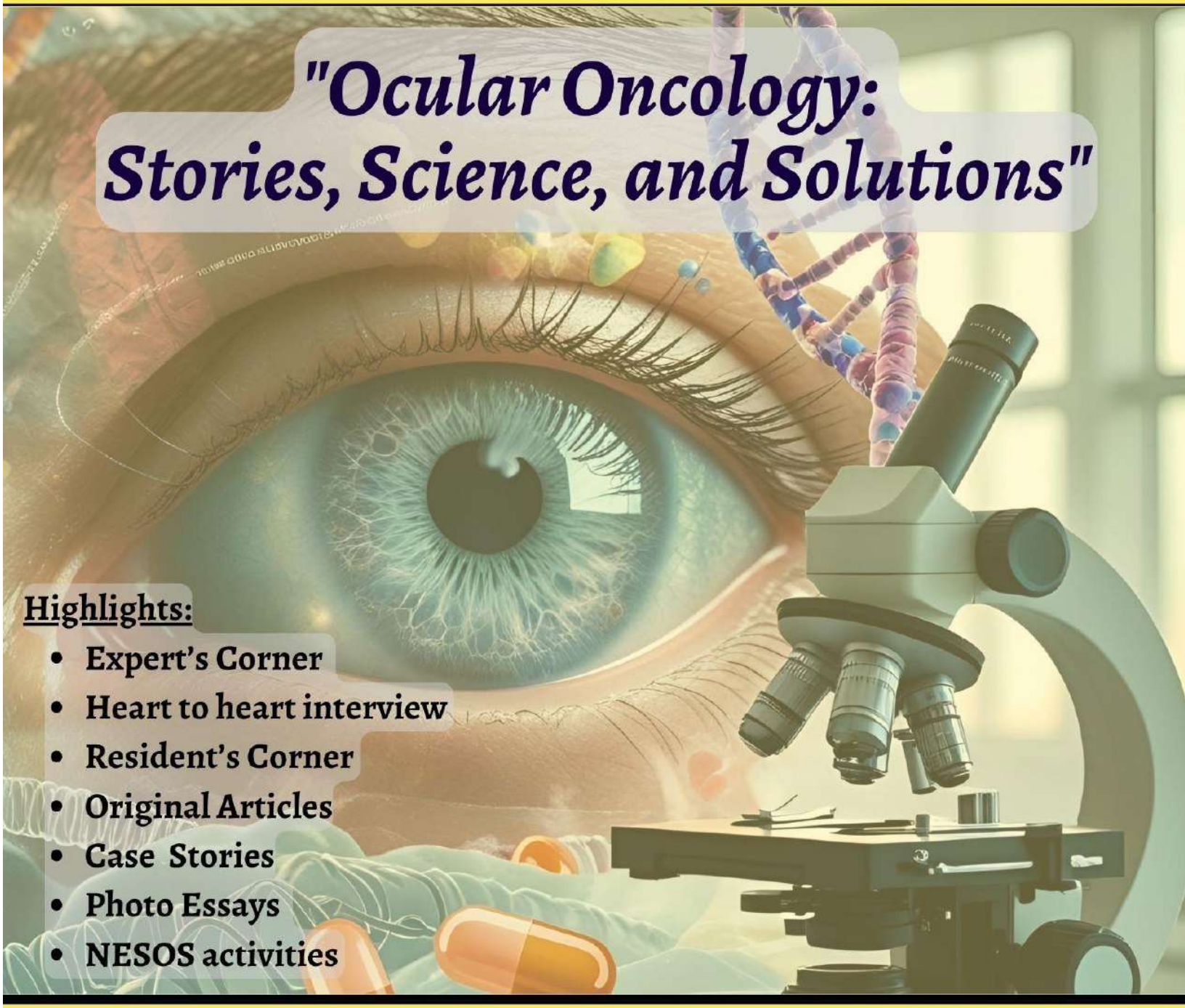
# NESOS E-MAG

Volume 3. No.1. Jan - Dec 2025

# "Ocular Oncology: Stories, Science, and Solutions"



**Highlights:**

- Expert's Corner
- Heart to heart interview
- Resident's Corner
- Original Articles
- Case Stories
- Photo Essays
- NESOS activities

An Official Publication (e-Magazine) by: NESOS Nepalese Society for Oculoplastic Surgeons

# Message from NESOS President

Dear Colleagues and Friends,

It is my pleasure to welcome you to the fifth edition of the NESOS e-Magazine, centered around the theme *"Ocular Oncology: Science, Stories & Solutions."* This issue sheds light on a field that demands not only clinical expertise but also compassion and timely intervention. This edition brings together science, real-world experiences, and innovative solutions, highlighting Nepal's progress and challenges in diagnosing and managing ocular tumors.

I extend my deepest gratitude to all contributors especially Prof. Dr. Usha Singh and Prof. Dr. Ruchi Goel from India, alongwith Prof. Dr. Rohit Saiju, Dr. Sulaxmi Katuwal, Dr. Purnima Sthapit, Dr. Ben Limbu, Dr. Prerna Arjyal Kafle, Dr Tina Shrestha, Dr Samata Sharma, Dr Suresh Rasaily, Dr. Nisha Shrestha, Dr. Sanket Parajuli, and our other photo-story participants—for sharing their expertise and insights.

Adding to that, the NepTED Registry Report and NESOS News reflect our society's ever-growing spirit of learning, sharing, and collaboration. As we continue to bridge gaps in awareness and treatment, let this eMagazine inspire discussions, learning, and actions.

*Together, we can turn science and stories into solutions for our patients.*

With sincere thanks and best wishes !!!

**Warm regards,**

**Dr Eliya Shrestha**
**President**
**NESOS**

# Editorial

Respected seniors, colleagues and readers,

It is with great pride and excitement that I welcome you to the **fifth edition** of the **NESOS e-Magazine**, the official publication of the **Nepalese Society for Oculoplastic Surgeons (NESOS)**. This magazine continues to serve as a platform for learning, mentorship, and meaningful dialogue—bridging generations of oculoplastic surgeons and encouraging a spirit of inquiry and innovation.

Every edition of our NESOS e-mag has carried a special theme. The first issue focused on *"Highway of tear",* the second on *"The wayward eyelids",* the third on *"Orbit – the Pandora box",* the fourth on *"Transforming eyes: The art and science of Cosmetic Oculoplasty".* This fifth edition now turns to the theme ***"Ocular Oncology: Science, Stories & Solutions,"*** which explores a field that lies at the intersection of vision, vigilance, and life-saving care.

This issue brings you an inspiring **Expert's Corner** with wisdom and motivation from Prof. Dr. Usha Singh and Prof. Dr. Ruchi Goel. Must-read articles like Fighting Retinoblastoma in Nepal, Imaging Advances in Ocular Oncology, Pediatric Tumors and Global Updates make this edition both insightful and exciting. We're especially delighted to introduce the **Resident's Corner**—with a practical and motivating piece for young ophthalmology residents by myself and Prof. Dr. Rohit Saiju.

I extend my heartfelt thanks to the **NESOS Executive Committee**, and all our **contributors** for their unwavering support and effort. To our readers, your feedback and engagement are invaluable as we continue to shape and grow this publication.

We hope you find this issue both enlightening and empowering.

Warm regards,

**Sincerely,**

**Dr Sabin Sahu**

**Editor-in-chief**

**NESOS e-Magazine**

# Editorial team

**PATRONS**

Dr Rohit Saiju

Dr Basant Raj Sharma

Dr Naresh Joshi

Dr Ben Limbu

**EDITOR-IN-CHIEF**

Dr Sabin Sahu

**EDITORS**

Dr Prerana Kansakar

Dr Anjila Basnet

**ASSOCIATE EDITORS**

Dr Aditya Prasad

Dr Sanket Parajuli

Dr Leena Jha

# Information to authors

**Subscription information:**
The e-Magazine is available to download free of charge from www.nesosnepal.org.np and https://anyflip.com/homepage/fpoyg/

**Please note:**
1. This is not a peer reviewed publication. Published article will not be counted as academic achievement.
2. It is the responsibility of the author to obtain appropriate consent for the publication of the patient details and patient photographs.
3. The articles need to be in standard English and referenced for any claims or factual data presented in the article.
4. The opinions and any claims made in the magazine would be the liability of the authors solely and NESOS or Editorial board would not bear any responsibilities for any disputes arising thereof.
5. The editorial committee deserves the right to reject an article at any stage of editing.
6. The editorial committee will notify the authors regarding the status of submission and any editorial changes to be made before publication.
7. Plagiarism is strictly prohibited.

**Copyrights:**
The contents published in the e-Magazine are copyright of the respective authors. Any article appearing in the e-Magazine can be reproduced after written approval from the NESOS e-Mag editorial committee and the respective author.

**Disclaimer:**
All the information and opinions published in the NESOS e-Mag reflect the views of the respective authors and NOT the opinions of the e-Magazine or its editorial committee or the NESOS. Any disputes arising thereof shall be the responsibility of the respective author.

**Editorial office:**
c/o: Dr Sabin Sahu, Jyoti Eye Hospital,
Zero-mile, Janakpurdham
Madhesh Province, Nepal
Contact no: +977-9824796481
Email: sabinsahu@gmail.com or emagnesos@gmail.com

**Published by:**
Nepalese Society for Oculoplastic Surgeons (NESOS), NOS building, Kumari Galli/ Devi Shree marga, House no. 32, Tripureshwor, Kathmandu
Contact no: +977-9851054783
Email: nesosnepal@gmail.com
Website: www.nesosnepal.org.np

# Contents



-

# About NESOS

## Introduction to Nepalese Society for Oculoplastic Surgeons NESOS

**Brief History of the subspeciality**

Nepalese Society for Oculoplastic Surgeons (NESOS) is a professional medical organization dedicated to advancing the field of oculoplastic surgery in Nepal. It was formed on 15th October, 2014 with small number of passionate and skilled oculoplastic surgeons in Nepal, who have had training or fellowship and experience in this highly specialized field of Orbit and Oculoplastic surgery.

The objectives of NESOS are to promote the academic trainings, research and quality of clinical practice in the area of plastic, reconstructive and aesthetic surgery of eyelids, orbits and lacrimal system. By nurturing young talents and encouraging research activities, the society aims to contribute to the global body of knowledge in oculoplastic surgery.

The society serves as a platform for oculoplastic surgeons across Nepal to collaborate, share knowledge, and enhance their expertise through conferences, workshops, and seminars.
NESOS also plays a crucial role in raising awareness about oculoplastic disorders and treatment options among the general public and other medical professionals. By conducting outreach programs and public health initiatives, the society endeavors to improve eye health and overall well-being within the Nepalese community.

**Registration number: 362/ 2071/6/29**

**Executive members and number of members**

NESOS currently has 53 full members with few international honorary and associated members.

**Founders:**

- Dr Rohit Saiju
- Dr Basant Raj Sharma

**Past Presidents:**

- 2021-2022 - Dr Ben Limbu

- 2019-2020 –Dr Basant Raj Sharma
- 2017-2018 – Prof Dr Rohit Saiju
- 2015-2016 – Prof Dr Rohit Saiju

**Executive committee members (2025-26):**

- President – Dr Eliya Shrestha
- Immediate Past President – Dr Sulaxmi Katuwal
- Vice-President – Dr Purnima R. Sthapit
- General Secretary – Dr Suresh Rasaily
- Treasurer – Dr Malita Amatya
- Joint Secretary – Dr Tina Shrestha
- Joint Treasurer – Dr Nisha Shrestha
- Scientific Chair – Dr Aashish Raj Pant
- Editor-in-chief – Dr Sabin Sahu
- Members – Dr Samata Sharma, Dr Prerana Kansakar, Dr Dikshya Bista, Dr Jamuna Gurung, Dr Pranita Dhakal, Dr Sushant Adiga

**Activities**

- Organizing regular conferences (NESOSCON conference every 2 years), workshops, and seminars on oculoplastic surgery topics.
- Providing continuing medical education (CME) programs for its members to enhance their knowledge and skills.
- Hosting guest lectures and inviting renowned oculoplastic surgeons from around the world to share their expertise.
- Facilitating collaborative research projects and encouraging research activities in the field.
- Regularly updating members on the latest developments and technological advancements in oculoplastic surgery.
- Publishes an e-magazine bi-annually covering important topics and updates related to orbit, lacrimal and oculoplastics. It publishes scientific articles and journals to disseminate research findings and advancements in the field.
- Provides travel grant for its members to attend national and international conferences.
- Provides awards to members with outstanding contributions in the field like "Young Oculoplastic Surgeon Award"
- Conducting public awareness campaigns about oculoplastic disorders and the importance of eye health.
- Supporting and mentoring young oculoplastic surgeons through fellowship programs and career guidance. It also encourages young Ophthalmologists to pursue career in the field of Oculoplasty.
- Advocating for the advancement of oculoplastic surgery within the broader medical community in Nepal.
- Collaborating with other medical societies and organizations to promote interdisciplinary approaches to eye health.
- Contributing to the development of guidelines and standards for oculoplastic surgery practice in Nepal.

The activities NESOS, showcase its commitment to advancing oculoplastic surgery, improving patient care, and raising awareness about eye health in Nepal.
The society is always ready to affiliate or associate with other institutes, societies and organizations to upgrade the quality of the service in this field by sharing the skills and knowledge together as well to overcome the challenges and explore the possibilities in the future.

**List of NESOS members:**

1. Dr Rohit Saiju
2. Dr Basanta Raj Sharma
3. Dr Eliya Shrestha
4. Dr Purnima Rajkarnikar Sthapit
5. Dr Lila Raj Puri
6. Dr Pooja karki
7. Dr Sabita Palikhe
8. Dr Ben Limbu

9. Dr Sulaxmi Katuwal
10. Dr Ranjana Sharma
11. Dr Puja Rajbhandari
12. Dr Naresh Joshi
13. Dr Suresh Raj Pant
14. Dr Sanjeeb Kumar Yadav
15. Dr Koshal Shrestha
16. Dr Prerna Arjyal Kafle
17. Dr Reshma Shrestha
18. Dr Diwa Hamal
19. Dr Dev Raj Bharati
20. Dr Gulsan Bahadur Shrestha
21. Dr Binita Bhattarai
22. Dr Jyoti Baba Shrestha
23. Dr Triptesh Raj Pandey
24. Dr Hom Bahadur Gurung
25. Dr Tina Shrestha
26. Dr Malita Amatya
27. Dr Prerana Kansakar
28. Dr Laxmi Devi Manandhar
29. Dr Aric Vaidya
30. Dr Aashish Raj Pant
31. Dr Nisha Shrestha
32. Dr Sabin Sahu
33. Dr Anjila Basnet
34. Dr Suresh BK Rasaily
35. Dr Anish Manandhar
36. Dr Dikshya Bista
37. Dr Gaurav Dhungana
38. Dr Pranav Shrestha
39. Dr Pratikshya Amatya
40. Dr Jamuna Gurung
41. Dr Ramita Kharel
42. Dr Pranita Dhakal
43. Dr Varun Shrestha
44. Dr Leena Jha
45. Dr Sushant Adiga
46. Dr Harshika Rauniyar
47. Dr Aditya Shrivastava
48. Dr Samata Sharma
49. Dr Satish Timalsena
50. Dr Anushree Adhikary
51. Dr Raja Husain Mansuri
52. Dr Ashesh Koirala
53. Dr Binita Thapa
54. Dr Krishna Gurung

# Expert's Corner

## "Ocular Oncology and Beyond: Prof. Dr. Usha Singh's Leadership, Vision, and Grit"

Prof. Dr. Usha Singh is a Professor of Ophthalmology at the Advanced Eye Centre, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, and a leading Indian authority in oculoplastic surgery and retinoblastoma care. She currently serves as President of the Oculoplastics Association of India (OPAI) for the 2023–2025 term, reflecting the national community's recognition of her leadership and contributions.

Since 1996, Prof. Singh has devoted her career to the twin subspecialties of Oculoplastics and Retinoblastoma. She established the dedicated Retinoblastoma Clinic at PGIMER in 1996 under the mentorship of the late Prof. Amod Gupta, and has led it to become a comprehensive referral hub for northern India—serving patients from across Punjab, Haryana, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Uttar Pradesh, Rajasthan, Chandigarh, Bihar, and even neighboring countries. The clinic runs as a multidisciplinary service with ophthalmology, pediatrics, oncology, interventional neuroradiology, histopathology, and social work working to provide comprehensive care.

Prof. Singh is not only a skilled clinician but also an active researcher. Her work focuses on retinoblastoma and oculoplastics, especially studying long-term results and improving treatment protocols.

She has published important research, including a 16-year review of retinoblastoma cases at the Advanced Eye Centre, and has contributed to national guidelines and consensus statements through OPAI. Beyond clinical and academic work, she has also taken on editorial roles and led awareness activities across India, helping shape better eye care practices in the country and beyond.

**SS: Q1. Can you share with us how your journey in ophthalmology began and what inspired you to specialize in oculoplasty and ocular oncology?**

**US:** My journey started when I opted for ophthalmology seat in PGIMER in January 1989. The revered teachers of the department, Prof I S Jain, Prof Amod Gupta, Prof J S Saini, Prof Jagat Ram, Prof. Sandeep Jain, Dr Kanwar Mohan, have nourished my innermost desire to do post-graduation, reasoning, knowledge, skills, and ethics.

After my PG, I joined the department as a faculty in December 1995. Our HOD then Professor Amod Gupta, who had also been my thesis guide directed me to take up retinoblastoma which I did. Those days the treatment for RB was (destructive surgery) enucleation for intraocular disease, and exenteration (destructive and disfiguring), external beam radiotherapy and palliative chemotherapy of 50 mg cyclophosphamide for years. Very soon in 1996, Dr R.K. Marwaha, professor of pediatrics, Division of Haemato-oncology suggested neoadjuvant chemotherapy for extraocular retinoblastoma (EORB). The was novel idea of chemo-reduction for retinoblastoma evolved first in UK and US after observing shrinkage of neuroblastoma tumors prior to removal and as an alternative to radiotherapy, as children were still dying due to second cancers. By mid-1990`s chemotherapy for RB was used abroad widely. Initially, we used chemo-reduction for EORB, being the first in the country to do so. Seeing the dramatic results of chemo-reduction and possibility of saving lives and treating eyes for salvaging the globe infused enthusiasm into me.

Over the years, I grew to like this specialty. The good part was that ever since systemic chemotherapy was started at our institute, we never had to do mutilating exenteration in any case of orbital retinoblastoma over the last 29 years. This novel work on Neoadjuvant chemotherapy in EORB on 32 patients had excellent results and generated lot of discussion at the conference of International Society of Ocular Oncology 2004, held at Hyderabad, and won the Best Scientific Poster Award.

As we are all aware now, the treatment of RB since the mid 90`s till date has made a paradigm shift. Currently, all state of art treatment is available at PGIMER Institute, Chandigarh, including Intra-arterial chemotherapy.

**SS: Q2. You've been working in oculoplastics and managing Retinoblastoma since 1996- over 27 years now. What sustained your passion and dedication to this lesser-chosen but critical field? What were the biggest hurdles you faced initially and how did you overcome them?**

**US:** Apart from RB, Oculoplastics is an area of my choice. While RB requires a wide pitch of multidisciplinary approach and congenial collaborations for smooth sequence of treatment, but also has psycho-social-economic concerns from RB families. Moreover, these children need a lifelong follow up. These are probably the reasons for this specialty to be not very popular choice. It may also not be financially viable in small private sector setups. Staying in an upgraded institute gave us an edge. Same is true for oculoplastics, which was then being done informally by all. The

specialty was not very popular then when I had joined. In fact, it was not even considered a research-oriented specialty by some and therefore not held in high esteem. The oculoplastics association of India (OPAI) too, was small and was still evolving.

I was allowed to run a formal clinic since 1996 onwards and develop this specialty. Today, oculoplastics has gained significant popularity among ophthalmologists. Even the public has become are more aware and sought after due to advancements and media exposure, especially aesthetic and reconstructive procedures.

The technological advancements in oculoplastics have evolved in terms of advanced imaging techniques, surgery being performed under microscopes, finer and better instrumentation, photography and recording facilities, exchange of knowledge in conferences, advancements in minimally invasive techniques, artificial intelligence integration, endoscopic lacrimal surgeries and novel materials for reconstruction. Moreover, the oculoplastic surgeons have adapted and evolved to the challenges of cross specialty consultations and surgical management in the interest of patients. Aesthetics and endoscopic surgeries have made it highly paying.

I was blessed to have good mentors and senior colleagues (Prof. Amod Gupta, Prof Jagat Ram, Prof M R Dogra, Prof Pandav, Dr Kanwar Mohan and Dr Ashok Sharma) who guided and encouraged by giving me a free hand in all matters relating to this field and therefore shaped my outlook and progress. My exposure to oculoplastics was greatly enhanced in tertiary care setting of a premier institute where I had to see all referrals and trauma cases. With addition of a junior colleague in 2006, our work further progressed in experience, and gained acceptance by colleagues in all related departments. Research collaborations were forged and oculoplastic publications contributed to literature.

**SS: Q3. Now serving as President of the Oculoplastics Association of India (OPAI), what does this leadership role mean to you, and what goals do you envision for OPAI during your tenure?**

**US:** As the president my efforts were to have annual scientific meetings, regional and local scientific webinars for trainees, general ophthalmologists and for the advanced, workshops and small training modules for postgraduate training, hands on training in aesthetics to promote oculoplastics.

Joint scientific meetings with other countries (SAARC), contributing to the scientific program of APAO, contributing to world guidelines on Thyroid eye disease and updating guidelines for Post PG oculoplastics training syllabus with incorporation of newer challenges, especially including aesthetics, reconstruction, and trauma management for the country. Likewise making suitable changes in the OPAI constitution to be future ready.

**SS: Q4. Could you share some memorable or impactful cases from your clinical experience that left a lasting impression on you—either medically or emotionally?**

**US:** I remember one case of a father of an RB child on his shoulders. This child had a fungating orbital RB with live maggots. This silent father with expressionless face was extremely poor looking, with hardly any flesh on his body. It was this one moment, one look at him, made taking history irrelevant. It bespoke of the harshest struggle he had faced in running from pillar to post to seek treatment for his child. It is a benediction of science that retinoblastoma treatment has made huge strides with advances in treatment being contributed by passionate academicians, ophthalmic oncologists, and researchers worldwide. It is now possible to save lives of such children.

Another case which affected me very much was the mental torture a father was facing to save his lineage. His child with RB was the only son amongst 4 daughters.

**SS: Q5. Ocular oncology often requires close collaboration with oncology, radiotherapy, and pathology teams. Can you describe a case or system at PGIMER that exemplifies effective multidisciplinary teamwork?**

**US:** The case of 3-year-old RB child with extraocular extension involving optic nerve till orbital apex, bone marrow infiltration, but with no CSF involvement. He underwent neoadjuvant chemotherapy, followed by enucleation, adjuvant chemotherapy and orbital radiation. For further treatment, he received an autologous stem cell transplant. His post-transplant stay in the hospital had a very stormy course in June last year. He was conditioned with carboplatin, etoposide and thiotepa. Was on ventilator for 6 days, and had continuous GI bleed requiring colostomy, therefore remained hospitalized for 2 months. This was a multidisciplinary approach at its best and heroic efforts by the paediatric oncology team (Dr Deepak Bansal, Dr Srinivas) in treating and saving this child/ He is a happy child today with a disease free follow up of one year.

**SS: Q6. You've mentored many young ophthalmologists over the years - including myself – and have always been a source of inspiration to me. What qualities do you believe are essential for a resident to succeed in oculoplasty and ocular oncology?**

**US:** A resident needs to have surgical technical skills, thorough knowledge of anatomy and diseases affecting the orbit-eyelids-lacrimal, and outstanding interpersonal abilities to succeed in oculoplasty and ocular oncology.

**SS: Q7. What are your key goals or future plans for expanding the ocular oncology and oculoplasty services at PGIMER? Are there new technologies or training programs on the horizon?**

**US:** Currently, endoscopic management of lacrimal diseases, Intra-arterial chemotherapy for retinoblastoma and orbital tumors, embolization, endovascular and intraoperative glue assisted surgical excisions of vascular lesions and tumors, multidisciplinary approach to orbital tumor removal, orbital fat grafting, newer surgical techniques for socket renewal, minor salivary gland

transplantation for severe dry eyes, cornea neurotization with sural, supratrochlear and supraorbital nerves are some of the newer techniques in which work is going on in the oculoplastic services.

We are aiming to provide genetic testing and counselling for all prenatal and antenatal (chorionic villous sampling) parents with an already affected RB child or with a family history of RB. In the future, plan is to start a fellowship training in oncology for which process is underway.

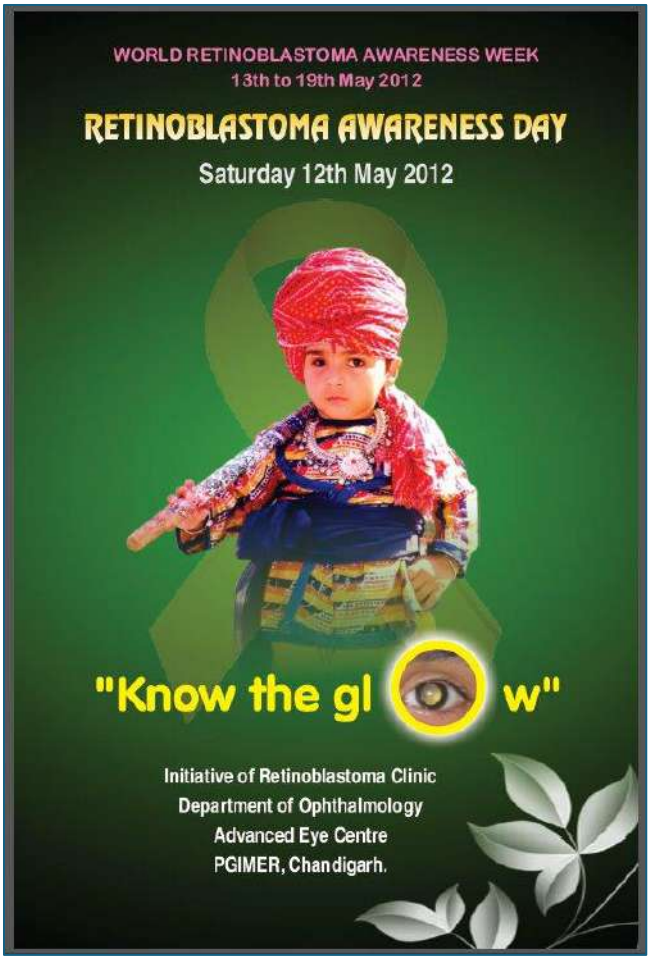
**SS: Q8. Outside your clinical and academic responsibilities, what hobbies or activities bring you joy and help you maintain work-life balance?**

**US:** Since childhood, I have been a part of a spiritual organization which believes in unity and divinity of mankind and contribute to society by doing service without expectations and publicity. For my self-growth, I participate and contribute in the Educare, Seva and Spiritual wings of the organization during my free time. This is what illuminates the path in the maze of life, provides serenity, and guides me. I take this opportunity to express gratitude to my revered teachers, colleagues, junior doctors, department staff, friends, family, and parents. Finally, and entirely, all this would not have been possible without my institute PGIMER-Chandigarh, which is the "Mecca of treatment" and The Almighty.

## Glimpses of her remarkable journey:



With Prof Amod Gupta, Past Dean & HOD, Department of Ophthalmology, PGIMER, Chandigarh


WORLD RETINOBLASTOMA AWARENESS WEEK
13th to 19th May 2012
RETINOBLASTOMA AWARENESS DAY
Saturday 12th May 2012
"Know the gl w"
Initiative of Retinoblastoma Clinic
Department of Ophthalmology
Advanced Eye Centre
PGIMER, Chandigarh.


2018 JAIP


OPAI
WELCOME TO


30th Annual Conference

# Expert's Corner

## "A Conversation with Prof. Dr. Ruchi Goel: A Journey Through Innovations, Academics and Ocular Oncology"

Prof. Dr. Ruchi Goel is a distinguished ophthalmologist and a Gold Medalist from Delhi University, with over 25 years of expertise in Oculoplastic surgery.

