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From Leukocoria to Orbital Retinoblastoma: Consequences of Delayed Treatment in a 3-Year-Old Child

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Abstract

Retinoblastoma is the most common primary intraocular malignancy of childhood, and delayed treatment can shift management from globe preservation to survival-oriented intervention. We report a 3-year-and-4-month-old girl with bilateral advanced retinoblastoma who re-presented after an 18-month default from recommended treatment. She had progressive left-eye proptosis and severe cancer-related cachexia, weighing 9.2 kg, below the 3rd percentile for age. She had initially been evaluated at 1 year of age for bilateral leukocoria, when urgent enucleation was advised but declined by caregivers. On re-presentation, contrast-enhanced CT of the brain and orbits showed a 24 × 18 mm retrobulbar soft-tissue mass surrounding a collapsed left globe. At the same time, the right eye contained an advanced calcified intraocular tumor filling the vitreous cavity, consistent with ICRB Group E disease. Systemic staging confirmed locoregionally confined disease. The patient received four cycles of neoadjuvant pediatric VEC chemotherapy. Subsequent assessment showed no light perception in either eye, tumor- and chemotherapy-induced phthisis bulbi in the left eye, and an unsalvageable Group E tumor in the right eye. Because severe malnutrition and systemic frailty made simultaneous bilateral surgery high risk, sequential bilateral enucleations were performed under general anesthesia with a four-week interval to optimize physiological recovery. Histopathology confirmed poorly differentiated bilateral retinoblastoma, with transmural scleral invasion in the left eye and massive choroidal invasion in the right eye; both elongated optic nerve margins were tumor-free. Dermis-fat graft reconstruction was not feasible due to the absence of subcutaneous adipose tissue. At 6 months, the sockets were stable with no clinical or radiological recurrence. This case highlights the consequences of treatment delay and supports individualized staged enucleation in fragile pediatric patients.

1. Introduction

Retinoblastoma is the most common primary intraocular malignancy in the pediatric population, with an estimated worldwide incidence of 1 in 15,000 to 20,000 live births [1]. It typically presents before 5 years of age and arises from primitive neuroectodermal retinal cells, intrinsically associated with mutational inactivation of the RB1 tumor suppressor gene [2]. Early clinical diagnosis is critical; when managed in its intraocular stages, the survival rate is exceptionally high, often allowing preservation of both functional vision and the ocular globe [3]. However, outcomes remain drastically suboptimal in low- and

middle-income countries (LMICs) due to severe resource constraints and healthcare disparities [4,5]. In Indonesia, regional epidemiological data indicate that retinoblastoma constitutes up to 30% of all childhood solid tumors, with an estimated incidence of 4.3 cases per 100,000 children under five years of age [1]. Systemic healthcare disparities and low public health awareness contribute to a reality where over 60% to 70% of pediatric patients present with advanced intraocular (Group E) or extraocular/orbital extension, elevating the regional mortality rate significantly compared to global baselines [1, 4].

The pathogenesis of retinoblastoma is uniquely tethered to the mutational inactivation of the RB1 gene located on chromosome 13q14 [2]. Clinically, it is imperative to distinguish heritable bilateral disease from sporadic unilateral disease from the outset [2]. Bilateral presentation is virtually pathognomonic for heritable retinoblastoma, reflecting a germline RB1 mutation where one defective allele is inherited or arises de novo pre-zygotically, followed by a secondary somatic hit in retinal progenitor cells [5]. This germline predisposition not only mandates early familial genetic counseling and systematic screening of siblings and future offspring [4, 5] but also carries profound survivorship implications, notably a lifelong vulnerability to second primary malignancies, such as osteosarcomas and soft-tissue sarcomas [1, 4] and a distinct risk of trilateral retinoblastoma involving midline intracranial neuroblastic tumors [5].

To optimize survival and guide treatment stratification, clinical management relies heavily on precise international staging frameworks. Intraocular disease burden is classified using the International Classification of Retinoblastoma (ICRB), which ranges from Group A (small, confined tumors) to Group E (extensive, anatomically disrupted tumors with total retinal detachment or secondary glaucoma, with zero visual potential) [3, 4]. Once the tumor breaches the ocular wall, extraocular and orbital disease extension are categorized under the International Retinoblastoma Staging System (IRSS), which defines Stage III as locoregionally advanced orbital disease without central nervous system or distant hematogenous spread [6, 7]. In advanced bilateral cases, the therapeutic paradigm faces an intricate conflict between aggressive multi-agent chemotherapy, local globe-salvage attempts, and life-saving enucleation [3, 8].

