Nasal fractures in children and adolescents; mechanisms of injury and efficacy of closed reduction

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ABSTRACT

Objectives: To determine the most common mechanisms of traumatic nasal deformities referred to pediatric otolaryngology. To examine the efficacy of closed reduction of nasal fractures in children and adolescents based on the parents’ and surgeon’s ratings of post-reduction nasal symmetry.

Methods: Case series and chart review within an urban pediatric otolaryngology practice.

Results: 100 cases of traumatic nasal deformity met inclusion criteria over a 3-year study period. The mean age at presentation was 13 years (4 weeks – 18 years); 55% were male and 70% were over the age of 12 years. The most common mechanism of injury was sports-related trauma (28%), followed by accidental trauma (21%), interpersonal violence (10%), motor vehicle collision (6%) and alcohol-related (2%). Of these 100 cases, 21% underwent closed reduction during the 14-day period following injury. At the postoperative visit the operating surgeon was satisfied with nasal symmetry in 43% of cases, with the parent(s) satisfied in 81% of cases. Both parent and surgeon were satisfied with post-reduction symmetry 33% of the time (TABLES 1 and 2 and FIGURES 1 and 2).

DISCUSSION

This study demonstrates that the mechanisms of nasal injury in children vary by age group and differ from the most common sources of injury in adults1,2. Additionally it appears that the efficacy of closed reduction for re-establishing nasal symmetry may be less in children and adolescents than established rates of successful reduction in adults3,4. The trend towards increasing efficacy with increasing age may reflect a higher rate of greenstick fractures in younger children than in teenagers and adults. Identifying differing success rates between age groups has implications for preoperative counseling and patient selection. This study would suggest that young children with severe deformities are less likely to regain satisfactory symmetry following closed reduction alone. In these cases a parent might consider forgoing an attempt at closed reduction altogether and defer intervention until a later timepoint. Such a decision would spare a young child an additional anesthetic and would lower medical costs. This study is limited by its retrospective nature and small number of subjects in the closed reduction group.

CONCLUSIONS

The most common mechanisms of nasal fracture in an urban / suburban pediatric population vary by age but tend to involve sports injuries and accidental falls / trauma. When a closed reduction is performed on a pediatric patient, postoperative surgeon and parental satisfaction appears to vary by age, with younger children having less predictable results.

REFERENCES


METHODS

Institutional review board approval was obtained. A pediatric otolaryngology practice billing database was queried for diagnosis codes consistent with nasal fracture and traumatic nasal deformity during the 3 year study period. Cases were identified and charts reviewed.

RESULTS

There were 100 cases of traumatic nasal deformity that met inclusion criteria. The mean age at presentation was 13 years (4 weeks – 18 years); 55% were male and 70% were over age 12 years. The most common mechanism of injury was sports-related trauma (28%), followed by accidental trauma (21%), interpersonal violence (10%), motor vehicle collision (6%) and alcohol-related (2%). Of these 100 cases, 21% underwent closed reduction within a 14-day period following injury. At the postoperative visit the operating surgeon was satisfied with nasal symmetry in 43% of cases, with the parent(s) satisfied in 81% of cases. Both parent and surgeon were satisfied with post-reduction symmetry 33% of the time (TABLES 1 and 2 and FIGURES 1 and 2).

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REFERENCES


TABLES 1 and 2: Summary of demographic information for children and adolescents with traumatic nasal deformities who presented to an urban pediatric otolaryngology practice over a 3 year period. CRNF: closed reduction of nasal fracture; MVC: motor vehicle collision; EToH: alcohol-related