# Conjunctival Melanoma in Youth: Case Report of an Asian Female

**Nur Athirah Binti Adnan[1], Nor Sharina Binti Yusof[1], Aniza Hassan[1], Jemaima Che Hamzah[2]**

*[1]Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia*
*[2]Ophthalmology Department, Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia Medical Center, Kuala Lumpur, Malasia*

**Abstract**

**Background:** Conjunctival melanoma (CM) is a rare ocular malignancy, typically affecting Caucasian males over 50. Its occurrence in young Asian females is extremely uncommon, posing diagnostic and therapeutic challenges.

**Case Presentation:** A 34-year-old Asian female with no comorbidities presented with a progressively enlarging medial right eye mass over 2-3 years. Examination revealed a hyperpigmented, papilliform conjunctival lesion with feeder vessels from 2 to 5 o'clock, encroaching the nasal cornea. She underwent wide excision biopsy, cryotherapy, and amniotic membrane grafting. Histopathology confirmed CM, positive for Melan-A. Tumor markers were negative. She received three cycles of topical mitomycin C (MMC) 0.02%. At latest follow-up, there was no recurrence.

**Discussion:** This case illustrates an unusual presentation of CM in a young Asian female. Early diagnosis and prompt surgical and adjuvant management are vital in preventing recurrence. Clinicians should maintain suspicion for CM even in low-risk demographics.

**Keywords:** Conjunctiva, Melanoma, Nevus, Neoplasms melanoma, Mucosal melanoma, Cutaneous melanoma, Clinical pattern, Ocular melanoma, Asian

**Key Messages:** CM is rare in young Asian females, often leading to delayed diagnosis. This case highlights the importance of early clinical suspicion, prompt surgical management, and adjuvant therapy to prevent recurrence and improve outcomes in atypical presentations of this aggressive ocular malignancy.

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## Introduction

Conjunctival melanoma (CM) is a rare type of tumor, accounting for just 0.2% of all melanomas, and 5% of ocular melanomas, based on a study of 84,836 melanoma patients in the U.S. between 1985 and 1994. CM is even rarer in non-White populations. The incidence of CM in White individuals is estimated at 0.2-0.8 per million, with an increasing trend over the years. For non-Caucasians, the incidence is around 0.06-0.8 per million. A study of 168 CM cases found varying incidence rates by race, with non-Hispanic Whites having the highest rate (0.49 per million), followed by Hispanics (0.33), Blacks (0.18), American Indians (0.17), and Asians (0.15). The overall White-to-Black incidence ratio is 2.6:1.[1,2] The most important precursor lesions are primary acquired melanosis (PAM) with atypia and conjunctival nevus, which may undergo malignant transformation. Ultraviolet (UV) light exposure has also been implicated, particularly in populations with high cumulative sunlight exposure. Other risk factors include fair skin phenotype, light iris color, and genetic predisposition, although these

**Correspondence to:**
**Nur Athirah Binti Adnan,** *Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia,*
*Email: p126188@siswa.ukm.edu.my*
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are less well established. A history of cutaneous melanoma or dysplastic nevus syndrome may increase susceptibility, reflecting possible shared genetic and environmental influences. Immunosuppression and chronic conjunctival inflammation have also been suggested as contributing factors in the pathogenesis of conjunctival melanoma.

**Case Report**

*Method*

We certify that we have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patients understand that her names and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

*Case History*

We present the case of a 34-year-old woman with no known medical comorbidities who was referred for evaluation of a progressively enlarging mass over the medial aspect of the right eye (RE). She first noticed the lesion approximately 2 to 3 years prior to presentation. It had gradually increased in size without associated symptoms such as pain, redness, discharge, or visual disturbances. There was no history of trauma, prior ocular surgery, or systemic malignancy. She denied any systemic symptoms such as weight loss, fatigue, or skin lesions.

On ocular examination, her best-corrected visual acuity (BCVA) was 6/6 in both eyes. Anterior segment examination of the right eye revealed a nasal conjunctival mass with prominent hyperpigmentation and a papilliform surface. The lesion was vascularized, with feeder vessels clearly visible, and extended from the 2 to 5 o'clock position. Notably, the mass encroached upon the nasal cornea between 2 and 3 o'clock. However, the gonioscopy was not done to see any involvement of the angle as the lesion is encroaching the nasal limbus of the cornea. Otherwise, there was no associated scleral thinning, proptosis, or limitation of extraocular movements. The left eye examination was unremarkable.