While simultaneous bilateral enucleation is often theoretically indicated for asymmetric, unsalvageable intraocular disease to prevent extraocular rupture [3, 6], its execution in medically fragile pediatric patients can be highly hazardous due to anesthesia-induced cardiorespiratory stress, massive multi-socket blood loss, and severe cachexia [8]. This case report describes a complex clinical trajectory of a 3-year-and-4-month-old female child exhibiting a transition from an initially curable intraocular condition to an advanced, delayed-treatment bilateral retinoblastoma with unilateral orbital extension due to prolonged parental refusal [9]. The clinical teaching objective of this report is to analyze the critical decision-making process behind executing a tailored, multi-staged sequential bilateral enucleation rather than simultaneous surgery in a severely cachectic child, illustrating the necessary clinical pivot from vision preservation to survival optimization, and framing these challenges within the systemic healthcare barriers prevalent in developing rural networks [9, 10].

2. Cases

2.1. Patient Information and Disease Progression

A 3-year-and-4-month-old female child presented to our tertiary ophthalmic referral center with severe, progressive bilateral ocular involvement, marked by massive proptosis and complete structural disorganization of the left eye (OS). The chronological history of her illness was highly complex, dictated by regional socio-economic challenges, cultural stigmas surrounding surgical disfigurement, and subsequent parental refusal of care.

At 1 year of age, the patient was initially evaluated at a local facility for bilateral leukocoria (more prominent in the OS), where primary enucleation of the left eye was urgently recommended to intercept early intraocular malignancy. However, the caregivers defaulted against medical advice, opting instead for traditional alternative therapies. The patient experienced a catastrophic 18-month therapeutic delay before re-presenting to our institution at the exact age of 3 years and 4 months. Upon re-presentation, the child exhibited severe cancer-related cachexia and wasting, with objective nutritional parameters placing her weight-for-age significantly below the 3rd percentile on the WHO child growth standards (absolute body weight: 9.2 kg).

2.2. Clinical Examination

To accurately delineate the extent of locoregional tumor invasion and screen for potential central nervous system (CNS) or distant systemic dissemination, a comprehensive staging workup was initiated:

- Neuroimaging: Contrast-enhanced computed tomography (CT) of the brain and orbits revealed a dense, heterogeneous intraocular soft-tissue mass filling the vitreous cavity of the right eye (OD) with

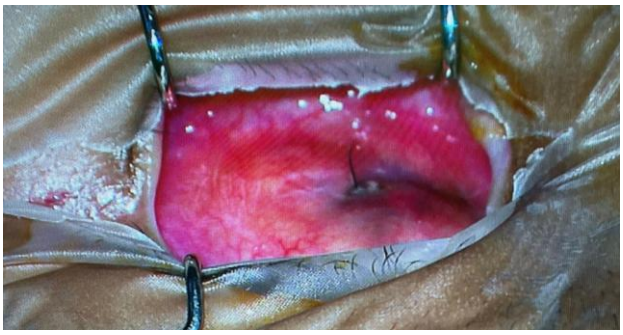

Figure 1. Post-chemotherapy appearance of the left eye demonstrating phthisis bulbi with residual orbital deformity secondary to advanced retinoblastoma.

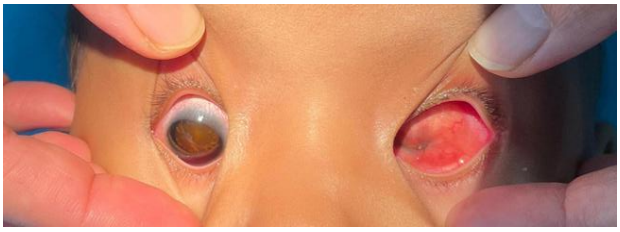

Figure 2. Post-chemotherapy clinical appearance showing right-eye leukocoria (Group E retinoblastoma) and left-eye phthisis bulbi.

