Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/r641m693

ANAESTHETIC MANAGEMENT OF EXCISION AND RECONSTRUCTION OF RIGHT LOWER EYELID TUMOUR IN HIGH RISK ELDERLY PATIENT - A CASE REPORT

Dr Ramiz Ifthikar Ahmed[1], Dr. Kannan[2], Dr. Geetha J[3*]

[1]Final Year Postgraduate in Anaesthesia, DSMCH, Siruvachur, Tamil Nadu, India
[2]Plastic Surgeon, DSMCH, Siruvachur, Tamil Nadu, India
[3*]Associate Professor, Department of Anaesthesia, DSMCH, Siruvachur, Tamil Nadu, India

***Corresponding Author:** Dr Geetha J.
*Associate Professor, Department of Anaesthesia, DSMCH, Siruvachur, Tamil Nadu, India

ABSTRACT

INTRODUCTION

Tumors of eyelid are categorized as epidermal, adnexal, stromal and metastatic tumors. Basal cell carcinomas form 85% of all eyelid tumors. Melanotic tumors fit into epidermal tumors and arises from melanocytes that are scattered in the basal layer of tarsal conjunctival epithelium. This case report involves a malignant spindle tumor of lower eyelid in a 78 year old male.

CLINICAL PRESENTATION

This elderly man presented with nodular swelling of right lower eyelid since 6 months and restricted inferior field of vision since 2 months. He is a diabetic since 3 years on insulin therapy and CKD due to diabetic nephropathy. Local examination revealed nodular swelling in right lower eyelid with blackish discolouration. BMI of 32.8. CNS: Cranial nerves: visual field restriction in inferior field. Investigations: FBS 87mg\dl, Urea 60, Creatinine 2.7, HbA1c 9.8.

PLAN

Excision of tumor, cervicofacial rotation advancement flap with palatal mucosal graft.

CHALLENGES

- Geriatric
- DM
- CKD
- Oculocardiac reflex
- Altered position for surgery and palatal graft
- Risk of aspiration

CONDUCT OF ANAESTHESIA

Patient was premedicated with steroids, Inj Glycopyrolate 0.2 mg, Inj Midazolam 1 mg. Patient is induced with inj Fentanyl 100mcg, Inj Propofol 100 mg. Intubated under Inj. Cisatracurium 10 mg with 7.5 mm ID Flexometallic oral tube and throat was packed. With patient in supine position, the tumour was excised, and flap cover was planned. The patient was then placed in Sister Rose position for palatal mucosal graft for reconstruction of conjunctiva. Stable intraoperative period and uneventful postoperative period.

CONCLUSION

This case is presented for its rarity in an elderly man with multiple comorbidities and well managed flap cover and palatal mucosal graft by the plastic surgeon.

KEYWORDS: Eyelid Tumor, Malignant Melanoma, Reconstruction of Eyelid, Palatal Mucosal Graft, Mustarde Flap, GERIATRIC.

INTRODUCTION

Health awareness and improving healthcare systems have increased human longevity. India's elderly population is about 10.5% of total population projected to surge by 347 million or 20.8% by 2050. The longevity has its own price the elderly have to pay as they have special physical, physiological, psychosocial and economic needs.

Age related accumulation of cell damage, modified immune functions and biological macromolecules may contribute to almost 50% of malignancies occurring above the age of 65 years. Apart from colorectal, prostate and breast cancers, malignant melanoma is more frequently seen in older age groups.

This is a case report of a lower eyelid tumour in a 78 year old man which was biopsy proven as melanocytic spindle cell tumour. The challenges were identification of pre existing cognitive impairment, cardiopulmonary reserve, and frailty, nutrition, polypharmacy, and increased risk for comorbidities including malignancies.

The primary goal is to provide an optimal quality of life after the surgical procedure. The case report describes a malignant tumour of the lower eyelid in a 78-year-old diabetic male with renal impairment. The tumour affected his field of vision and caused psychosocial impairment for fear of post operative ghastly appearance, total loss of vision and spread of malignancy.

