



Editorial

The convergence of ocular oncology and oculoplasty: From survival to wholeness

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1. Introduction

In ocular oncology, every millimetre can mean the difference between saving sight, saving the eye or saving a life. Yet today, the most profound transformation in this field lies not merely in new instruments or imaging, but in a new philosophy: restoring wholeness, not merely survival. The traditional boundaries between ocular oncology and oculoplastic surgery are dissolving, giving rise to a collaborative era where the goal extends beyond tumour control to preserving function, identity, and the human spirit.

The convergence of ocular oncology and oculoplasty reflects a fundamental shift in patient care. Historically, ocular oncology focused on tumour eradication and survival, often at the cost of function and appearance. Modern practice integrates oculoplastic surgery early to restore eyelid function, ocular surface integrity, and facial harmony, thereby improving both vision-related and psychosocial quality of life.^{1,2} Early and simultaneous oculoplastic intervention during tumour resection especially when long-term facial nerve dysfunction or extensive tissue loss is anticipated has been shown to yield better functional and quality-of-life outcomes than delayed reconstruction.^{1,3}

Ocular malignancies occupy a unique niche in ophthalmology conditions that threaten not only sight but also appearance, emotion, and, at times, life itself. As understanding deepens, so does recognition that rehabilitation physical, functional, and psychological is an inseparable component of cure.^{4,5} Multidisciplinary care that

unites ocular oncologists, oculoplastic surgeons, ocularists, and psychologists ensures patients are treated as whole individuals rather than as isolated diseases.

Although uncommon, ocular and periocular malignancies show striking geographical variation.

Uveal melanoma (UM) is the most common primary intraocular malignancy in adults, with an age-adjusted incidence of about 5 to 7 cases per million persons per year in Western populations.⁴ Rates are lowest in Asia (approx. 0.4 per million) and highest in Northern Europe and Australia (approx. 7 to 8 per million), reflecting pigmentation-related risk factors.^{4,5}

Ocular surface squamous neoplasia (OSSN) demonstrates extreme latitude-dependent variation from 0.01 to 3.4 per 100 000 persons per year, the higher values seen in equatorial and sub-Saharan regions.⁶⁻⁸ The IRIS Registry (2014 to 2021) found increasing incidence in the United States, particularly among older males and immunocompromised patients.⁸

Sebaceous gland carcinoma (SGC) of the eyelid shows the opposite pattern: rare in Western series but proportionally high in Asia. An Indian cohort of 536 patients reported SGC in 32% of malignant eyelid tumours, confirming its regional prominence.⁹

Retinoblastoma, the most frequent intraocular cancer of childhood, occurs in roughly 1 per 15 000 to 20 000 live births, accounting for 40-60 cases per million globally.^{10,11}

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Nearly 95% present before age 5. Survival now exceeds 95% in high-income nations, though disparities persist in low-resource regions.¹¹

Lacrimal gland lesions are predominantly inflammatory; in a UK tertiary-centre series, 69% were chronic inflammation, 15% lymphoma, 4% adenocarcinoma, and 2% pleomorphic adenoma.⁹ Such data guide appropriate biopsy and reconstruction strategies.

This epidemiologic diversity highlights the need for regional screening, pathology expertise, and reconstructive capacity particularly in Asia and Africa where SGC and OSSN burdens are greatest.

Modern ocular oncology has entered the precision era. Multimodal imaging, molecular diagnostics, and artificial intelligence now enable earlier detection and tailored treatment.¹³ Systems such as MOLES and TFSOM-DIM assist in non-invasive risk stratification for choroidal naevi and small melanomas, while liquid biopsy technologies detecting circulating tumour DNA promise real-time surveillance.^{12,13}

Plaque brachytherapy and proton-beam radiotherapy achieve local control in over 90% of uveal melanomas. Anti-VEGF therapy mitigates radiation maculopathy, preserving vision. Immunotherapies and molecularly targeted drugs are expanding treatment options for conjunctival and eyelid malignancies.¹⁴

Oculoplastic surgery has simultaneously evolved from delayed reconstruction to proactive collaboration in oncologic planning.¹⁵ Early reconstructive input ensures optimal oncologic safety and aesthetic outcomes. Microvascular flaps, endoscopic resections, and image-guided approaches enable complete tumour removal with minimal deformity.^{14,15}

Prosthetic rehabilitation, including osseointegrated implants and digitally designed orbital prostheses, offers natural appearance and comfort.¹³ Regenerative medicine and 3D bioprinting provide personalised reconstructive solutions with reduced donor-site morbidity.¹⁴ Minimally invasive reconstructive techniques and molecularly targeted adjuncts further enhance function and recovery.^{14,15}

Machine-learning tools are improving diagnostic accuracy and outcome prediction in both oncology and oculoplasty.^{12,13} Three-dimensional printing allows patient-specific surgical models, while teleophthalmology supports follow-up care in remote regions.¹⁴

India has emerged as a leader in integrating oncology and oculoplasty; centres such as AIIMS, LV Prasad Eye Institute, and Sankara Nethralaya have pioneered affordable prosthetic design and tele-oncology initiatives, extending high-quality care to underserved communities.¹⁶⁻¹⁸

Healing in ocular oncology transcends biology it embraces emotional and social dimensions. Multidisciplinary onco-rehabilitation teams comprising ocularists, psychologists, occupational therapists, and low-vision specialists help restore identity and self-confidence. Integrating patient-reported outcome measures ensures that success is measured not only by tumour control but also by restored quality of life.¹⁵

The integration of oculoplasty into ocular oncology represents a paradigm shift from survival to wholeness. Advances in imaging, precision therapy, reconstructive science, and multidisciplinary care have made it possible to preserve both life and appearance. The ultimate triumph of this convergence lies not merely in curing disease but in restoring humanity and dignity to every patient.

As Hippocrates wrote, *“Wherever the art of medicine is loved, there is also a love for humanity.”* In every reconstructed orbit, every restored gaze, and every life lived after cancer, that love endures.

2. Conflict of Interest

There are no conflicts of interest.

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