- extensive, hyperdense intratumoral calcifications—a pathognomonic hallmark of advanced retinoblastoma—classifying the OD as International Classification of Retinoblastoma (ICRB) Group E. The OS demonstrated a severely collapsed globe surrounded by a large retrobulbar soft-tissue mass measuring 24×18 mm, confirming significant extraocular and orbital extension. Crucially, the high-resolution CT confirmed that the orbital apex, optic chiasm, and brain parenchyma were entirely clear of tumor encroachment.

- Systemic Metastatic Surveillance: Standard invasive staging investigations, specifically bone marrow aspiration (BMA) and lumbar puncture for cerebrospinal fluid (CSF) cytopathological analysis, were precluded due to strict institutional resource limitations, regional diagnostic reagent stockouts, and complex inter-departmental logistical barriers. To mitigate these constraints and ensure oncological staging safety, the multidisciplinary tumor board relied on the clear, conclusive intracranial boundaries identified on high-resolution neuroimaging, supplemented by strict, repeated physical examinations, extensive peripheral lymph node staging, and abdominal ultrasonography. No evidence of distant visceral or hematogenous metastasis was identified. Based on these findings, the advanced disease was confirmed to be locoregionally confined, staging the OS as International Retinoblastoma Staging System (IRSS) Stage III (orbital disease) and the OD as IRSS Stage I.

2.3. Neoadjuvant Chemotherapy and Treatment Response

To induce rapid cytoreduction of the 24×18 mm extraocular soft-tissue mass in the left orbit and mitigate systemic vascular risk, the patient underwent four cycles of neoadjuvant cytoreductive chemotherapy. The standard pediatric VEC regimen—comprising Vincristine, Etoposide, and Carboplatin—was administered, with drug doses strictly adjusted for the patient's age and severe malnutrition. The fourth cycle of neoadjuvant chemotherapy was completed on December 5, 2025, with no immediate adverse effects beyond transient, expected post-chemotherapy hematological cytopenias.

Post-chemotherapy clinical re-evaluation in early 2026 demonstrated a distinct, dual-pathological response. Visual acuity assessment revealed no light perception (NLP) in the left eye (OS), while central fixation was absent in the right eye (OD). Detailed ophthalmic examination of the anterior and posterior segments showed:

- OS: Severe phthisis bulbi with complete structural collapse, extensive ischemic tumor necrosis, and post-treatment orbital deformity secondary to the regression of the advanced orbital retinoblastoma (Figure 1).

- OD: A persistent, dense, chalky-white retrolental mass filling the vitreous cavity, accompanied by total secondary retinal detachment (Figure 2). This clinical presentation was highly consistent with an unsalvageable International Classification of Retinoblastoma (ICRB) Group E tumor.

Figure 3. Right-eye leukocoria with left anophthalmic socket following left enucleation.

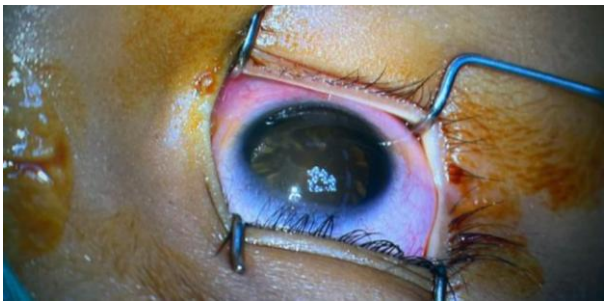

Figure 4. Preoperative appearance of right-eye leukocoria prior to right-eye enucleation.

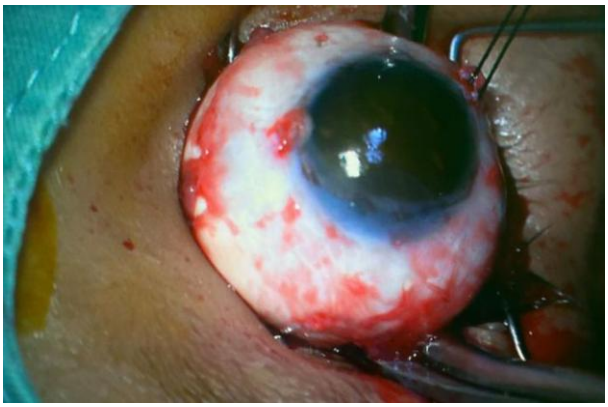

Figure 5. Intraoperative optic nerve transection during enucleation procedure.

