Surgical Intervention on Pediatric Orbital Floor Fractures Improves Enophthalmos but Does Not Affect Visual Outcomes: An Analysis of 72 Children with Isolated Orbital Floor Fractures

Justin M. Broyles, MD, Danielle Jones, BS, Justin Bellamy, BS, Mohamad Sebai, MD, Sami Tuffaha, MD, Karim Sarhane, MD, Paul N. Manson, MD, Amir H. Dorafshar, MBChB

The Johns Hopkins Hospital
Department of Plastic and Reconstructive Surgery
Baltimore, MD

JOHNS HOPKINS MEDICINE

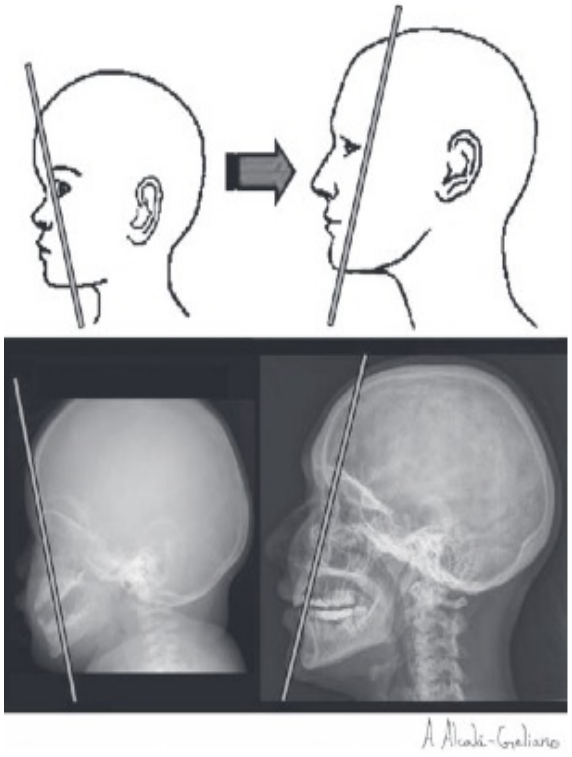
Nothing to disclose

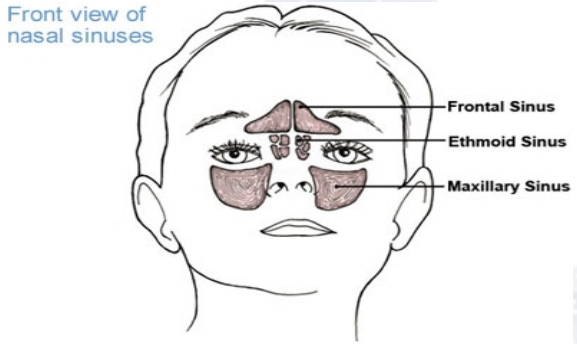
BACKGROUND

- Pediatric facial fractures are common
- Periorbital fractures are the third most common facial fracture[1]
- Established algorithms for adult orbital floor fracture management
- Management of pediatric floor fractures is controversial

1. Gerber, Barbara, Paul Kiwanuka, and Daljit Dhariwal. "Orbital Fractures in Children: A Review of Outcomes." *British Journal of Oral and Maxillofacial Surgery* 51.8 (2013): 789-93

BACKGROUND





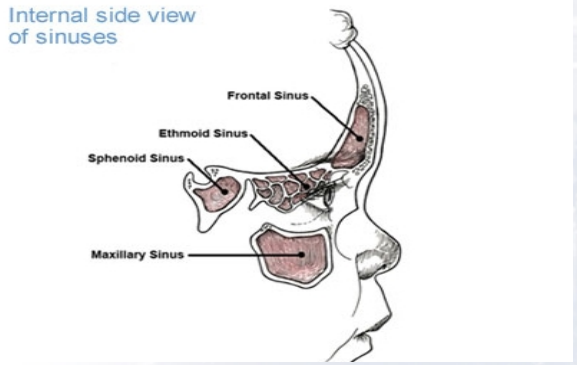


Figure from:Alcala-Galiano, A., I. J. Arribas-Garcia, M. A. et al.. "Pediatric Facial Fractures: Children Are Not Just Small Adults." Radiographics 28.2 (2008): 441-61.

CLINICAL PRESENTATIONS

Restricted Upward Gaze

Enophthalmos

Wei, Leslie A, et al, "Pediatric Orbital Floor Fractures." *Journal of American Association for Pediatric Ophthalmology and Strabismus* 15.2 (2011): 173-80.

