

Current Practices in Ophthalmology
Series Editor: Parul Ichhpujani

Adit Gupta
Prerana Tahiliani *Editors*

Oculoplastic and Orbit Casebook

 Springer

Current Practices in Ophthalmology

Series Editor

Parul Ichhpujani, Department of Ophthalmology, Government Medical College and Hospital, Chandigarh, India

This series of highly organized and uniform handbooks aims to cover the latest clinically relevant developments in ophthalmology. In the wake of rapidly evolving innovations in the field of basic research, pharmacology, surgical techniques and imaging devices for the management of ophthalmic disorders, it is extremely important to invest in books that help you stay updated. These handbooks are designed to bridge the gap between journals and standard texts providing reviews on advances that are now part of mainstream clinical practice. Meant for residents, fellows-in-training, generalist ophthalmologists and specialists alike, each volume under this series covers current perspectives on relevant topics and meets the CME requirements as a go-to reference guide. Supervised and reviewed by a subject expert, chapters in each volume provide leading-edge information most relevant and useful for clinical ophthalmologists. This series is also useful for residents and fellows training in various subspecialties of ophthalmology, who can read these books while at work or during emergency duties. Additionally, these handbooks can aid in preparing for clinical case discussions at various forums and examinations.

Adit Gupta • Prerana Tahiliani
Editors

Oculoplastic and Orbit Casebook

 Springer

Editors

Adit Gupta
Mumbai Eye Plastic Surgery
Mumbai, Maharashtra, India

Prerana Tahiliani
Mumbai Eye Plastic Surgery
Mumbai, Maharashtra, India

ISSN 2523-3807

ISSN 2523-3815 (electronic)

Current Practices in Ophthalmology

ISBN 978-981-97-0592-4

ISBN 978-981-97-0593-1 (eBook)

<https://doi.org/10.1007/978-981-97-0593-1>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd. The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

If disposing of this product, please recycle the paper.

Contents

1	Eyelid Lacerations and Canalicular Laceration	1
	Varshitha Hemanth Vasanthapuram	
2	Canalicular Injuries	15
	Manjula Sharma, Manpreet Kaur, Aditi Mehta, and Manpreet Singh	
3	Eyelid Ptosis	25
	Rwituja Thomas and Summy Bhatnagar	
4	Ectropion and Entropion	37
	Aditi Mehta	
5	Thyroid Eye Disease	57
	Adit Gupta and Prerana Tahiliani	
6	Acute Dacryocystitis and Sequelae	67
	Nandini Bothra and Ayushi Agarwal	
7	Secondary Acquired Nasolacrimal Duct Obstruction	73
	Nandini Bothra and Ayushi Agarwal	
8	Orbital Trauma and Reconstruction: A Case-Based Approach	79
	Tarjani Vivek Dave and Akshita Agarwal	
9	Orbital and Adnexal Tumors	87
	Harshita Sharma and Sonal P. Yadav	
10	Eyelid Malignant Tumors	99
	Prerana Tahiliani and Adit Gupta	

About the Editors

Adit Gupta is consultant oculoplastic and orbit surgeon at Mumbai Eye Plastic Surgery, a dedicated ophthalmic plastic surgery center in Mumbai, India. He is an expert in the field of eyelid and facial cosmetic surgery. Over the past 8 years, he has performed several procedures for the cosmetic, structural, and functional rehabilitation of the eyelids and lacrimal region in India and the USA. Dr. Gupta completed his MD in ophthalmology from Advanced Eye Centre, PGIMER, Chandigarh, India following which he completed his oculoplastic fellowship at LV Prasad Eye Institute, Hyderabad, India. He pursued further training for his second fellowship in orbitofacial cosmetic surgery at the UCLA Stein Eye Institute, Los Angeles, California, USA under the tutelage of Dr. Robert Goldberg. In addition to eyelid surgery, Dr. Gupta focuses on cosmetic eyelid surgeries, thyroid eye disease, and revision procedures. Apart from clinical work, Dr. Gupta has keen interest in research, teaching, and developing minimally invasive techniques for orbital and cosmetic surgeries.

Prerana Tahiliani is consultant oculoplastic and orbit surgeon at Mumbai Eye Plastic Surgery and Lotus Eye Hospital, Mumbai, India. She completed her post-graduation in ophthalmology from Sri Sankaradeva Nethralaya, Guwahati, India followed by a fellowship in ophthalmic plastic surgery and ocular oncology at the LV Prasad Eye Institute, Hyderabad, India. During her tenure at LV Prasad, she developed a keen interest for ocular oncology and dacryology. She followed this up with a short stint at UCLA and CHLA, Los Angeles, USA in the year 2016. Dr. Tahiliani is a keen researcher and invited speaker at many national and international forums. Apart from this, she also is an avid teacher and likes encouraging the young leaders in oculoplastics.