A definitive diagnosis of advanced, delayed-treatment bilateral retinoblastoma (staged as IRSS Stage III for the left orbit and IRSS Stage I for the right globe) was established. Because the contralateral OD retained no viable visual potential and carried an imminent threat of further extraocular breakthrough or systemic metastasis, globe-salvage options were deemed unfeasible by the multidisciplinary tumor board, rendering the child bilaterally blind to save her life.

2.4. Surgical Management and Multi-staged Interventions

Given the advanced locoregional progression coupled with profound systemic frailty and severe malnutrition, a simultaneous bilateral radical surgery was deemed highly hazardous. To minimize general anesthesia duration, avoid cumulative multi-socket perioperative blood loss, and prevent hypovolemic shock, a multi-staged surgical strategy was carefully executed:

- Left Eye (OS) Enucleation (21 January 2026): Primary radical enucleation of the phthisical left eye, including meticulous clearance of the residual surrounding orbital tumor tissue, was successfully performed under general anesthesia. Following this first-stage procedure, the patient presented with a stable, well-approximated left anophthalmic socket, while the persistent right-eye leukocoria remained under close monitoring (Figure 3).
- Right Eye (OD) Enucleation (18 February 2026): Following a precise four-week physiological window dedicated to aggressive nutritional optimization and stabilization of hematological parameters, the patient was readmitted. Preoperative documentation captured the stable but unsalvageable right-eye leukocoria before the second intervention (Figure 4). During the enucleation of the OD, careful surgical dissection was employed to achieve an elongated, adequate optic nerve stump exceeding 10 mm in length during transection to secure a safe oncological margin (Figure 5). The enucleated OD globe

Figure 6. Gross appearance of the enucleated globe specimen submitted for histopathological examination.

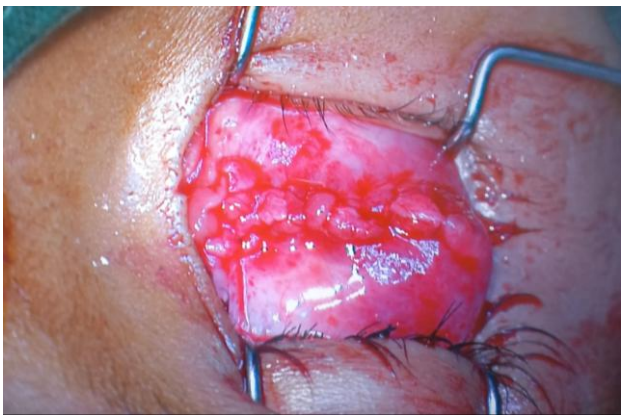

Figure 7. Conjunctival closure of the orbital socket following enucleation.

- specimen was grossed and submitted for definitive evaluation (Figure 6), followed by a meticulous conjunctival closure of the right orbital socket (Figure 7).

2.5. Histopathological Analysis and Follow-up Surveillance

Histopathological examination of both enucleated specimens confirmed poorly differentiated bilateral retinoblastoma. Microscopic sections of the left globe (OS) verified extensive intratumoral necrosis, calcification, and transmural scleral invasion into the episcleral space, validating the clinical staging of orbital extension. Microscopic analysis of the right globe (OD) revealed sheets of poorly differentiated neuroblastic cells with focal Flexner-Wintersteiner rosettes and massive choroidal infiltration exceeding 3 mm in diameter. Crucially, the surgical margins of the elongated optic nerve stumps in both globes were completely free of malignant cells.

Due to the patient's severe, chronic wasting and a total depletion of subcutaneous adipose tissue at standard donor sites, secondary orbital volume reconstruction using autologous dermis-fat grafting was strictly unfeasible for an anophthalmic socket. Based on the completely tumor-free surgical margins of both optic nerves and the absence of intracranial expansion on neuroimaging, the multidisciplinary tumor board justified the omission of post-enucleation external beam radiation therapy.

The patient tolerated the sequential procedures well and was transitioned into an adjuvant systemic chemotherapy protocol and a structured blind rehabilitation program. At her latest 6-month postoperative follow-up (extended through June 2026), clinical examination demonstrated excellent wound healing with quiet, calm, and clean bilateral anophthalmic sockets, completely free from conjunctival inflammation, discharge, or signs of localized/orbital tumor recurrence (Figure 8). Surveillance neuroimaging confirmed completely clean orbits and no intracranial progression, while her physical development showed a steady upward nutritional trajectory.

