Supplementary materials

Supplementary Table S1: International Classification of Diseases (ICD) Codes Used to Retrieve Data

Diagnosis	ICD-9 Code(s)	ICD-10 Code(s)
Orbital Hemorrhage	376.32	H05.231, H05.232, H05.233, H05.239
Open Globe	871	S05.2, S05.3, S05.5, S05.6, S05.7
Vitreous Hemorrhage	364.41	H43.1
Open wound of adnexa	870	S01.1, S05.4
Superficial eye injury	918	S00.2, S05.0
Contusion of eye or adnexa	921	S00.1, S05.4
Orbital Fracture	802.6, 802.7	S02.30XA, S02.30XB, S02.31XA, S02.31XB, S02.32XA, S02.32XB, S02.3XXA, S02.3XXB
Nasal Fracture	802.0, 802.1	S02.2XXA, S02.2XXB
Maxillary Fracture	802.4, 802.5	S02.40XA, S02.40XB, S02.41XA, S02.41XB
Low Vision	369	H54
Optic Neuropathy	950.0	S04.01
Diplopia	368.2	H53.2
Orbital Edema	376.33	H05.22
Orbital Cellulitis	376.01	H05.01

ICD = International Classification of Diseases. The above codes were utilized to determine whether patients with primary orbital hemorrhage were also diagnosed with other traumatic facial/ocular injuries.

Supplementary Table S2: External Causes of Injury and Poisoning Codes (E-codes) Used to Retrieve Data

Mechanism	ICD-9 E-Code(s)	ICD-10 E-Code(s)
MVA	E810-825	V00-79
Fall	E880-888	W00-19
Assault	E960-969	X92-99, Y00-09
Objects	E916-920	W20-W49
Other	E800-807, E826-848, E850-869, E890-915, E921-929, E950-959, E970-999	V80-99, W50-99, X00-83, Y21-38

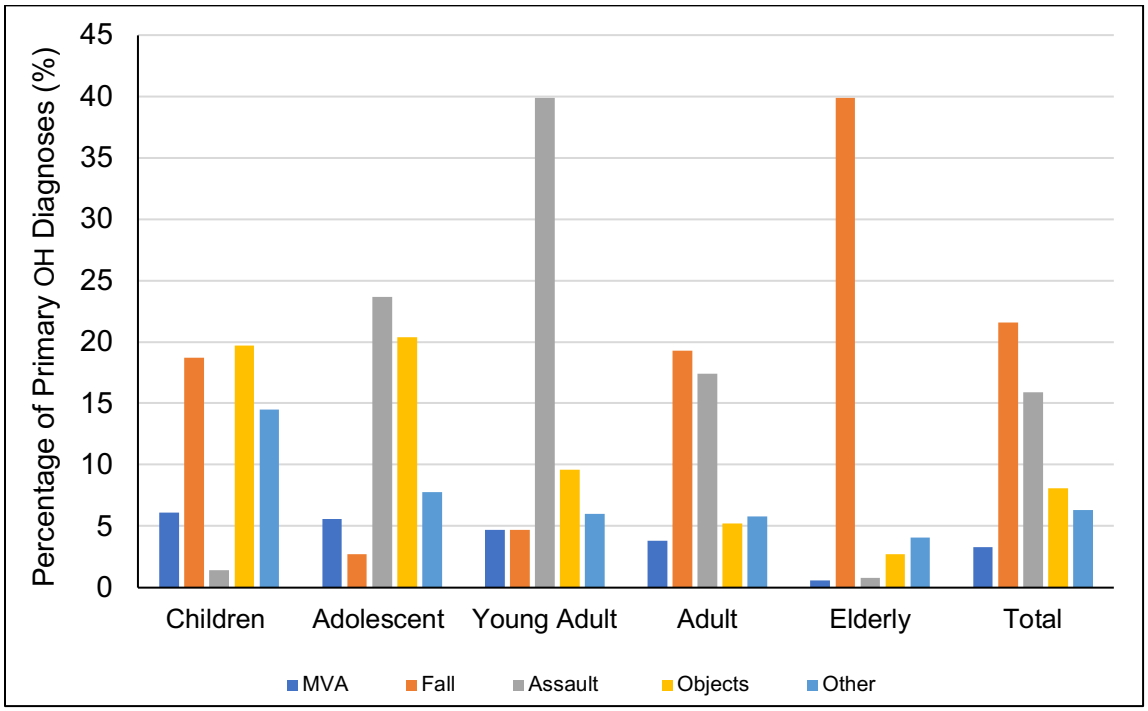
ICD = International Classification of Diseases. E-Codes = External Causes of Injury and Poisoning Codes. The above codes were utilized to determine the etiology of primary orbital hemorrhage (if documented) from the emergency department sample database.