Eyelid Lacerations and Canalicular Laceration

1

Varshitha Hemanth Vasanthapuram

1.1 Introduction

Eyelid lacerations form a major bulk of the ocular emergencies encountered in the Oculoplasty clinic. Periocular soft tissue trauma can range from a simple abrasion to avulsion, may be associated with orbital fractures/open globe injury or facial injury.

Eyelids play an important functional and aesthetic role. A good eyelid tear repair is crucial to preserve this. A thorough clinical examination and evaluation is paramount to effective surgical planning and repair.

1.2 Pre-requisites for a Good Surgical Planning

1.2.1 History

- Time since injury: Early repair is advocated, especially in laceration involving canaliculus.
- Mode of injury: It is important to note the mode of injury. For instance, in case of Road Traffic Accident (RTA) one must look for grease, gravel, stones, glass pieces within the laceration. In animal bite injury, anti-rabies vaccine and immunoglobulin need to be arranged. Other modes include assault, penetrating trauma related to occupation, blouse hook injury in babies, etc.

V. H. Vasanthapuram (✉)

Ophthalmic Plastic Surgery Services, Narayana Nethralaya, Bangalore, India

© The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024

A. Gupta, P. Tahiliani (eds.), *Oculoplastic and Orbit Casebook*, Current Practices in Ophthalmology, https://doi.org/10.1007/978-981-97-0593-1_1

1.2.2 Clinical Assessment

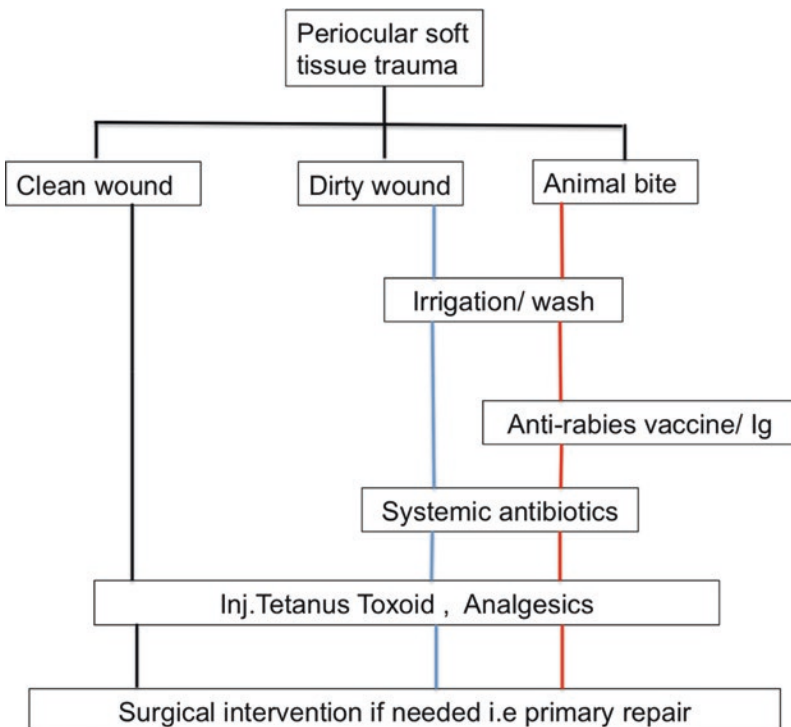
The laceration should be assessed for the following:

- Full thickness or partial thickness.
- Eyelid avulsion.
- Extra-marginal/marginal involvement.
- Canthal involvement.
- Canalicular and lacrimal apparatus involvement.
- Soft tissue loss.
- Presence of foreign body.
- Additional injury—orbital fracture, globe injury.

1.2.3 Before the Surgery

- Pre- and post-operative photographic documentation.
- Proper patient communication and consent.
- Repair should be preceded by thorough saline and betadine wash.
- Tetanus toxoid injection and antibiotic coverage should be given.

Though the extent of periocular injury and cause is varied, following a general protocol can help in most occasions in the emergency room. This protocol should however be followed after a thorough assessment of the vitals, systemic status, and associated injuries.



1.2.3.1 Irrigation

Soft tissue wounds less than 8 h old and surgical incisions are categorized as “clean” and wounds older than 8 h are categorized as “dirty” wounds [1]. Soft tissue injuries secondary to RTA may have mud, grease, gravel, glass pieces, etc. within the wound and vicinity. Cleaning and irrigation remove the dirt which aids in better assessment of wounds. Also, thorough irrigation reduces the organism load and decreases the risk of infection, especially in animal bites.