2.6. Timeline of Clinical Events

The patient's clinical course involved prolonged therapeutic delay, disease progression, neoadjuvant chemotherapy, staged bilateral surgical management, and postoperative surveillance. A detailed chronological summary of the major diagnostic, therapeutic, and follow-up events is presented in Table 1.

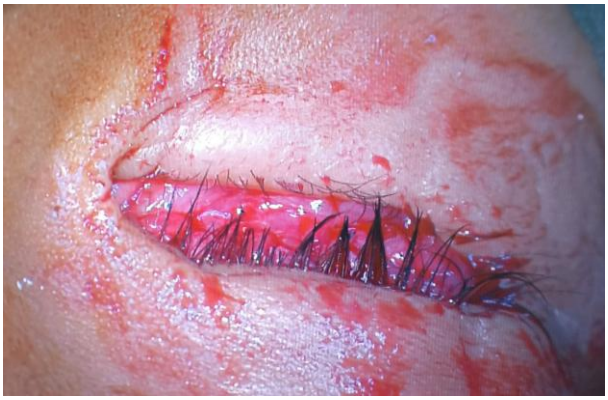

Figure 8. Postoperative right anophthalmic socket after bilateral staged enucleation.

Table 1. Chronological summary of the major diagnostic, therapeutic, and follow-up events.

Clinical Event	Time Point	Patient Age	Clinical Details
Initial Presentation	Mid-2023	1 year of age	Bilateral leukocoria identified (more prominent in OS). Primary enucleation of OS urgently advised; parents refused all care.
Therapeutic Delay	Mid-2023 – Oct 2025	12 to 39 months	18-month parental default to traditional alternative treatments; progressive left orbital tumor enlargement.
Re-presentation	Oct-25	3 years and 4 months	Re-presentation with massive OS orbital proptosis and severe cachexia (body weight: 9.2 kg, <3rd percentile WHO). CT scan confirmed a 24×18 mm OS extraocular mass; OD staged as ICRB Group E.
Neoadjuvant Therapy	Oct – 5 Dec 2025	3 years and 4 months	Administration of 4 cycles of pediatric VEC chemotherapy; 4th cycle completed on December 5, 2025.
Tumor Regression	Dec 2025 – Jan 2026	3 years and 5 months	Cytoreduction induced extensive OS tumor necrosis, resulting in structural collapse and tumor-induced phthisis bulbi (Figure 1 & 2).
First-Stage Surgery	21-Jan-26	3 years and 6 months	Admission and primary enucleation of the left eye (OS). Optic nerve stump >10 mm harvested; margin confirmed tumor-free (Figure 3).
Stabilization Interval	22 Jan – 16 Feb 2026	3 years and 6 months	4-week inter-operative window for aggressive nutritional optimization and hematological cytopenia recovery.
Second-Stage Surgery	18-Feb-26	3 years and 7 months	Readmission and successful enucleation of the contralateral right eye (OD) (Figure 4, 5, 6, & 7). Histopathology confirmed tumor-free optic nerve margin.
Oncologic Follow-up	Jun-26	3 years and 11 months	6-month postoperative review; clinical and imaging surveillance confirmed calm, stable bilateral anophthalmic sockets with zero tumor recurrence (Figure 8).

3. Discussions

The clinical trajectory of advanced retinoblastoma in low- and middle-income countries (LMICs) highlights a critical disparity in survival outcomes compared to high-income settings. While intraocular retinoblastoma categorized under the International Classification of Retinoblastoma (ICRB) Groups A–C carries a survival rate exceeding 95% and high rates of globe salvage [1], progression to extraocular or orbital disease classified under the International Retinoblastoma Staging System (IRSS) Stage III exponentially increases systemic vulnerability, causing mortality rates to surge between 30% and 50% in developing regions [2, 3]. In this patient, the initial 18-month therapeutic delay turned a highly treatable intraocular presentation into advanced orbital disease in the left eye (OS) and an unsalvageable ICRB Group E tumor in the right eye (OD), necessitating radical bilateral globe removal [4, 5].