Appropriate approach, evaluation and management by anesthetic and surgical team enhanced a successful outcome.

CASE REPORT

Clinical Presentation

78 years old man presented with nodular swelling in right lower eyelid since 6 months. He has vision in the right eye but has restricted inferior field of vision since two months.

No history of headaches

No discharge from eyes or nostrils, known diabetic since 3 years and is on insulin therapy. Local examination revealed nodular swelling in the right lower eyelid with blackish discolouration. The extraocular movements were full laterally and restricted inferiorly.

The patient was conscious, oriented and comfortable at rest. Morphologically he had a large nose, broad face, bilateral parotidomegaly, a broad glabella, barrel chest but no pedal edema. There was no anemia or jaundice, no premalignant skin markers like hyper or hypopigmentation and there was no significant lymphadenopathy in the neck or axilla.

As basal cell carcinomas are common in this location, an ultrasound guided fine needle aspiration biopsy of the Lesion was done. This showed features of malignant spindle cell tumour.

Evaluation and optimization for surgical excision and reconstruction of the eyelid was planned.

	Hematological	**Cardiac**	**Respiratory**
Hemoglobin	13.4 g%	ECG: NSR	SPO2 on air 98%
TC	11,200 cu^3	ECHO:EF 60%	Sabarasez 20sec
BT CT	3 mins 5 sec 10 mins	RVSP 25	Xray chest Increased bronchovascular markings
PT	14	LVDD 1	
APTT	16		
INR	1.2		

Airway short neck TMD < 4 cm
SMD 12.5cm
METS 3
BMI 35

Renal	Hepatic	Diabetes
Urine output adequate	Bilirubin 0.1	Blood sugar 300mg/dl
Urine Albumin + Sugar ++	Proteins Albumin 3.2 Globulin 2.8	Urine sugar ++
Urea 60 mg%		Ketones negative
Creatinine 2.7 mg%		HbA1c 9.8%
Potassium 3.8 mg%		

CT Scan of Orbit
Showed 2.7 x 2cm well defined soft tissue density mass lesion appears to be arising from lower tarsal plate (palpebral region)
B/L globe contour normal, B/L lens in position, B/L vitreal density normal
B/L conal and intraconal space intact

Differential Diagnosis
1. RT Lower tarsal plate mass-? Malignant.
2. RT tarsal plate lymphovascular malformation.

Optimization
- Deep breathing exercises
- Incentive spirometry
- Desensitisation of airway with budesonide nebulisation
- Insulin therapy
- Salt restriction
- Reservation of one unit of packed cells
- 8th hourly glycemic chart

Plan
- Oral endotracheal intubation with packing of throat
- Supine position for excision of tumour and raising of cervico facial flap
- Sister rose position with mouth open for palatal mucosal graft excision

Anaesthetic Needs
Steroid cover to reduce facial edema Uninterrupted sustained neuromuscular paralysis by renal safe relaxant directed the use of Cisatracurium 8mg from intubation. Anaesthesia and analgesia by fentanyl citrate and isoflurane

Conduct of Anaesthesia
Patient was premedicated with steroid, Inj Glycopyrrolate 0.2mg, Inj Midazolam 1mg. Induced with Inj fentanyl 100mcg, inj propofol 100mg.Intubated under Inj Cisatracurium 8mg with 7.5mm ID flexometallic oral tube and throat was packed. With patient in supine position, the tumour was excised, and flap cover was planned. The patient was then placed in Sister Rose position for palatal mucosal graft for reconstruction of conjunctiva. Stable intraoperative period and uneventful postoperative period.

Surgery

V shaped incision was made over right lower eyelid and tumour was excised. Facial flap was raised. Palatal mucosal graft was placed over conjunctiva skin and lateral nasal region was closed.