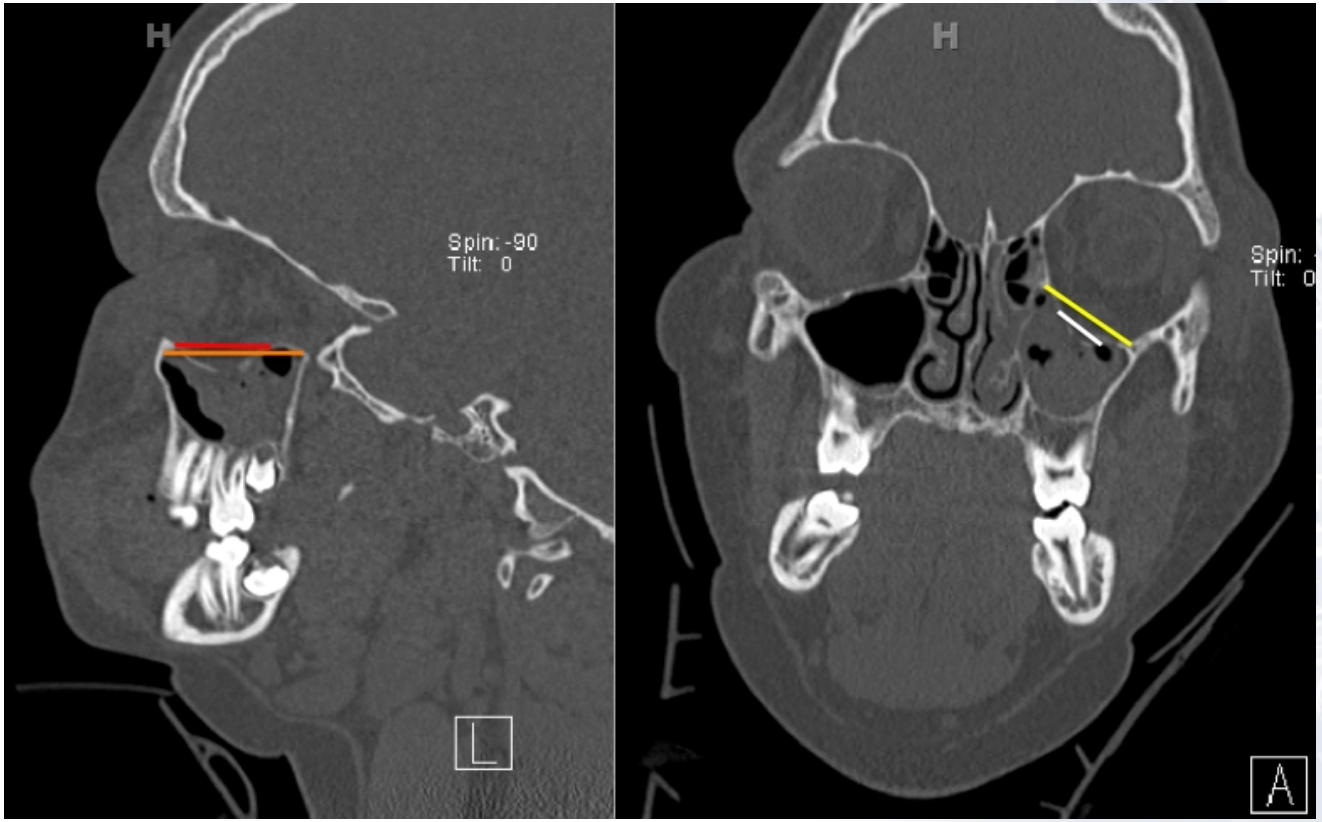
PURPOSE

- Aims:
  - Determine defect/orbit width ratio that is associated with the development enophthalmos
  - Predict long-term visual outcomes in children who present with visual disturbances

METHODS

- Retrospective review, 1991-2012
- 72 Children with isolated orbital floor fractures
- 76 Fractures
- Chart and radiographic review
  - Panoramic radiographs (66%)
  - Computed tomography (34%)

