

## Cannibalistic bilateral orbital trauma

Tatiana R. Rosenblatt<sup>a</sup>, Giancarlo A. Garcia<sup>a</sup>, Thomas E. Johnson<sup>b</sup>, Andrea L. Kossler<sup>a,\*</sup>

<sup>a</sup> Byers Eye Institute, Stanford University School of Medicine, 2452 Watson Court, Palo Alto, CA, 94303, USA

<sup>b</sup> Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, 900 NW 17<sup>th</sup> St, Miami, FL, 33136, USA

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### ABSTRACT

**Purpose:** To describe the details of a unique case of cannibalistic orbital trauma and the oculoplastic reconstruction approach.

**Observations:** A 65-year-old homeless man survived a disfiguring cannibalistic facial and bilateral orbital injury that included bilateral loss of all adnexal structures, partial exenteration of the left orbit, and severe damage to the right globe and anterior orbital structures. The patient's extensive facial and orbital tissue damage required emergent surgery, which included left exenteration and right eyelid reconstruction.

**Conclusions:** This is the first report of cannibalistic evisceration in a live victim who survived the attack, posing a unique reconstructive challenge. Bilateral globe removal was avoided to provide time for the patient's emotional recovery. Although this was an exceptional surgical scenario, traditional oculoplastic principles remained crucial to achieving a successful outcome. The patient survived and was pleased with his surgical outcome, refusing further reconstruction or prosthesis fitting.

### 1. Introduction

Auto-enucleation ("Oedipism"), a form of self-mutilation in which someone manually removes their own eye, is a known phenomenon with reports dating as far back as the 4th century and over 50 cases reported in modern journals.<sup>1–10</sup> Post-mortem cannibalistic enucleation has also been reported, in which murderers have enucleated the eyes of their victims after their death.<sup>11</sup> However, there are no prior reports of cannibalistic enucleation or evisceration of a live victim who survived the attack. Herein we describe the surgical reconstruction of a survivor of an extensive cannibalistic facial trauma that included left evisceration with partial exenteration and severe bilateral orbital and adnexal damage. The substantial facial and orbital tissue damage posed a unique reconstructive challenge with regard to the restoration of form and function while accounting for the psychosocial implications of bilateral orbital trauma and vision loss. Written consent was obtained from the patient for publication of this case and identifiable photographs, and the report is in accordance with the Health Insurance Portability and Accountability Act (HIPAA) regulations.

#### 1.1. Case report

A 65-year-old homeless man presented to the emergency room after his eyes, nose, and 75% of his face had been mauled by an assailant who was suspected to be under the influence of psychoactive substances. The attacker chewed off the victim's face for 18 minutes before police arrived and shot the assailant dead, saving the patient's life. The patient unfortunately sustained accidental abdominal and chest wall gunshot wounds, intended for the attacker, and required hemodynamic support upon arrival. The patient was intubated and sedated during the oculo-facial examination. The pupils were not visible bilaterally. The victim was missing all facial soft tissues down to bone or periosteum from his nose to his scalp, including all periocular soft tissues and adnexa (Fig. 1A). The left socket appeared partially exenterated with all anterior orbital soft tissues and proximal lacrimal drainage tissues missing. The left eye was only held in place by the optic nerve with a widely ruptured left globe and all intraocular contents eviscerated, with only some bare sclera remaining (Fig. 2A). All extraocular muscles were either missing or cut and the conjunctiva and tenon's capsule were missing (Fig. 2B). The right inferior, lateral, and superior rectus and oblique muscles were torn or avulsed, and the conjunctiva, tenon's capsule, and much of the right anterior orbital fat were missing (Fig. 2C). The right globe had a

\* Corresponding author. FACS Byers Eye Institute at Stanford Department of Ophthalmology Stanford University School of Medicine 2452 Watson Court Palo Alto, CA, 94303, USA.

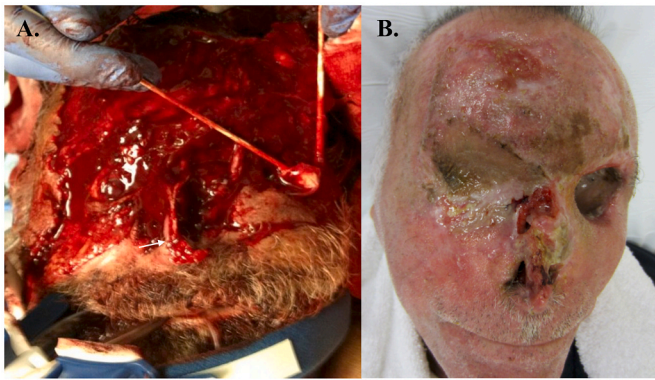
E-mail addresses: [tatianar@stanford.edu](mailto:tatianar@stanford.edu) (T.R. Rosenblatt), [akossler@stanford.edu](mailto:akossler@stanford.edu) (A.L. Kossler).

