required, if fresh material (e.g. for frozen section, IF, or cytopathology) is to be sent, or if electron microscopy may be required, the laboratory must be contacted in advance.

Specimen transport and packaging: Specimens are normally received by post or by courier arranged by the sending hospital. Fax/phone back arrangements to ensure confirmation of receipt may be made by prior arrangement with the laboratory. Packaging of diagnostic specimens must conform to United Nations Regulations (2005) and Transport of Dangerous Goods Regulations (2005) – see HSE guidance.[8] In brief, virtually all ophthalmic pathology diagnostic specimens will be Category B biological substances (assigned to UN 3373) and packing instruction PI 650 will apply. The postal service, couriers and the laboratory will be able to provide on request information/protocols regarding appropriate packaging and transport.

Request forms: Request forms may be provided if required. Request forms must be completed fully. In order to conform with specimen acceptance policy the following information should be supplied:-

Patient Surname
Patient Forename
Date of birth
NHS number
Patient Address

Clinician
Hospital location
Date specimen taken
High Risk status
Specimen type
Brief relevant clinical information

Rapid processing of specimens: Many histopathology laboratories provide a service for intraoperative diagnosis (i.e. frozen section) and/or rapid paraffin processing (e.g. for delayed reconstruction). There is local variation in availability, but, generally, this may be arranged by prior discussion between clinician and laboratory. Frozen section service is very labour-intensive and should only be requested when appropriate.

Fixation and containers: Patient identification and specimen details must be completed on each specimen pot submitted. Multiple specimens from the same patient should be placed in different, individually identified containers in order to avoid confusion among specimens. Most specimens will require fixation in 10% neutral buffered formalin. Suspected sebaceous carcinoma specimens **do not** need to be submitted fresh and should be formalin-fixed. The volume of fixative (and therefore size of specimen pot) should be appropriate to the size of specimen. For minute biopsies (e.g. retina) it may be more appropriate to place the specimen and formalin within a small container (e.g. Eppendorf tube or similar). (Packaging and transport – see above).

Fresh specimens (frozen section specimens, cytology specimens, and conjunctival specimens for immunofluorescence (IF)): These specimens must be submitted only after prior arrangement with the laboratory, and must be delivered without delay in time to be received and handled by the laboratory. Conjunctival specimens for immunofluorescence (IF) may be stabilised for transport in Michel's medium or gel transport tubes. Michel's medium in suitably sized containers is readily commercially available, and gel transport tubes may be obtained by prior arrangement from some laboratories. Advance notice of fresh specimens to be delivered and sender contact information is required so that late/non-arrival of specimens can be investigated and tracked.
N.B.:- Frozen sections and IF cannot be performed on High Risk specimens.

Turnaround times: Current information may be obtained by enquiry from the individual NSOPS/BAOP laboratory.

Research: Samples of ocular tissue may be required for research purposes. In such circumstances where the specimen is required both for diagnostic and research purposes, it is advisable for the ophthalmologist to seek advice from the pathologist involved. This will help ensure adequate tissue sample is taken and it may be best for the pathologist to divide and section the specimen before processing.

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1 http://www.specialisedservices.nhs.uk/serv/ophthalmic-pathology/

2 http://www.specialisedservices.nhs.uk/

3 http://www.eyepathuk.co.uk/pathology_specialist.html/

4 http://www.specialisedservices.nhs.uk/doc/10034/

5 Focus Winter 2010 'Histopathology and cytology specimens – what should you send, and to whom?
http://www.rcophth.ac.uk/page.asp?section=355&sectionTitle=Focus+Articles/

6 http://www.rcpath.org/resources/pdf/g053v2_guidelinesreportingophthalmicspecs_mar08.pdf/

7 http://www.rcpath.org/resources/pdf/G004-SpecialistCellularPathologists-Jun06.pdf

8 http://www.hse.gov.uk/aboutus/meetings/committees/acdp/050208/acdp88p6.pdf