Given the suspicious nature of the lesion, the patient underwent a wide local excision of the conjunctival mass under local anesthesia. Intraoperatively, the lesion was noted to be elevated and pigmented, involving the nasal conjunctiva from 1 to 5 o'clock. It measured approximately 2 mm horizontally and 2.5 mm vertically at the 1-3 o'clock area near the limbus. A lobulated, gelatinous component was identified between the 3 and 4 o'clock positions, situated 2.0 mm from the limbus, measuring 4.5 mm in height and 15 mm in vertical extent. An additional pigmented extension was present from 4 to 5 o'clock, measuring approximately 6.0 mm in horizontal span. The lesion was excised with adequate margins, and cryotherapy was applied to the adjacent conjunctival borders to reduce the risk of local recurrence. An amniotic membrane patch graft was used to reconstruct the defect.

Histopathological examination of the excised tissue showed features consistent with conjunctival melanoma. The tissue section demonstrates nests of atypical melanocytes with prominent nucleoli and melanin pigmentation. Immunohistochemical staining was positive for Melan-A, confirming the melanocytic origin of the tumor. There was no evidence of lymphovascular invasion or involvement of deeper ocular structures.

Given the diagnosis and risk of recurrence, the patient was started on adjuvant therapy with topical mitomycin C (MMC) at a concentration of 0.02%. She received three cycles of MMC, each cycle consisting of a one-week course followed by a one-week drug-free interval. The treatment was well-tolerated, and no ocular surface toxicity was observed.

The patient was monitored closely in the outpatient setting with regular slit-lamp examinations and photographic documentation. At her latest follow-up, at 9 months post-treatment, the surgical site had healed well, with no clinical evidence of local recurrence or residual pigmentation. Visual acuity remained excellent at 6/6 in both eyes, and the patient reported no symptoms. There was no palpable regional lymphadenopathy, and systemic review remained unremarkable.

This case illustrates a classic presentation of conjunctival melanoma in a relatively young, immunocompetent patient without prior risk factors. It highlights the importance of early recognition of atypical pigmented conjunctival lesions and prompt intervention with a combination of surgical excision, cryotherapy, and adjunctive chemotherapy to minimize recurrence and preserve visual function.

**Table 1:** Patient's clinical data

| **Patient** | **34 years old, Malay, Female** |
|---|---|
| **Chief complain and duration** | Increasing size of mass over the medial part of the right eye since 2-3 years ago with mass-like effect<br>Eye discomfort associated mild of blurry vision<br>However, there is no pain, no eye discharge. |
| **Previous ocular history** | Growth started since secondary school but static in size. |
| **Medical Co-Morbidity** | Non-significant |
| **Best corrected visual acuity** | |
| OD: 6/36 OS: 6/12 | |
| **Anterior segment examination** | |
| OD | Nasal hyperpigmentation conjunctival mass with papilliform shape and feeder vessels, encroaching nasal cornea from 2-3 o'clock<br>Iris: Mamilliform<br>Anterior chamber: Deep, no cells reaction<br>Pupil: 3mm, reactive and round |
| OS | Nasal conjunctiva pinguecula, cornea clear |
| Dilated fundus examination | |
| OU | Normal |