Supplementary Table S3: Lateral Canthotomy Procedure Codes Used to Retrieve Data

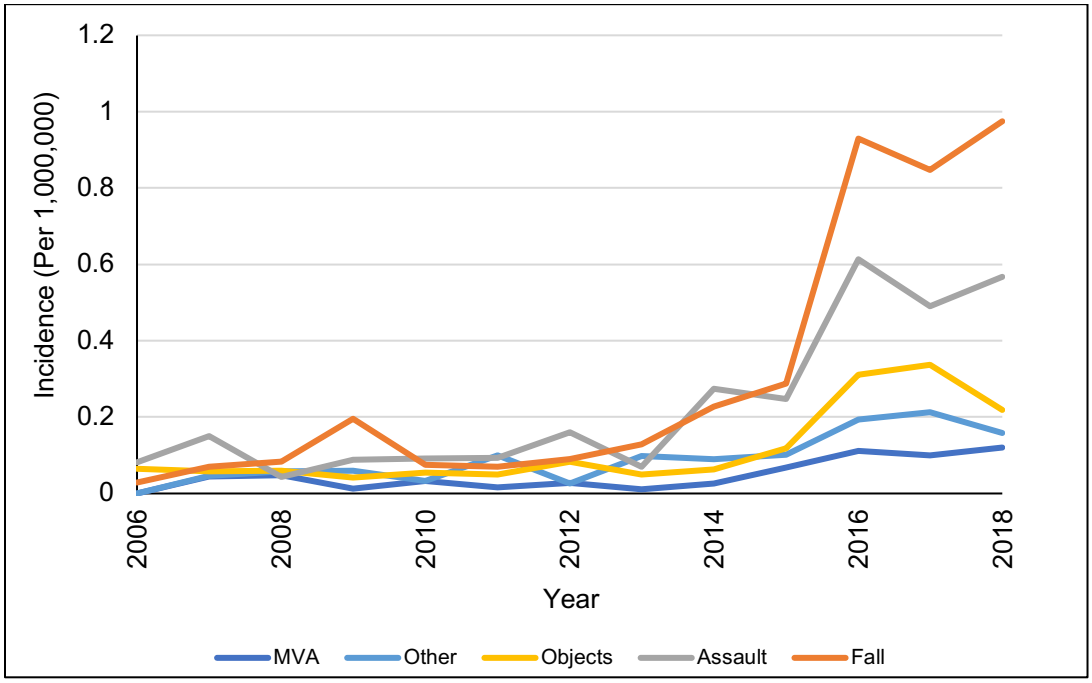
Procedure	ICD-9 Code	ICD-10 Codes	CPT Code
Lateral Canthotomy	08.51	08NN0ZZ, 08NN3ZZ, 08NNXZZ, 08NP0ZZ, 08NP3ZZ, 08NPXZZ, 08NQ0ZZ, 08NQ3ZZ, 08NQXZZ, 08NR0ZZ, 08NR3ZZ, 08NRXZZ	67715

ICD = International Classification of Diseases. CPT = Current Procedural Terminology. The above codes were used to probe the emergency department sample to determine if lateral canthotomy was documented as having been performed.