A highly accomplished surgeon, she holds prestigious qualifications including MS, DNB, FAICO (Oculoplasty), and FRCOphth (London). Currently serving as a Senior Consultant in Oculoplasty and a Visiting Consultant in Ocular Oncology at Rajiv Gandhi Cancer Institute, she was formerly the Director-Professor & Head of Oculoplasty Services at Guru Nanak Eye Centre, Maulana Azad Medical College, New Delhi.

Her surgical excellence spans advanced orbital, lacrimal (endoscopic), and lid surgeries, along with cataract, glaucoma, and trauma procedures. She has trained postgraduates for two decades and served as a cataract surgery trainer for ORBIS International.

An esteemed academician, Dr. Goel is an examiner for multiple prestigious institutions, including the Royal College of Ophthalmologists (London). She has authored the "Manual of Oculoplasty" (2024) and co-authored a cataract surgery manual (2011), alongside publishing 110 indexed papers, 40 non-indexed articles, and over 30 book chapters.

Recognized with numerous awards—such as the Dr. V.P. Chadha Gold Medal, APAO-Honavar Award, and AIOS-IJO Silver Award—she is also a sought-after speaker, having conducted 50+ instruction courses and live surgeries globally. Her contributions to ophthalmology, particularly in Oculoplasty and surgical training, make her a leading authority in the field.

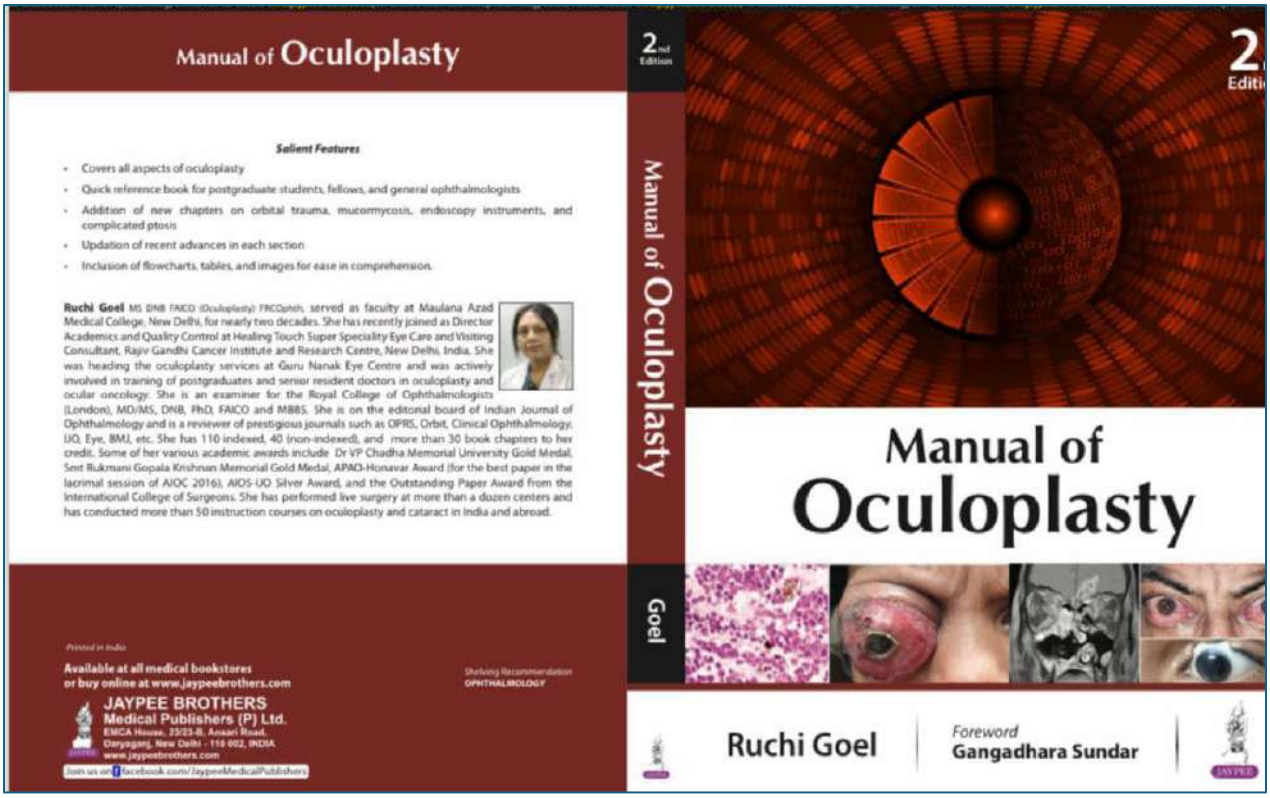
**SS: Q1. Can you share with us how your journey in ophthalmology began and what inspired you to specialize in oculoplasty and ocular oncology?**

**RG:** I joined MS Ophthalmology at Safdarjung Hospital, New Delhi in 1995 and completed my senior residency in 2002. In the residency period, I was fortunate to be exposed to diverse oculoplasty procedures. Oculoplasty was synonymous with creativity and struck the chord within me! Fortunately, when I joined as faculty at Guru Nanak Eye Centre (GNEC), New Delhi in 2006, I was posted in Oculoplasty unit. GNEC government run a high volume, referral centre and a part of multispecialty complex. I started treating many cancer patients referred from all parts of the country. Lack of resources, awareness and trained cancer specialists in many parts of India inspired me expand the services at GNEC. I also imparted skills in my students to create more cancer specialists. In 2024, after taking voluntary retirement from government service, I have joined my current places of work.

**SS: Q2. You've had an outstanding academic journey. Could you share some of the key milestones or achievements that hold special significance for you—whether in research, teaching, leadership, or clinical innovation?**

**RG:** In early part of my career, I co-authored the book on Manual of small Incision Cataract Surgery, 2023, CBS publishers, New Delhi with Dr KPS Malik. The book had about 100 diagrams which I drew myself to illustrate the steps and complications of the surgery. Soon the book became a best seller, and I was invited in India and abroad to perform live surgery of SICS.

As a faculty at GNEC, my students shared the need for a single Oculoplasty book for post-graduates. My next book `Manual of Oculoplasty', Jaypee publishers, New Delhi was published in 2019 and subsequent edition was released in 2025. The book is especially close to my heart as it is a compilation of my entire Oculoplasty journey.




Our group performed extensive research on Thyroid Orbitopathy and published many research articles, the most notable being: "*Goel R, Shah S, Sundar G, Arora R, Gupta S, Khullar T. Orbital and ocular perfusion in thyroid eye disease. Surv Ophthalmol. 2023 May-Jun;68(3):481-506. doi: 10.1016/j.survophthal.2023.01.003."*

We also published extensively on lacrimal procedures. I was awarded the APAO-Honavar award for my technique of conjunctivo-DCR in AIOC. The article was later published. *"Goel R, Kishore D, Nagpal S, Kumar S, Rathie N. Results of a new "mirror tuck technique" for fixation of lacrimal bypass tube in conjunctivodacryocystorhinostomy. Indian J Ophthalmol. 2017 Apr;65(4):282-287."*

I was fortunate to serve at various leadership positions:

- Joint Secretary All India Ophthalmological Society 2017-2020
- Joint Treasurer All India Ophthalmological Society 2011-2014
- Editor-in – chief, Delhi Journal of Ophthalmology 2015-2017
- Member Scientific Committee(All India Ophthalmological Society) 2005-2008, 2008-2011
- Member Academic and Research Committee(All India Ophthalmological Society) 2005-2008, 2008-2010
- Treasurer Delhi Ophthalmological Society 2009-2011

**SS: Q3. What are the most common ocular or periocular tumors you encounter in your practice?**

**RG:** The commonest periocular cancers referred to me are sebaceous cell carcinomas. Ocular surface neoplasias are also reasonable numbers. Orbital vascular malformations form a sizeable chunk of orbital masses. Choroidal melanomas are common in the intraocular group.

**SS: Q4. What are some of the biggest challenges in the management of ocular cancers in India?**

**RG:** The lack of awareness, tendency to delay in seeking treatment often lead to advancement in cancer stage. Paucity of trained cancer specialists, infrastructure and cost involved in diagnostic procedures and treatment are other prohibitory factors. There are long waiting lists for radiotherapy and chemotherapy in the select few available centres.

**SS: Q5. How has the approach to diagnosing and managing ocular malignancies evolved over the years??**

**RG:** The advances in imaging techniques facilitates early diagnosis and appropriate staging of cancers. Stereotactic radiation and brachytherapy enables management with minimal complications. Targeted therapy and advent of new chemotherapeutic agents has increased survival rates.

**SS: Q6. Outside your clinical and academic responsibilities, what hobbies or activities bring you joy and help you maintain work-life balance?**

**RG:** I like to spend time with my family and watch spiritual programs online.

**SS: Q7. What message would you like to give to young ophthalmologists who wish to make a meaningful impact in both clinical care and academic excellence?**

**RG:** There are no short cuts in life. Hard work, sincerity, honesty and empathy are the backbones of any successful career. Focus on work and never run after short term gains.

**Dr SS:** We extend our heartfelt gratitude to Prof. Dr. Ruchi Goel for graciously sharing her time, insights, and invaluable experiences with us. Her unwavering commitment to excellence in ocular oncology, oculoplastic surgery, and academic leadership continues to inspire clinicians, researchers, and young ophthalmologists across the region. Through her pioneering work, compassionate patient care, and dedication to teaching, Dr. Goel exemplifies the true spirit of medical innovation and mentorship. We are honored to feature her in this edition of the NESOS eMagazine and deeply appreciate her contributions to advancing the field of ophthalmology.

## Glimpses of her remarkable journey:


GNEC will never be same without you!

Article

# "Fighting Retinoblastoma in Nepal"

**Author:** Dr. Purnima Rajkarnikar Sthapit, MD
**Affiliation:** Head of Department of Oculoplasty, Ocular Oncology and Prosthesis
Tilganga Institute of Ophthalmology, Gaushala, Kathmandu, Nepal

Retinoblastoma accounts for approximately 3% of all childhood cancers and is recognized as the most common intraocular malignancy in children under five years of age globally. A pediatric oncologist once shared a vital truth that underscores the urgency of this disease: **"*Retinoblastoma is the only pediatric cancer whose prognosis solely depends on early detection and prompt management.*"** This statement highlights the life-saving importance of recognizing early signs, especially **leukocoria**, in children.

Over the years, a significant shift has been observed in how Retinoblastoma presents in Nepal. Literature reviews reveal that two decades ago, many children arrived at hospitals with advanced disease—commonly with a fungating orbital mass. In contrast, today's cases more often present at earlier stages, such as with leukocoria, thanks to growing public awareness and improved access to affordable healthcare. However, advanced cases still occur, serving as a reminder that awareness must continue to expand.

To that end, awareness campaigns are playing a pivotal role. In 2024, *Open Eyes Nepal*, in collaboration with *Tilganga Institute of Ophthalmology*, initiated a leukocoria awareness program targeting primary healthcare workers, vaccination nurses, and school nurses. A total of 96 participants across three districts were trained and equipped with **Arclight**, a user-friendly handheld device to detect leukocoria. These programs are a model for grassroots engagement and should be replicated nationwide. Every healthcare professional and concerned individual should support, participate in, or initiate similar efforts to ensure no child is missed.

## The Importance of Early Staging

Early detection of Retinoblastoma, when the tumor is still confined to the eye (Stage 0 or Stage 1), can lead to highly favorable outcomes. In such cases, the child's life is not at risk, and with appropriate management—including systemic chemotherapy and localized treatments like **trans pupillary thermotherapy**, **cryotherapy**, or **intra/periocular chemotherapy** - it is often possible to preserve both the eye and vision.

Even in unilateral cases requiring **enucleation**, if performed timely and in the absence of high-risk histopathological features, the prognosis remains excellent. However, accurate **histopathological evaluation** is crucial. Stage 2 disease, which refers to microscopic residual disease after enucleation, can easily be missed without an experienced **onco-pathologist**. Misclassification as Stage 1 may lead to skipping necessary **adjuvant chemotherapy**, increasing the risk of recurrence and progression to Stage 3 or even Stage 4—stages associated with poor prognosis. Therefore, collaboration with experienced pathologists should be mandatory before and after surgical intervention.

## Clinical Diagnosis Over Biopsy

Retinoblastoma is unique among childhood cancers in that it is diagnosed clinically, without the need for a tissue biopsy. Biopsy attempts, particularly intravitreal or orbital, are **contraindicated** as they elevate the staging from 0 to 3 due to the risk of spreading tumor cells—a condition known as ***accidental orbital Retinoblastoma***. Differentiating Retinoblastoma from conditions like **PHPV (Persistent Hyperplastic Primary Vitreous)**, **FEVR (Familial Exudative Vitreoretinopathy)**, **Coats disease**, or **endophthalmitis** requires expertise in clinical and radiological evaluation.

## Tailored Treatment Based on Staging and Grouping

In bilateral disease, **staging** is determined by the worse eye, while **grouping** is done for each eye individually. This distinction is crucial as both treatment and prognosis vary significantly depending on stage and group.

- **Stage 0 disease** (confined to the eye) with **Group D or lower** may require systemic chemotherapy combined with focal therapies, aiming for globe preservation.
- **Stage 1 disease** can often be cured with enucleation alone.
- **Stage 2** needs both enucleation and adjuvant chemotherapy.
- **Stage 3** necessitates high-dose systemic chemotherapy (usually 12 cycles) and radiation.
- **Stage 4** may require palliative care depending on systemic spread and the child's overall condition.

This prolonged and resource-intensive treatment presents emotional and financial challenges. Most affected families are young, often newly married and not financially prepared to face such a crisis. Unlike chronic conditions where time can be taken to arrange finances, Retinoblastoma demands **immediate** intervention.

## Open Eyes Nepal: Supporting Families in Crisis

In response to these challenges, we established **Open Eyes Nepal**, a non-governmental organization aimed at supporting families through both **financial aid** and **awareness initiatives**. Through our fundraising efforts, we now offer **free treatment** and **rehabilitation services**, including custom-made prosthetic eyes, in collaboration with *Tilganga Institute of Ophthalmology*.

## Why This Matters

Globally, Retinoblastoma occurs in approximately 1 in every 15,000 to 20,000 live births. Though rare compared to other childhood illnesses, the fact that it affects **very young children**, including newborns, and carries a **99% mortality rate if left untreated**, makes it one of the most sensitive and urgent conditions ophthalmologists and pediatricians face.

Timely diagnosis and treatment can mean the difference between life and death, blindness and vision, trauma and recovery. It is imperative that every healthcare worker, parent, and policymaker in Nepal—and beyond—understands the importance of **early detection** and **specialized care** for Retinoblastoma.

Let us all be vigilant, proactive, and united in ensuring that no child in Nepal—or anywhere else—succumbs to a disease that is both **curable and preventable** when caught early.


Retinoblastoma awareness, arclight training and distribution program held at Nijgadh where 50 primary health workers, optometry students and school nurses participated


Interaction of Retinoblastoma (who had received financial aid by Open Eyes Nepal) survivors with the delegates of Open Eyes Nepal and donor institute- Australian Catholic University

Training on use of Arclights by Dr Sushant. The program was organized by Open Eye Nepal and supported by Nijgadh Tilganga Community Eye Hospital on March 11th, 2025.


Awareness and training on importance of white glow detection by Pediatricians and labor room nurses was given by Open Eyes Nepal at 4 different hospitals- KMC Hospital, Paropakar Maternity Hospital, TUTH and Kanti Children Hospital.

Second and third Retinoblastoma awareness program organised by us in collaboration with Rotary Club Yela at 3 different Nursing colleges of Kathmandu and Patan. It was conducted by our members Umang, Suchita, Dr Malita and volunteer Dr Anushree from Tilganga.

From Diagnosis to Hope: Dr. Purnima with her brave retinoblastoma survivors, celebrating strength and second chances

.

**Corresponding author:**
Dr. Purnima Rajkarnikar Sthapit, MD
Head of Department of Oculoplasty, Ocular Oncology and Prosthesis
Tilganga Institute of Ophthalmology, Gaushala, Kathmandu, Nepal
purnimark@gmail.com

Article

# "Imaging in Ocular Oncology: Role of Ultrasound, MRI, and OCT"

**Author:** Dr. Ben Limbu, Dr. Samata Sharma, Dr. Nisha Shrestha
**Affiliation:** Department of Oculofacial, Aesthetic & Ocular Oncology, Global Eye Hospital, Nepal

**Introduction**

Ocular imaging plays a pivotal role in evaluating tumor location, thickness, basal dimensions, vascularity, architecture, tissue composition, and invasiveness. Imaging techniques support to confirm the presence of and quantitate the amount of subretinal fluid, orange lipofuscin pigmentation, and other tumor-associated sequelae, and they facilitate the staging and classification of ocular tumors. Imaging is important during follow up for evaluating the response to therapy and treatment-related complications such as radiation retinopathy. While histological examination following a biopsy remains the gold standard for definitive tumor confirmation, imaging modalities have proven equally reliable in diagnosing various types of ocular tumors. Current and emerging instrumentation can acquire, edit, archive, retrieve, compare, make precise measurements, and transmit high quality digital images for diverse purposes, including patient care, treatment planning, teaching, and research.

This article is focused on the most valuable and widely used modalities including ultrasound, magnetic resonance imaging (MRI) and optical coherence tomography (OCT). Each of these imaging tools offers distinct advantages based on the tumor type, location, and clinical context.

## 1. Ultrasound (B-scan and A-scan)

Ultrasound imaging works on the principle of high-frequency sound wave reflection. A transducer emits ultrasonic waves (typically 10–20 MHz for ocular use) into the eye. These sound waves travel through the tissue and are partially reflected back to the transducer when they encounter boundaries between tissues of different densities. The time delay and intensity of the returning echoes are processed to form either one-dimensional (A-scan) or two-dimensional (B-scan) images. The strength of the echo corresponds to the acoustic impedance differences between tissues, allowing visualization of structures within the eye and orbit.

Ultrasound is a foundational imaging modality in ocular oncology, offering both structural assessment and tissue characterization. The B-scan (USB) provides two-dimensional cross-sectional images of the eye and orbit using high-frequency sound waves, while the A-scan delivers one-dimensional amplitude spikes that help quantify tissue reflectivity and measure axial length

or lesion thickness. Ultrasound is especially valuable as a first-line imaging tool when direct visualization is limited due to media opacities, such as dense cataracts, vitreous hemorrhage, or corneal scars.

Ultrasound is widely used to differentiate solid from cystic lesions, to measure tumor size and thickness, and to assist in the diagnosis of intraocular tumors such as choroidal melanoma, choroidal hemangioma, and retinoblastoma.

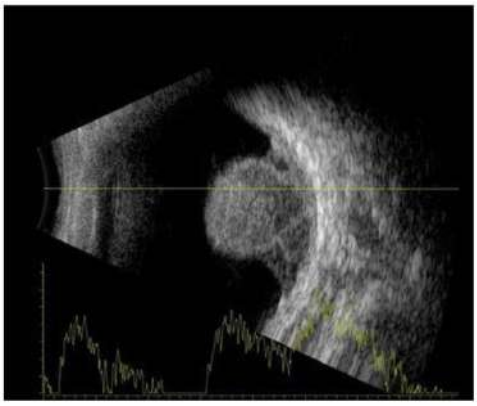


Figure 1.

A Scan USG typically shows a prominent initial spike followed by low to medium internal reflectivity with diminishing amplitude and a significant echo

B Scan USG showing a large mushroom like lesion arising from choroid with subretinal fluid

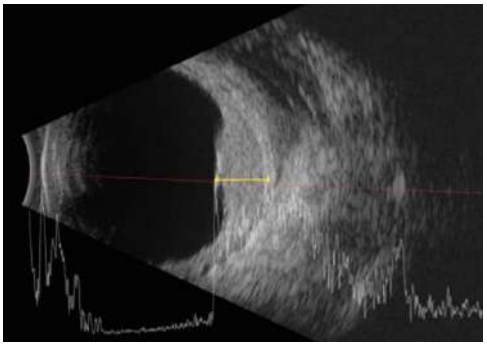


Figure 2.

A Scan USG typically shows a prominent initial spike followed by medium to high internal reflectivity with diminishing amplitude and a significant echo

B Scan USG showing a dome shaped lesion arising from choroid with subretinal fluid

For tumors greater than 3 mm in thickness, a combination of A- and B-scan ultrasonography can diagnose choroidal melanomas with greater than 95% accuracy.

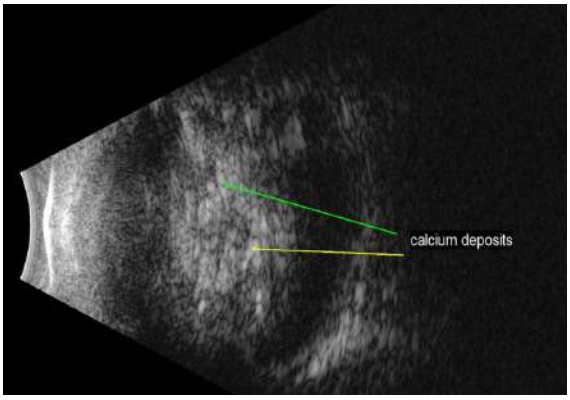



Figure 3.

An ultrasound B scan of an intraocular retinoblastoma showing characteristic calcifications

**High-Frequency Ultrasound Biomicroscopy (UBM) in Ocular Tumor Imaging**

UBM operates in the 10–100 MHz range, offering axial resolution of 20–50 µm—significantly higher than conventional B-scan. Its field of view (4–11 mm) allows deeper and broader visualization of the anterior segment and ciliary body structures. It remains the gold standard for differentiating cystic from solid ocular tumors by allowing detailed characterization of wall thickness, surface and internal echogenicity, relationships with adjacent structures and posterior extent of the lesion. Despite its diagnostic superiority, UBM requires a higher level of technical expertise, as the probe must be operated while immersed in a water bath. Care must be taken to avoid globe distortion or patient discomfort. UBM is particularly useful in detecting iris and ciliary body lesions, small tumors hidden behind the iris, tumors involving the anterior chamber angle and ocular surface squamous neoplasia.

Emerging three-dimensional high-frequency ultrasound technology offers the potential for volumetric and tomographic imaging of tumors, enhancing diagnostic precision and aiding in monitoring and surgical planning. However, this modality is not yet as widely available as standard USB in most clinical settings.

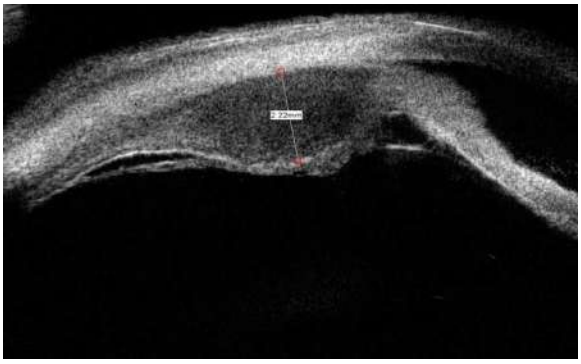


Figure 4. UBM showing low homogenous infiltration of the ciliary body

**Table 1. Characteristic Ultrasound Findings in Ocular Tumors**

| Tumor Type | B-Scan Findings | A-Scan Findings |
|---|---|---|
| Choroidal Melanoma | ***Dome or collar-button shaped***, low-to-medium internal reflectivity, acoustic hollowing | Low to medium internal reflectivity, regular structure |
| Choroidal Hemangioma | Homogeneous, echogenic (bright), smooth contours | High internal reflectivity |
| Retinoblastoma | ***Calcified intraocular mass*** (high reflectivity), retinal detachment common | Very high reflectivity due to calcification |

| | | |
|---|---|---|
| Optic Nerve Glioma | ***Fusiform enlargement*** of the optic nerve | Moderate reflectivity; less defined compared to meningioma |
| Optic Nerve Meningioma | "***Railroad track***" or "***tram-track***" appearance, calcification possible | High reflectivity from calcified sheath |
| Conjunctival Lesions | Superficial, well-defined mass on anterior segment imaging | Variable reflectivity |
| Ciliary Body Melanoma | Hidden behind iris; indentation of lens or iris root | Low to medium internal reflectivity |

Despite its clinical value, ultrasound does have limitations. It is operator-dependent, requiring experience to accurately interpret findings, and it offers limited anatomical detail of surrounding structures compared to more advanced imaging modalities like OCT or MRI. Nonetheless, due to its accessibility, safety, and effectiveness—particularly in challenging visualization scenarios—ultrasound remains a critical tool in the diagnosis and management of ocular tumors.

## 2. Magnetic Resonance Imaging (MRI)

MRI works on the principle of nuclear magnetic resonance (NMR). It uses a strong magnetic field and radiofrequency (RF) pulses to align and then disturb the hydrogen protons in the body (mainly in water and fat). When these protons return to their original alignment (relaxation), they emit signals that are detected by the scanner. These signals are processed to create detailed images of soft tissues, based on the density and relaxation properties of hydrogen atoms in different tissues.

Magnetic Resonance Imaging (MRI) plays an essential role in the evaluation and management of ocular oncology cases. Its superior soft tissue contrast and multiplanar imaging capabilities make it an invaluable tool for characterizing intraocular and orbital tumors, assessing their extent, and guiding treatment decisions. MRI is particularly effective in differentiating benign from malignant lesions based on signal intensity characteristics, enhancement patterns, and the presence of hemorrhage or necrosis. In the case of intraocular tumors such as uveal melanoma and retinoblastoma, MRI provides detailed information on tumor size, extrascleral extension, and involvement of critical adjacent structures such as the optic nerve and orbit. Although calcifications are better visualized with CT, MRI offers detailed anatomical delineation without the use of ionizing radiation—an important consideration, especially in pediatric oncology.

For orbital tumors, including lymphoma, metastases, or optic nerve gliomas, MRI helps define tumor margins and their relationship to intraconal and extraconal spaces. This anatomical precision is vital for both surgical planning and radiotherapy targeting. Furthermore, MRI is instrumental in post-treatment surveillance, as it can assess response to therapy, detect recurrence, and monitor residual disease. Specific tumor types demonstrate characteristic MRI features: for instance, uveal

melanoma typically appears hyperintense on T1-weighted images and hypointense on T2, while optic nerve gliomas present with fusiform thickening and T2 hyperintensity.

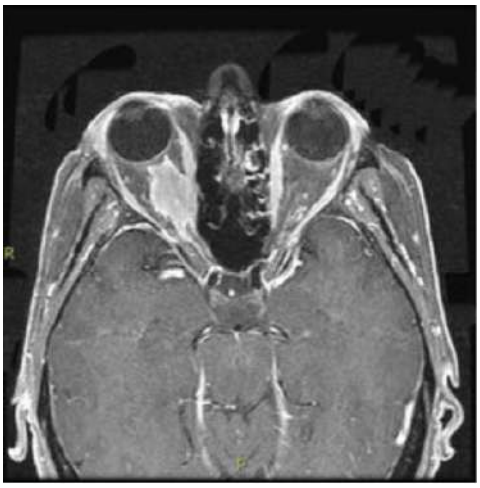


Figure 4. MRI imaging of Optic nerve sheath meningioma

**Table 2. Characteristic MRI findings in various ocular tumors**

| Tumor type | Characteristic MRI finding |
|---|---|
| Optic Nerve Sheath Meningioma | "***Tram-track***" sign (enhancing sheath with non-enhancing optic nerve) |
| Optic Nerve Glioma | ***Fusiform optic nerve enlargement***, T2 hyperintense, variable enhancement |
| Retinoblastoma | Intraocular mass with heterogeneous signal; optic nerve invasion; calcifications better seen on CT |
| Orbital Lymphoma | Isointense on T1 and T2, homogeneous enhancement, well-defined margins, minimal edema |
| Cavernous Hemangioma | Well-circumscribed intraconal mass, progressive fill-in post-contrast enhancement |
| Choroidal Hemangioma | T1 isointense, T2 hyperintense, early and persistent enhancement |
| Ocular/Choroidal Metastasis | Variable signal; enhancing choroidal mass; often with associated retinal detachment |

In summary, MRI serves as a cornerstone in ocular oncology imaging, offering detailed insights into tumor morphology, local invasion, and therapeutic impact. Its non-invasive nature and radiation-free imaging make it particularly well-suited for repeated assessments and for use in

sensitive populations such as children. Despite some limitations—such as its inability to detect calcifications and sensitivity to motion artifacts—MRI remains a critical component of comprehensive ocular tumor evaluation.