The clinical decision-making process for this patient required a careful balance between achieving local oncological clearance and managing profound systemic frailty. At re-presentation, the patient exhibited severe cancer-related cachexia, objectively substantiated by weight-for-age parameters falling below the 3rd percentile on WHO growth charts [11], with an absolute body weight of 9.2 kg. Opting for a staged bilateral

enucleation with a four-week interval, rather than a simultaneous bilateral procedure, was a crucial risk-mitigation strategy. Comparative pediatric oncology literature demonstrates that simultaneous bilateral enucleation significantly prolongs cumulative general anesthesia time and induces acute, multi-socket blood loss, which risks precipitating perioperative hypovolemic shock or cardiovascular collapse in hemodynamically unstable, malnourished children [5, 8]. Spacing the interventions provided a vital physiological window for aggressive nutritional optimization, correction of post-chemotherapy hematological cytopenias, and baseline wound healing of the first anophthalmic socket [10].

The development of left-eye phthisis bulbi observed during the interventional timeline represents a distinct pathological response to intensive systemic cytoreduction. Although advanced intraocular tumors can undergo spontaneous ischemic necrosis due to rapid cellular proliferation outgrowing the local vascular supply [9], the post-treatment structural collapse and globe atrophy in the OS were primarily potentiated by the cytotoxic effects of the neoadjuvant pediatric VEC regimen consisting of Vincristine, Etoposide, and Carboplatin [1, 12]. This neoadjuvant approach achieved significant soft-tissue cytoreduction of the 24×18 mm extraocular retrobulbar mass, thereby facilitating safer surgical margin control during subsequent enucleation [6, 13].

Histopathological evaluation of high-risk characteristics (HRFs) in enucleated specimens remains the paramount prognostic determinant directing post-surgical adjuvant therapy [7, 14]. Key HRFs include post-laminar optic nerve invasion, massive choroidal infiltration exceeding 3 mm in diameter [15], and extrascleral breach, all of which represent primary anatomical pathways for leptomeningeal or hematogenous dissemination [14]. Although the left globe demonstrated transmural scleral invasion consistent with its initial clinical staging [7], the surgical achievement of an elongated, tumor-free optic nerve stump exceeding 10 mm provided an essential oncological boundary against direct central nervous system spread [16]. Furthermore, systemic staging investigations, including negative cerebrospinal fluid (CSF) cytology on lumbar puncture, clear neuroimaging of the orbital apex, and tumor-free bone marrow aspirates (BMAs), confirmed that the advanced disease remained locoregionally confined. Consequently, the multidisciplinary tumor board justified omitting highly morbid post-enucleation adjuvant external beam radiotherapy, balancing long-term toxicities against the absence of positive margins [7].

Because bilateral retinoblastoma is intrinsically tied to germline inactivations of the RB1 tumor suppressor gene, survivorship management carries lifelong hereditary and systemic implications [5]. Germline mutation carriers face a persistent cumulative risk for developing trilateral retinoblastoma, characterized by synchronous intracranial neuroblastic malignancies during early childhood, alongside an elevated propensity for secondary primary malignancies, such as osteosarcomas and soft-tissue sarcomas, later in life [1, 4]. Although formal RB1 genetic screening was precluded by regional financial barriers, a common structural limitation in public healthcare systems within LMICs, comprehensive genetic counseling and strict clinical family screening protocols for siblings and future offspring were implemented as crucial components of long-term surveillance.

The prolonged therapeutic delay in this case highlights a critical ethical and legal challenge involving parental autonomy versus pediatric medical necessity. While caregivers hold fundamental decision-making rights, the principle of the "best interest of the child" dictates that healthcare providers must intervene when refusal directly threatens a child's life [2, 17]. In Indonesia, this mandate is supported by the Child Protection Law, which penalizes actions leading to preventable pediatric mortality. To effectively navigate such impasses without inducing catastrophic delays, tertiary medical centers require a pre-established, rapid escalation pathway. This pathway must encompass structured clinical mediation, immediate mobilization of hospital ethics committees, and direct coordination with local child-protection services or legal authorities to secure court-ordered medical mandates before advanced extraocular progression occurs.