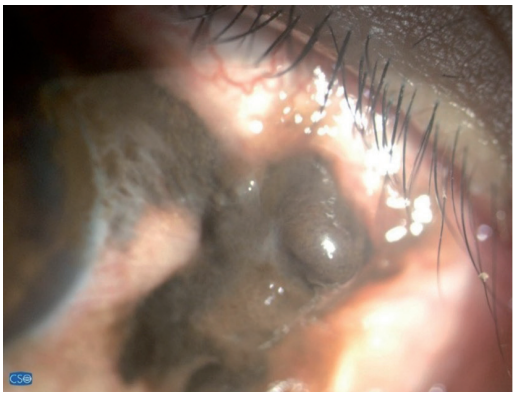

**Figure 1 (a)**

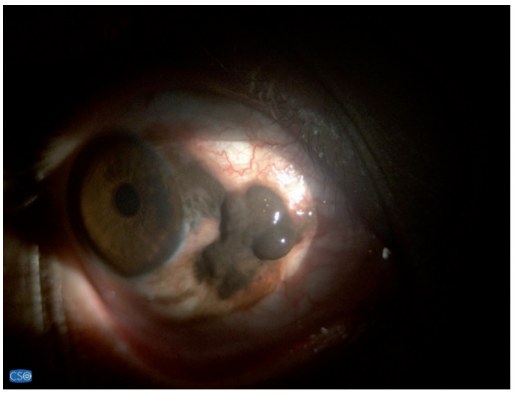

**Figure 1 (b)**

**Figure 1 (a) and (b):** Hyperpigmentation conjunctival mass with papilliform shape and feeder vessels, encroaching nasal cornea from 2-3 o'clock

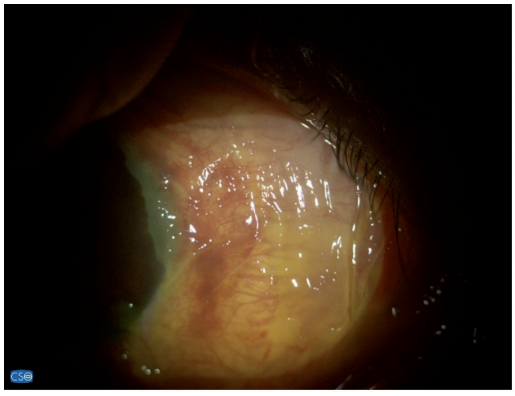

**Figure 2:** Post 1-week Right Eye Wide excision biopsy, cryotherapy and amniotic patch graft

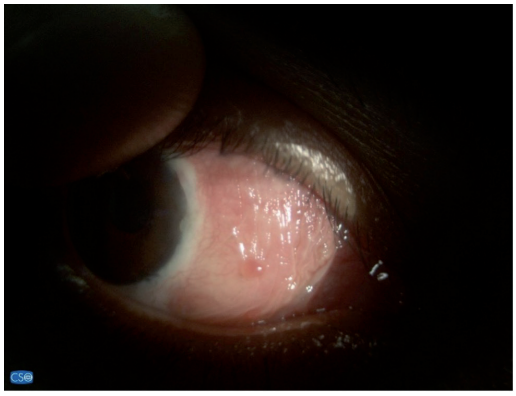

**Figure 3:** Post 1 month Right Eye Wide excision biopsy, cryotherapy, Amniotic patch graft and 1 cycle of Gutt MMC 0.02%

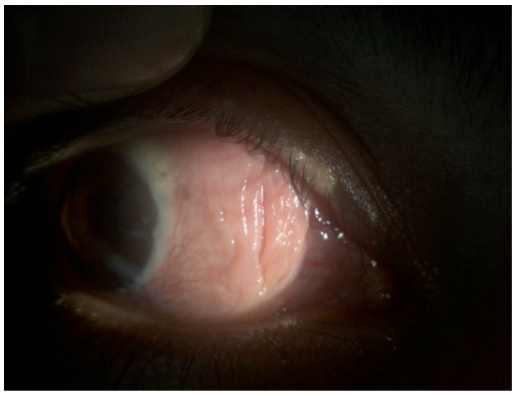

**Figure 4:** post 2-month Right Eye Wide excision biopsy, cryotherapy, Amniotic patch graft and 3 cycles of Gutt MMC 0.02%

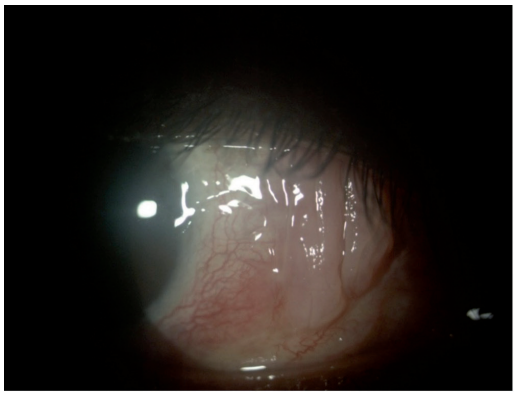

**Figure 5:** Post 3 month Right Eye Wide excision biopsy, cryotherapy, Amniotic patch graft and 3 cycles of Gutt MMC 0.02% with epithelization over AMT area