Irrigation of periocular soft tissue wounds at the author’s institute is performed with normal saline solution, directly with the bottle in small wounds or with an intravenous (iv) infusion cannula attached to the bottle for large wounds. The nozzle is placed at a distance of approximately 1–2 inches from the wound. In case of grease or soil, gentle digital cleaning can aid. Wounds with associated globe injuries should be irrigated with caution.

Hollander et al. found that irrigation may not be beneficial in clean wounds. In fact, they cited irrigation deems the wounds more exposed to possible exogenous infection and trends towards worse cosmetic outcome after primary repair [2]. This was attributed to tissue trauma secondary to high pressure irrigation [2].

The author recommends gentle cleansing of clean wounds and irrigation of dirty wounds.

Wound debridement can be performed under anesthesia just before wound repair with an aim of maximum tissue preservation. The non-viable tissue can be excised and foreign bodies removed [3].

The periocular region has a rich blood supply. There can be bleeding from the supra-trochlear and supra-orbital vessels in lacerations involving the brow. Initial hemostasis can be achieved by pressure application.

1.2.3.2 Medications

Routine analgesics like non-steroidal anti-inflammatory drugs can be prescribed for pain. Topical broad-spectrum antibiotics should suffice for clean wounds [4]. In cases of animal bites, RTA, systemic immunosuppressed states such as diabetes, broad spectrum systemic antibiotics are recommended for 5–7 days [1, 4]. The author prescribes amoxicillin-clavulanate combination 30 mg/kg body weight iv or 625 mg orally (adults) at a twice daily dosing for 5 days.

Tetanus Immunization

Major wounds such as crush wounds, devitalized wounds, burns, fractures, avulsion, dirty wounds, and minor wounds such as scratches are prone to tetanus. It is vital to probe the history of prior tetanus immunization [5]. Tetanus administration for wounds as per the Advisory Committee on Immunization Practices (ACIP) recommendations is mentioned in Table 1.1 [6]. Tetanus toxoid (Tt) produces delayed immunity. Administering Tt in acute wounds does not provide the required immunity but ensures protection for future wounds, hence in cases of unknown immunization history or history of last booster in more than 10 years or greater than 5 years in case of contaminated wound, tetanus immune globulin (TIG) should be administered [5, 6]. The recommended TIG dosage for adult prophylaxis is 250–500 U IM in opposite extremity to Tt and 250 U IM in pediatric age group [5].

Table 1.1 Tetanus administration for wounds as per the Advisory Committee on Immunization Practices (ACIP) recommendations

History of adsorbed tetanus toxoid-containing vaccines (doses)	Clean, minor wound, DTaP, Tdap or Td ^a	Clean, minor wound, TIG ^b	All other wounds ^c , DTaP, Tdap or Td ^a	All other wounds ^c , TIG ^b
Unknown or <3	Yes	No	Yes	Yes
≥3	No ^d	No	No ^e	No

DTaP diphtheria and tetanus toxoids and acellular pertussis vaccine, *Tdap* tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis, *Td* tetanus and diphtheria toxoids, *TIG* tetanus immune globulin

^aDTaP is recommended for children <7 years of age. Tdap is preferred to Td for persons aged 11 years or older who have not previously received Tdap. Persons aged 7 years or older who are not fully immunized against pertussis, tetanus, or diphtheria should receive one dose of Tdap (preferably the first) for wound management and as part of the catch-up series; if additional tetanus toxoid-containing doses are required, either Td or Tdap vaccine can be used

^bPeople with HIV infection or severe immunodeficiency who have contaminated wounds (including minor wounds) should also receive TIG, regardless of their history of tetanus immunizations

^cSuch as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite

^dYes, if ≥10 years since the last tetanus toxoid-containing vaccine dose

^eYes, if ≥5 years since the last tetanus toxoid-containing vaccine dose

1.2.4 General Principles in Repair

- Best performed under surgical loupe or microscope.
- Local infiltration or general anesthesia.
- Layered closure of tissues should be performed from deep to superficial.
- Skin suturing—eversion of wound edges during closure gives a better cosmetic outcome [4].
- Scarring along relaxed skin tension lines yields better results, hence the ragged edges of lacerations should be attempted to be converted to parallel edges to RSTL [4].
- Preserve as much soft tissue as possible during debridement [7].
- Avoid major reconstructive procedures during primary repair [7].
- Perform eyelid tear repairs after globe repairs in case of combined injuries.

Below are a few case scenarios illustrating the management of different grades of eyelid laceration.

1.3 Case Scenarios

1.3.1 Case 1

1.3.1.1 Case Summary

A 32-year-old female presented with trauma to the left eye following a fall from bicycle in the morning of her visit to the Eye Clinic. On examination, a full thickness laceration of the middle third of the left upper eyelid was noted (Fig. 1.1a). It was involving the margin, sparing the lateral canthus. The globe was intact. Visual acuity was 6/6 in both eyes, slit lamp examination was unremarkable.