## 3. Optical Coherence Tomography (OCT)

Optical Coherence Tomography (OCT) is a non-invasive imaging technique based on which measures the delay and intensity of backscattered light by comparing it to a reference beam that has traveled a known path. This technology enables **cross-sectional, high-resolution imaging of ocular tissues.**

The first commercially available OCT system, **Time-Domain OCT (TD-OCT),** was later succeeded by **Spectral-Domain OCT (SD-OCT),** offering significantly improved axial resolution (4–7 μm) and faster acquisition speeds. The most advanced iteration, **Ultra-High Resolution OCT (UHR-OCT),** is primarily used in research and academic settings due to its ability to resolve microstructural tumor features with exceptional clarity. In ocular oncology, OCT serves as a vital tool for the non-invasive evaluation and monitoring of both ocular surface and intraocular tumors. It is particularly effective in assessing ocular surface squamous neoplasia (OSSN), conjunctival lesions (both pigmented and non-pigmented), choroidal nevi, epitheliomas, melanocytomas, and other neoplastic conditions. OCT provides real-time, high-resolution visualization of tumor morphology, including epithelial thickness, stromal involvement, and tissue interface changes, which aids in distinguishing benign from malignant lesions, guiding biopsy decisions, and monitoring therapeutic response.

Additionally, OCT is instrumental in imaging retinal and choroidal microstructures in oncology cases. It enables the detection of tumor-related retinal changes, such as subretinal fluid accumulation and localized retinal detachment, which can signal early malignancy or tumor progression. OCT is also valuable in evaluating small intraocular tumors, including early melanomas, and helps differentiate benign pigment epithelial lesions from more concerning pathology.

Optical coherence tomography angiography (OCTA) is a novel, non-invasive imaging modality that enables detailed visualization of ocular microvasculature and is particularly useful in distinguishing vascular ocular tumors. In choroidal nevi, OCTA typically reveals a hyporeflective mass with no significant deformation of the choroidal vasculature and an intact retinal pigment epithelium Bruch’s membrane complex, whereas it is obscured in choroidal melanoma along with a significantly decreased surface microvasculature (SMV) flow rate compared to nevi.

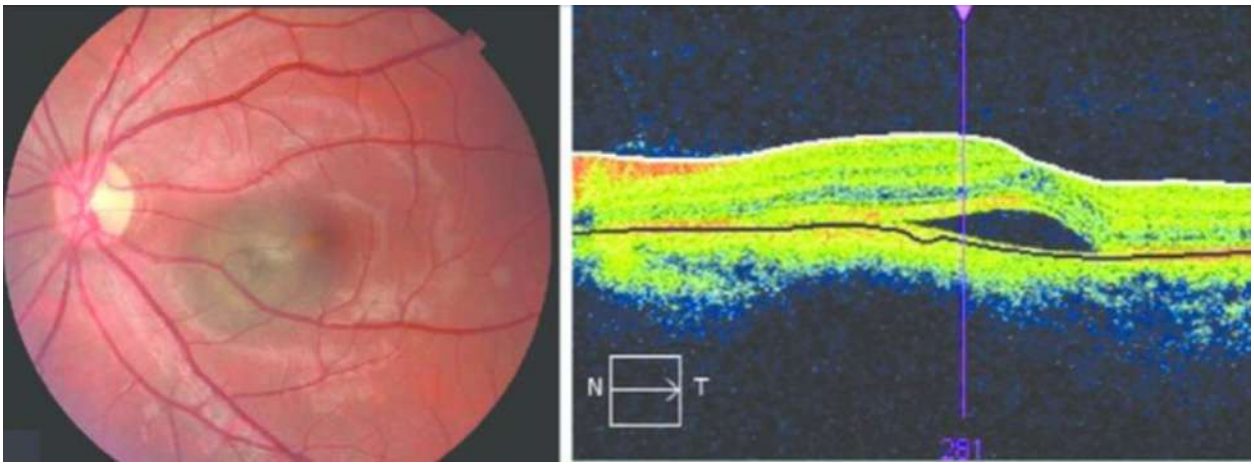



Figure 5. OCT scan of a small choroidal melanoma

**Table 3. Characteristic OCT findings in various ocular tumors**

| Tumor Type | Characteristic OCT Findings |
|---|---|
| Choroidal Nevus | Overlying RPE alterations, drusen, slight elevation of RPE, preserved retinal architecture |
| Choroidal Melanoma | Dome-shaped RPE elevation, subretinal fluid, shaggy photoreceptors, disruption of outer retina |
| Ocular Surface Squamous Neoplasia (OSSN) | Thickened hyperreflective epithelium with abrupt transition from normal tissue |
| Conjunctival Melanoma | Hyperreflective subepithelial lesion, possible epithelial thinning |
| Conjunctival Nevus | Cystic spaces within lesion, mild hyperreflectivity, intact epithelium |
| Choroidal Hemangioma | Smooth dome-shaped elevation, homogenous internal reflectivity, intact overlying retina |
| Uveal Metastasis | Irregular RPE elevation, subretinal fluid, retinal thickening, undulating surface |
| Ciliary Body Tumor (when visible) | Anterior displacement of iris or lens, subtle elevation on peripheral OCT scans |

The key advantages of OCT include its micron-level resolution, non-invasive nature, and repeatability, making it suitable for serial monitoring throughout the disease course. However, OCT has limitations: it provides limited penetration for deep lesions within the choroid or sclera and is less effective in the presence of opaque ocular media, such as dense cataracts or vitreous hemorrhage, which can hinder image acquisition.

In summary, OCT is an essential imaging modality in ocular oncology, offering precise, real-time insights that support early diagnosis, informed clinical decisions, and effective monitoring of ocular tumors.

**Table 4. Comparison between the different imaging modalities in Ocular Oncology**

| | **Ultrasound** | **Magnetic Resonance Imaging (MRI)** | **Optical Coherence Tomography (OCT)** |
|---|---|---|---|
| **Role** | First-line imaging, especially in media opacity (e.g., cataract, vitreous hemorrhage | Excellent for orbital and optic nerve assessment, extraocular extension | High-resolution imaging of retinal and choroidal microstructures |
| **Applications** | - Differentiate solid vs cystic lesions<br>- Measures tumor size/thickness<br>- Diagnose choroidal melanoma, hemangiomas, retinoblastoma, OSSN, iris/ciliary body tumors | Evaluate large tumors and orbital masses<br>- Differentiate benign vs malignant lesions<br>- Pre-surgical staging | Monitor tumor-related retinal changes (e.g., subretinal fluid)<br>- Evaluate small tumors (e.g., choroidal nevi)<br>- Differentiate benign pigmented lesions from malignant |
| **Techniques** | B-scan and A-scan ultrasonography,<br><br>Ultrasound Biomicroscopy | T1, T2, fat-suppressed sequences, contrast-enhanced MRI | Time-domain OCT (TD-OCT), Spectral-domain OCT (SD-OCT), Ultrahigh-resolution OCT (UHR-OCT), OCTA |
| **Advantages** | - High-resolution cross-sectional imaging<br>- Real-time, non-invasive | - Superior soft tissue contrast<br>- No radiation | Micron-level resolution<br>- Non-invasive and repeatable |
| **Limitations** | - Operator-dependent<br>- Limited detail of surrounding anatomy | - Lower resolution for small intraocular tumors<br>- High cost, longer scan times<br><br>- Contraindicated in patients with metallic implants/ foreign bodies | - Micron-level resolution<br>- Non-invasive and repeatable |

## Conclusion

A multimodal imaging approach using ultrasound, MRI, and OCT is essential in ocular oncology for accurate diagnosis, characterization, and monitoring of ocular and orbital tumors. Each

modality offers unique strengths, and their combined use enhances clinical decision-making and patient outcomes.

## References


1. Char DH, Stone RD, Irvine AR, Crawford JB, Hilton GF, Lonn LI, *et al*. Diagnostic modalities in choroidal melanoma. Am J Ophthalmol 1980;89:223-30.
2. Neupane, R., Gaudana, R. & Boddu, S.H.S. Imaging Techniques in the Diagnosis and Management of Ocular Tumors: Prospects and Challenges. *AAPS J* 2018;20(6):97.
3. Kadakia A, Zhang J, Yao X, Zhou Q, Heiferman MJ. Ultrasound in ocular oncology: Technical advances, clinical applications, and limitations. *Experimental Biology and Medicine*. 2023;248(5):371-379.
4. Niendorf, T., Beenakker, J. W. M., Langner, S., Erb-Eigner, K., Bach Cuadra, M., Beller, E., Stachs, O. (2021). Ophthalmic Magnetic Resonance Imaging: Where Are We (Heading To)? *Current Eye Research*, *46*(9):1251–1270.
5. Sara Verbeek, Lauren A. Dalvin, Advances in multimodal imaging for diagnosis of pigmented ocular fundus lesions, Canadian Journal of Ophthalmology, 2024;59(4): 218-233.



**Corresponding author:**
Dr Ben Limbu, MD
Consultant Ophthalmologist
Assistant Professor of Ophthalmology
Ophthalmic Plastic and Reconstructive Surgeon
Founder and Chief Executive Officer
Global Eye Hospital
benlimbu007@gmail.com

Article

# "Ocular Malignancies in Eastern Nepal: My Clinical Experience with Awareness, Spectrum, and Management"

**Author:** Dr. Prerna Arjyal Kafle, Consultant Ophthalmologist and Oculoplastic Surgeon
**Affiliation:** Department of Ophthalmology, Birat Medical College, Biratnagar

## Introduction

Ocular malignancies, though relatively rare, pose significant threats to both vision and life. In Eastern Nepal, where access to specialist eye care is limited, delayed presentation and misdiagnosis are common. In this article I would like to share my experience with the current state of awareness, the spectrum of ocular cancers seen in the region, and the management strategies commonly employed.

A study from 2014 (Cancer incidence in five continents) showed a worldwide distribution of annual incidence ranging from 0.1 to 7.4 per 100,000 persons. The two most common ocular malignancies are retinoblastoma in children—accounting for about 2% of all childhood cancers—and uveal melanoma in the elderly. Eyelid tumors are also more prevalent in Asian countries.

Often, ocular cancer is only addressed when it affects vision or causes a cosmetic problem. If detected early, surgical resection is the gold-standard, curative technique. However, in developing countries, ocular malignancies are frequently diagnosed at an advanced stage, when curative treatment is no longer possible.

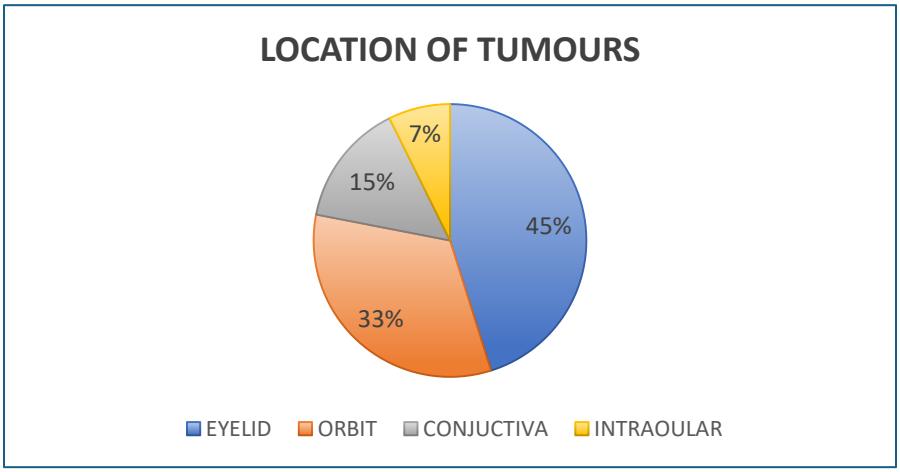
Due to a lack of awareness, most patients present in the late stages. Treatment becomes a major challenge—particularly when expectations do not match reality in terms of recurrence, financial burden, and functional or cosmetic outcomes. Late presentation also increases the risk of metastasis, necessitating multispecialty oncology care.

## Awareness: The first hurdle

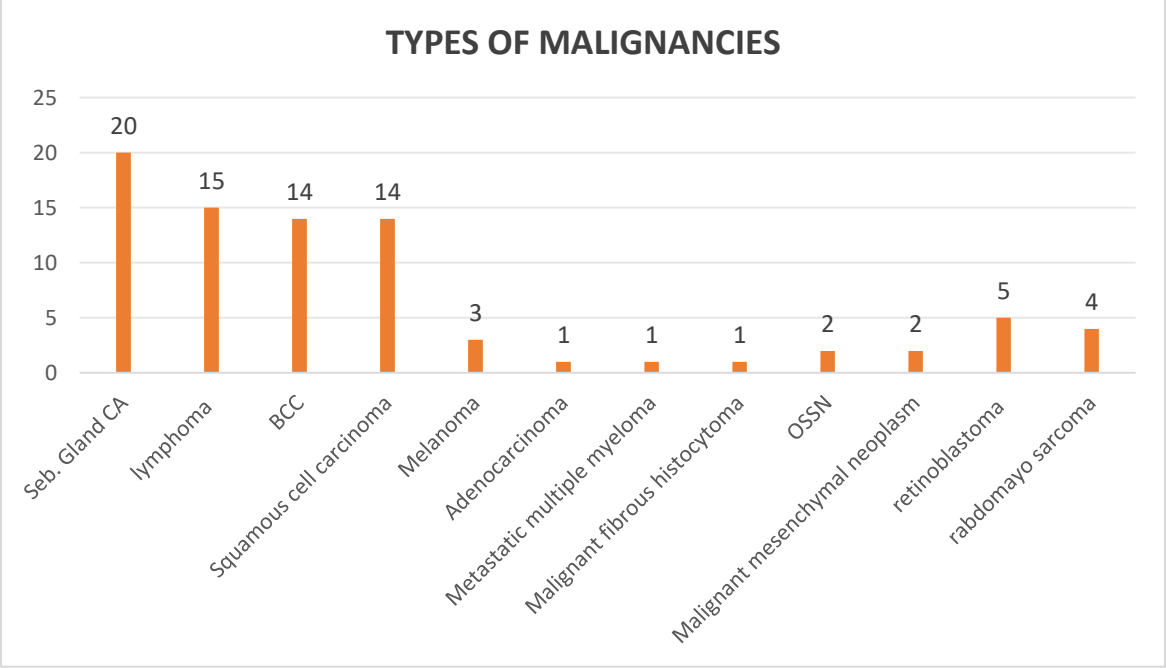
We conducted a study on awareness of ophthalmic cancers among patients visiting our outpatient department. The findings revealed that only 26.8% of 235 participants had any awareness of ophthalmic malignancies. Notably, the level of formal education did not correlate significantly with cancer awareness. Among those who were aware, 9.25% had no knowledge of the risk factors.

**Clinical Spectrum and management**

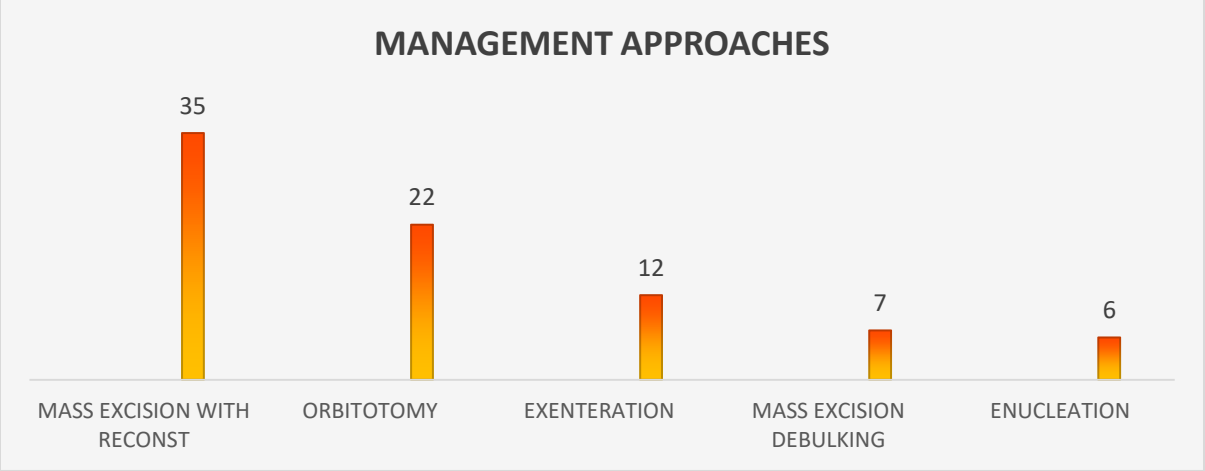
Over three years at Birat Medical College, I have opportunity to handle 82 patients with ocular malignancies. Age at presentation ranging from 1 year to 83 years. The most common location of malignancy was the eyelid (45%), followed by the orbit (33%), conjunctiva (15%) and intraocular tumors (7%).




The most frequently encountered malignancy was sebaceous gland carcinoma (n=20), followed by lymphoma (n=15).



The most common surgical method was mass excision with reconstruction (n=35) using various flaps and grafts, especially for eyelid tumors.




In my experience, most of the cases had delayed presentations when they arrive at our hospital. I think the major factors contributing to late presentation are as followings:

**1. Awareness:** As stated earlier, only 26.8% of patients with other eye diseases were aware of ocular malignancies. Surprisingly, the level of education did not significantly improve awareness.

**2. Socioeconomic and Cultural Beliefs:**

Some patients delay hospital visits due to social stigma, or believe that the disease is caused by witchcraft and seek traditional healers first.

**3. Accessibility:**

Healthcare facilities are either unavailable or unknown to many patients. They often do not know where or whom to approach for treatment.

**4. Affordability:**

Financial hardship is one of the most common barriers. The first question patients ask is often: *"What will be the total cost of treatment?"* Upon hearing that surgery is needed, many reply: *"We are poor."* Being in a developing country with limited insurance coverage, healthcare remains unaffordable to many. Some patients refuse treatment despite knowing the consequence

**Challenges and future directions**

While Nepal is globally recognized for its eye care services, ocular oncology is still a new and growing field, even for oculoplastic surgeons. Surgical skill alone is not enough—we need multidisciplinary teams for comprehensive cancer care. Post-operative radiotherapy or chemotherapy is often necessary. General anesthesia is frequently required, and many patients present with comorbid conditions alongside their ocular malignancies.

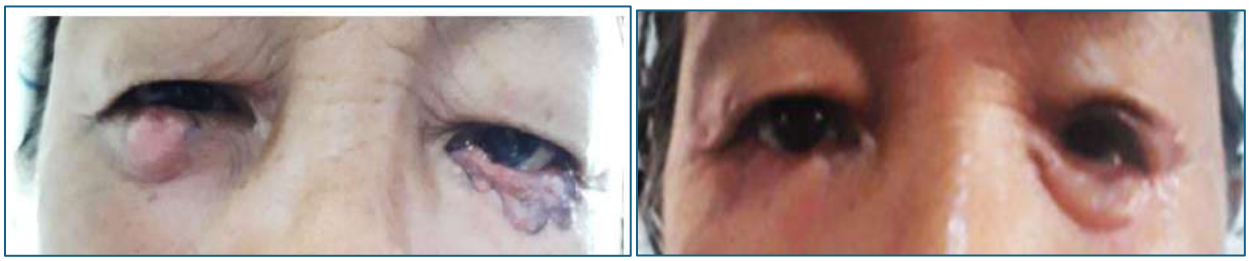
Ocular oncology is a. challenging and emotionally demanding field. Unlike cataract surgery, which offers instant visual gratification, oncologic outcomes are uncertain, and recurrence is common. Surgeries especially for orbital tumors are complex, high-risk, and time-consuming.
*"The orbit is like a jukebox—you never know what you're going to find inside."*

It takes determination and passion to prioritize oculoplasty and ophthalmic oncology services. We must strive to establish full-time, year-round dedicated services.
We should recognize that ophthalmic oncology is an emerging field, and when paired with oculoplasty, it is both income-generating and service-oriented, producing tangible results for patients and healthcare institutions.

## Conclusion

Ocular malignancies in Eastern Nepal are often hidden in plain sight - under-recognized, mismanaged, and potentially fatal. Strengthening awareness, ensuring early diagnosis, and adopting an interdisciplinary management approach is essential for improving outcomes in this vulnerable population.

**Few photographs highlighting my works:**



Bilateral lid tumours (Sebaceous gland CA and BCC).
Post op pic of RE modified Hughes procedure, LE bi-pedicle flap

Pre op and post op pic of exenteration for SCC

Pre op and post op pic of exenteration with cheek flap (Mustarde) advancement

Pre and postop pic of extensive lid mass (BCC) with reconstruction using multiple flaps

Pre op and post op pic of mass excision and reconstruction with multiple flaps for BCC

After RE Exenteration

Rehabilitation with Orbital prosthesis

**Corresponding author:**
Dr. Prerna Arjyal Kafle
Consultant Ophthalmologist and
Oculoplastic Surgeon
Birat Medical College, Biratnagar

Article

# "Pediatric Ocular Tumors: Challenges and Role of Muldisciplinary Approach in Management"

**Authors:** Dr Samata Sharma MD[1,2] Dr Ben Limbu MD[2]

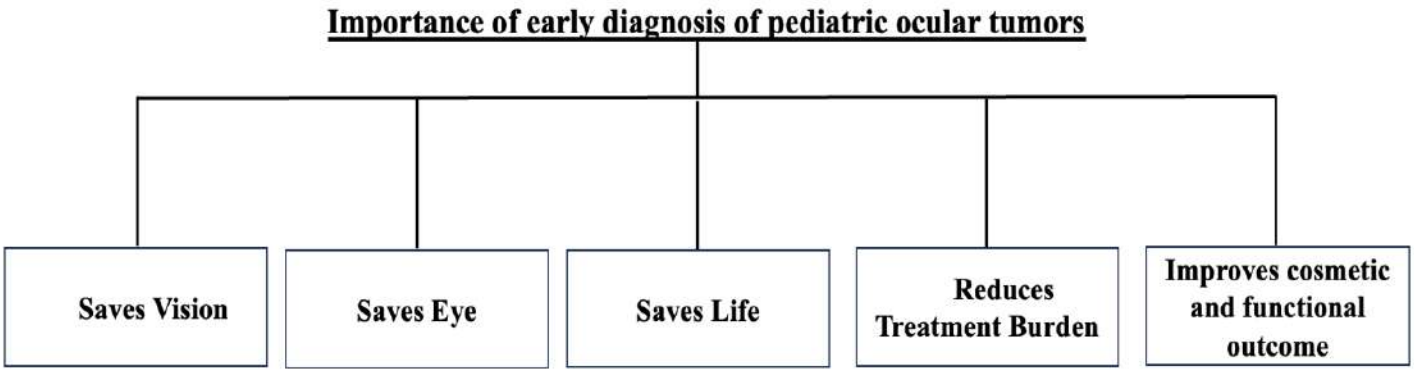
**Affiliation:** [1] Department of Pediatric Ophthalmology and Oculoplastics, Hospital for Children, Eye, ENT and Rehabilitation Services, Nepal.

[2] Department of Oculofacial, Aesthetic and Ocular Oncology, Global Eye Hospital, Nepal.

## Introduction

Pediatric ocular tumors, though relatively uncommon, present significant clinical challenges due to their potential to threaten vision, life, and cosmesis. The spectrum of ocular and orbital tumors in children ranges from benign lesions such as dermoid cysts and capillary hemangiomas to malignant neoplasms like retinoblastoma and rhabdomyosarcoma.

Early recognition and intervention are critical as delayed diagnosis can result in irreversible visual loss, globe sacrifice, or even systemic metastasis. A prompt, multidisciplinary approach involving pediatric ophthalmologists, oculoplastic surgeons, pediatricians, oncologists, and radiologists is essential to ensure accurate diagnosis, timely treatment, and optimal visual, functional, and cosmetic outcomes.



**Diagnostic Challenges and Holistic Management in Pediatric Ocular Tumors**

The initial presentation of pediatric ocular tumors is often highly variable, making early diagnosis particularly challenging. Parents may first seek care from a pediatric ophthalmologist, general ophthalmologist, or pediatrician, presenting with a diverse range of ocular signs. While some tumors such as retinoblastoma may manifest with classic features like leukocoria, others present more subtly, mimicking benign conditions such as conjunctivitis, strabismus, or eyelid swelling. For instance malignant condition like rhabdomyosarcoma may mimic benign condition like conjunctivitis or at advance may just appear as orbital cellulitis.

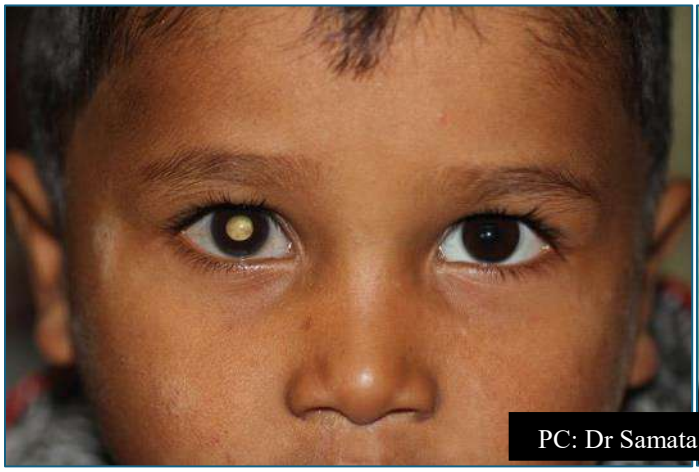
Compounding the diagnostic challenge is the fact that young children often cannot verbalize visual symptoms, and rarely present with clearly defined visual loss. These nonspecific clinical signs demand a high index of suspicion and clinical experience to interpret correctly. Once a tumor is suspected, comprehensive work-up and timely referral to an oculoplastic surgeon or ocular oncology team are critical for accurate diagnosis and management.

Treatment strategies are carefully individualized based on the tumor's type, location, and extent. Importantly, clinicians must not neglect the fellow eye, which, although unaffected by the tumor itself, may harbor amblyogenic conditions such as high refractive error, anisometropia, strabismus etc. A comprehensive binocular approach is essential, not only to address the tumor but also to preserve and optimize overall visual development and long-term quality of life in these young patients.

**Key Warning Signs In Pediatric Patients That Warrant Immediate Evaluation**

| S.N | Sign / Symptom | Possible Tumor/cause |
|---|---|---|
| 1 | **Altered Red Reflex / Leukocoria** | Retinoblastoma (RB) |
| 2 | **New-onset Strabismus / Visual Inattention** | Retinoblastoma |
| 3 | **Proptosis** | Rhabdomyosarcoma<br>Orbital Capillary Hemangioma<br>Optic nerve glioma<br>Orbital Lymphangioma<br>Retinoblastoma (late stage) |
| 4 | **Persistent Eyelid Swelling / Palpable Mass** | Dermoid cyst<br>Rhabdomyosarcoma |
| 5 | **Persistent Red eye /chemosis** | Rhabdomyosarcoma |
| 6 | **Spontaneous Hyphema / Iris Mass** | Xanthogranulaoma |

***Pediatric ocular tumors demand early recognition, timely referral, and a comprehensive binocular approach to preserve both life and vision. Even when only one eye appears affected, the fellow eye may be at risk for silent but vision-threatening conditions.***



PC: Dr Samata Sharma

Fig.1 Early presentation of retinoblastoma with leukocoria.