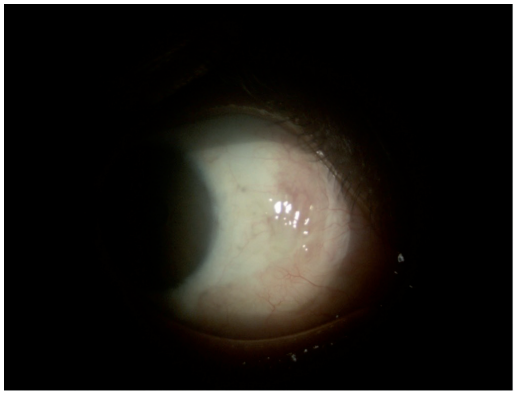

**Figure 6:** Post 9 month Right Eye Wide excision biopsy, cryotherapy, Amniotic patch graft and 3 cycles of Gutt MMC 0.02% with complete healing, no epithelial defect and signs of recurrence were observed.

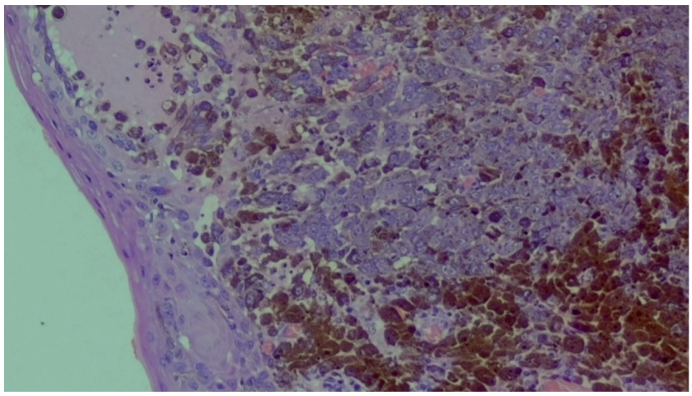

**Figure 7 (H&Ex100):** The right conjunctiva mass show invasive malignant melanocytic neoplasm, arranged in diffuse sheet with intraepithelial component in nested and pagetoid pattern.

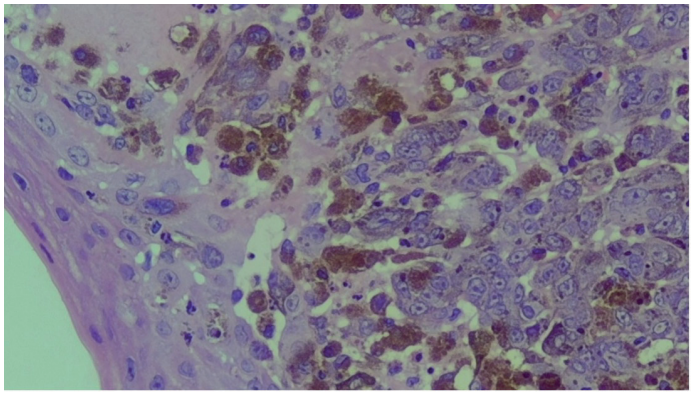

**Figure 8 (H&Ex200):** The malignant cells exhibit round to polygonal, moderately pleomorphic nuclei with prominent eosinophilic nucleoli and abundant cytoplasm, some containing finely granular cytoplasmic melanin.