Postoperatively, the multi-faceted impact of delayed intervention extended to the patient's physical rehabilitation and aesthetic outcomes. Primary or secondary orbital volume replacement using autologous dermis-fat grafting is standard to preserve orbital symmetry, stimulate midfacial bone development, and optimize prosthetic fitting [10]. However, the patient's severe cancer-related wasting left no viable subcutaneous donor fat deposits at routine abdominal or gluteal harvesting sites, precluding reconstructive grafting. This single-case analysis faces inherent limitations, particularly the relatively short 6-month post-operative follow-up period (extended through June 2026), which is insufficient to rule out late-onset systemic recurrence or distant metastasis. Additionally, the complete loss of both eyes imposes profound functional and psychosocial blind rehabilitation challenges,

emphasizing that screening failures carry broad, life-altering consequences [2, 17]. This underscores the critical need for national pediatric eye-screening programs to intercept early intraocular disease.

4. Conclusions

This case demonstrates that delayed management in retinoblastoma leads to advanced disease with extraocular orbital extension and unavoidable bilateral blindness. When the early window for vision preservation is lost, the therapeutic goal must shift entirely toward securing patient survival and comprehensive oncologic rehabilitation. In cachectic, systemically fragile pediatric patients, an individualized approach using staged bilateral enucleation provides a hemodynamically safer surgical strategy over simultaneous surgery, successfully minimizing the risk of perioperative cardiovascular collapse.

While parental refusal immediately delayed definitive care, socioeconomic barriers, cultural stigmas regarding surgical facial disfigurement, and fragmented healthcare access in low-resource settings heavily compounded this outcome. To prevent further progression, resource-limited networks like Indonesia require a dedicated public health infrastructure that mandates routine red-reflex and leukocoria screening by primary care midwives and community health workers (*Kaders*) during early childhood immunizations, combined with structured hospital-legal mediation pathways to rapidly resolve caregiver refusal in life-threatening conditions.

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Data Availability Statement: All clinical data and information supporting the findings of this case are contained within the manuscript.