Fig.2. Late presentation of retinoblastoma with extraocular spread

**Work-up of Pediatric patient with suspected Ocular/Orbital Tumors**

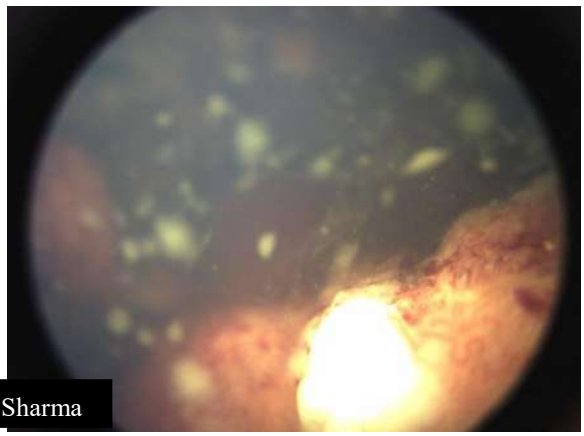
1. **History**

1) Age of onset, duration, progression
2) Parental observations: white pupillary reflexes especially in photographs, strabismus, swelling, proptosis, visual inattention
3) History of trauma, infection, or systemic illness
4) Family history (e.g., retinoblastoma)

2. **Clinical Examination**

| System | Assessment |
|---|---|
| **Visual function** | Age-appropriate Visual acuity, fixation, following |
| **External examination** | Eyelid mass, swelling, discoloration |
| **Ocular motility** | Restriction may indicate mass effect |
| **Pupil examination** | Red reflex, RAPD, leukocoria |
| **Anterior segment** | Iris mass, hyphema, pseudohypopyon |

| System | Assessment |
|---|---|
| **Fundus exam** | Mass, retinal detachment, calcification |



PC: Dr Samata Sharma

Fig 3. Retinal detachment and Sub Retinal seeding in a case of Retinoblastoma

Fig 4. Large Retinoblastoma with vitreous seeding

### 3. Imaging

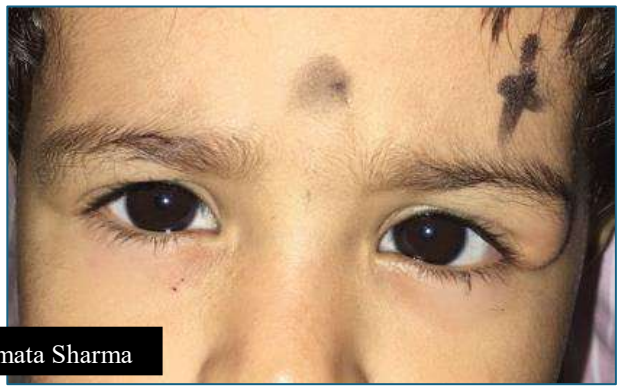
| Modality | Indications |
|---|---|
| **Ultrasound B-scan** | Quick screening for intraocular tumors |
| **CT Scan** | Calcifications (e.g., RB), Bony involvement, |
| **MRI Orbit & Brain** | Best for soft tissue, optic nerve, brain |

***Always assess both eyes and the entire visual system thoroughly. Even seemingly benign findings may be the earliest signs of a vision- or life-threatening tumor.***

**Overview of Common Pediatric Ocular and Orbital Tumors and Mimicking Conditions**

| Tumor | Typical Age | Location | Key Features | Management |
|---|---|---|---|---|
| **Retinoblastoma (Malignant)** | <5 years (peak <2 yrs) | Intraocular (retina) | Leukocoria, strabismus, decreased vision, proptosis (late), possible bilateral | Systemic chemotherapy, laser/cryotherapy, enucleation, IAC |
| **Capillary Hemangioma (Benign)** | Infancy (first 6 months) | Eyelid, orbit (superficial or deep) | Red/bluish soft mass, may increase with crying, can cause amblyopia or astigmatism | Observation, oral/topical propranolol, steroids |
| **Dermoid Cyst (Benign)** | Birth to early childhood | Superotemporal orbit | Painless, firm, mobile mass near brow, slow-growing | Surgical excision if large/symptomatic |
| **Rhabdomyosarcoma (Malignant)** | 7–10 years | Orbit | Rapid-onset proptosis, eyelid swelling, ptosis; often mimics orbital cellulitis | Urgent biopsy + systemic chemotherapy ± radiotherapy |
| **Lymphangioma (Benign)** | Childhood (variable) | Orbit | Slowly progressive proptosis, may hemorrhage causing sudden swelling | Observation, Sclerotherapy / Debulking if symptomatic |
| **Ocular/Orbital Leukemia (Malignant)** | Any age in childhood | Retina, choroid, orbit | Choroidal infiltrates, retinal hemorrhages(white centered hemorrhages), optic disc edema, proptosis (in AML/ALL relapse) | Systemic chemotherapy, CNS-directed therapy |

| Tumor | Typical Age | Location | Key Features | Management |
|---|---|---|---|---|
| **Optic Nerve Glioma** ***(Low-grade Malignant)*** | Childhood (often <10 yrs) | Optic nerve, optic chiasm | Progressive vision loss, optic disc edema/ pallor, proptosis, maybe associated with NF1 | Observation if stable, chemotherapy for progression |
| **Optic nerve Sheath Meningioma** **(Benign)** | Late childhood to adolescence (rare in younger children) | Optic nerve sheath, sphenoid wing, orbit | Gradual proptosis, optic neuropathy, *may be associated with NF2* | Observation in mild cases; surgical decompression or radiotherapy if progressive |
| **Juvenile Xanthogranuloma** **(Benign)** | <2 years | Eyelid, iris | Yellowish nodules, spontaneous hyphema if iris involved | Observation; steroids or excision if needed |



PC: Dr Samata Sharma

Fig 5. Right Eye Orbital Lymphangioma mimicking as lid swelling and subconjunctival haemorrhage

Fig 6. Left Frontozygomatic Dermoid Cyst

**Multifaceted Role of the Oculoplastic Surgeon in Pediatric Ocular Tumors**

| Domain | Specific Role |
|---|---|
| Diagnosis & Biopsy | - Perform incisional/excisional biopsies for orbital and adnexal masses<br>- Aid in histopathologic diagnosis |
| Surgical Management | - Excise benign or malignant periocular/orbital tumors<br>- Debulking or orbitotomy for deep lesions |
| Socket & Orbital Care | - Manage post-enucleation or exenteration sockets |
| Cosmetic Rehabilitation | - Restore eyelid and orbital symmetry<br>- Assist in maintaining normal facial growth and appearance |
| Long-term Follow-up | - Monitor for tumor recurrence, socket complications, or orbital growth disturbances<br>- Adjust prosthetics as child grows |

***The oculoplastic surgeon plays a pivotal role, particularly in biopsy, surgical management, socket care, and long-term orbital rehabilitation; though collaboration with pediatric ophthalmologists and pediatric oncologists is essential to balance oncologic control with the preservation of visual function, prevention of amblyopia, and support of facial development.***

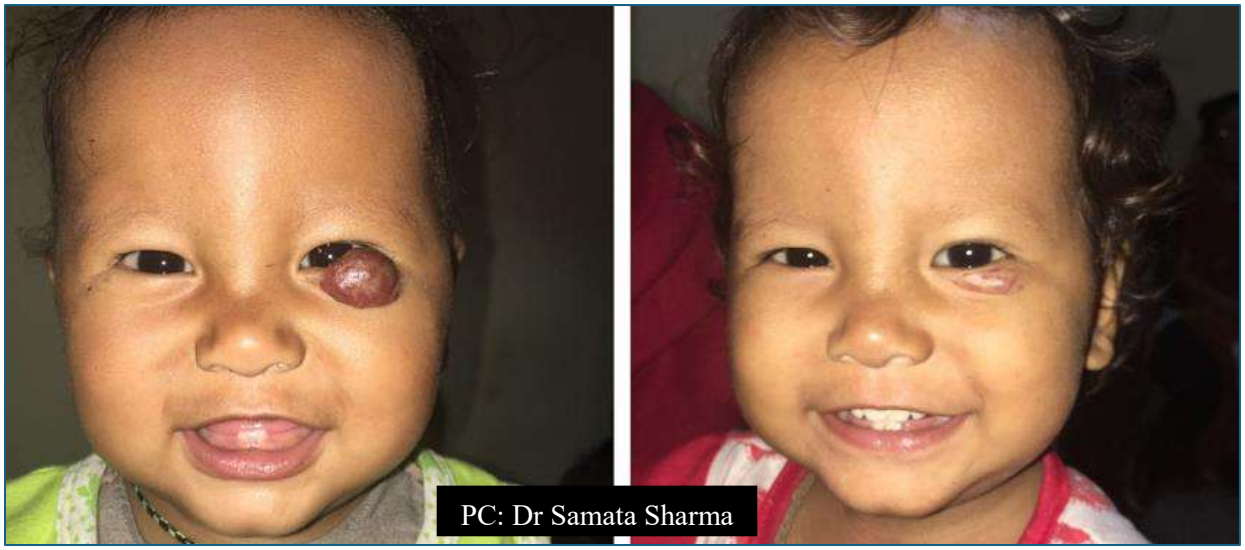



Fig 7. Left lower lid Capillary Hemangioma (Before and after treatment)
Although the lesion was benign treatment with intralesional steroids was done to prevent the development of astigmatism and amblyopia.

**Role of the Pediatric Ophthalmologist in Pediatric Ocular Tumors**

| Domain | Key Responsibilities |
|---|---|
| Early Detection | - Recognize subtle signs (e.g., leukocoria, strabismus)<br>- Differentiate tumors from benign mimics |
| Initial Work-Up | - Perform comprehensive ocular exams (red reflex, ocular motility, fundus examination)<br>- Order appropriate imaging and lab tests if required |
| Referral & Coordination | - Refer promptly to ocular oncology and oculoplastics team<br>- Act as liaison in multidisciplinary care |
| Adjunct Treatment | -Monitor response to systemic therapy |
| Visual Rehabilitation | - Detect and manage amblyopia, anisometropia, or refractive errors<br>- Ensure visual development in the fellow eye too |
| Long-Term Monitoring | - Track tumor recurrence, treatment effects, and visual outcomes over time |

***The pediatric ophthalmologist plays a central role in both diagnosing life-threatening conditions early and preserving long-term visual function, often before the child can express symptom.***
**** Equally important is the ability to differentiate benign mimics of various ocular lesions, as this can help prevent unnecessary parental anxiety, avoid unwarranted investigations, and reduce inappropriate referrals to tertiary centers.***

PC: Dr Samata Sharma

Fig 6. Lacrimal dacryocele. Early recognition of its benign, self-limiting nature in primary care could have spared the parents unnecessary stress and travel for treatment.

Fig 7. Goldenhar Syndrome. Limbal dermoids, though benign, may induce astigmatism and amblyopia. Early refractive correction and amblyopia therapy are essential, even if surgery is delayed.

**Conclusion**

Pediatric ocular tumors represent a diverse spectrum of conditions, each varying in severity, prognosis, and potential impact on vision and life. The anatomical location of these tumors plays a critical role in determining their clinical presentation. Vigilance is essential, as early recognition of warning signs should prompt immediate evaluation and appropriate imaging to differentiate benign from malignant lesions.

With ongoing advancements in diagnostic imaging and targeted therapies, management is increasingly shifting toward eye-sparing treatments, functional rehabilitation, and an improved quality of life for affected children. Timely diagnosis, combined with a multidisciplinary, team-based approach, is key to optimizing outcomes, ensuring not only effective tumor control but also the preservation of vision and life.

**References**

1.Kathryn Bentivegna, Nicholas J. Saba, Roman Shinder, Jane M. Grant-Kels, Ocular and orbital tumors in childhood,Clinics in Dermatology 2024; 42 (4):396-405.
2. Lauren B. Yeager, Alexis Kassotis, Tahvi Frank, Chloe Y. Li, Brian P. Marr; A Review of Pediatric Ophthalmic Tumors. *Pediatr Rev* March 2024; 45 (3): 119–131.
3. Vijay, Vathsalya; Alam, Md. Shahid; Subramanian, Nirmala; Krishnakumar, Subramanian; Biswas, Jyotirmay; Mukherjee, Bipasha. Clinical spectrum and clinicopathological correlation of pediatric orbital tumors: 20 years' experience from a tertiary eye care center. Indian Journal of Ophthalmology February 2024;72(2):p 249-257.
4. Świerczyńska M, Filipek E. Benign tumors of the orbit in children and adolescents – clinical and histopathological analysis. Klinika Oczna / Acta Ophthalmologica Polonica. 2021;123(2):85-89.
5. Roy SR, Huque F. A Review of Childhood Ocular, Orbital, and Surface Tumors with Updated Clinical Management. Int. J. Gen. Intern. Med. BIJGIM. 2022;1:29-41.
6. Karakosta C, Liaskou M, Kattamis A, Rigatou E, Paraskevopoulos K. Orbital Rhabdomyosarcoma Masquerading as a Dermoid Cyst: A Case Report and Review of the Literature. Cureus. 2023 Dec 11;15(12):e50332.

**Corresponding author:**
Dr. Samata Sharma
Pediatric Ophthalmologist and
Oculoplastic Surgeon
General secretary-NPOSS
Executive Member-NESOS
drsamatasharma@gmail.com

Article

# "Recent Advances in Ocular Oncology: Emerging Technologies in Diagnosis and Management"

**Author:** Dr. Sanket Parajuli, Consultant Oculoplastic Surgeon
**Affiliation:** Reiyukai Eiko Masunaga Eye Hospital, Banepa, Kavrepalanchok, Nepal

## Introduction

Ocular tumors represent a diverse and intricate group of neoplasms affecting the eye and its surrounding structures. They pose a dual threat by compromising both vision and life, making early and accurate diagnosis essential to improving patient outcomes. Uveal melanoma, the most common primary intraocular malignancy in adults, has a global incidence of approximately 5.1 cases per million annually. Its tendency to metastasize, particularly to the liver, results in a poor prognosis - with a five-year survival rate of less than 15% once metastasis has occurred. In contrast, retinoblastoma, a fast-growing pediatric malignancy, predominantly affects children under five years old and has an incidence of 1 in 15,000 to 20,000 live births worldwide. Prompt detection is vital for vision preservation and survival, emphasizing the urgent need for technological advancements in both diagnosis and treatment.

Over the past decade, significant breakthroughs have emerged in ocular oncology, driven by the convergence of imaging innovations, molecular diagnostics, and artificial intelligence (AI). These advances are transforming clinical workflows, enabling earlier diagnoses, more personalized treatments, and improved prognostic accuracy. This article reviews these emerging technologies under two main areas: diagnosis and treatment, highlighting the evolving role of AI in reshaping the field.

## Advances in Diagnosis

The diagnosis of ocular tumors has traditionally relied on clinical imaging tools such as ultrasonography, optical coherence tomography (OCT), fundus photography, and advanced techniques like magnetic resonance imaging (MRI) and computed tomography (CT). Although histopathology remains the gold standard, these methods often require specialized equipment and expertise, which may not be readily available in low-resource settings—delaying intervention and impacting outcomes. Recent innovations have significantly enhanced diagnostic capabilities.

### 1) High resolution Imaging techniques

Recent advancements enable detailed visualization of intraocular tumors:

• **Ultra-widefield and swept-source OCT** provide high-resolution 3D visualization of intraocular tumors.

• **OCT-angiography** help differentiate malignant from benign lesions, such as distinguishing choroidal melanoma from nevi, by revealing subtle anatomical and vascular features.

**2) Artificial intelligence (AI) in Diagnostic Imaging**

AI has emerged as a powerful tool in diagnostic imaging for ocular oncology.

• **Machine learning (ML) and deep learning (DL) algorithms**, particularly convolutional neural networks (CNNs)—have demonstrated diagnostic accuracies exceeding 90% in distinguishing uveal melanoma and retinoblastoma from other ocular lesions.

• **AI – assisted staging** not only improves diagnostic precision but also standardize image interpretation, reducing interobserver variability. For example, CNN-based AI systems have successfully staged retinoblastoma and detected subtle early signs on fundus photographs.

• **Radiomics,** another AI-powered innovation, involves the extraction of quantitative features from imaging data to assess tumor texture, shape, and heterogeneity. These features have been strongly associated with metastatic risk in uveal melanoma and are increasingly used to support treatment planning and surveillance. AI models incorporating radiomic features now allow clinicians to assess the likelihood of metastasis and tailor monitoring protocols accordingly.

**3) Liquid biopsy and Molecular Diagnostics**

Noninvasive techniques are transforming ocular oncology diagnosis.

• **Circulating tumor DNA (ctDNA)** in the blood can detect mutations such as BAP1 and GNAQ in uveal melanoma even before radiological signs of metastasis emerge.

• **Aqueous humor analysis** in retinoblastoma has provided cell-free DNA biomarkers that correlate with tumor aggression, including RB1 copy number changes and 6p gain. These methods are noninvasive and facilitate molecular diagnosis without enucleation.

**4) Gene expression profiling for risk stratification.**

• Commercial tests analyzing 15–25 genes in uveal melanoma can classify tumors into low- and high-risk groups for metastasis (e.g., Class 1A, 1B, and 2 profiles).

• For retinoblastoma, genomic and methylation profiling is being investigated as a means to assess tumor behavior and tailor therapy.

Despite these advancements, challenges persist—particularly in standardizing data across centers, improving the quality of AI training datasets, and addressing privacy and transparency concerns in AI use. Nevertheless, these innovations are already improving clinical outcomes, enabling earlier and more precise diagnosis of ocular tumors.

**Advances in Treatment**

Treatment modalities in ocular oncology have progressed rapidly, moving beyond traditional enucleation and nonspecific radiotherapy to incorporate highly targeted, organ-sparing, and personalized approaches. Innovations in immunotherapy, targeted radiation, localized chemotherapy, and emerging gene therapies are transforming patient outcomes.

1) **Immunotherapy & Targeted Systemic Therapies**

**• Tebentafusp: A breakthrough in metastatic uveal melanoma**

Tebentafusp is a novel bispecific T-cell receptor (TCR) therapy targeting gp100 in HLA-A*02:01–positive patients with metastatic uveal melanoma. Tebentafusp is the first agent to demonstrate an overall survival benefit in this cancer, increasing 3-year survival rates from 18% to 27% compared to standard therapies. Other TCR-based therapies, such as IMC-F106C, are currently in phase III trials, and early results are promising.

2) **Precision Radiotherapy**

• **Proton beam therapy**, particularly pencil-beam scanning technology, delivers highly conformal radiation while sparing surrounding healthy tissue. This is especially beneficial for tumors near critical structures such as the optic nerve or macula. Long-term studies show over 70% eye preservation rates with modern proton therapy.

• **Advanced plaque brachytherapy** planning software have improved dose distribution for ruthenium-106 and iodine-125 implants.

3) **Localized Chemotherapy delivery**

• Intra-arterial chemotherapy (IAC) now utilizes super-selective catheters and real-time imaging to deliver drugs directly into the ophthalmic artery. This allows for higher drug concentration at the tumor site while minimizing systemic side effects compared to traditional IV chemotherapy. This technique has achieved globe salvage rates of over 80% in advanced cases.

4) **Emerging Nanotechnology and Photo-therapeutics**

• **Mesoporous copper sulfide (CuS) nanoparticles** have demonstrated potent tumor ablation through combined photothermal and radical-mediated DNA damage. Such therapies are being studied for their potential to target hypoxic tumor cells resistant to conventional treatment.

5) **Gene and cell therapies**

• **CRISPR-based RB1 gene editing** in RB1-deficient models is accelerating drug development. Lipid nanoparticle or viral vector delivery systems are being adapted from inherited retinal disease research to treat pediatric ocular tumors.

6) **AI-Driven treatment Optimization**

• Deep-learning platforms are being used to optimize radiation dosimetry, reduce treatment and planning time

• Predict complications such as radiation-induced optic neuropathy with high accuracy.

• Enable personalized therapy while preserving visual function.

These innovations are shifting ocular oncology toward minimally invasive, highly effective, and vision-sparing treatments, significantly improving patient survival and quality of life. Despite progress, key challenges remain, including cost barriers, limited accessibility to advanced therapies, and the need for long-term safety data on emerging treatments like gene editing and nanotherapies. Future efforts must focus on standardizing AI integration, developing predictive biomarkers, and improving global access to ensure equitable adoption of precision therapies. Addressing these gaps will enable more effective, vision-preserving treatments for ocular tumors worldwide.

**Conclusion**

Ocular oncology stands at the cusp of a transformative era driven by technological innovation. From early detection using AI-enhanced imaging and liquid biopsy to advanced therapies such as Tebentafusp and gene editing, the field is rapidly evolving toward personalized, organ-sparing, and less invasive care. Artificial intelligence, in particular, is reshaping every stage of the patient journey - enhancing diagnostic accuracy, guiding treatment planning, and improving prognostic evaluation.

As these technologies mature, equitable access and robust validation in diverse populations remain key challenges. Interdisciplinary collaboration among clinicians, researchers, data scientists, and policymakers will be essential to ensure that innovations translate into meaningful improvements in global ocular oncology outcomes. With continued advancement, the future holds the promise of earlier detection, better vision preservation, and longer survival for patients affected by these rare but devastating cancers.

**References:**

1. Hou X, Rokohl AC, Li X, Guo Y, Ju X, Fan W, Heindl LM. Global incidence and prevalence in uveal melanoma. Adv Ophthalmol Pract Res. 2024 Oct 9;4(4):226-232. doi: 10.1016/j.aopr.2024.10.001. PMID: 39726825; PMCID: PMC11670701.

2. Nag A, Khetan V. Retinoblastoma - A comprehensive review, update and recent advances. Indian J Ophthalmol. 2024 Jun 1;72(6):778-788. doi: 10.4103/IJO.IJO_2414_23. Epub 2024 May 24. PMID: 38804799; PMCID: PMC11232864.

3. Cui Y, Yin S, Qin X, Jiao W, Ren A, Wang F, Zhao B. Advances in the treatment of intraocular malignancies: A literature review. Front Med (Lausanne). 2022 Oct 18;9:975565. doi: 10.3389/fmed.2022.975565. PMID: 36330064; PMCID: PMC9624174.

4. Totah H, Raich E. [TREATMENT UPDATES IN OCULAR ONCOLOGY]. Harefuah. 2024 Dec;163(11):717-722. Hebrew. PMID: 39692374.

5. Kuang Jiawei and Tang Zuohua. Spectral CT in ocular tumor characterization: technological advancements, clinical dilemmas, and translational prospects. Radiology Science. 2025. Vol. 4(1):24-28. DOI: 10.15212/RADSCI-2024-0003

6. Varshney, Ankitkumar & Bhattacharjee, Debanjali. (2025). Advancements in artificial intelligence for ocular oncology: Enhancing diagnostic accuracy and prognostic capabilities in eye tumors. IP International Journal of Ocular Oncology and Oculoplasty. 11. 22-29. 10.18231/j.ijooo.2025.005.\

7. Mayerhoefer ME, Materka A, Langs G, Häggström I, Szczypiński P, Gibbs P, Cook G. Introduction to Radiomics. J Nucl Med. 2020 Apr;61(4):488-495. doi: 10.2967/jnumed.118.222893. Epub 2020 Feb 14. PMID: 32060219; PMCID: PMC9374044.

8. Sanchez GM, Chigane D, Lin M, Xu L, Yellapantula V, Berry JL. Retinoblastoma: Aqueous humor liquid biopsy. Taiwan J Ophthalmol. 2025 Mar 20;15(1):55-61. doi: 10.4103/tjo.TJO-D-24-00133. PMID: 40213298; PMCID: PMC11981557.

9. Kaliki S, Shields CL. Recent trends in ocular oncology. Oman J Ophthalmol. 2011 Sep;4(3):103-4. doi: 10.4103/0974-620X.91263. PMID: 22279395; PMCID: PMC3263160.

10. Al Balushi K, Al Hadhrami A, Balushi HA, Al Lawati A, Das S. Tebentafusp as a Promising Drug for the Treatment of Uveal Melanoma. Curr Drug Targets. 2024;25(3):149-157. doi: 10.2174/0113894501280380231214105255. PMID: 38115619.

11. Raval V, Parulekar M, Singh AD. Emerging New Therapeutics for Retinoblastoma. Ocul Oncol Pathol. 2022 Nov;8(3):149-155. doi: 10.1159/000524919. Epub 2022 May 9. PMID: 36938374; PMCID: PMC10015589

**Corresponding author:**
Dr. Sanket Parajuli
Consultant Oculoplastic Surgeon
Reiyukai Eiko Masunaga Eye Hospital, Banepa,
Kavrepalanchok, Nepal
sanketparajuli@gmail.com

Resident's corner

# "Ocular Oncology: What Every Ophthalmology Resident Should Know?"

**Authors:** Dr Sabin Sahu [1], Prof. Dr Rohit Saiju [2]
**Affiliation:** [1] Jyoti Eye Hospital, Janakpurdham and Janaki Medical College, Janakpurdham; [2] Medical Director, Drishti The Vision Eye Center, Kathmandu

## Introduction

Ocular oncology is a specialized field focusing on the diagnosis and management of benign and malignant tumors affecting the eye, eyelids, orbit and ocular adnexa. The incidence of cancer is on the rise worldwide and so is that of eye cancers specifically. The recent American Cancer Society—Survival, Epidemiology, and End Results (SEER) study has estimated 3,360 new cases of eye cancer in a population of 329 million. It was reported that the incidence of eye cancer in the UK has risen by 36% in the last decade. The gravity can be estimated by the fact that Retinoblastoma alone in India and China accounts for over half the cases reported globally each year. Tumors affecting the eye and its adnexa may be sight-threatening, life-threatening, or both. For the ophthalmology resident, awareness of this field is not merely academic—it is essential.

Ocular oncology is a promising subspecialty dealing exclusively with intraocular and periocular premalignant, benign and malignant tumors and simulating lesions. The principal fields of expertise lie in the diagnosis and management of lid and adnexal tumors, orbital tumors, intraocular tumors, malignant melanomas, retinoblastoma and other metastases to the eye and orbit. All other subspecialties like retina, cornea, neuro-ophthalmology and pediatric ophthalmology seek consultation with ocular oncologists and provide quality team care to such patients.

## Basic concepts

Cancer or neoplasia is a group of diseases characterized by uncontrolled proliferation of abnormal cells, forming a mass called tumor, with a potential to invade or spread to other parts of body. Tumor can be benign or malignant, congenital or acquired, and can involve tissues from surface epithelium to deep intraocular structures.

Benign tumors grow slowly (over months to years), remain localized, and do not invade surrounding tissues, whereas malignant tumors grow aggressively, invade nearby structures, and can metastasize to distant sites.

**Few features suggestive of malignant lesions include:**

- Rapid growth over weeks to months
- Infiltrative, ill-defined borders
- Epithelium may be ulcerated
- Presence of fine new vessels (telengiectasia)
- Uneven pigmentation or change in pigmentation
- Fixation to deeper tissues or bone
- Presence of metastasis (defined as presence of tumor implants that are discontinuous from the primary tumor and located at site that is distant from the tissue of origin)

Genetic damage is the cornerstone of carcinogenesis and may be caused by environmental factors, chemicals, viruses, or hormones. Many ocular tumors can have hereditary predisposing factors in addition to environmental influences.

**Key Ocular tumors every Resident should recognize:**

1) Eyelid Tumors:
    - Benign: Nevus, papilloma
    - Malignant: Basal cell carcinoma, Squamous cell carcinoma, Sebaceous gland carcinoma, Melanoma
2) Orbital Tumors:
    - Benign: Cavernous hemangioma, Dermoid cyst
    - Malignant: Lymphoma, Rhabdomyosarcoma, Lacrimal gland tumors
3) Ocular Surface Tumors:
    - Conjunctival intraepithelial neoplasia (CIN)
    - Ocular surface squamous neoplasia (OSSN)
    - Conjunctival melanoma
4) Intraocular Tumors:
    - Pediatric: Retinoblastoma
    - Adult: Uveal melanoma
5) Metastases from systemic cancers (e.g., breast, lung)
    - Choroidal metastases

Each of these entities carries distinct diagnostic and therapeutic considerations, and the resident must develop an ability to recognize patterns of presentation.

## Overview of common ocular tumors:

***a) Eyelid tumors***

- One should remember the basic skin anatomy (Layers of epidermis and dermis, Adnexa like hair, oil and sweat gland and pigment cells. Try to categorize them with two main questions in mind. 1. From where does it arises? 2. What is chronicity of the lesion?
- Most common benign lesions like stye, chalazion, and internal hordeolum are commonly faced clinically. One should be able to diagnose and differentiate them.