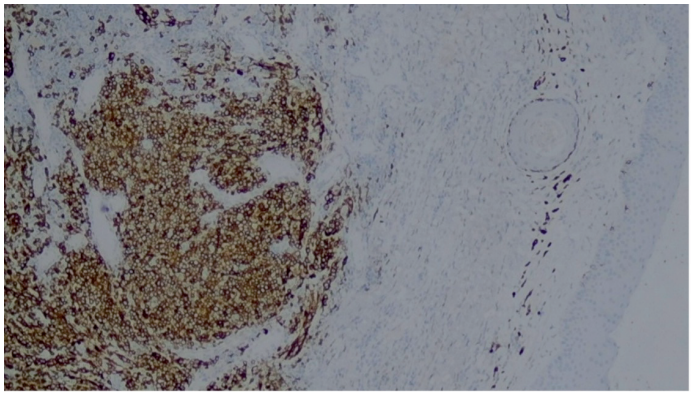

**Figure 9 (Melan A x40):** The tumour cells are positive for Melan-A antibody.

## Discussion

Conjunctival melanoma is a rare but potentially life-threatening malignancy of the ocular surface, accounting for approximately 2% of all ocular tumors. It typically arises from primary acquired melanosis (PAM) with atypia, a pre-existing nevus, or de novo, as suspected in our patient.[3,4] Although more commonly seen in middle-aged to elderly populations,[5-7] younger patients can also be affected, as demonstrated in this case of a 34-year-old woman without systemic comorbidities or ocular risk factors.

Clinically, conjunctival melanoma often presents as a pigmented, nodular, or papilliform lesion with prominent vascularity. It frequently involves the bulbar conjunctiva, particularly at the limbus, and may extend to the cornea, tarsal conjunctiva, or fornices.[8] Our patient's lesion displayed characteristic features, including localized pigmentation, feeder vessels, and encroachment onto the cornea, necessitating high clinical suspicion for malignancy.

Early diagnosis and complete surgical excision with tumor-free margins remain the cornerstone of management. Wide excisional biopsy with "no-touch" technique is recommended to minimize the risk of tumor cell dissemination.[9] In our case, cryotherapy was applied intraoperatively to the adjacent conjunctival margins to destroy residual microscopic disease, a strategy supported by numerous studies. Amniotic membrane transplantation was used to facilitate healing and maintain ocular surface integrity post-resection.

Histopathology confirmed conjunctival melanoma with positive immunohistochemical staining for Melan-A, a melanocyte-specific marker. Melan-A and HMB-45 are commonly used to confirm melanocytic origin and assist in differentiating melanoma from benign melanocytic lesions.[10,11]

Given the risk of local recurrence and potential for metastasis-particularly to regional lymph nodes, lungs, and liver-adjuvant therapy is frequently employed.[12] In our case, topical mitomycin C (MMC) 0.02% was administered in three cycles. MMC is an alkylating agent that inhibits DNA synthesis, used effectively in ocular surface neoplasia, including conjunctival melanoma. The patient tolerated the treatment well, with no significant ocular surface complications.

Surveillance is critical due to the potential for recurrence, which ranges from 18% to 32% depending on tumor characteristics, surgical margins, and initial treatment adequacy. Lifelong follow-up with regular clinical examinations and photographic documentation is advised. Sentinel lymph node biopsy may be considered in select cases, particularly when tumors are thicker than 2 mm or located at high-risk sites, although it was not indicated in this case due to the absence of regional lymphadenopathy and thin tumor morphology.

The visual prognosis in conjunctival melanoma is generally favorable when detected early and managed appropriately.[8] Our patient maintained 6/6 vision in both eyes with no evidence of recurrence during follow-up, demonstrating the importance of timely diagnosis and a multidisciplinary treatment approach.

This case underscores the need for ophthalmologists and general practitioners to maintain a high index of suspicion for pigmented conjunctival lesions and refer early for specialist evaluation. It also highlights the utility of combining surgical excision, cryotherapy, and adjuvant topical chemotherapy in achieving excellent local control and preserving vision.

## Conclusion

Conjunctival melanoma is a rare but aggressive malignancy of the ocular surface that requires a high index of suspicion, even in younger patients without known risk factors. Early recognition and prompt intervention are critical to achieving favourable outcomes. This case illustrates the importance of comprehensive clinical evaluation of progressive pigmented conjunctival lesions, appropriate surgical excision using a "no-touch" technique, and the role of adjuvant therapies such as cryotherapy and topical mitomycin C in reducing recurrence risk.

Histopathological confirmation with melanocytic markers, including Melan-A, is essential for diagnosis and prognostication. Regular long-term follow-up is imperative due to the potential for local recurrence and distant metastasis. Our patient achieved excellent visual and oncologic outcomes through timely management and multidisciplinary care. This case contributes to the growing body of evidence supporting a structured, evidence-based approach

to the diagnosis and treatment of conjunctival melanoma.

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**Conflict of Interest:** None

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