CT Images

Figure 1

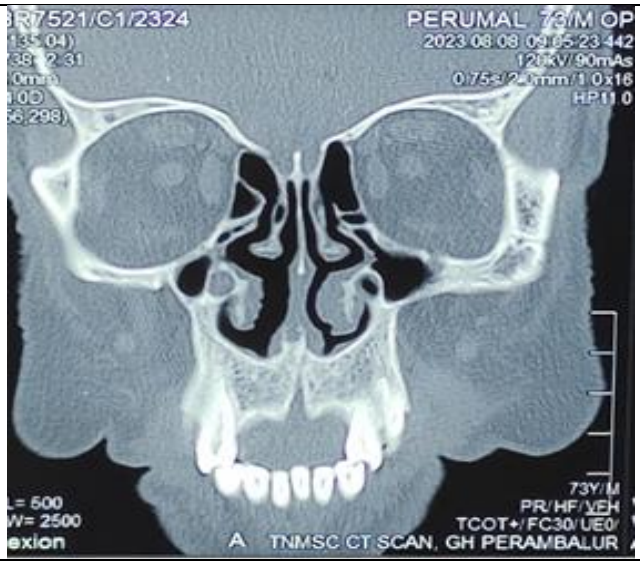

Figure 2

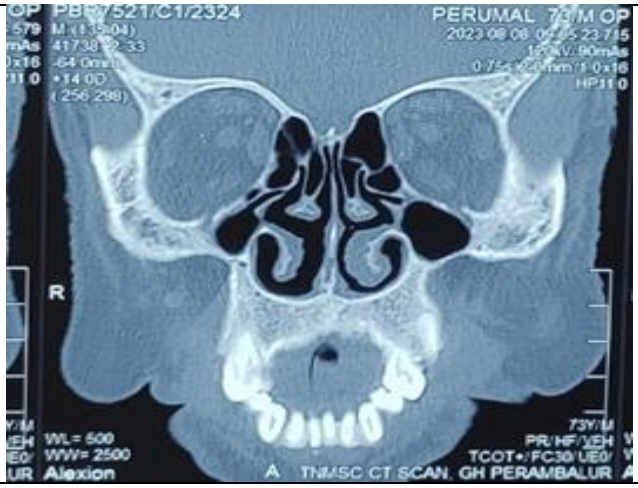

Figure 3

Patient Images

Figure 1: Nodular Tumor of Lower Eyelid

Figure 2: Palatal Mucosal Graft

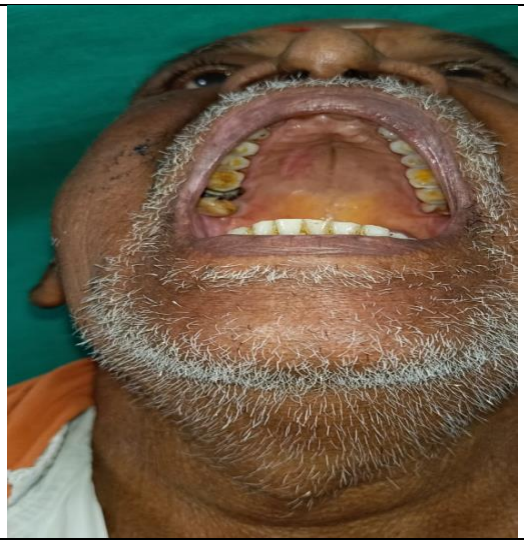

Figure 3: Healed palatal graft donor area

Figure 4: Mustarde Flap

Figure 5: Suture Line of Flap

Figure 6: Excised Tumour

Figure 7: Post-Operative Picture after 4 Weeks

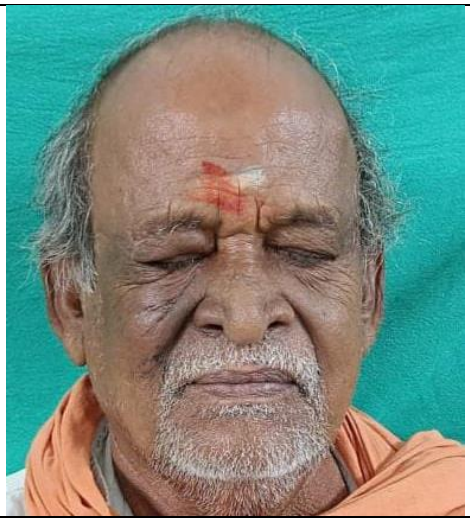

Figure 8: Perfect closure of eyelids

Histopathological Report

Sections studied show stratified squamous epithelium. Subepithelium shows adnexal structures with skeletal muscle bundles and ill circumscribed and unencapsulated infiltrating tumor arranged in sheets and interlacing fascicles with areas of surface ulceration. These are spindle shaped, showing moderate to severe nuclear pleomorphism, inconspicuous nucleoli and cytoplasmic Melanin pigments. The circumferential surface is involved by the tumor.

Impression- Malignant Melanoma

Post-Operative Period

Head up position to improve venous drainage and reduce facial edema. Glycemic control. Monitoring of intake and output.

DISCUSSION

Longevity poses accumulation of damaged cells as part of aging processes with increased risk of malignancy. occupational hazards and lifestyle changes impose systemic morbidities such as diabetes mellitus, systemic hypertension, obesity, chronic bronchitis, reducing cardiorespiratory functions, and psychosocial factors occurring as a result of fear of disfigurement, dependency, loss of essential functions such as vision.

Anatomy of Eyelid

The eyelids contain numerous histological elements which can be origin of benign or malignant lesions. The eyelids are composed of 4 layers. skin, subcutaneous tissue, striated muscle, that is orbicularis oculi, tarsus and conjunctiva.[1]

The eyelid skin is the thinnest in the body which lacks subcutaneous fat. Melanocytes are spread in the basal layer of keratinised stratified squamous epithelium. The dermis contains fibrous tissue, blood vessels, lymphatics and nerves. Orbicularis oculi is the striated muscle composed of pretarsal and preseptal parts and orbital part which is located over external