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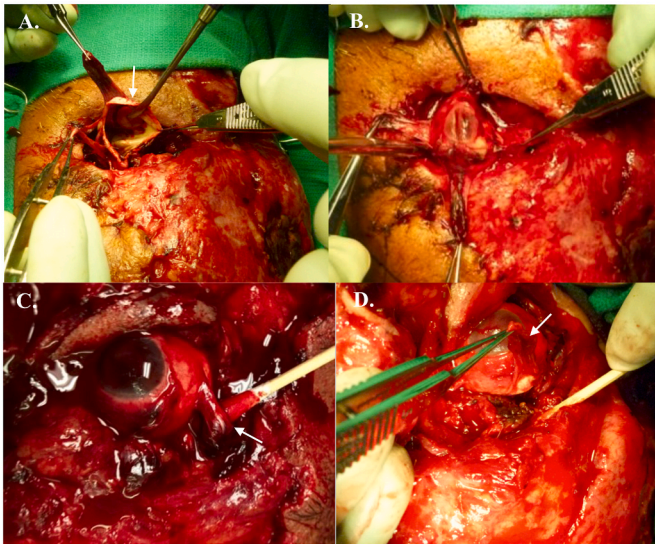
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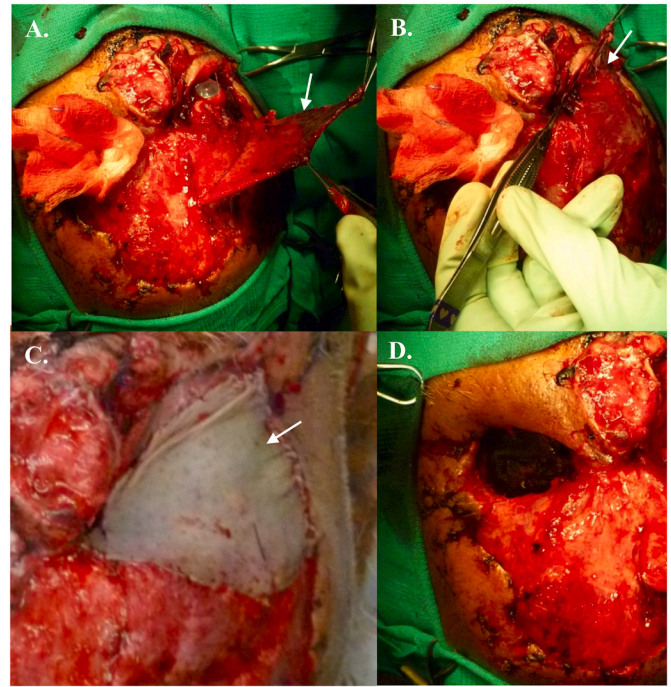
**Fig. 1.** A. Preoperative photo. The nasal tip is visible with exposed septum (white arrow) above the patient’s mouth and beard. All soft tissues from the nose to the hairline were removed during the attack, with blood covering the underlying structures of the eyes and forehead. B. Postoperative photo, six weeks after surgery, showing slow healing of the primary reconstruction.



**Fig. 2.** Orbital examination. A. Widely ruptured left globe with eviscerated ocular contents, only part of bare sclera remaining (white arrow), and the globe held in place by the optic nerve. B. Left eye with all extraocular muscles avulsed or torn and missing conjunctiva, tenons, anterior orbital soft tissues, and eyelids. C. Right eye with a total hyphema, removal of all conjunctiva and tenons from the limbus to past the equator, absence of eyelids and anterior orbital fat, torn inferior, superior and lateral rectus (white arrow) muscles, and avulsed inferior oblique muscle. D. Right eye with a large posterior rupture between the superior and lateral rectus muscles (white arrow).

large posterior rupture extending between the superior and lateral rectus muscles (Fig. 2D).