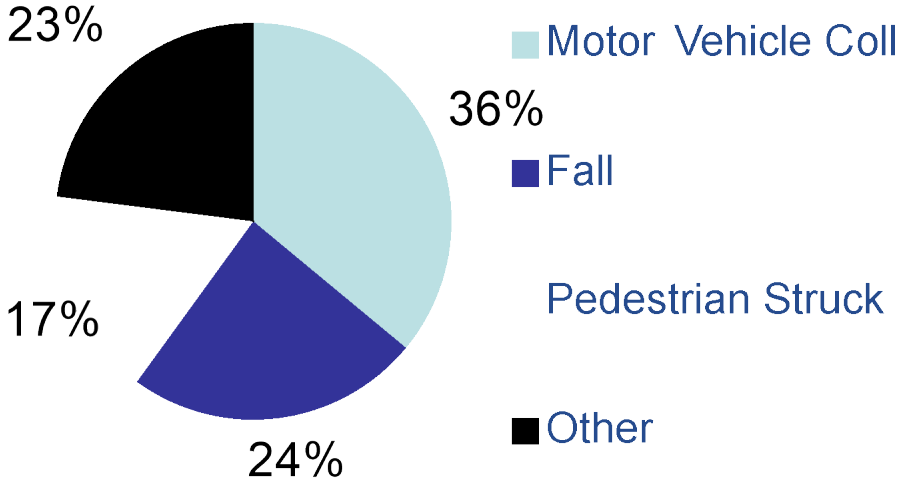
RADIOGRAPHIC EVALUATION



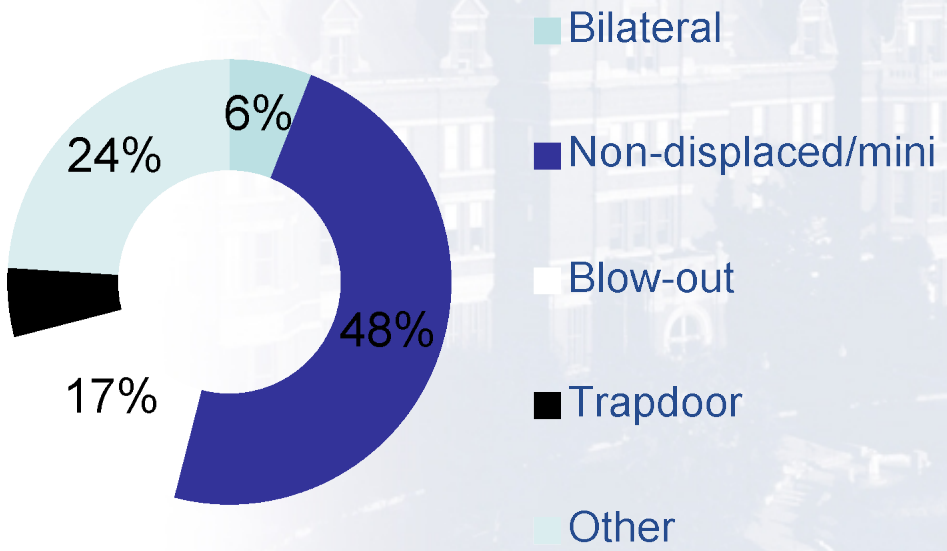
DEMOGRAPHICS

69% (50/72) MALE
AGE: 8.4 YRS +/- 4YRS
FOLLOW-UP: 14 MONTHS

Mechanism



Fracture Patterns



RESULTS: MANAGEMENT

- 33% Treated surgically
- Surgical indications:
  - Size of fracture (65%)
  - Entrapment (17%)

P<0.05	SURGERY	CONSERVATIVE
Defect Width (mm)	20.7	7.8
Defect/Orbit Width ratio	0.54	0.32

RESULTS: VISUAL ACUITY

PRESENTATION

Visual Acuity:

- 19% Decreased (14/72)
- 81% Unchanged (58/72)

FOLLOW-UP

Visual Acuity:

- Unchanged 50% (7/14)
- Decreased 7% (1/14)
- Improved 43% (6/14)

RESULTS: ENOPHTHALMOS

ON ADMISSION

- 8% (6/72)
  - 4 Managed surgically
    - Complete resolution
  - 2 Managed conservatively
    - Complete resolution

AT FOLLOW-UP

- 4% (3/72)
  - Managed conservatively
    - Complete resolution

RESULTS: SURGICAL OUTCOMES

	ENOPHTHALMOS	IMPROVEMENT VISUAL ACUITY
SURGERY	RR: 0.02 CI 0-0.49, $p<0.05$	NS

CONCLUSIONS

- Surgical correction of floor defects eliminates enophthalmos
- However, enophthalmos, either acute or delayed, can potentially resolve without surgery
- Surgery does not improve visual acuity in patients presenting with decreased vision
- A definite defect/orbital width ratio for surgical intervention remains to be determined