**Eyelid Nevus**


- The mole that we commonly see is actually a melanocytic nevi (benign acquired nevi). Benign lesions grow in controlled manner, have uniform color, regular smooth borders and symmetric shape.
- Congenital nevi are present since birth. "Kissing nevus" is a form of congenital nevus where lesion is seen as nevi opposite one another on the upper and lower eyelids. Junctional nevus are found at junction of the epidermis and the dermis; they are flat and pigmented. Compound nevus extends from the epidermis into the dermis; they are raised and pigmented. Intradermal nevus are raised and no pigmentation is seen.
- The majority of nevi require no treatment. If there is dramatic change in color or shape, or patient wants it removed for cosmetic purpose, surgical excision may be done.

**Melanoma of eyelids**

- Characteristics of pigment cell malignancy (melanoma) include recent onset of pigmented lesion or change in existing pigmented lesion, may have several colors within the lesion, have irregular margins, asymmetric shape and size larger than 6mm in diameter.

**Basal cell carcinoma (BCC)**


- It is the most common human malignancy.
- Ultraviolet (UV) light exposure and fair skin is major risk factor.
- Most common site is lower eyelid followed by medial canthus, upper eyelid and lateral canthus.
- Major clinical variety of presentations:
    a) Nodular – classical features of a rolled edge, surface telengiectasia and central ulceration (also known as "rodent ulcer"); most common variety
    b) Superficial - appear as erythematous, scaling patch with raised pearly borders
    c) Morpheic (Sclerosing) - flat, indurated with ill-defined borders; aggressive variety
    d) Pigmented – with brown or black pigmentation
- Goal of therapy is the complete excision with preservation of uninvolved eyelid and periorbital tissues. Wide excision with a 4mm margin will give adequate results in most cases.
- Recurrent tumors tend to be more aggressive and infiltrative.

**Squamous cell carcinoma**


- A malignant eyelid tumor that commonly affects elderly, fair-skinned individuals.
- Tends to arise in precancerous areas of skin alterations or in areas damaged by chronic sun exposure, ionizing radiations or carcinogens.
- Initial changes can look like chronic eczema-like lesion.
- Palpable regional lymph nodes indicate metastatic spread.
- Diagnosis requires a biopsy for histologic confirmation. Once the diagnosis is confirmed, complete removal of tumor cells with preservation of unaffected eyelid and periorbital tissues is done.
- Invasion into deep orbital tissues can be seen, often requiring orbital exenteration for definitive management.

**Sebaceous gland carcinoma**


- It usually arises from meibomian glands of the upper tarsus, but can originate from Zeis glands, caruncle or eyebrow.
- Generally affects elderly patients. Elderly females are commonly involved. This is aggressive tumor which can exhibit local recurrences and regional and distant metastases.
- Two most common presentations:
    a) Solitary eyelid nodule – often misdiagnosed in early stages of chalazion
    b) Diffuse eyelid thickening - often misdiagnosed as chronic blepharoconjunctivitis. can exhibit intraepithelial (pagetoid) spread into eyelid and conjunctival epithelium.
- The best management is wide surgical excision with frozen section or chemosurgery control. If the suspected lesion is large and extensive reconstruction is anticipated, a shaving or punch biopsy can be performed first.

***b) Orbital tumors***

**Orbital capillary hemangioma**

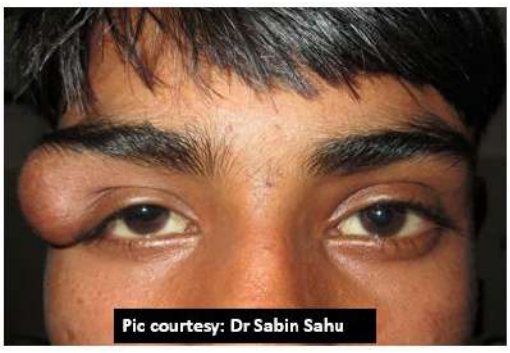
- Orbital capillary hemangioma can occur in the deep orbit and produce proptosis or displacement of the globe or it can occur in the anterior portion of the orbit and present as a reddish-blue, fluctuant, subcutaneous eyelid mass.
- Orbital capillary hemangioma can have a variety of clinical manifestations. A common feature of infantile capillary hemangiomas, however, is their tendency to grow rapidly in infancy and then to stabilize and gradually regress.
- In some cases, a capillary hemangioma of the eyelid can be associated with orbital capillary hemangioma and extraocular cutaneous hemangiomas.

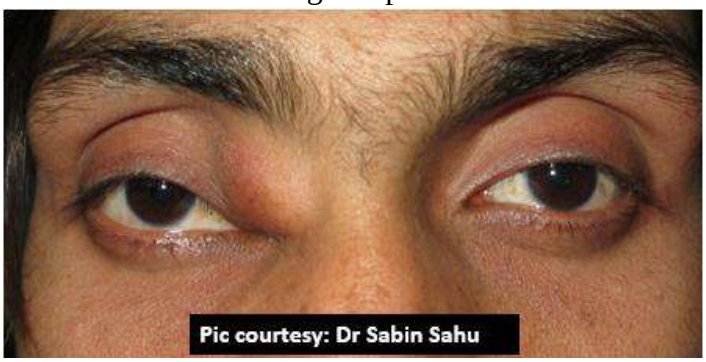
**Orbital cavernous hemangioma**

- Cavernous hemangioma is the most common vascular tumor of the orbit.
- It is a benign tumor that tends to occur in adulthood as slowly progressive lesion that can produce painless proptosis. Because it most often occurs in the muscle cone, it usually produces axial proptosis.
- Management of orbital cavernous hemangioma ranges from periodic observation for small, asymptomatic lesions to surgical excision for larger, symptomatic tumors.

**Dermoid cysts**

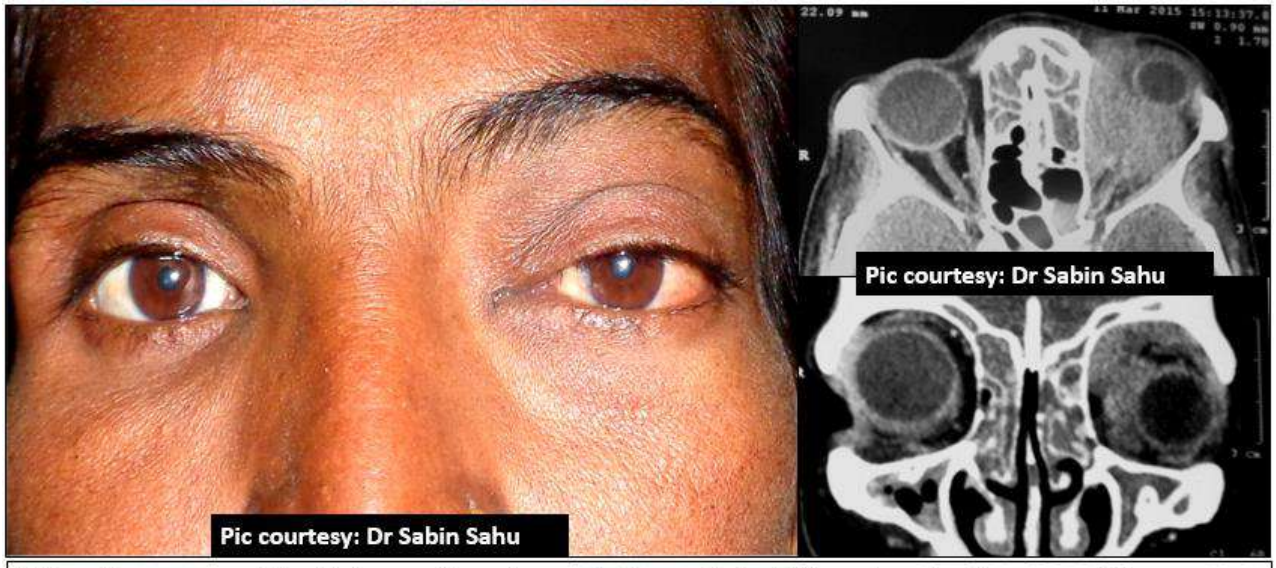
- It is a benign congenital cystic lesion that originates from ectoderm trapped along bony sutures during fetal development.
- Most dermoid cysts in the orbital region are located supero-temporally near the zygomatico-frontal suture. Other locations include frontoethmoidal or frontonasal sutures.
- Superficial dermoid lies just under the skin. Deep dermoid lies within the orbit (posterior orbital dermoid). Large dermoid cysts located in the posterior orbit pose more of a diagnostic and therapeutic challenge. Such cysts can slowly grow to a large size at a young age and can recur after excision.
- Diagnosis can be made clinically or by CT or MRI imaging that shows well-defined, low density cystic lesion that may cause bony remodeling or scalloping.
- Definite treatment is surgical excision with intact capsule. It is important to avoid rupture of the cyst to prevent inflammation.
- Prognosis is excellent with complete removal. It has no malignant potential.



**Lymphoma**

- Lymphoma can be broadly divided into NHL (70%) and Hodgkin disease (30%).
- Almost all periocular lymphomas are non-Hodgkin type, almost all of B cell origin.
- They are typically seen in old age patients, and there may be a history of autoimmune disease, HIV, use of immunosuppressive or other viral infections.
- The orbital soft tissues are most commonly involved, followed by the conjunctiva and, last, the eyelids.
- A gradual onset with slow progression of a painless orbital mass, often anterior and superior, is typical of the orbital lymphoid lesions.
- A lesion affecting lacrimal gland may present with ptosis or a palpable mass. They may have typical S-shaped deformity.
- Conjunctival involvement may present with a salmon patch or conjunctivitis.
- Extraocular muscle involvement may cause proptosis or diplopia. Involvement of the optic nerve or vitreous may present with visual disturbance.
- Typical CT scan feature of lymphoid lesions is well-circumscribed masses that mold around normal orbital structures such as the globe, extraocular muscles, or orbital walls, without indenting the globe or eroding or remodeling bone.
- All patients should undergo systemic evaluation. Chest and abdominal CT scans, Bone marrow aspiration are needed to rule out systemic involvement.
- Management options include: Radiotherapy, Chemotherapy, Immunotherapy and Radioimmunotherapy.
- Most orbital lesions are treated with radiotherapy at a very high success rate.




Painless firm supero-medial orbital mass, with no decreased vision and lack of inflammatory signs in a young adult.
CT scan show mass involving intraconal as well as extraconal space extending upto posterior part of left orbit in axial section.
Coronal section show Ill defined heterogenous mass in left superior and medial orbit without globe compression suggestive of orbital lymphoma

**Rhabdomyosarcoma**

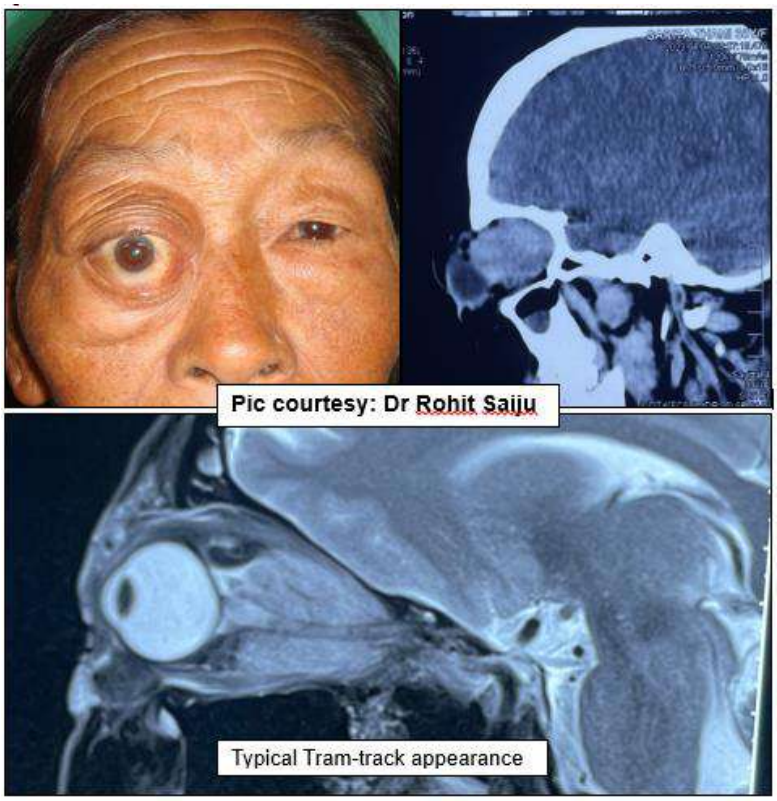
- Tumors of skeletal muscle derivation that can develop in the orbit include rhabdomyoma, rhabdomyosarcoma (RMS), and malignant rhabdoid tumor.
- RMS is the most common primary orbital malignancy of childhood. It generally occurs in the first two decades of life.
- It presents with proptosis, downward and lateral globe displacement, ptosis, conjunctival and eyelid swelling, palpable mass and pain.
- Orbital RMS can be highly aggressive locally. Systemic evaluation to exclude metastatic disease including lung, lymph nodes, and other sites. This should be followed by prompt biopsy with histopathologic confirmation of the diagnosis
- Most patients are treated with irradiation and chemotherapy, according to guidelines established by the Intergroup Rhabdomyosarcoma Study.

**Lacrimal gland tumors**

- Lacrimal tumors can be benign or malignant. Benign mixed tumor is the most common tumor of lacrimal gland. Adenoid cystic carcinoma, adenocarcinoma are malignant tumors arising from lacrimal tissues. Infiltrations of cells (mainly lymphoid) into lacrimal gland is the most common cause of lacrimal gland enlargement.
- Fullness of a palpable mass in the supero-lateral quadrant is common clinical presentation of lacrimal gland tumors. Proptosis occur relatively late with lacrimal gland masses as lacrimal gland lies anterior to the equator of the eye. If you lift the upper eyelid, you may be able to see an enlarged palpebral lobe of the lacrimal gland.
- The main characteristic of the benign mixed tumor is its slow progression. This long-standing hard tumor pushes the eye down and molds the bone. It occurs in a younger patient. When you determine that the problem has been present more than 1 year and the CT scan shows chronic bone molding, think benign mixed tumor and plan to remove the mass intact.
- Incisional biopsy should not be done for benign mixed tumor, but is done for all other lacrimal gland masses.
- Adenoid cystic carcinoma progresses over a few months; symptoms or signs are almost never present for more than 1 year. There is no pain present, but there is often numbness or paresthesia in the temporal region as a result of typical neurotrophic spread of adenoid cystic carcinoma.

**Optic nerve tumors**

- Meningioma and glioma are central nervous system (CNS) tumors that can arise primarily from the optic nerve.
- Meningioma is a benign neoplasm that arises from the arachnoid layer of the meninges and frequently affects the orbit.
- Optic nerve meningioma is seen most often in middle-aged adults. Optic nerve gliomas occur primarily in children in the first decade of life.
- Patients usually note vision loss. Proptosis usually minimal at time of presentation. If present, the proptosis is axial. Progression is very slow over months or years. There is no pain associated.
- An MRI scan is usually performed to view the details of the soft tissues in the orbital apex and around the chiasm.
- Debulking of an optic nerve meningioma cannot be done without damage to the vision, so no attempt to excise is usually done until useful vision is lost or the tumor is extending toward the optic canal as seen on serial MRI examinations.




***c) Ocular surface tumors***

**Conjunctival intraepithelial neoplasia (CIN)**

- Premalignant lesion of conjunctival epithelium which is localized, minimally aggressive and have no potential to metastasize is called CIN.
- It is commonly seen in elderly and associated with UV exposure. Other risk factors include HIV, HPV and immunosuppression.

- Clinical appearances include gelatinous, leukoplakic or papilliform lesion, usually located at the limbus in interpalpebral zone.
- Complete excision with adequate margins and histopathological examination is the preferred initial treatment. Other treatment modalities include cryotherapy and topical chemotherapy with Mitomycin – C, 5-Fluorouracil or Interferon α2b.
- Prognosis is usually good with early treatment. There is risk of progression to invasive OSSN.

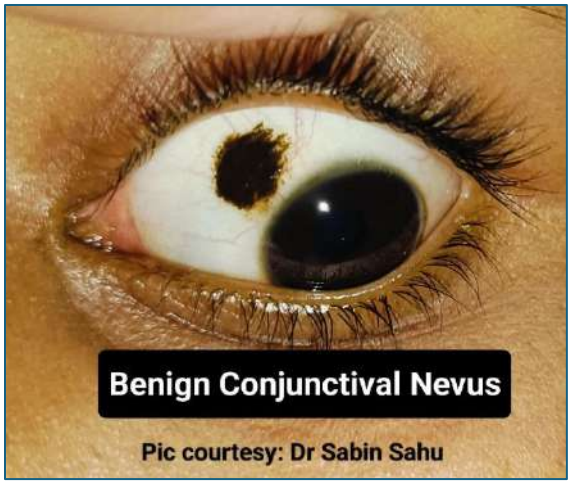
**Ocular surface squamous neoplasia (OSSN)**

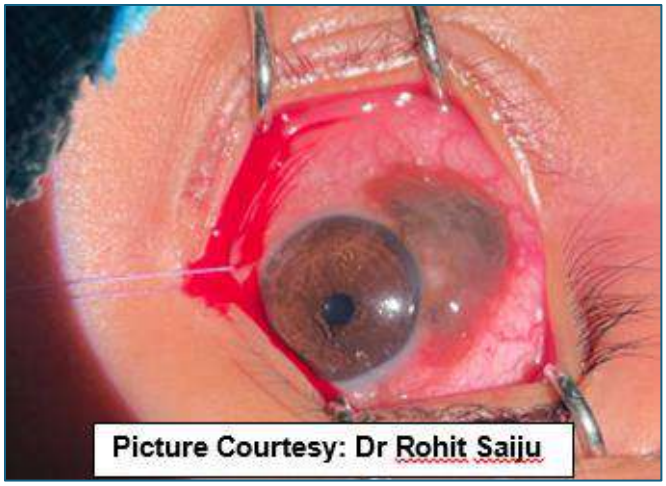
It is most common ocular surface malignancy, seen more in tropical areas with high UV exposure.

- OSSN is generally used as the umbrella term that include spectrum of neoplastic disorders involving conjunctiva and/or cornea, ranging from CIN to invasive squamous cell carcinoma.
- Clinical presentations is similar to that of CIN and, in many instances, they cannot be differentiated clinically. Clinical presentations include gelatinous, papilliform, leukoplakic or nodular mass. Involves limbus and may extend onto cornea or fornix.
- Diagnosis: Clinical + Histopathology ± Impression cytology
- Management: Surgical excision with wide margins is main treatment wherever possible. Adjuvant therapies include Cryotherapy, topical chemotherapy like MMC, 5-FU, IFN α2b)
- Follow-up: Lifelong; recurrence possible.


**Conjunctival nevus**

- Conjunctival nevus is the most common conjunctival tumor in children
- Conjunctival nevi can manifest as a darkly pigmented, lightly pigmented and completely nonpigmented mass.
- Most nevi occurred at the nasal or temporal limbus, without involvement of the cornea. Occasionally, they are located in the caruncle, but rarely are nevi found in the fornix or tarsal conjunctival surface.
- Evolution of conjunctival nevus into malignant melanoma is extremely low (<1%).



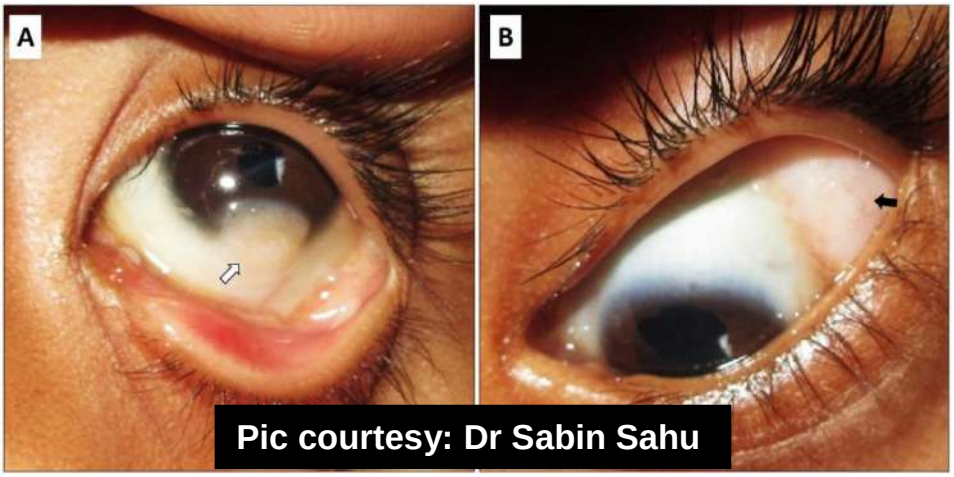

**Conjunctival melanoma**

- It is a malignant tumor of melanocytes of the conjunctiva.
- It is usually seen in $5^{th}$ - $6^{th}$ decade of life.
- Risk factors include UV exposure, fair skin and genetic predisposition.
- Clinically appears as pigmented or amelanotic nodular mass. May have feeder vessels. May involve limbus, bulbar conjunctiva or fornix.
- Treatment modalities include wide local excision with cryotherapy, radiotherapy using teletherapy or brachytherapy, topical chemotherapy for residual disease, and sentinel lymph node biopsy in invasive cases.
- Classic limbal lesions are removed by alcohol corneal epitheliectomy, wide partial lamellar sclero-conjunctivectomy, double free-thaw cryotherapy, and primary conjunctival closure. Lesions that extend into the globe may require enucleation and those extending into the orbit may require eyelid sparing orbital exenteration.
- Prognosis is worse than OSSN. There is high risk of local recurrence and metastasis especially to regional lymph nodes, lungs, liver, brain and other organs. The overall mortality for patients with conjunctival melanoma is about 25%.

**Conjunctival dermoid**

- Both dermoid and dermolipoma are choriostomas, which are tumorous malformations composed of tissues not normally present at the involved site. The choriostomatous tissues may include skin, bone, lacrimal gland, cartilage, hair etc.
- Small dermoids are often asymptomatic, but larger dermoids can cause irritation, astigmatism, and inadequate eyelid closure.
- Limbal dermoid commonly appears as yellow-white limbal mass infero-temporally, but can appear in other meridians. Fine hairs may often protrude from the lesion.
- Lipodermoid or dermolipoma typically appear at lateral canthus. It consists of fatty tissue (lipoma) covered by connective tissue and epithelium, resembling normal conjunctiva. It is usually asymptomatic but may cause cosmetic concerns. Surgical excision is considered if the lesion is visible in primary gaze or cause cosmetic concerns.

- Dermoid can occur as a part of Goldenhar syndrome which also includes pre-auricular tags, other auricular, facial and vertebral anomalies.
- Smaller asymptomatic dermoids can be observed and larger symptomatic lesions require excision. Indications for surgical removal include amblyopia due to secondary astigmatism, encroachment on the visual axis, dellen formation, inadequate eyelid closure, and cosmetic considerations.




***d) Intraocular tumors***

**Retinoblastoma**


- It is most common primary intraocular malignancy in children.
- Retinoblastoma can be hereditary or non-hereditary. Hereditary (bilateral, multifocal) occur due to germline RB1 gene mutation (chromosome 13q14). Non-hereditary (unilateral) occur due to somatic mutation. Majority of patients present before 5 years. 2/3$^{rd}$ cases are Unilateral (60%), 1/3$^{rd}$ cases are Bilateral (40%).
- Leukocoria (white pupillary reflex) is the most common presenting sign, followed by strabismus, decreased vision, red or painful eye (due to secondary glaucoma/inflammation) and proptosis.
- Diagnostic modalities include:
    - Indirect ophthalmoscopy and EUA (Examination under anesthesia) to directly visualize the tumor mass
    - Imaging: B-scan ultrasonography (to determine tumor size, extent, calcifications), CT or MRI scan (to determine extraocular or intracranial extensions)
- Classification: Reese-Ellsworth, IIRC (International Intraocular Retinoblastoma Classification)
- Management of RB depends on tumor size and spread.

- Chemotherapy is mainstay of treatment. Commonly used chemotherapy agents include Vincristine, Etoposide, and Carboplatin. Intra-arterial chemotherapy is used for concentrated delivery of chemotherapy to eye.
- Enucleation used to be a major treatment for RB, but nowadays there is substantial reduction in frequency of enucleation. Enucleation continues to be treatment of choice for advanced intraocular retinoblastoma and all painful blind eyes.
- Local therapies include laser photocoagulation, plaque irradiation, thermotherapy and cryotherapy.

- Prognosis is excellent with early diagnosis and treatment. Risk of metastasis is present if optic nerve or choroid is involved. If not treated in time, it can be not only sight-threatening but life-threatening as well.

**Uveal melanoma**

- Uveal melanoma is the most common primary intraocular malignancy in adults, arising from melanocytes of the uveal tract. Approximately 90% of uveal melanomas arise in the choroid, 7% in the ciliary body, and the remaining 3% in the iris.
- It commonly affects patients in $5^{th}$ – $6^{th}$ decade. Risk factors include fair skin, light-colored eyes, UV exposure and genetic predisposition.
- Clinical features include blurred vision, photopsia, visual field defects and visible pigmented dome-shaped mass on fundus. It may be asymptomatic in early stages. Intraocular tumors may be detected as an incidental finding on clinical exam.
- Diagnosis can be made by fundus examination, B-scan ultrasonography, OCT and fluorescein angiography. MRI scan is useful for extrascleral extension.
- Management for small to medium tumors include local radiotherapy or plaque brachytherapy, while large tumors need nucleation.
- Prognosis depends on tumor size, thickness and diameter, location and spread. Hepatic metastasis is most commonly seen.


Anterior segment showing congestion, mid dilated pupil and iris neovascularisation

USG showing a mushroom-shaped, elevated, solid lesion with regular internal structure and low to moderate internal reflectivity suggestive of choroidal melanoma

***e) Metastases***

- Metastatic tumors are relatively uncommon.
- Lung cancer is the most common metastatic orbital tumor in men.
- Breast cancer is the most common metastatic orbital tumor in women.
- The proptosis seen is often non-axial because the areas infiltrated by tumor are often outside the muscle cone, sometimes eroding the orbital bones.
- CT scan shows infiltrative mass which can have bone erosions. The definitive diagnosis of a metastatic orbital tumor is made by incisional biopsy.
- A systemic workup is required to define the extent of disease.

**Red Flag Signs in Ocular tumors Not to Miss**

Several clinical signs demand immediate attention and high suspicion for underlying malignancy. These include:

- **Leukocoria in a child:** A hallmark of retinoblastoma but also seen in other conditions. Requires urgent workup.
- **Pigmented intraocular mass:** Features suggestive of choroidal melanoma.
- **Rapidly growing, non-healing or recurrent eyelid lesion:** Especially if recurrent or ulcerated—may represent malignancy such as sebaceous gland carcinoma.
- **Progressive proptosis or orbital mass effect:** Particularly if painful or associated with systemic symptoms.
- **Rapidly growing conjunctival lesion with feeder vessels:** Especially in UV-exposed individuals—think OSSN or melanoma.
- **Systemic or advanced disease clues:** Lymphadenopathy (Preauricular / submandibular) in conjunctival tumor spread; signs of metastasis (Involvement of lungs, liver, breast); Painful blind eye (may indicate tumor seeding or invasion).

These signs should prompt further evaluation or referral, rather than simple reassurance or empiric treatment.