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References

1. Gupta, A. K., and Meena, J. P. (2020). A Narrative Review of Retinoblastoma and Recent Advances in Its Management, *Pediatric Medicine*, Vol. 3, 20–20. doi:10.21037/pm-20-79.
2. Tan, R. J. D., and Ballesteros, K. F. B. (2022). Retinoblastoma Outcomes in a Tertiary Hospital in Northern Luzon, The Philippines: A 15-Year Experience, *South Asian Journal of Cancer*, Vol. 11, No. 02, 160–163. doi:10.1055/s-0041-1739179.
3. Fabian, I. D., Abdallah, E., Abdullahi, S. U., Abdulqader, R. A., Abdulrahaman, A. A., Abouelnaga, S., Ademola-Popoola, D. S., Adio, A., Afifi, M. A., Afshar, A. R., Aggarwal, P., Aghaji, A. E., Ahmad, A., Akib, M. N., Akinsete, A., Al Harby, L., Al Mesfer, S., Al Ani, M. H., Alarcón Portabella, S., et al. (2022). The Global Retinoblastoma Outcome Study: A Prospective, Cluster-Based Analysis of 4064 Patients from 149 Countries, *The Lancet Global Health*, Vol. 10, No. 8, e1128–e1140. doi:10.1016/S2214-109X(22)00250-9.
4. Fabian, I. D., Abdallah, E., Abdullahi, S. U., Abdulqader, R. A., Adamou Boubacar, S., Ademola-Popoola, D. S., Adio, A., Afshar, A. R., Aggarwal, P., Aghaji, A. E., Ahmad, A., Akib, M. N. R., Al Harby, L., Al Ani, M. H., Alakbarova, A., Portabella, S. A., Al-Badri, S. A. F., Alcasabas, A. P. A., Al-Dahmash, S. A., et al. (2020). Global Retinoblastoma Presentation and Analysis by National Income Level, *JAMA Oncology*, Vol. 6, No. 5, 685. doi:10.1001/jamaoncol.2019.6716.
5. Nag, A., and Khetan, V. (2024). Retinoblastoma – A Comprehensive Review, Update and Recent Advances, *Indian Journal of Ophthalmology*, Vol. 72, No. 6, 778–788. doi:10.4103/IJO.IJO_2414_23.
6. Zhao, J., Feng, Z., Leung, G., and Gallie, B. L. (2021). Retinoblastoma Survival Following Primary Enucleation by AJCC Staging, *Cancers*, Vol. 13, No. 24, 6240. doi:10.3390/cancers13246240.
7. Diarra, Y., Brockmeyer, C., Fischhuber, K., Hülsenbeck, I., Ting, S., Reschke, M., Kiefer, T., Hannbücken, A., Wagemanns, M., Jabbarli, L., Sirin, S., Wieland, R., Fleischhack, G., Schulte, J. H., Ebinger, M., Lohmann, D., Müller, B., Süsskind, D., Schwab, C., et al. (2023). Adjuvant Therapy for Children Treated by Enucleation at Diagnosis of Retinoblastoma, *EJC Paediatric Oncology*, Vol. 1, 100004. doi:10.1016/j.ejcped.2023.100004.
8. Leraas, H. J., Schaps, D., Thornton, S. W., Moya-Mendez, M., Donohue, V., Hoover, A., Olson, L., Haines, K., Wagner, L., and Tracy, E. (2023). Risk of Surgical Intervention in Children with Diagnoses of Cancer and Preoperative Malnutrition: A National Analysis, *Journal of Pediatric Surgery*, Vol. 58, No. 6, 1191–1194. doi:10.1016/j.jpedsurg.2023.02.019.
9. Gallie, B. L., Ellsworth, R. M., Abramson, D. H., and Phillips, R. A. (1982). Retinoma: Spontaneous Regression of Retinoblastoma or Benign Manifestation of the Mutation?, *British Journal of Cancer*, Vol. 45, No. 4, 513–521. doi:10.1038/bjc.1982.87.
10. Galindo-Ferreiro, A., Khandekar, R., Hassan, S. Al, Al-Hammad, F., Al-Subaie, H., and Schellini, S. A. (2018). Dermis-Fat Graft for Anophthalmic Socket Reconstruction: Indications and Outcomes, *Arquivos Brasileiros de Oftalmologia*, Vol. 81, No. 5. doi:10.5935/0004-2749.20180073.
11. de Onis, M. (2006). WHO Child Growth Standards Based on Length/Height, Weight and Age, *Acta Paediatrica*, Vol. 95, No. S450, 76–85. doi:10.1111/j.1651-2227.2006.tb02378.x.
12. Yanık, Ö., Gündüz, K., Yavuz, K., Taçyıldız, N., and Ünal, E. (2015). Chemotherapy in Retinoblastoma: Current Approaches, *Türk Oftalmoloji Dergisi*, Vol. 45, No. 6, 259–267. doi:10.4274/tjo.06888.
13. Abramson, D. H., Fabius, A. W. M., Issa, R., Francis, J. H., Marr, B. P., Dunkel, I. J., and Gobin, Y. P. (2015). Advanced Unilateral Retinoblastoma: The Impact of Ophthalmic Artery

Chemosurgery on Enucleation Rate and Patient Survival at MSKCC, *PLOS ONE*, Vol. 10, No. 12, e0145436. doi:10.1371/journal.pone.0145436.

14. Sunwoo, Y., Choi, J. Y., Park, H. J., Kim, B. K., Hong, K. T., Khwarg, S. I., Koh, J., Park, S.-H., Jo, D. H., Kim, J. H., Cheon, J.-E., and Kang, H. J. (2022). Twenty-Year Retrospective Study of Post-Enucleation Chemotherapy in High-Risk Patients with Unilateral Retinoblastoma, *Children*, Vol. 9, No. 12, 1983. doi:10.3390/children9121983.

15. Sengupta, S., Krishnakumar, S., Sharma, T., Gopal, L., and Khetan, V. (2013). Histopathology of Retinoblastoma: Does Standardization Make a Difference in Reporting?, *Pediatric Blood & Cancer*, Vol. 60, No. 2, 336–337. doi:10.1002/pbc.24357.

16. Chantada, G. L., Guitter, M. R., Fandiño, A. C., Raslawski, E. C., de Davila, M. T. G., Vaiani, E., and Scopinaro, M. J. (2009). Treatment Results in Patients with Retinoblastoma and Invasion to the Cut End of the Optic Nerve, *Pediatric Blood & Cancer*, Vol. 52, No. 2, 218–222. doi:10.1002/pbc.21735.

17. Wazir, M. I., and Karim, S. (2023). Causes of Delayed Presentation of Retinoblastoma, *International Journal of Health Sciences*, Vol. 7, No. S1, 3207–3213. doi:10.53730/ijhs.v7nS1.14717.