orbital bones. The tarsi are firm plates of dense connective tissue and the meibomian glands are embedded in the connective tissue of the tarsal plate. The posterior eyelid surface is lined by the palpebral conjunctiva that is composed of epithelium and subepithelial stroma, the susbstantia propria. the epithelium of the tarsal conjunctiva is mostly cuboidal and contains goblet cells. Melanocytes are scattered in the basal layer of epithelium. The stroma is composed of fibrovascular connective tissue.

Major types of eyelid tumors

Category	Subtypes
Epidermal tumors	Nonmelanotic tumors
	Melanocytic tumors
Adnexal tumors	Sebaceous gland tumors
	Sweat gland tumors
	Hair follicle tumors
	Cystic lesions
Stromal tumors	Fibrous tissue tumors
	Fibrohistiocytic tumors
	Lipomatous tumors
	Smooth muscle tumors
	Skeletal muscle tumors
	Vascular tumors
	Perivascular tumors
	Neural tumors
	Lymphoid, plasmacytic, and leukemic tumors
	Cartilage and bone tumors
	Hamartoma and choristoma
	Palpebral conjunctival tumors
Secondary tumors	
Metastatic tumors	
Inflammatory and infections lesions that simulate neoplasma	

Table 1: Classification of Eyelid Tumours

Basal cell carcinoma is the most common skin malignancy and in Non Asian countries accounts for 85-95% of all malignant epithelial tumours of eyelid.[2] Melanocytic lesions of the skin are common and may arise from the naevus cells, melanocytes of the dermis. they all derive embryologically from the neural crest. The location of the melanocytic cells affects the clinical appearance of the various types of melanocytic lesions.

Most eyelid melanomas evolve through flat lentigo maligna precursor lesion that progresses to lentigo maligna melanoma or through dysplastic nevi. Nodular melanomas are rare among the already very rare cutaneous eyelid melanomas. Eyelid melanomas can often involve eyelid margins. In such cases the mucocutaneous junction may be breached and the palpebral conjunctiva may be involved. Thus, any breach of the epidermal basement membrane by atypical melanocytes is considered as malignant melanoma.[3]

Clark's micro staging of cutaneous melanoma does not apply to the eyelid skin that has a different structure of its dermis.