**Basic Diagnostic Tools Every Resident Should Master**

While specialized imaging and biopsy may ultimately be required, residents must be proficient in initial evaluation and interpretation. Key tools and skills include:

a) **Fundus Examination:** Mastery in indirect ophthalmoscopy and slit-lamp biomicroscopy for evaluating intraocular lesions.

b) **B-Scan Ultrasonography:** Perform and interpret B-scans when media opacities obscure posterior segment visualization.

c) **CT scan and MRI scan:** CT scan is best for trauma (fractures, foreign bodies) and calcified lesions (e.g., retinoblastoma). It is fast but involves radiation. MRI scan is superior for soft tissue (optic nerve tumors, uveal melanoma, and intracranial pathology). No radiation but slower and contraindicated with metallic implants. Residents should be able to order for appropriate imaging, recognize axial / coronal sections and key findings in CT scan. Familiarity with T1 and T2 weighted images in MRI is essential.

d) **Optical Coherence Tomography (OCT):** Obtain and analyze scans for documenting intra-retinal or subretinal changes. Always correlate findings with clinical presentations.
e) **Fundus Photography and FFA/ICG:** Useful in documenting lesion characteristics and vascular patterns. Residents should be able to recognize features of common retinal lesions.
f) **Clinical Photography:** Essential for follow-up of conjunctival, eyelid, and orbital lesions.

Recognizing the limitations of one's setting and when advanced testing or referral is needed is equally important.

**When to Refer and Who to Refer To**

A resident's primary responsibility is not to definitely diagnose cancer but to avoid missing it. The decision to observe or intervene should always be made with caution. Whenever in doubt, be cautious and refer. Prompt referral is necessary when:

a) A suspicious intraocular mass is noted.
b) An eyelid or conjunctival lesion fails to respond to conservative therapy.
c) A rapidly growing or deep orbital mass is detected.
d) Uncertain diagnosis requiring advanced imaging or biopsy
e) High-risk cases (e.g., retinoblastoma, uveal melanoma)

Referrals should ideally be made to ocular oncologists or multidisciplinary centers involving specialists in pathology, medical oncology, radiation oncology, and pediatric care where appropriate. Early referral improves prognosis and may reduce the extent of surgical or systemic interventions required.

**Management Principles: What Residents Should Know**

**Observation vs. Intervention**

Not all lesions require immediate treatment. However, observation must be purposeful and based on sound clinical judgment. Growth, symptomatic change, or atypical features mandate reassessment or escalation of care.

**Treatment Modalities**

Ocular oncology utilizes a diverse range of therapeutic tools:

- Excision of the mass: Different biopsy techniques including shave biopsy, incisional biopsy and excisional biopsy can be performed for common for eyelid, conjunctival, and surface lesions. Primary layered closure or different reconstruction techniques may be needed depending upon size of defects after excision of mass.
- Enucleation and Evisceration: Still relevant in advanced intraocular tumors or painful blind eyes with suspected malignancy.
- Plaque Brachytherapy: A common treatment for medium-sized choroidal melanoma.
- Chemotherapy:
    - Systemic: For metastatic or systemic disease (e.g., retinoblastoma).
    - Intra-arterial: Especially in retinoblastoma (via ophthalmic artery).
    - Intravitreal: For vitreous seeds in retinoblastoma.
- External Beam or Proton Beam Radiotherapy: Used selectively for orbital and intraocular tumors.

Residents are not expected to perform these procedures but must understand the rationale, indications, and common complications to counsel patients and anticipate follow-up needs.

**Resident Responsibilities in Training**

A proactive resident can significantly impact early diagnosis and patient education.
Key responsibilities include:

- **Meticulous Eye Exams:** Careful documentation and repeated evaluations of suspicious lesions.
- **Patient and Family Education:** Discussing warning signs and alleviating misconceptions about treatment.
- **Participation in Academic Discussions:** Enhances understanding of complex cases and decision-making.
- **Literature Review:** Keeping updated with the latest management protocols and consensus guidelines.

Building a habit of clinical curiosity and respectful vigilance prepares residents for both common and rare clinical scenarios.

**Ethical and Emotional Aspects**

Ocular oncology is as much about empathy as it is about expertise. Residents must:

- **Communicate with Compassion:** Delivering bad news, discussing loss of vision or eye, or managing pediatric cancers requires sensitivity and support.
- **Understand the Impact of Diagnosis:** A cancer diagnosis can be devastating—residents should acknowledge the psychological weight carried by patients and caregivers.
- **Ensure Informed Consent:** Especially when recommending biopsies or surgical interventions with significant consequences.
- **Collaborate Holistically:** Involving counselors, social workers, and family support systems when needed. Recognizing the human aspect of oncology makes a profound difference in patient care and resident maturity.

**Conclusion**

Thus, there is a dire need of experts in ocular oncology in Nepal training even more new Ophthalmologists to become experts in taking care of children and adults with eye and adnexal tumors. There should be more targeted training to empower such experts to engage in early detection, accurate diagnosis, logical decision making, and medical and surgical management. An interactive academic session with a case discussion can be a powerful teaching tool. Surgical skills can be improved with hands-on training. It is our responsibility to establish ocular oncology centers in every tertiary eye center to serve the hundreds of citizens with aims to salvage lives so that all may live, to salvage globe and vision so that all may see.

Ocular oncology may not be a daily part of every ophthalmology resident's clinical exposure, but it is a critical competency in becoming a comprehensive eye physician. Recognizing red flags, using basic diagnostic tools, and knowing when to refer are non-negotiable skills. As future ophthalmologists, residents must be vigilant, compassionate, and committed to learning—because in ocular oncology, early action often means saving not just sight, but life itself.

**References:**


1) Shields JA, Shields CL. Eyelid, conjunctival, and orbital tumors: an atlas and textbook. Lippincott williams & wilkins; 2008.
2) Fay A, Dolman PJ. Diseases and Disorders of the Orbit and Ocular Adnexa E-Book: Expert Consult. Elsevier Health Sciences; 2016 Nov 4.
3) Shields CL, Shields JA. Tumors of the conjunctiva and cornea. *Surv Ophthalmol* 2004;49:3‑24.
4) Shields CL, Shields JA. Conjunctival tumors in children. Current opinion in ophthalmology. 2007 Sep 1;18(5):351-60.
5) Shields JA, Shields CL, Scartozzi R. Survey of 1264 patients with orbital tumors and simulating lesions: The 2002 Montgomery Lecture, part 1. *Ophthalmology* 2004;111: 997‑1008.
6) Garrity JA, Henderson JW, Cameron JD. Henderson's orbital tumors. Lippincott Williams & Wilkins; 2007.



**Corresponding author:**

Dr. Sabin Sahu,
Jyoti Eye Hospital, Janakpurdham,
Asst. Prof. Janaki Medical College
sabinsahu@gmail.com

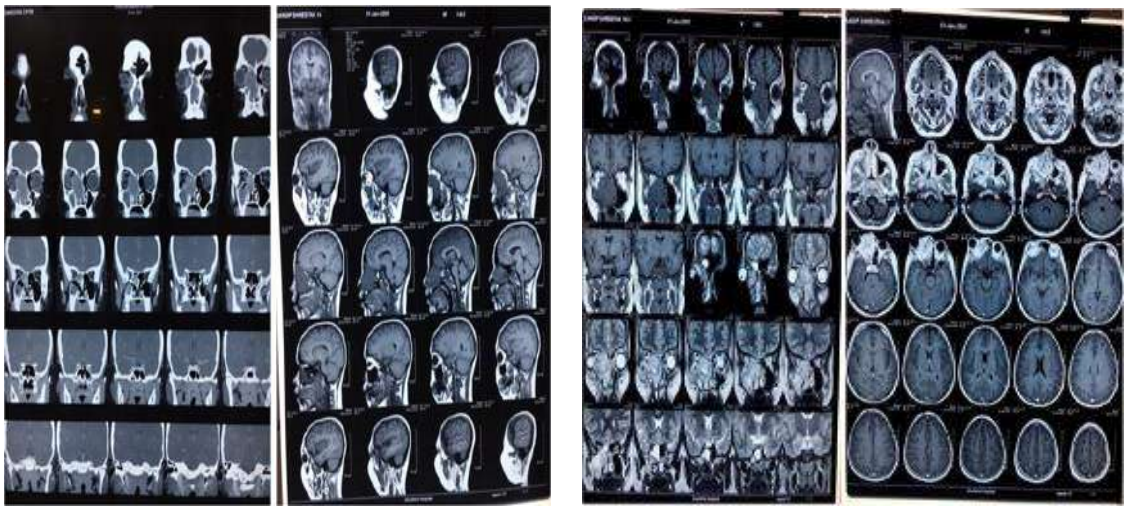
# Case Story

## "Rapidly Progressive Orbital Mass in a Child: A Case of Alveolar Rhabdomyosarcoma"

**Author:** Dr. Tina Shrestha, Consultant Oculoplastic Surgeon
**Affiliation:** Department of Ophthalmology, Dhulikhel Hospital, Kathmandu University, Nepal

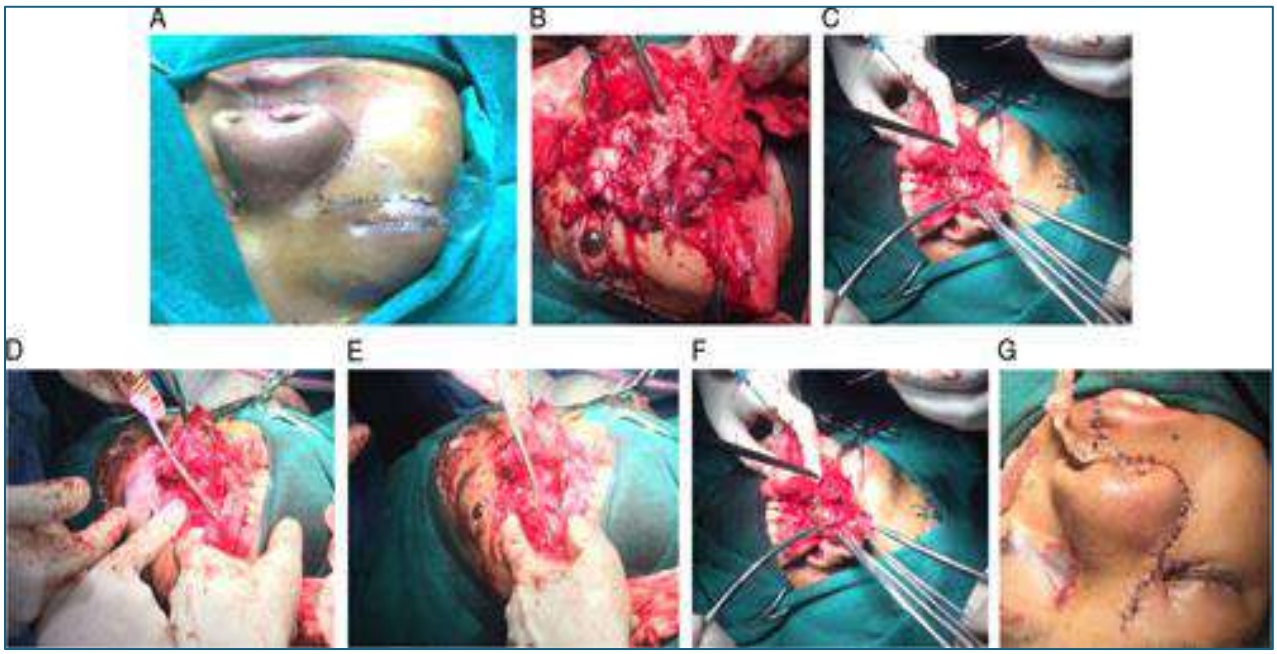
**Case Presentation:**

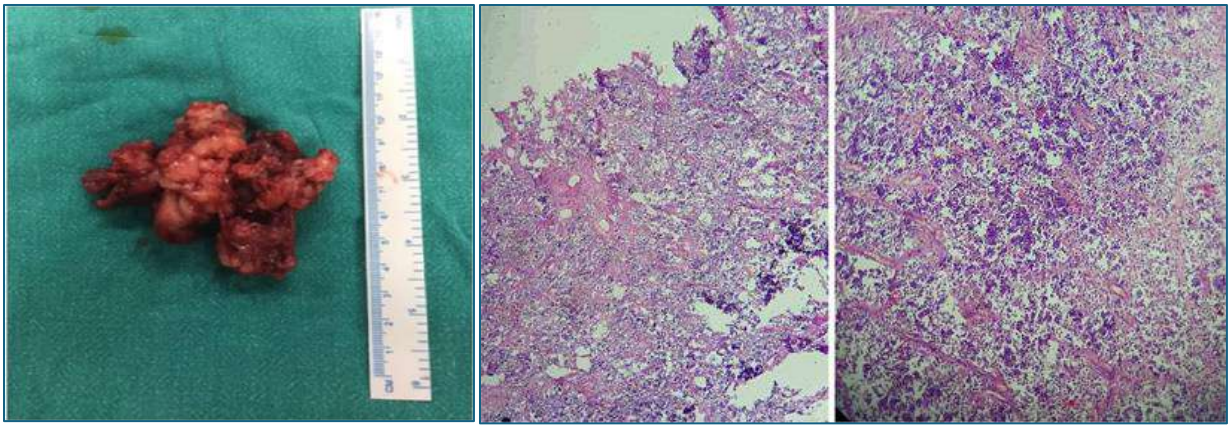
A 14-year-old male presented with rapidly progressive swelling of the right orbit. On ocular examination, there was nonaxial inferolateral proptosis of the right eye. Computed tomography revealed a large soft tissue density tissue lesion in the right nasal cavity and meatus measuring at least 3.2×2.7×5.4 cm in size with the erosion of the right orbit along with extension of the lesion in the extraconal compartment of the orbit. An MRI of the brain with contrast showed a heterogeneously enhancing altered signal intensity lesion.



**Intervention:**

Debulking was planned, and a biopsy of the mass was sent that gave an impression of alveolar Rhabdomyosarcoma (RMS). He also received radiotherapy and chemotherapy at one of the cancer hospitals in Nepal. Postsurgical follow-up showed gradual improvement in the visual acuity of the right eye. No evidence of metastasis and recurrence was found upon subsequent follow-up.





**Conclusion:**

Thus, early diagnosis and prompt treatment is most for a favorable prognosis in the case of RMS. The main aim of this article was to briefly overview a rare case of RMS, its clinical presentation, diagnosis, treatment modalities, and its prognosis.

**Corresponding author:**
Dr Tina Shrestha
Dhulikhel Hospital,
Kathmandu University, Nepal
khoju.tinashrestha@gmail.com

# Heart to Heart Interview

## "Dr. Sulaxmi Katuwal: A Visionary Leader in Service of Humanity"

*This interview features a conversation between Dr. Sulaxmi Katuwal (Dr. SK), Past President of the Nepalese Society for Oculoplastic Surgeons (NESOS), and Dr. Sabin Sahu (Dr. SS).*

*Through this engaging exchange, readers are offered a unique window into Dr. SK's journey, perspectives, and impactful contributions to the field.*

*We hope you enjoy the read!*


**Dr SS:** Thank you so much, Dr. Sulaxmi, for graciously agreeing to be interviewed for our upcoming NESOS e-Magazine. We truly appreciate you taking the time to share your insights and expertise despite your demanding schedule and family responsibilities. Your contribution will be a valuable addition to this edition, and we are genuinely honored to have the opportunity to learn from your experience. Thank you once again for your generosity and support.

**Q1. Dr SS: You've had a long and impactful journey in ophthalmology since 2007. What inspired you to choose this field, and how did your journey begin?**

**Dr SK:** My journey began in a way that's quite common to many of us. I had just finished my internship and was raising a baby. I was looking for a suitable place to start working—somewhere that didn't require night or 24-hour duties and wasn't too physically taxing.

One day, my husband asked if I would be interested in working at Tilganga Eye Centre (TEC). He informed me, through an informal source, that there was a vacancy for a Medical Officer. Without a second thought, I agreed and applied. To my surprise, I started my career as an MO in ophthalmology the very next day.

The seniors at TEC were very supportive and cooperative. I quickly adapted to the environment and became familiar with the subject matter. The working atmosphere at TEC was so inspiring that I began to envision myself as an ophthalmologist.

More importantly, the smiles, happiness, and gratitude I saw on the patients' faces deeply moved me and motivated me to pursue ophthalmology as my career.

As I mentioned earlier, working there was so enjoyable and fulfilling that I decided to sit for the NAMS ophthalmology entrance exam in 2004—and successfully enrolled.

**Q2. Dr SS: What were some of the key challenges you faced while leading large-scale eye health programs like those in Rapti and Bahadurgunj, and how did you overcome them?**

**Dr SK:** Working in Rapti and Bahadurgunj wasn't an easy task back then. I had to face new geography, unfamiliar people, and a different language and culture. On top of that, being a single female doctor working far from family came with its own set of challenges. I experienced all of this in the beginning, but I quickly adapted to the changing circumstances of my career.

With profound courage, determination, willpower, and the ability to face the challenges that came my way, I gradually adjusted and made life easier for myself. More importantly, the unconditional trust and support I received from my family, the local NNJS members, the community, and the staff around me can never be overstated.

In the early days of my career in Rapti and Bahadurgunj, there were very few doctors available to manage the hospitals, outreach programs, and eye centers. Many times, I was the sole ophthalmologist responsible for patients in both Rapti and Bahadurgunj. I would often operate in one hospital late into the night, rest for a few hours, and travel to the next hospital early in the morning. There were days when I performed surgeries until midnight or even into the early morning hours. I'd then travel to the next destination, drowsy and physically exhausted, catching up on sleep during the journey itself.

The entire purpose of pushing myself so hard was—and still is—driven by one guiding principle: no patient should suffer due to our limitations or shortcomings. This has remained the core philosophy throughout my career.

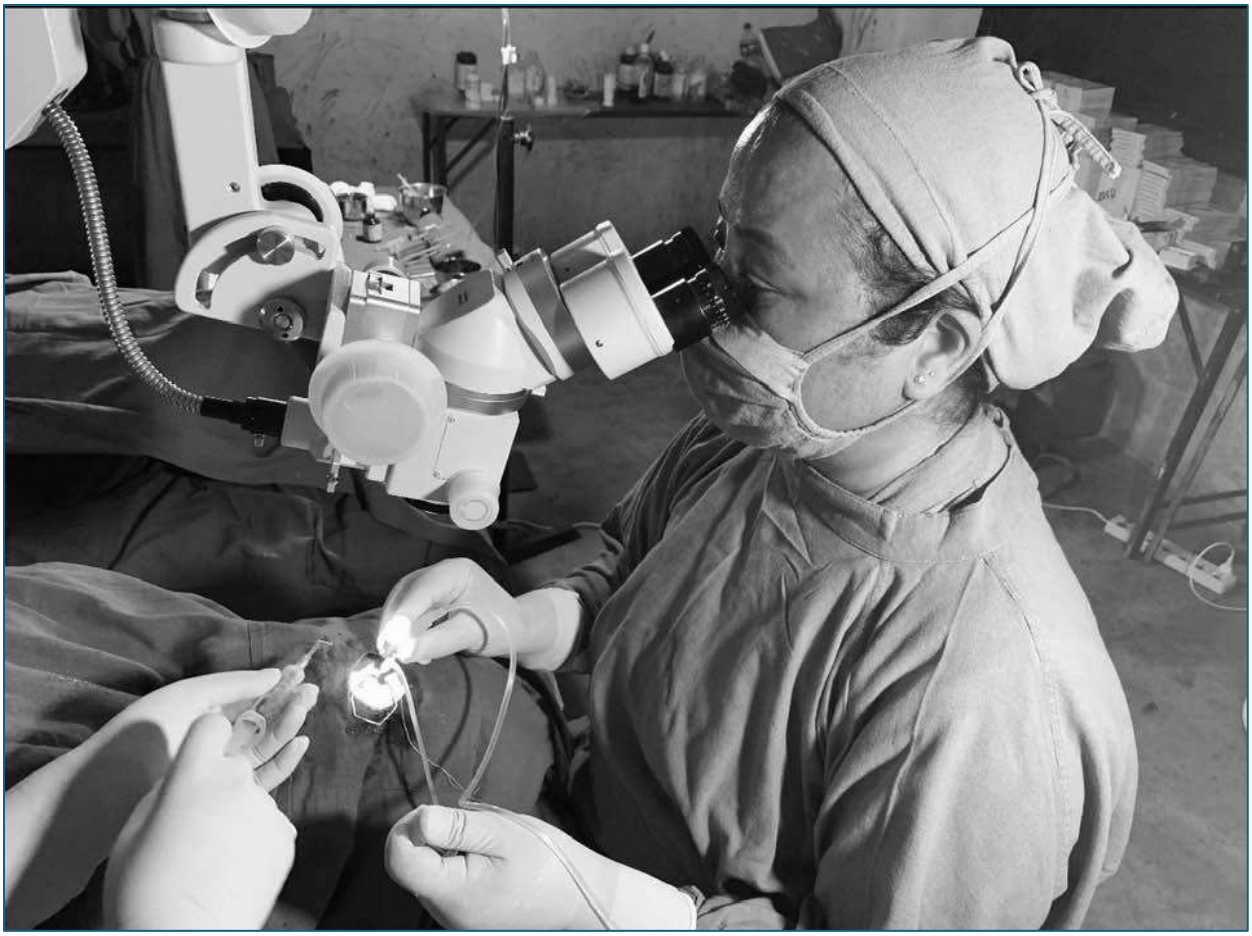


**Q3. Dr SS: You've conducted surgical outreach in remote provinces like Lumbini and Karnali. Can you share a memorable story or experience from the field that left a lasting impact on you?**

**Dr SK:** Regarding the question about outreach activities and their impact on me, I would say there are countless moments and memories that can't be captured in a short span of time or space.

But to summarize, I have experienced immense happiness and joy—like when an elderly person, carried in on the arms of their relatives, regains vision and sees their grandchildren for the first time. The joy, the smile on their face, and the way they express their gratitude is indescribable. It's something that must be felt deeply—it touches the heart and soul.

Many times, I have been deeply moved when a child with congenital cataract undergoes surgery and reacts to seeing the world for the first time. The wonder in their eyes and the change in their behavior afterward is simply unforgettable.



**Q4. Dr SS: Having performed tens of thousands of ocular surgeries, what aspects of surgical work continue to excite and motivate you today?**

**Dr SK:** Vision gives our lives meaning and purpose. By restoring sight, we can bring positive changes to people's lives, offering them the opportunity to live more fully—often in a short time, at a large scale, and with minimal resources. This is the power of ocular surgery and the responsibility of ophthalmologists.

Among the many surgical interventions in ophthalmology, I have found cataract and other vision-restoring procedures to be especially fulfilling and immediately rewarding.

**Q5. Dr SS: You've pursued specialized training in phacoemulsification and oculoplasty. What drove you toward oculoplasty, and how do you see this subspecialty evolving in Nepal?**

**Dr SK:** Nepal remains an underdeveloped country where poverty, illiteracy, and poor access to healthcare are still widespread. Even in 2025, we are fighting for basic eye care services in many regions. Oculoplasty-related disorders are common, but access to specialized care is limited due to the small number of oculoplastic surgeons, mostly concentrated in major cities.

Oculoplasty is still a relatively new subspecialty in ophthalmology. Considering these realities, I chose oculoplasty as my field of specialization—to help bridge this critical gap in care.

Today, oculoplasty is rapidly evolving in Nepal. Many young, energetic ophthalmologists are now pursuing fellowships in this field. The future of oculoplasty is bright, with significant potential for growth.

As society progresses and becomes more affluent, there is a growing awareness and demand for cosmetic and aesthetic procedures. The recent surge in social media influence has also significantly increased interest in oculoplastic and cosmetic surgeries. Moving forward, we must focus seriously on both the quantity and quality of oculoplastic services we provide to meet these rising expectations.


**Q6. Dr SS: As a past President of NESOS, how do you reflect on your leadership experience there, and what role do such platforms play in strengthening academic and professional collaboration?**

**Dr SK:** Serving as President of NESOS was a major milestone in my professional journey. It was both a great honor and a test of my leadership potential. This opportunity taught me invaluable lessons and helped strengthen my leadership skills. I am deeply grateful to my seniors and colleagues for the trust and guidance they extended to me.

Organizations like NESOS are essential platforms for sharing clinical experiences, building friendly and supportive relationships among colleagues, and promoting a healthy and competitive learning environment. Furthermore, collaboration and networking with national and international ophthalmic

and oculoplastic organizations elevate our knowledge and skills, helping us reach new levels of professionalism.

**Q7. Dr SS: You've received several national and international recognitions throughout your career. How do you personally define success in medicine and public service?**

**Dr SK:** The saying "Rome was not built in a day" reminds us that significant achievements require time, effort, and thoughtful persistence. No one becomes successful overnight. Real success demands consistency, honesty, hard work, dedication, professional commitment, and strong ethical values.

In my view, a truly successful person also carries a deep sense of moral responsibility toward the organizations they serve, society at large, and the people they care for. Medicine is no exception—our field requires constant advancement of knowledge and skills to keep up with evolving challenges.

**Q8. You've balanced clinical, administrative, and outreach responsibilities with apparent ease. What mindset or habits have helped you manage these demanding roles effectively?**

**Dr SK:** It is essential to remain loyal and responsible to one's organization and its goals. With this philosophy in mind, I carried out my clinical, administrative, and outreach responsibilities to the best of my ability.

Thanks to my perseverance and determined mindset, I never gave up in the face of adversity. I faced circumstantial challenges with resilience and was able to fulfill my duties in a balanced and effective way.

**Q9. Beyond ophthalmology, what are your personal hobbies or passions? How do you recharge outside the operating room?**

**Dr SK:** As the daughter and daughter-in-law of farming families, I have deep respect and interest in agriculture. During my free time, I enjoy helping manage farm activities and spending quality time with my family. Whenever possible and circumstances allow, I also enjoy traveling abroad with my family to recharge my energy and spirit.

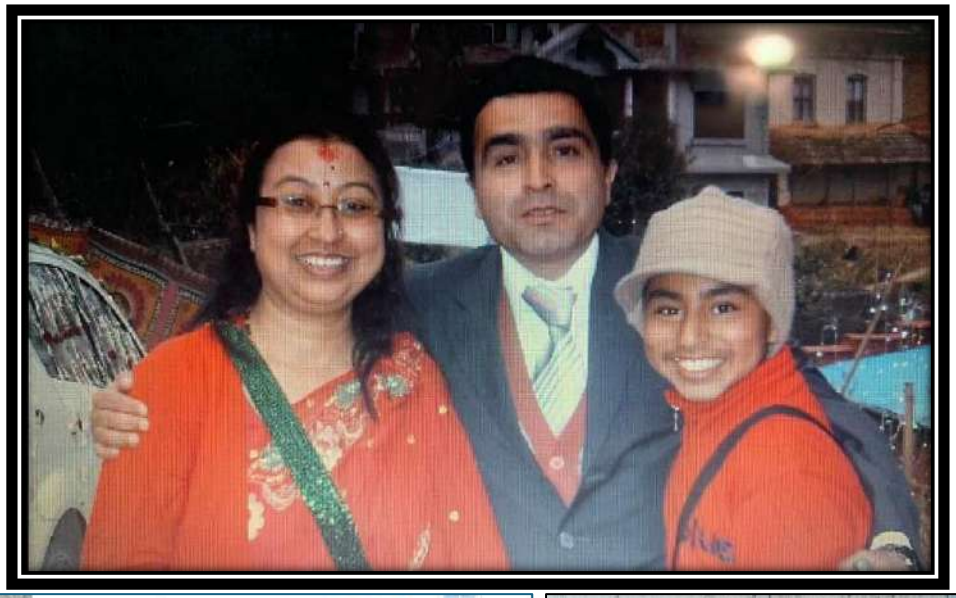
**Q10. Lastly, what message would you like to share with the next generation of ophthalmologists and NESOS members who look up to role models like you?**

**Dr SK:** Ophthalmology is a noble profession—one we can all take pride in. Every subspecialty within it is valuable and equally respected. Like any discipline in medicine, ophthalmology has its challenges and limitations, but that should never deter us.

There are no shortcuts to success. It requires perseverance, honesty, and dedication. I warmly welcome the new generation of ophthalmologists and especially those entering the field of oculoplasty. I wish you all a bright and impactful future.

**Dr SS:** Thank you very much, Dr. Sulaxmi mam, for generously sharing your time, insights, and experiences with us. Your thoughtful reflections and unwavering dedication have added great value to this interview, and we truly appreciate your support and contribution to our publication.