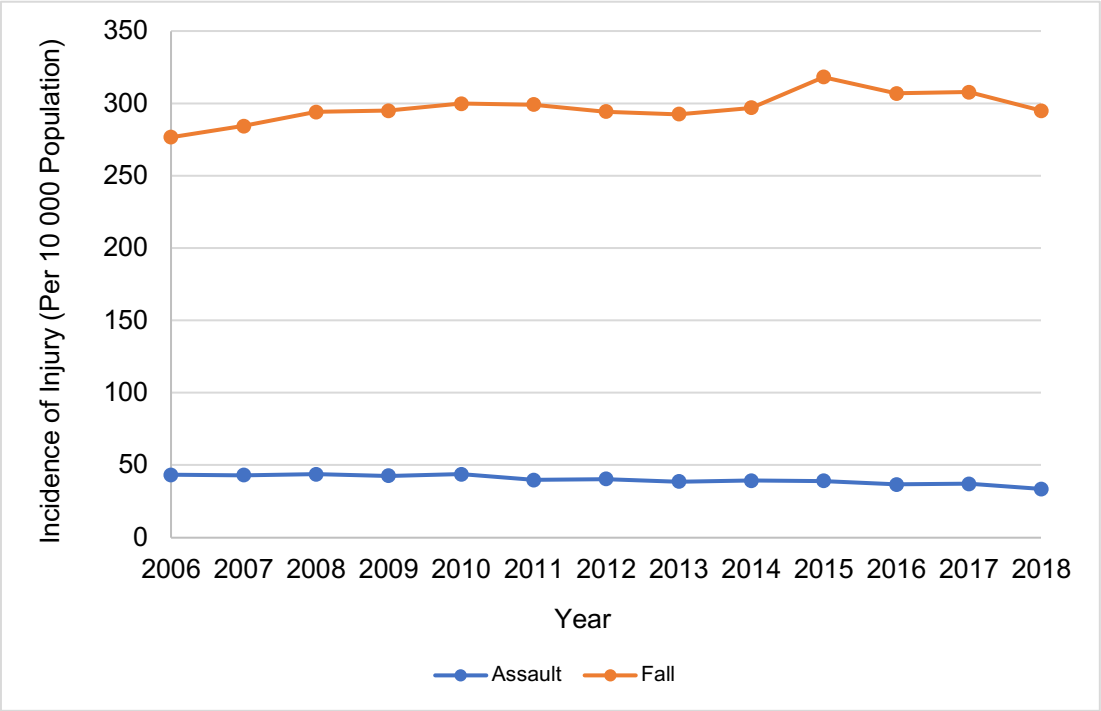
Supplementary Figure S1: Primary orbital hemorrhage-associated mechanisms of injury across age groups



Supplementary Figure S2: Overall incidence of various mechanisms of injury causing primary orbital hemorrhage from 2006 to 2018 (MVA = Motor vehicle accident)



Supplementary Figure S3: Overall assault and fall incidence in the United States population from 2006 to 2018, extrapolated from the National Emergency Department Sample



Supplementary Table S4: Most common primary OH-associated ocular injuries across age groups

	Percent of Primary OH Diagnoses in Age Group with the Associated Injury						
Associated Injury	**Children (≤ 10) (N = 589) n (%)**	**Adolescent (11-20) (N = 488) n (%)**	**Young Adult (21-44) (N = 1423) n (%)**	**Adult (45-64) (N = 1370) n (%)**	**Elderly (≥ 65) (N = 2083) n (%)**	**Total (N = 5953) n (%)**	***p* value[a]**
Contusion	55 (9.3)	40 (8.2)	95 (6.7)	84 (6.1)	104 (5.0)	377 (6.3)	0.45
Nasal Fracture	---[b]	---[b]	82 (5.7)	38 (2.8)	26 (1.2)	158 (2.7)	0.0079
Wound	13 (2.1)	13 (2.6)	43 (3.0)	31 (2.3)	43 (2.1)	143 (2.4)	0.93
Low Vision	---[b]	---[b]	14 (1.0)	14 (1.1)	84 (4.0)	123 (2.1)	0.0076
Orbital Fracture	---[b]	---[b]	41 (2.9)	23 (1.7)	25 (1.2)	94 (1.6)	0.2411
Superficial	---[b]	---[b]	37 (2.6)	35 (2.5)	---[b]	93 (1.6)	0.069
Diplopia	---[b]	---[b]	34 (2.4)	16 (1.2)	---[b]	60 (1.0)	0.0657

[a] = statistical assessment based on assumption of equal distribution among age groups; [b] = 10 or fewer patients reported in this category, information omitted from table to preserve patient anonymity.