Plastic Surgery

Conventional wound closure methods either for cosmetic or functional reasons prove impractical following defects of large areas. in such situations, the need arises for additional tissue reconstruction. Grafts like split thickness skin grafts are nonvascularised tissue patches. In contrast, the flaps are vascularised and local flaps are more popular whenever feasible. The simplest local flap is the advancement flap. Advancement flaps are crucial in wound closure by allowing scar camouflage along cosmetic subunit junctions. The face is made up of eight aesthetic units (namely forehead, nose, 2 peri orbital areas, 2 cheeks, perioral area and chin, each of which contains several subunits. placing incisions into the junctions between them will often hide surgical scars effectively.[4]

The mustarde rotation flap is a surgical technique used to reconstruct large, full thickness defects of lower eyelid utilising a large rotational skin and muscle flap to cover the defect. Such local flaps reduce and redirect tension permitting excellent skin colour, texture and thickness matching the recipient site. The mustarde flap is used for the defects of the lower eyelid and cheek.[5] This flap distributes tension in a horizontal plane, and it is used to prevent excessive tension on the lower eyelid and subsequent ectropion. In our patient a combination of mustarde and cervicofacial flap was used as a triangular flap by a V incision. the incision runs from the superior aspect of the defect superolaterally to the preauricular cheek. The incision Then may be extended according to the defect. The arterial supply comes from facial and submental arteries. The flap may need tacking sutures. In general, this flap is opposite to the face lift flaps where in the former the flap goes medial and, in the latter, takes a lateral movement.[6]

In our patient a V shaped incision was made to raise the flap which was advanced medially. The Mustarde rotational cheek flaps have been used to reconstruct lower eyelids of 55 patients since 1964. It has been improvised and followed up for until seven years after surgery until it was published through University of Alabama and available online since 30th October 2013.[7]

Evaluate functional activity and health related quality of life. ADL or Activity of Daily Living represents activities of day-to-day self-care whereas DADL represents more complex tasks. Frailty refers to loss of physiological reserve that makes a person vulnerable to disability during and after stress. The components of frailty syndrome include mobility, muscle weakness, poor exercise tolerance, unstable balance, weight loss, malnutrition and muscle waste.

Anaesthesia

Anesthetic concerns in this patient include geriatric, chronic kidney disease, diabetes mellitus, cognitive issues and poly pharmacy along with airway management and hypertensive stress response. D.M. Coventry et al have documented an elaboration on geriatric concerns.[8] Half of all patients more than 65 years of age will have an operation before they die. Opioid free anaesthesia, decarbonising anaesthesia avoiding use of gases and inhalational agents have all been advocated in geriatric anaesthesia.[9] Surgical risk and outcome in these patients depend on four factors: age, patient 's physiological status and co-existing disease, elective or emergency surgery and type of procedure.

Renal mass may decrease by30%by age of 80 years. Loss of mass is more prominent in renal cortex. This loss correlates with decrease in the number of functioning glomeruli.[10] There is a progressive decline in creatinine clearance with age yet serum creatinine remains relatively unchanged. Renal capacity to conserve sodium is also reduced. Various instruments are available to evaluate functional activity and health related quality of life. ADL or activity of daily living represents activities of day to day self-care.

Fraility refers to loss of physiologic reserve that makes a person vulnerable to disability during and after stress. The components of fraility syndrome include mobility, muscle weakness, poor exercise tolerance, unstable balance, weight loss, malnutrition and muscle wasting.[11]

Criteria used to Define Fraility
Microcognition tests ---- points
Three-word registration - 1+1+1
Clock drawing - 2
Three-word recall
If the total score is less than 3 then dementia work up is advisory Fraility score- operational definition.

Criteria	Definition
Shrinkage	Unintentional weight loss ≥10 lbs past year
Weakness	Decreased grip strength
Exhaustion	Self-reported poor energy and endurance
Low physical activity	Low weekly energy expenditure
Slowness	Slow walking
Table 2	

The patient receives 1 point for each criterion met: 0–1, not frail; 2–3, intermediate frail (pre-frail); 4–5, frail.