## Some glimpses and memories of Dr Sulaxmi




2nd National Oculoplastic Conference 2014
Kathmandu, Nepal, 18-19th October


Review Of All Subjects (ROAS) for Ophthalmic Assistants


NESOS
HIMALAYA EYE HOSPITAL
NON ENDOSCOPIC ENDONASAL DACRYOCYSTORHINOSTOMY WORKSHOP
Interactive Lectures
Hands on training workshop
Observational Learning
Date : 31st Aug to 2nd Sep, 2023
Venue : Himalaya Eye Hospital, Ghariptan Pokhara, Nepal
Organizer : Nepalese Society for Oculoplastic Surgeons (NESOS)


National Oculoplasty Conference 2022

# Photo Story

**"From Diagnosis to Recovery: A Case of Sebaceous Gland Carcinoma Managed with Hughes Reconstruction"**

**Courtesy:** Dr. Laxmi Manandhar, Oculoplastic Surgeon
**Affiliation:** Lumbini Eye Institute, Bhairahwa, Nepal


**Left eye lower lid lesion extending across nearly the entire horizontal length of the lid margin with irregular, lobulated surface, yellowish appearance with nodularity and associated loss of eyelashes (madarosis) suggestive of sebaceous gland carcinoma**

**Post op 6 week after Hughes Procedure**

**Post op 3 months**

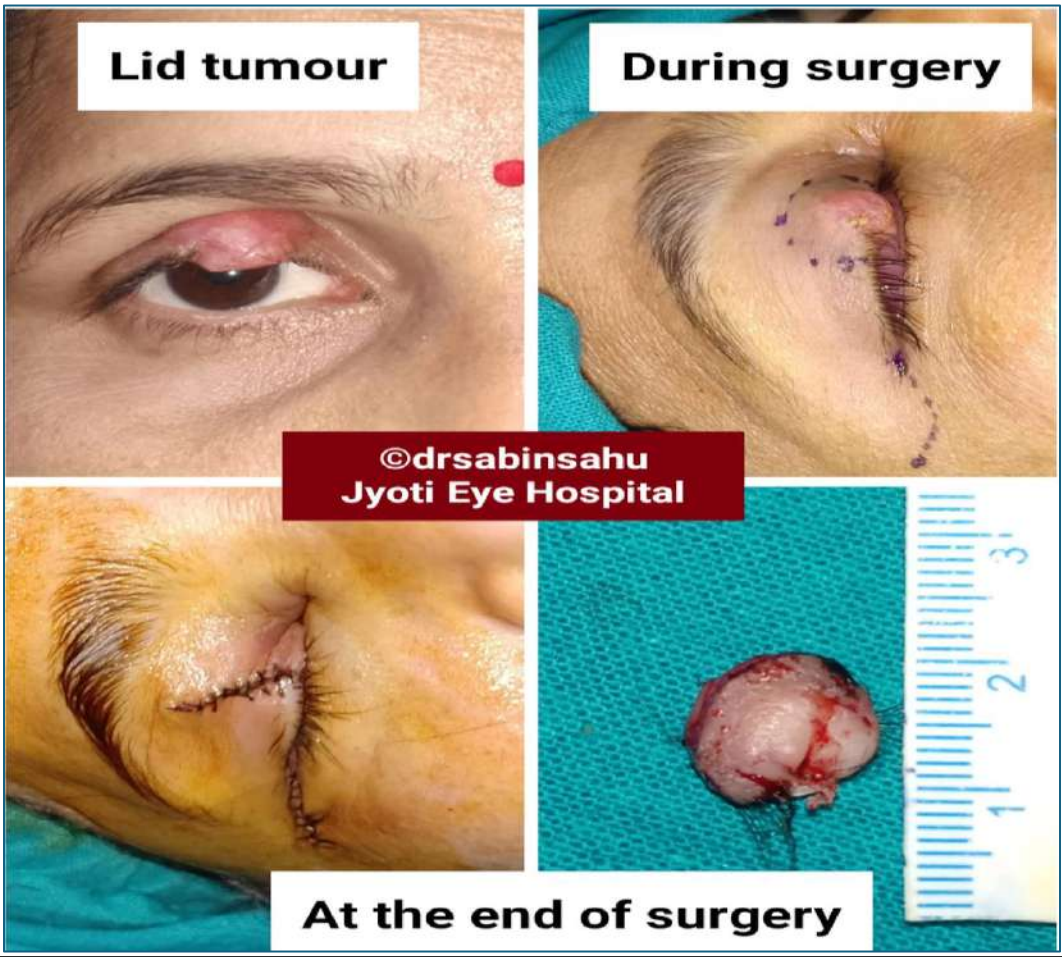
## HUGHES PROCEDURE

- The Hughes procedure is a two-stage oculoplastic technique used to reconstruct large full-thickness lower eyelid defects involving over 50% of the lid, usually after tumor excision.
- In the first stage, a tarsoconjunctival flap from the upper eyelid is used to rebuild the posterior lamella, while the anterior lamella is reconstructed with a skin graft or local flap.
- After 3–6 weeks, the flap is divided to restore upper eyelid function. This method provides strong support and good cosmetic results but causes temporary eyelid closure.

# Photo Story

**"Sebaceous Gland Carcinoma of the Eyelid: Surgical Management with Tenzel's Semicircular Flap"**

**Courtesy:** Dr. Sabin Sahu, Oculoplastic Surgeon
**Affiliation:** Jyoti Eye Hospital, Janakpurdham, Nepal




**Photographs demonstrating Tenzel's semicircular flap for upper lid sebaceous cell carcinoma in in 35 year female**

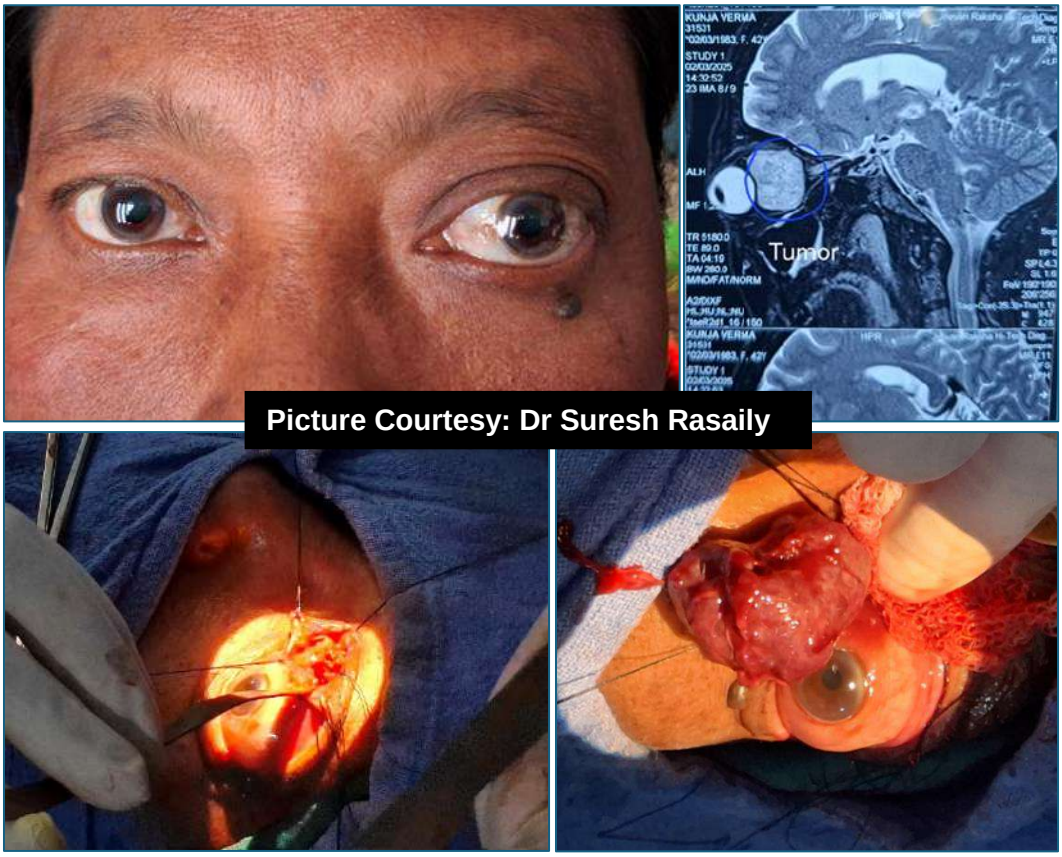
## TENZEL'S SEMICIRCULAR FLAP RECONSTRUCTION

- Tenzel's semicircular flap is a rotational skin-muscle flap used to reconstruct moderate-sized defects (up to 40–60%) of the upper or lower eyelid, typically at the medial or lateral canthus.
- A semicircular incision is made lateral to the defect, and the flap is rotated to restore eyelid structure and function while maintaining contour.

# Photo Story

**"Successful Removal of Intraconal Cavernous Hemangioma via Medial Vertical Lid Split Approach"**

**Courtesy:** Assoc. Prof. Dr. Suresh Rasaily
**Affiliation:** Rapti Academy of Health Sciences, Nepal




Picture Courtesy: Dr Suresh Rasaily

A 48 -year -old female patient presented with painless proptosis in her left eye. Her visual acuity was 6/9 in both eyes and Hertel's Exophthalmometry revealed 20 and 24 mm at 108 base reading. There was an intraconal mass vascular in nature (cavernous hemangioma) and she underwent posterior orbitotomy via medial vertical lid split approach to remove entire tumor.

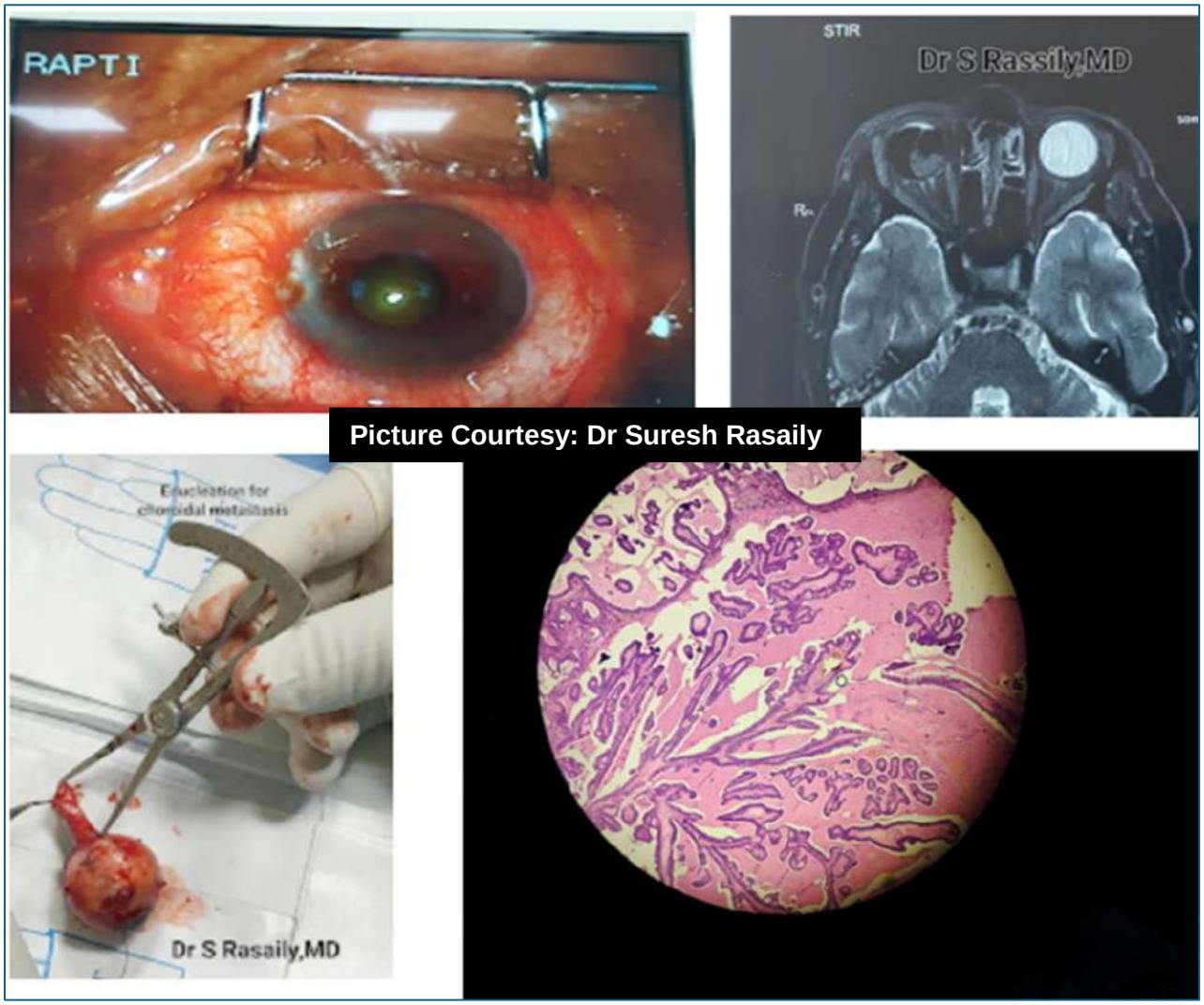
## MEDIAL VERTICAL LID SPLIT APPROACH

- The Medial Vertical Lid Split (MVLS) provides medial orbital access via a full-thickness vertical eyelid incision, dissecting through orbicularis oculi and retractors.
- Reconstruction involves medial canthal tendon reattachment (if needed) and layered tarsal and skin closure, with optional lateral canthoplasty.

# Photo Story

**"Choroidal Metastasis as initial presentation of Lung Adenocarcinoma"**

**Courtesy:** Assoc. Prof. Dr. Suresh Rasaily
**Affiliation:** Rapti Academy of Health Sciences, Nepal



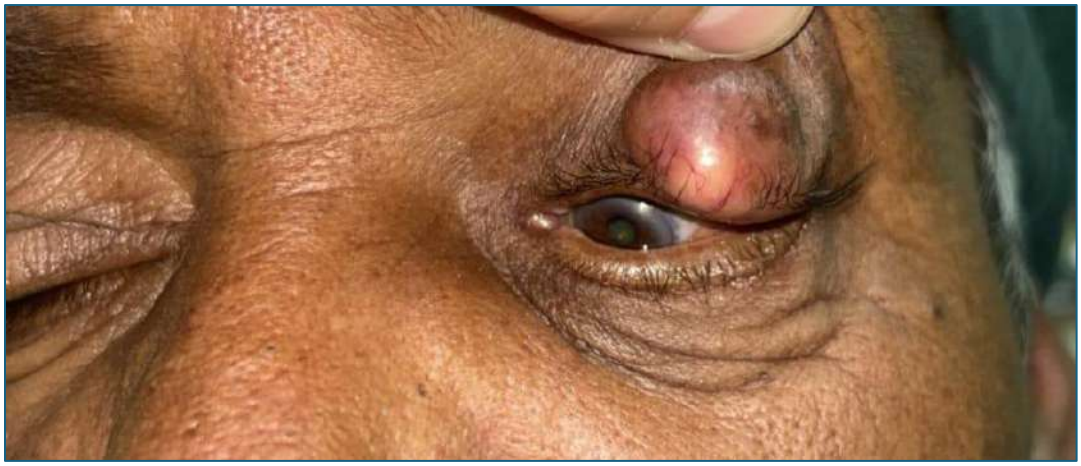

Picture Courtesy: Dr Suresh Rasaily

A 65- year- old male patient presented with a 4-months history of painful loss of vision in his left eye. Fundus examination revealed a yellowish white elevated choroidal mass. He underwent enucleation and systemic metastatic workup. He was found to be suffering from Stage 4 lung cancer of adenocarcinoma. He survived for 6 months with palliative care.

# Photo Story

**"Recurrent Sebaceous Carcinoma:Cutler-Beard Procedure Staged Repair"**

**Courtesy:** Dr. Dikshya Bista
**Affiliation:** Tilganga Institute of Ophthalmology, Nepal



Recurrent upper lid sebaceous gland carcinoma involving >50% width of upper lid

After first stage of Cutler-Beard flap procedure

After second stage of Cutler-Beard flap procedure

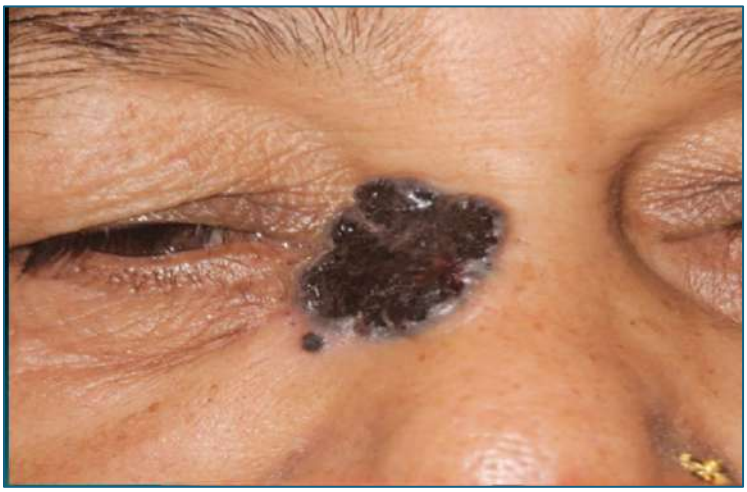
## CUTLER-BEARD PROCEDURE

- It is a two-stage technique for reconstructing large full-thickness upper eyelid defects (>50% of its width).
- It involves creating a full-thickness advancement flap from the lower eyelid, which is transposed beneath a skin bridge to the upper eyelid defect, providing both anterior and posterior lamellae.
- After several weeks, the flap is divided in a second stage to restore separate upper and lower eyelid margins, ensuring functional protection of the globe and acceptable cosmesis.

# Photo Story

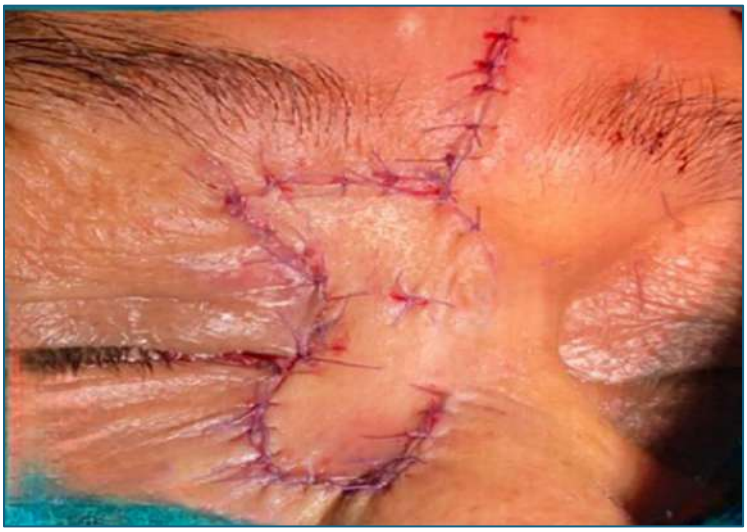
## "Reconstruction following Excision of Right Medial Canthal Pigmented Basal Cell Carcinoma using a bilobed glabellar Flap"

**Courtesy:** Dr. Nisha Shrestha
**Affiliation:** Patan Academy of Health Sciences, Nepal



**Preoperative View**

An elderly patient presented with a pigmented, irregularly bordered lesion at the right medial canthus, partially involving the nasal bridge and lower eyelid. Clinical suspicion was high for pigmented basal cell carcinoma (BCC) given the lesion's color heterogeneity, rolled edges, and central crusting. The location posed reconstructive challenges due to proximity to the eyelid margin, canthal tendon, and lacrimal drainage system.



**Immediate Postoperative View**

Following a wide local excision with oncologically safe margins, the resultant defect encompassed the medial canthal skin and part of the nasal bridge. A bilobed glabellar skin flap, designed adjacent to the defect, was mobilized and rotated into place, ensuring optimal tension distribution and good color/texture match. The flap's geometry allowed primary closure of the donor site without distortion of the eyelid margin or canthal contour.

**Conclusion:** Bilobed glabellar flaps are particularly suited for medial canthal and nasal sidewall defects due to their excellent color/texture match and arc of rotation.

# NESOS News Desk

## NESOS Members in action

a) **Webinar on Retinoblastoma conducted on 17 May in occasion of "Retinoblastoma Awareness Week 2025"**

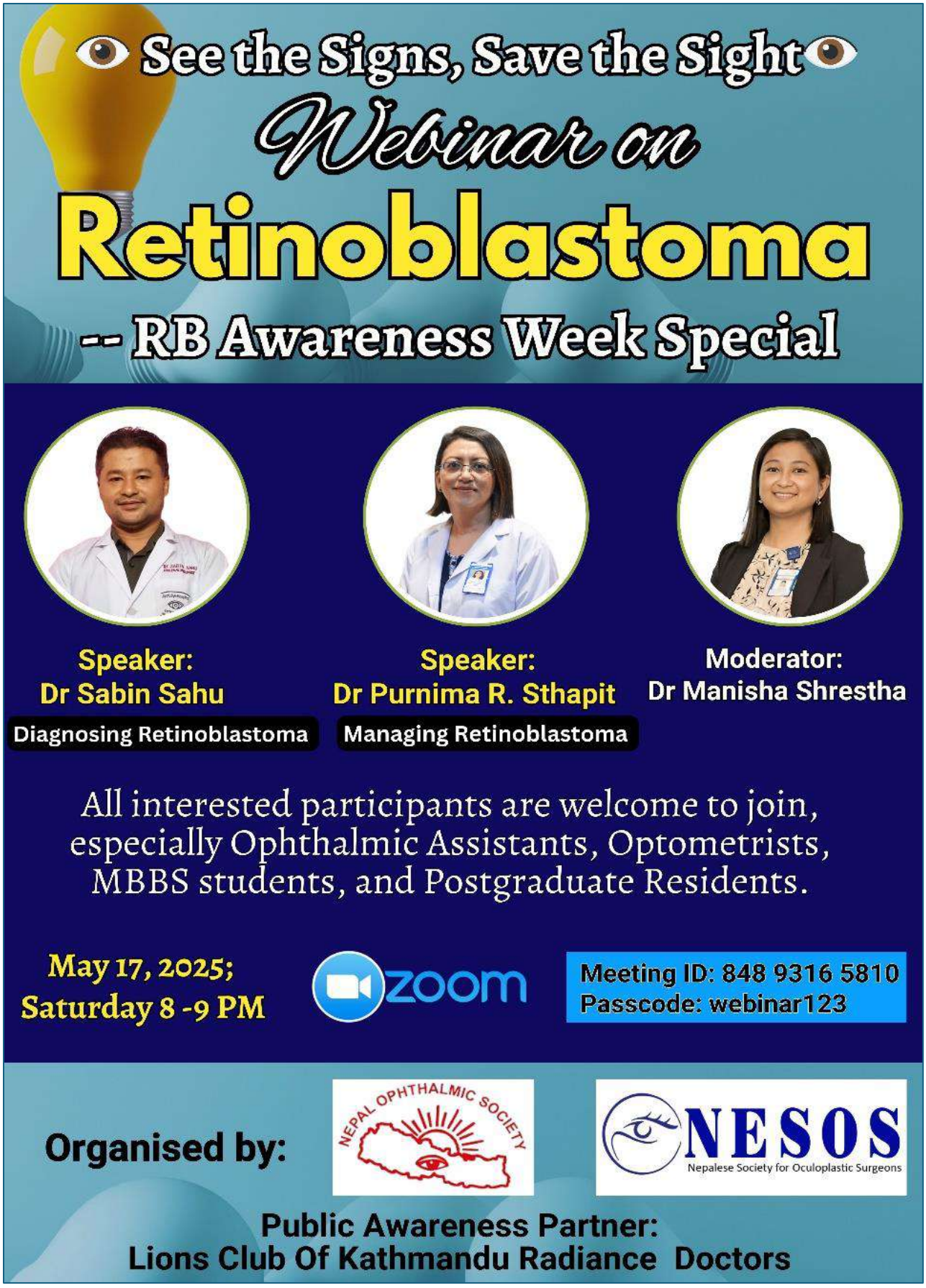

As part of the RB Awareness Week Special, a highly informative and successful webinar titled "See the Signs, Save the Sight: Webinar on Retinoblastoma" was conducted on May 17, 2025 (Saturday), from 8–9 PM via Zoom.
The session featured insightful presentations by:

- Dr. Sabin Sahu (Oculoplastic Surgeon, Jyoti Eye Hospital, Janakpurdham) on Diagnosing Retinoblastoma
- Dr. Purnima Rajkarnikar Sthapit (Oculoplastic Surgeon, Tilganga Institute of Ophthalmology) on Managing Retinoblastoma

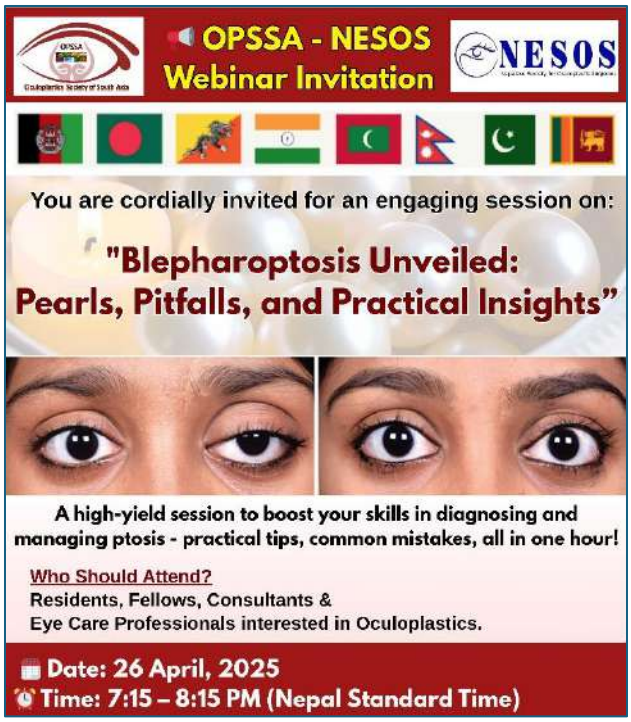
The program was moderated by Dr. Manisha Shrestha (Paediatric Ophthalmologist, Bharatpur Eye Hospital).

The program was organized by the Nepal Ophthalmic Society (NOS) in collaboration with the Nepalese Society for Oculoplastic Surgeons (NESOS), with Lions Club of Kathmandu Radiance Doctors as the Public Awareness Partner.

The event saw active participation from approximately 95 attendees, including Ophthalmic Assistants, Optometrists, MBBS students, and Postgraduate Residents from across the country. The webinar successfully raised awareness on early diagnosis and effective management of Retinoblastoma, emphasizing the importance of saving vision and lives through timely intervention.


See the Signs, Save the Sight
Webinar on
Retinoblastoma
-- RB Awareness Week Special
Speaker:
Dr Sabin Sahu
Diagnosing Retinoblastoma
Speaker:
Dr Purnima R. Sthapit
Managing Retinoblastoma
Moderator:
Dr Manisha Shrestha
All interested participants are welcome to join, especially Ophthalmic Assistants, Optometrists, MBBS students, and Postgraduate Residents.
May 17, 2025;
Saturday 8 -9 PM
zoom
Meeting ID: 848 9316 5810
Passcode: webinar123
Organised by:
NEPAL OPHTHALMIC SOCIETY
NESOS
Nepalese Society for Oculoplastic Surgeons
Public Awareness Partner:
Lions Club Of Kathmandu Radiance Doctors

b) **OPSSA – NESOS joint webinar, "Blepharoptosis Unveiled: Pearls, Pitfalls, and Practical Insights" was conducted on 26th Apr 2025.**




OPSSA-NESOS Joint Webinar, held on April 26, 2025, was a collaborative effort between the Nepalese Society for Oculoplastic Surgeons (NESOS) and the Oculoplastics Society of South Asia (OPSSA).

Titled "Blepharoptosis Unveiled: Pearls, Pitfalls, and Practical Insights," the session provided an in-depth exploration of ptosis diagnosis and management, offering valuable clinical tips and highlighting common challenges.