The patient underwent emergent facial and socket surgery and was treated with broad-spectrum intravenous antibiotics with coverage of anaerobes and other mouth flora. His facial soft tissues were debrided, undermined, and advanced, and areas of the face were skin grafted. His right eye underwent ruptured globe and extraocular muscle repair, with placement of an amniotic membrane graft to reconstruct the ocular surface. The eyelids were reconstructed with a well-vascularized pericranial advancement flap secured to the inferior orbital rim to reform the posterior lamella, and a full-thickness skin graft was used to reconstruct the anterior lamella (Fig. 3A–C). The left globe and all remaining damaged or necrotic orbital tissues were removed, exenterating the left orbit (Fig. 3D). A split-thickness skin graft was harvested to line the left socket. The staged surgical plan included subsequent surgery to open the



**Fig. 3.** Operative images. A. Right globe rupture and extraocular muscles were repaired. A right-sided pericranial flap was fashioned to create a vascularized posterior lamella flap (white arrow). B. The pericranial flap was anchored to the right inferior orbital rim periosteum (white arrow). C. A full-thickness skin graft was placed over the pericranial flap (white arrow). D. Left orbit after remnant globe removal and orbital debridement resulting in complete exenteration.

reconstructed right eyelids and eviscerate the right eye with placement of an orbital implant, and to eventually fit the patient with a right ocular prosthesis, left orbital prosthesis, and nasal prosthesis. The patient recovered from his injuries (Fig. 1B) and expressed functional satisfaction, declining additional ocular or nasal surgery.

**2. Discussion**

Cannibalistic attack in humans is one of the most ancient taboos, a powerful prohibition as described by Freud, with rare but notable reports in modern history.<sup>12–15</sup> Human cannibalism is typically described as falling into one of three categories: ritual, in which cannibalism occurs as part of a tribal belief system; survival, in which cannibalism is performed in dire circumstances due to acute starvation; and pathological, in which cannibalism is performed voluntarily by an individual.<sup>12</sup> Analyses of cases in the latter group reveal that attackers are often younger or middle-aged men and are typically driven by mental illness with severe psychosis, drug abuse, or paraphilia, a condition in which extreme actions are taken on behalf of abnormal sexual desires.<sup>12,16</sup> Mental illness and drug-related motivations are similarly echoed in the literature in instances of autoenucleation, though the trauma induced by these acts is typically confined to the orbit and is much cleaner and less extensive than the trauma induced by cannibalism.<sup>1–10,17</sup> While in many cases victims of cannibalism are first killed by their attacker, who then follows with a cannibalistic act, cannibalistic attacks of live victims have been reported; however, these attacks are often quite gruesome and typically the victims do not live to tell the tale.<sup>12,14</sup> This case is unique in that it is the first reported case of cannibalistic evisceration and partial exenteration in which the victim survived, requiring immediate medical attention and subsequent surgical reconstruction. While the assailant, being a 31-year-old man, fit the typical demographic, his motivations for the attack remain unknown.

In light of the extensive facial and orbital damage sustained by our

patient, the main challenges of this case were two-fold. First, the dense anastomotic vasculature of the orbit and adnexa was interrupted by the bilateral loss of the victim's facial soft tissues, eyelids, and anterior orbit, creating a deficiency of vascular support for reconstruction. His social history of homelessness, suspected scabies, hemodynamic instability secondary to gunshot wounds, and the nature of the attack itself created a high risk for infection or failure with typical free flap reconstructive techniques. Therefore, the right eyelids were reconstructed with a pericranial flap from his forehead to provide a vascularized posterior lamella and support an overlying skin graft, and the left partially exenterated orbit was debrided resulting in complete exenteration.

Second, the bilateral nature of the orbital attack added additional psychosocial and medicolegal considerations to the reconstruction in regard to bilateral globe removal versus ruptured globe repair. Ruptured globe repair is preferred to primary globe removal to allow for proper preoperative discussions and to give patients time for emotional recovery.<sup>18,19</sup> In this patient, the cannibalistic left evisceration and partial exenteration of orbital structures precluded left globe salvage; therefore, enucleation with orbital debridement, resulting in complete exenteration, was required. Right globe salvage was prioritized for psychosocial recovery, restoration of periocular form, and return of function, despite the likely need for a future evisceration with orbital implant and ocular prosthesis. In this case, globe salvage was highly appreciated by the patient, so much so that additional periocular reconstructive surgeries and prosthesis fitting were declined.

Cannibalistic removal of the eyes and orbital tissues in a live human has not previously been reported. Though this surgical scenario is unprecedented, oculoplastic principles remain constant, with the aim of preserving form and function when possible and achieving a reconstruction outcome that is as in line with the patient's goals as possible. Bilateral globe removal was avoided to allow time for emotional recovery, and the right eyelids were reconstructed using a vascularized pericranial flap to reform the posterior lamella and support a full-thickness skin graft. The patient survived his injuries and was satisfied with his outcome.

#### Patient consent

The patient consented to publication of the case and its associated images in writing.

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#### Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

#### Declaration of competing interest

The following authors have no financial disclosures: TRR, GAG, TEJ, ALK.

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