Aging and Respiratory System
Aging decreases the elasticity of the lung tissue, allowing overdistension of alveoli and collapse of small airways. Residual volume and functional residual capacity decreases with aging. Airway collapse increases with residual volume and closing capacity. Even in normal persons, closing capacity exceeds functional residual capacity at age 45 years in supine position and in 65 years of age in sitting position. This leads to ventilation perfusion mismatch, an increase in anatomic and physiologic dead space and reduced arterial oxygen tension.[12]

Renal Functions and Aging
Renal blood flow, renal mass, glomerular number and tubular length decrease with age. Serum creatinine is unchanged because of reduced muscle mass and creatinine production whereas blood urea nitrogen increases with aging. Impairment of sodium handling, concentrating ability, diluting capacity predisposes to both dehydration and fluid overload. the response to ADH and aldosterone are reduced. The ability to reabsorb glucose is reduced. All these increases the risk of post-operative acute renal failure. Drug metabolism is slowed, and excretion is delayed, protein binding is low and increased free drug levels exist. MAC for inhalational agents is reduced by 4% per decade over 40 years. The typical octagenarian will require a smaller induction dose of Propofol than that required by 20 years old patient. Thus, in this discussion, ophthalmic, plastic and anesthetic components of this case has been elaborately discussed.

CONCLUSION
Geriatric population has increasing demographics. It is essential to understand their specific needs and cater to the right to live an independent and healthy life. This is a rare case of malignant spindle cell nodular tumor of lower eyelid, which was thoroughly evaluated, operated and offered excellent post operative outcome assuring the well-being of the patient in his further years of life.

REFERENCES
1. Bedrossian EH. Embryology and anatomy of the eyelid. Chap- 5. In: Tasman W, Jaeger EA, eds. Duanes foundation of clinical ophthalmology, ocular anatomy embryology and teratology. Vol. 1. Philadelphia: Lippincott Williams and Wilkins 2004:1-24.
2. Font RL. Eyelids and lacrimal drainage system. In: Spencer WH, ed. Ophthalmic pathology: an atlas and textbook. 3rd edn. Philadelphia: WB Saunders 1996:2229-32.

3. Peer J, Folberg R. Eyelid tumours cutaneous melanoma. Chap- 7. In: Peer J, Singh AD, eds. Clinical ophthalmic oncology eyelid and conjunctival tumours. 2nd edn. Berlin: Springer 2014:63-8.
4. Etzkon JR, Zito PM, Hohman MH. Advancement flaps. Treasure Island (FL): StatPearls Publishing 2025.
5. Lo CH, Kimble FW. The ideal rotation flap: an experimental study. Journal of Plastic, Reconstructive & Aesthetic Surgery 2008;61(7):754-9.
6. Quimby A, Fernandes R. The cervicofacial flap in cheek reconstruction: a guide for flap design. Journal of Oral and Maxillofacial Surgery 2017;75(12):2708-e1.
7. Callahan MA, Callahan A. Mustardé flap lower lid reconstruction after malignancy. Ophthalmology 1980;87(4):279-86.
8. Coventry DM. Manual of Geriatric Anesthesia. Br J Anaesth 2013;111(1):130-1.
9. Kampman JM, van Bree EM, Gielen L, et al. A nationwide approach to reduction in anaesthetic gas use: The Dutch Approach to decarbonising anaesthesia. Br J Anaesth 2025;134(4):1146-52.
10. Nitta K, Okada K, Yanai M, Takahashi S. Aging and chronic kidney disease. Kidney and Blood Pressure Research 2014;38(1):109-20.
11. Sieber FE, Pauldine R. Geriatric anaesthesia. Chap. 71. In: Miller RD, Eriksson LI, Fleisher LA, et al. Millers anaesthesia. 7th edn Churchill Livingston 2005: p 2261.
12. Butterworth JF, Mackey DC, Wasnick JD. Morgan & Mikhail's clinical anesthesiology. 7th edn. New York: McGraw-Hill 2022: p. 1450.