The webinar featured distinguished keynote speakers, including Prof Amer Yaqub (Pakistan), Dr Santosh Honavar (India), and Dr Murtuza Nuruddin (Bangladesh), alongside contributions from Dr Abigail (Ghana) and Dr Sanket Parajuli (Nepal). A diverse panel of experts—comprising Prof Apjit Kaur (India), Prof Tayyab Afghani (Pakistan), Prof Rohit Saiju (Nepal), Prof Ibrar Hussain (Pakistan), Dr Basant Sharma (Nepal), Dr Syeed Mehbub Ul Kadir (Bangladesh), and Dr Ben Limbu (Nepal)—enriched the discussion with regional perspectives and case-based insights.

Designed for residents, fellows, consultants, and oculoplastics professionals, the session successfully bridged knowledge gaps and fostered international collaboration in the field. The event underscored OPSSA and NESOS's commitment to advancing oculoplastic care through education and shared expertise.

# OPSSA-NESOS Joint Webinar

## "Blepharoptosis Unveiled: Pearls, Pitfalls, and Practical Insights"

26 April, 2025; 7:15 – 8:15 PM (Nepal Time; GMT +5:45)

### Office bearers:

Prof Ashok Grover
President, OPSSA

Prof Md Golam Haider
Gen. Secretary, OPSSA

Dr Eliya Shrestha
President, NESOS

Dr Suresh Rasaily
Gen. Secretary, NESOS

### Panelists:

Prof Apjit Kaur

Prof Tayyab Afghani

Prof Rohit Saiju

Prof Ibrar Hussain

Dr Basant Sharma

Dr Kasturi Bhattacharjee

Dr Syeed Mehbub Ul Kadir

Dr Ben Limbu

### Keynote Speakers:

Prof Amer Yaqub

Dr Santosh Honavar

Dr Murtuza Nuruddin

### Speakers:

Dr Abigail Nyarko Akatse

Dr Sanket Parajuli

### Moderators:

Dr Dikshya Bista

Dr Sushant Adiga

Organised by:

Supported by:

### c) NESOS Members Represent Nepal at APSOPRS-SSOPRS Oculofacial Aesthetics Masterclass, Singapore

NESOS members Dr. Purnima R. K. Sthapit, Dr. Malita Amatya, and Dr. Diwa Lamichhane proudly represented Nepal at the prestigious Asia Pacific Society of Ophthalmic Plastic & Reconstructive Surgery (APSOPRS) – Singapore Society of Ophthalmic Plastic & Reconstructive Surgery (SSOPRS) Oculofacial Aesthetics Masterclass, held at the National University Hospital (NUH), Singapore, on 19th and 20th July. Their active participation showcased the growing engagement and expertise of Nepalese ophthalmic plastic surgeons on the international stage.

d) **Dr. Puja Rajbhandari Shines at Global Platform – CBAM Congress, Canada**

Dr. Puja Rajbhandari has brought pride to Nepal by successfully graduating at the prestigious CBAM Congress held at the Sheraton Hotel, Canada. Her remarkable achievement on this international stage highlights her dedication and excellence in the field of Aesthetic Medicine. With this accomplishment, we look forward to her valuable contributions in advancing the field of Oculoplasty and Aesthetic Oculofacial practice in Nepal. Heartfelt congratulations and best wishes for her continued success and service to the specialty.


# NepTED Registry

## "Key updates and progress report of NepTED Registry"

**Author:** Dr Puja Rajbhandari

The Nepal Thyroid Eye Disease Registry is an initiative of NESOS aimed at developing a comprehensive database of TED patients in Nepal. The registry aims to provide a centralized platform for collecting and analyzing data related to the prevalence, incidence, clinical characteristics, and management of the disease, enabling healthcare providers to develop evidence-based treatment strategies and improve patient outcomes. The registry also aims to facilitate a better understanding of predisposing factors for TED, enabling physicians to prevent and manage the disorder, leading to more favorable outcomes for patients through multispecialty teamwork.

**Activities till date:**

**a) Nepal Thyroid Eye Disease Registry workshop conducted on 3rd August 2023 at Kathmandu**


**b) Province wise NepTED workshop conducted online via Zoom**


**c) Research orientation class by NHRC conducted online via Zoom**


**d) Dynamic EMR by Paila Technologies, led by a team under Som Shah, have been appointed as the official IT support team for data entry software management**


**e) Workshop on NepTED Registry successfully completed on 27th July 2024, Kathmandu.**

Prof. Dr. Kelvin Chong was the chief guest and mentor of the program.


**f) For ease of data collection and entry, proforma was edited and shared to all members. Centre codes provided to all 54 centres.**

THYROID EYE DISEASE PROFORMA

Hospital name: Hospital code:

Doctor:

☐ New ☐ Old

A. Demographics

Serial No: Date of Examination:

Name: Age (Years):

Gender: ☐ Male ☐ Female ☐ Prefer not to say

Address (Province): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

Phone Number: Occupation:

Chief Complaint: ☐ Foreign Body Sensation ☐ Discomfort in Eye ☐ Eyelid Swelling ☐ Watering ☐ Redness ☐ Blurring of Vision ☐ Protrusion of Eyeball ☐ Reading Problem ☐ Double Vision ☐ **spontaneous pain** ☐ **Gaze evoked pain** ☐ Asymptomatic (Noticed by relatives/friends)

Duration of symptoms: Family History: ☐ Thyroid Disorder ☐ TED ☐ Myasthenia Gravis

The NepTED Registry is currently in the data collection phase and, although progress has been slightly slower than anticipated, the project is steadily moving forward. We are going to submit our progress report till date to Nepal Health Research Council (NHRC) soon. Despite some delays, the team remains committed to ensuring comprehensive and high-quality data gathering. There is optimism that the registry will yield valuable insights and meaningful results once completed, contributing to improved understanding and outcomes in its field of study. Continued efforts are being made to address challenges and maintain momentum, with the expectation that the registry will soon achieve its objectives.

# Oculoplasty Updates

## "Latest Developments in Ocular Oncology: Key Findings from Recent International Journal Articles"

**Compiled by: Dr Sabin Sahu, Dr Varun Shrestha**

### 1. Title: Adult and pediatric orbital rhabdomyosarcoma: comparison of characteristics and outcomes

- **Citation:** Shoji MK, Meyer BI, Diklich N, Panneerselvam S, Camacho M, Clauss KD, Johnson TE, Tse DT, Tse BC. Adult and pediatric orbital rhabdomyosarcoma: comparison of characteristics and outcomes. Orbit. 2025 Jan 9:1-2.

**Highlights:**

- Rhabdomyosarcoma (RMS) is a common pediatric orbital malignancy but is extremely rare in adults. This study assesses clinical and radiographic features, management, and outcomes in adult orbital RMS patients with comparison to pediatric patients.
- A retrospective chart review from 2000–2023 at Bascom Palmer Eye Institute was conducted evaluating patients aged 0 to 100-years-old with biopsy-confirmed orbital RMS. Twenty-four patients were included, 15 children (mean age 6.4 ± 4.4 years) and 9 adults (35.7 ± 12.4 years).
- **Conclusion:** While pediatric and adult orbital RMS clinical presentations are similar, adult disease more often demonstrates aggressive features, including alveolar subtype, local structure involvement, and lower disease-free survival.

### 2. Title: The swinging upper eyelid approach for large encapsulated intraconal masses presenting superolateral to the optic nerve (U-Swing)

- **Citation:** Ibrahim HA, Montasser M, Sabry HN. The swinging upper eyelid approach for large encapsulated intraconal masses presenting superolateral to the optic nerve (U-Swing). Orbit. 2024 Oct 27:1-7.

**Highlights:**

- This is a retrospective case series. The study included a review of five patients' records who had large encapsulated intraconal masses, superolateral to the optic nerve, and who underwent surgical excision with the U-Swing approach in the authors' institute over the last 10 years. This approach entailed a planned upper temporal fornix-based conjunctival flap and a lateral canthotomy.
- All patients within the 1st postoperative month had minimal postoperative edema, minimal conjunctival redness, no visible conjunctival or skin scar, normal pupil size and pupil reaction, full extra ocular motility, recovered upper eyelid position and excursion.
- **Conclusion:** The U-Swing approach provides a horizontally expandable surgical window that allows safe removal of a large, encapsulated intraconal mass, superolateral to the optic nerve with low morbidity and rapid recovery.

**3. Title: Primary orbital and adnexal rhabdomyosarcoma: a study of 54 Asian Indian patients**

- **Citation:** Agarwal A, Vempuluru VS, Mohammad FA, Ali MH, Palkonda VA, Kaliki S. Primary orbital and adnexal rhabdomyosarcoma: a study of 54 Asian Indian patients. Orbit. 2025 May 4;44(3):257-66.

**Highlights:**

- This is a retrospective interventional case series of 54 patients of histopathology-proven RMS.
- The mean age of presentation with RMS was 10 years (median, 7 years; range, <1–54 years). The most common tumor location was the superonasal quadrant (n = 21, 39%). Extensions beyond the orbit into the sinuses, temporal fossa, and brain were seen in 15 (28%), 3 (6%), and 8 (15%), respectively.
- First-line treatment modalities included a combination of surgical debulking, chemotherapy, and external beam radiotherapy in 20 (37%) patients; chemotherapy and radiation in 20 (37%); complete surgical excision and chemotherapy in 3 (6%); orbital exenteration, chemotherapy, and external beam radiotherapy in 1 (2%); chemotherapy alone in 1 (2%) patient, and 9 (17%) patients were lost to follow up.
- By Intergroup Rhabdomyosarcoma Study Group (IRSG) grouping, tumors belonged to groups I (n = 2, 4%), II (n = 13, 29%), and III (n = 30, 67%). Kaplan-Meier survival estimates for tumor recurrence, lymph node metastasis, systemic metastasis, and death (n = 45) were 84%, 82%, 95%, and 95% at 1 year, 69%, 76%, 81%, and 77% at 5 years, 69%, 76%, 81%, and 77% at 10 years, respectively. On multivariate regression, age >18 years was found to have a significantly increased risk of locoregional LN metastasis (p = 0.005).
- **Conclusion:** Despite aggressive treatment modalities, the 5–year disease-specific survival rate was 77% in Asian-Indian cohort. Age > 18 years at presentation was associated with a poorer prognosis.

**4. Title: COVID-19-associated rhino-orbito-cerebral mucormycosis: a single center prospective study of 264 patients**

- **Citation:** Kim U, Perzia B, Kulkarni P, Rajiniganth M, Sundar B, Robin AL, Garg Shukla A, Maeng MM. COVID-19-associated rhino-orbito-cerebral mucormycosis: A single center prospective study of 264 patients. Orbit. 2025 Jan 2;44(1):24-33.

**Highlights:**

- Outbreaks of mucormycosis were reported worldwide throughout the COVID-19 pandemic. We report clinical outcomes of a treatment protocol for COVID-19-associated rhino-orbital-cerebral mucormycosis (ROCM).
- Patients with biopsy-proven mucormycosis and COVID-19 were included. All received intravenous amphotericin B deoxycholate 1 mg/kg and surgical endoscopic sinus debridement (FESS). Those with rhino-orbital or cerebral disease limited to the cavernous sinus were eligible for transcutaneous retrobulbar amphotericin B (TRAMB). Patients were discharged on oral posaconazole for 6 months.
- Results: In total, 264 patients were followed for a mean of 2.5 months. On presentation, 163 patients (174 eyes) had eye involvement. Of these, 141 eyes (81.0%) had light perception or

worse vision. By the last follow-up, 163 patients (176 eyes) were affected, and of these, 96 eyes (54.5%) had no light perception. Twenty-one patients (8%) died and 3 orbits (0.5%) were exenterated. There was no change in mortality ($p = 0.38$) or exenteration ($p = 0.38$) in the 55 patients who received TRAMB compared to patients with rhino-orbital or cerebral disease limited to the cavernous sinus who did not. Asymptomatic COVID-19 was associated with higher mortality than symptomatic COVID-19 ($p = 0.025$). Uncontrolled diabetes was a risk factor for death ($p = 0.022$). New diabetes was associated with increased mortality versus pre-existing diabetes ($p = 0.005$).

- **Conclusion:** A multidisciplinary approach is crucial to manage COVID-19-ROCM. In our cohort, TRAMB therapy did not increase mortality or exenteration rates. While poor vision on presentation was profound, some vision recovery was noted with treatment. COVID-19 immune dysregulation may predispose patients to ROCM, particularly those with asymptomatic disease.

**5. Title: A jugular venous compression adjunct for surgical excision of distensible orbital venous malformations**

- **Citation:** Liu J, Liu C, Long K, Liu H. A jugular venous compression adjunct for surgical excision of distensible orbital venous malformations. Orbit. 2025 Jan 2;44(1):39-48.

**Highlights:**

- Eighteen patients (8 males and 10 females) diagnosed with distensible venous anomalies were enrolled. Neck compression technology, was employed to distend the lesions before puncture embolization using n-butyl-2-cyanoacrylate glue under general anesthesia. The surgical process, along with preoperative to postoperative changes in ocular symptoms, were recorded.
- Results: The average surgical duration was 95 min. A mean of 3.41 ml surgical glue was used for embolization. The compression belt maintained pressure at 35–40 mmHg. Total lesion resection was achieved in 12 patients, with 6 patients undergoing subtotal removal not requiring supplementary surgery. Symptoms were entirely alleviated in 17 patients, and signs of distensible lesions during the Valsalva maneuver were absent. One patient underwent secondary surgery for residual eyelid lesions. Minor complications included mild ocular movement restriction, residual subcutaneous induration, transiently increased orbital pressure, and lower lid ectropion in four, three, four, and one patient, respectively. Three patients experienced a mild post-operative visual acuity decrease, although none experienced vision loss.
- **Conclusions:** Direct orbital embolization aided by a jugular vein compression device is safe and demonstrates satisfactory outcomes in orbital varicose vein treatment.

**6. Title: The role of radiotherapy in indolent ocular adnexal and orbital lymphomas**

- **Citation:** Yazici G, Akin S, Kahvecioglu A, Yigit E, Turker FA, Yildiz F. The role of radiotherapy in indolent ocular adnexal and orbital lymphomas. Head & Neck. 2025 Mar;47(3):891-8.

**Highlights:**

- A retrospective analysis of 44 patients with indolent OOLs treated with RT was conducted.
- Results: Most patients (87%) had early-stage disease. Treatment involved RT alone (34%) or RT + systemic therapy (66%). The median RT dose was 30 Gy, with a median follow-up of 45 months. Local and systemic recurrence rates were 4% and 9%, respectively. Five-year overall

and disease-free survival (DFS) rates were 96.2% and 83.6%. Early-stage patients showed similar DFS rates regardless of whether they received RT alone or RT plus systemic therapy. No grade 3 RT-related toxicity occurred, but systemic therapy led to grade 3 toxicity in 17% of patients.

- **Conclusions:** RT is essential for treating indolent OOLs, and combination with systemic therapies does not enhance outcomes for early-stage patients.

**7. Title: Long-Term Outcomes of Neoadjuvant Intraarterial Chemotherapy for Locally Invasive Lacrimal Gland Carcinoma ex Pleomorphic Adenoma**

- **Citation:** Juratli L, Kim J, Juntipwong S, Elner VM, McLean S, Chaudhary N, Worden FP, Demirci H. Long-Term Outcomes of Neoadjuvant Intraarterial Chemotherapy for Locally Invasive Lacrimal Gland Carcinoma ex Pleomorphic Adenoma. **Ophthalmic Plastic & Reconstructive Surgery**. 2025 Jul 1;41(4):432-8.

**Highlights:**

- Three patients with CXPA of the lacrimal gland treated with neoadjuvant ICAA therapy followed by multimodal therapy at the University of Michigan were retrospectively reviewed.
- Results: Three patients had stage T4cN0M0 CXPA of the lacrimal gland (American Joint Committee on Cancer 8th ed). The first patient underwent 2 cycles of neoadjuvant IACC followed by multimodal therapy (exenteration, chemoradiotherapy, and adjuvant systemic chemotherapy). At 10 years of follow-up, there was no local recurrence or systemic metastasis. The second patient underwent 1 cycle of neoadjuvant IACC with multimodal therapy (systemic chemotherapy, globe-sparing orbital surgery, and chemoradiotherapy). After 5-year follow-up, there was no local recurrence or systemic metastasis. The third patient underwent 2 cycles of neoadjuvant IACC followed by multimodal therapy (globe-sparing orbital surgery, chemoradiotherapy, and adjuvant systemic chemotherapy). After 2 years, he developed parotid and retromandibular metastasis and underwent total parotidectomy with total neck dissection followed by chemoradiation and systemic anti-androgen therapy. After 7 years, he did not have any local recurrence or systemic metastasis.
- **Conclusions:** Neoadjuvant IACC with multimodal therapies can achieve favorable outcomes with locoregional control and improve disease-specific survival in patients with locally invasive advanced-stage CXPA of the lacrimal gland.

**8. Title: Trends in Demographic, Clinical, Socioeconomic, and Facility-Specific Factors Linked to Eyelid Melanoma Survival: A National Cancer Database Analysis**

- **Citation:** Robbins JO, Huck NA, Khosravi P, Torabi SJ, Woodward JA, Kuan EC, Dermarkarian CR. Trends in Demographic, Clinical, Socioeconomic, and Facility-Specific Factors Linked to Eyelid Melanoma Survival: A National Cancer Database Analysis. **Ophthalmic Plastic & Reconstructive Surgery**. 2025 Jan 6:10-97.

**Highlights:**

- Cases of eyelid melanoma diagnosed between 2004 and 2017 were identified using the National Cancer Database.
- A total of 3,235 patients with EM were eligible for demographic analysis. The majority of patients were over 60 years of age and predominantly male. Kaplan-Meier analysis showed a

significant decrease in 10-year overall survival with increasing age at diagnosis ($p < 0.001$), T clinical stage ($p < 0.001$), and male sex ($p = 0.001$). Additionally, patients with higher income ($p = 0.01$), private insurance ($p < 0.001$), and those treated at high-volume ($p = 0.006$) and academic facilities ($p = 0.005$) had improved 10-year overall survival. Multivariate Cox regression identifying independent predictors of EM mortality corroborated these findings.

- **Conclusions:** Eyelid melanoma survival outcomes were significantly influenced by age, tumor stage, socioeconomic status, and facility characteristics. Treatment at high-volume centers confers a survival advantage, emphasizing the importance of specialized care. These findings underscore the need for early detection and equitable access to improve EM outcomes.

**9. Title : Orbital Myeloma and Plasmacytoma: An Australian Study**

- **Citation:** Xiong J, Tong JY, Hyer J, O'Donnell B, Selva D, Hardy T, McNab A, Sullivan TJ, Taylor S, Figueira E, Allende A. Orbital Myeloma and Plasmacytoma: An Australian Study. **Ophthalmic Plastic & Reconstructive Surgery**. 2025 Mar 1;41(2):186-92.

**Highlights:**

- Multicenter retrospective review of orbital plasmacytoma and orbital involvement in multiple myeloma (MM) from 2005 to 2022 in Australia.
- Results: Twenty-one participants were identified. The median age was 62 years (range 34–88 years), and 11 (52%) were females. Eighteen (84%) had a known diagnosis of MM prior to their orbital presentation, with all patients eventually being diagnosed with systemic MM. Thirteen (72%) were receiving active treatment for systemic myeloma on presentation, while 3 (17%) were in remission. All but 1 had unilateral orbital involvement (n= 20, 95%). Common presenting symptoms and signs were decreased visual acuity (n= 13, 62%), proptosis (n= 11, 52%), limited motility (n= 15, 71%), and optic neuropathy (n= 5, 24%). Radiologically, 15 (71%) involved the superotemporal orbit, 7 (33%) inferotemporal orbit, and 16 (76%) involved≥ 1 extraocular muscle. Sixteen (76%) were biopsied and confirmed orbital plasmacytoma on histopathology. Treatment modalities included intravenous and oral steroids (n= 7, 33%), chemotherapy (n= 9, 43%), radiotherapy (n= 13, 62%), stem cell transplant (n= 3, 14%), and surgical debulking and decompression (n= 3, 14%). Mortality was high, with 15 (71%) having MM-related mortality.
- **Conclusions:** This is the largest cohort of Australian data on orbital plasmacytomas. Most patients have a diagnosis of systemic MM at presentation. It is crucial to recognize and treat these patients early due to a poor systemic prognosis.

**10. Title: Mohs Micrographic Surgery With Immunohistochemistry for the Treatment of Periocular Melanoma In Situ**

- **Citation:** McInnis-Smith KM, Asamoah EM, Demer AM, Sharma K, Yu CY, Bradley EA, Tooley AA, Wagner LH. Mohs micrographic surgery with immunohistochemistry for the treatment of periocular melanoma in situ. **Ophthalmic Plastic & Reconstructive Surgery**. 2025 Jan 1;41(1):78-83.

**Highlights:**

- Mohs micrographic surgery with immunohistochemistry allows for same-day comprehensive margin assessment of melanoma in situ prior to subspecialty reconstruction. This study describes

the oncologic and reconstructive outcomes of eyelid and periorbital melanoma in situ and identifies risk factors for complex reconstructive demands.

- Retrospective case series of all patients treated with Mohs micrographic surgery with immunohistochemistry for melanoma in situ affecting the eyelids or periorbital region from 2008 to 2018 at a single institution. Tumors were assigned to the eyelid group if the clinically visible tumor involved the skin inside the orbital rim. Reconstructive variables were compared between the eyelid and periorbital cohorts.
- Results: There were 24 eyelid and 141 periorbital tumors included. The initial surgical margin for all tumors was 5.34±1.54 mm and multiple Mohs stages were required in 24.2% of cases. Eyelid tumors included more recurrences (p= 0.003), and the average defect size was larger (14.0±13.3 cm 2 vs. 7.7±5.4 cm 2, p= 0.03). Risk factors for complex reconstruction included: initial tumor diameter> 2 cm (odds ratio [OR]: 3.84, 95% confidence interval [CI]: 1.95–7.57) and eyelid involved by initial tumor (OR: 4.88, 95% CI: 1.94–12.28). At an average follow-up of 4.8 years, there were no melanoma-related deaths and 1 local recurrence (0.6% recurrence rate).
- **Conclusions:** Mohs micrographic surgery with immunohistochemistry achieves excellent local control rates for periocular melanoma in situ. An initial surgical margin of 5 mm is frequently insufficient to achieve clear margins. The resulting defects are large, and the complexity of reconstruction can be predicted by tumor size and clinical involvement of eyelid skin.

**11. Title: Artificial intelligence and machine learning in ocular oncology, retinoblastoma (ArMOR)**

- **Citation**: Vempuluru VS, Patil G, Viriyala R, Dhara KK, Kaliki S. Artificial intelligence and machine learning in ocular oncology, retinoblastoma (ArMOR). **Indian Journal of Ophthalmology**. 2025 May 1;73(5):741-3.

**Highlights:**

- To test the accuracy of a trained artificial intelligence and machine learning (AI/ML) model in the diagnosis and grouping of intraocular retinoblastoma (iRB) based on the International Classification of Retinoblastoma (ICRB) in a larger cohort.
- Retrospective observational study that employed AI, ML, and open computer vision techniques.
- Results: For 1266 images, the AI/ML model displayed accuracy, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of 95%, 94%, 98%, 99%, and 80%, respectively, for the detection of RB. For 173 eyes, the accuracy, sensitivity, specificity, PPV, and NPV of the AI/ML model were 85%, 98%, 94%, 98%, and 94% for detecting RB. Of 173 eyes classified based on the ICRB by two independent ocular oncologists, 9 (5%) were Group A, 32 (19%) were Group B, 21 (12%) were Group C, 37 (21%) were Group D, 38 (22%) were Group E, and 36 (21%) were classified as normal. Based on the ICRB classification of 173 eyes, the AI/ML model displayed accuracy, sensitivity, specificity, PPV, and NPV of 98%, 94%, 99%, 94%, and 99% for normal; 97%, 56%, 99%, 71% and 98% for Group A; 95%, 75%, 99%, 96%, and 95% for Group B; 95%, 86%, 96%, 75%, and 98% for Group C; 92%, 76%, 96%, 85%, and 94% for Group D; and 94%, 100%, 93%, 79%, 100% for Group E, respectively.
- **Conclusion:** These observations show that expanding the image datasets, as well as testing and retesting AI models, helps identify deficiencies in the AI/ML model and improves its accuracy.

**12. Title: Safety of intravitreal chemotherapy in the management of retinoblastoma: A systematic review of the literature**

- **Citation:** Lavasidis G, Strongylis M, Tzamalis A, Tsinopoulos I, Ntzani EE. Safety of intravitreal chemotherapy in the management of retinoblastoma: A systematic review of the literature. **Critical reviews in oncology/hematology**. 2024 Aug 1;200:104423.

**Highlights:**

- Intravitreal chemotherapy is used as a salvage therapy for retinoblastoma with persistent or recurrent vitreous seeding after primary treatment.
- To assess the safety of this technique, we conducted a systematic review of all studies reporting ocular toxicity data. Forty-eight trials involving 2751 eyes were included.
- The most common complications were cataract, retinal toxicity, and vitreous hemorrhage. However, severe and permanent adverse events were limited, while the risk of extraocular dissemination, a significant concern, was practically eliminated through preventive techniques. Globe salvage rates ranged from 29 % to 100 %. In conclusion, intravitreal chemotherapy seems to improve prognosis of eyes with advanced disease, with an acceptable safety profile.
- Nevertheless, most relevant studies are retrospective, and no randomized trials have been performed. Recognizing the challenges regarding the conduct of randomized studies for such a rare pediatric cancer, we believe that multicenter trials through international collaborations can significantly enhance the available information.

*"These updates highlight only a few key findings in ocular oncology, compiled from recent publications in peer-reviewed journals. For a comprehensive understanding of the studies, including methodologies, results, and clinical implications, readers are encouraged to refer to the full-text articles using the citations provided. Accessing the original sources will provide deeper insights into the advancements and their potential impact on patient care."*

# Gen-Z आन्दोलनका शहिदहरु प्रति हार्दिक नमन!

**डा. प्रेरणा अर्याल काफ्ले, बहुप्रतिभाशाली र बहुमुखी क्षमताको धनी एक ओक्युलोप्लास्टिक सर्जन हुन् । उनी नृत्य, साहित्यिक लेखन र कविता लेखनजस्ता कलात्मक रुचिहरूमा समेत समान रूपमा अभिरुचि राख्छिन् । प्रस्तुत कविता उनले भदौ २४-२८ मा भएको जेन-जेड आन्दोलनका शहीदहरूलाई समर्पित गरेकी हुन्, जसले करिब ७२ जना नेपाली युवाको अमूल्य ज्यान लियो ।**

निशब्ध छु म, निरीह भएको छु
तिम्रा छटपटाहटको दृष्य देख्दा
बिछिप्त भएको छु

आज तिमी घरबाट निस्किदा
जति गर्वले छाती फुलेका थिए
साँझ तिम्रो सास रोकिंदा
मेरा छाती मलाई नै बोझ भएछ

आज तिमी बोलिरहँदा
जति मेरा मन तरङ्गित थिए
अहिले तिम्रो निशब्ध अनुहारले
मेरा आँखा रसाइरहेछ

मैले मेरो देशको जिम्मा तिम्रा काधहरुमा गएको हेर्न खोज्दा
मेरा अघिल्ला पुस्ताले तिम्रो काधमा गोली बर्षाएछ
मैले मेरा सपनाहरू साकार हुने हातहरु खोज्दा
निर्दय शासकहरूले ति हातहरू कुल्चिदिएछ

निशब्ध छु म, निरीह भएको छु
तिम्रा छटपटाहट संगै मेरा आशाहरू मेटाइदिंदा
निर्जीव भएको छु।।।।

NESOS E-MAG

an initiative of

NESOS
Nepalese Society for Oculoplastic Surgeons

**Address for Correspondence:**

**Dr Sabin Sahu,**
**Editor-in-chief , NESOS e-Magazine**
**Medical Director, Jyoti Eye Hospital, Janakpurdham**
**Asst. Prof., Janaki Medical College, Ramdaiya, Janakpurdham**
**Email: sabinsahu@gmail.com; +977-9824796481**