

Craniofacial trauma produced by a violent mechanism *Coltea ENT Clinic experience*

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Abstract: Introduction: The utility of the study is due to the relatively high frequency of traumatic pathology in ENT practice. Facial, cervical and otic trauma may occur at any age.

Materials and methods: The study is retrospective and includes a group of 317 patients who were treated for ENT trauma (craniofacial, neck and ear trauma) in the emergency room of Coltea Hospital.

Results: The group is composed of 64.35% males and 35.65% women, 86.12% (273) patients are from urban areas and the remaining 13.88% (44) from rural areas. The average age is 33.84 years. Most common etiology is human aggression (90.85%). The most common fracture was nasal fracture without displacement.

Discussions and Conclusions: The most common patients are young adults, male and from urban areas. Patients most commonly present with cranio-facial trauma (82.97%) and most common mechanism is human aggression (90.85%). About half of patients experience posttraumatic epistaxis previously.

Key Words: craniofacial trauma, epidemiology, production mechanism, associated injuries.

Traumatic pathology is relatively common in ENT practice. In the United States is estimated to occur about 3 million [1] annual presentations to the doctor for this pathology. Facial, anterior cervical and ear trauma are common in active patients, who have physically demanding jobs or practicing different sports. In the literature, most patients are young adult males [2,3,4].

A statistic [5] mentions that road accidents, altercations and falls were the etiology of the nasal pyramid fractures in over 85% of the cases. Also other international studies [4,6] stipulate values between 27.9% and 36% for human aggression and 16.6 - 32% for road accidents.

Craniofacial trauma affect at this level soft tissue, skin, vessels, nerves, muscle, adipose tissue and bone structures. According to a study [4] most commonly broken bone in the craniofacial trauma are the mandible (44.2%), followed by nasal pyramid (18.9%). In other researches [6] nasal fracture is more common. In recent years the number of patients with facial fractures slightly increased [7], although safety and health have improved.

Surgery is frequently required (77% of cases [4]), most common to solve fractures (eg. nasal pyramid, jaw).

Materials and methods

During 01.01.2011 - 29.12.2011 a total of 1100 patients with ENT trauma complaints (craniofacial, cervical and otic trauma) have addressed to the doctor at Coltea Hospital, ENT emergency room from Bucharest. Of these 317 patients are forensic cases.

The study is retrospective and will continue to follow this selected group of 317 patients, aged between 15 and 84. The data were collected using medical records and the statistical bases of the hospital.

Results

Lot description

Gender distribution is 204 (64.35%) men and 113 (35.65%) women. 86.12% of patients (273) are from urban areas and the remaining 13.88% (44) originate in rural areas.

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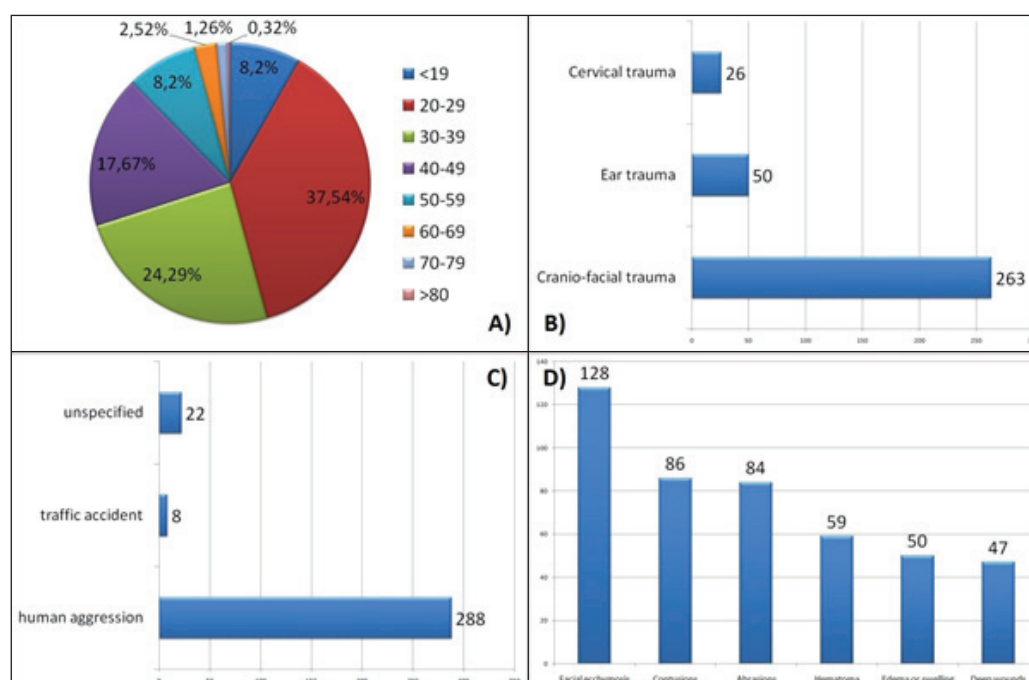


Figure 1: A) Age group distribution; B) Anatomical region affected; C) Etiology; D) Soft tissue injuries.

Distribution of patients by age is mentioned in Table 1. Most patients were in 20-29 and 30-39 years age groups (37.54% and 24.29%), incidence of craniofacial, ear and neck trauma decreases with increasing age. The young adult age is an incidence peak. (Figure 1.A). The average age is 33.84 years.

Period between injury and presentation to the doctor is generally short, 193 of the 317 patients have addressed to the doctor on the same day or next day of the incident.

Craniofacial trauma diagnosis was made in most cases, 263 of 317, representing 82.97% of patients. Anterior cervical trauma was identifiable on 26 patients and 50 patients had otic trauma. (Figure 1B) A total of 22 (6.94%) were polytraumatized, 12 of them with injuries at other levels than the head and neck.

The etiology was in an overwhelming percentage represented by human aggression (288 patients - 90.85%). 8 patients had car accident and in 22 cases the etiology is not specified. In one patient's case, the human aggression factor was accompanied by a traffic accident. (Figure 1C).

Affirmative loss of consciousness was reported in 21.77% of cases (69 patients), while the remaining 78.23% (248 patients) have retained consciousness after trauma.

The most common fracture was that of the nasal bones, 62 patients (19.56%), compared with maxillary sinus wall fractures in three patients and zygomatic bone fracture (2 patients).

The nose fracture was with displacement at the rate of 37.1% (23 patients) and without displacement in 62.9% (39 patients) from the patients with fractures of the nasal pyramid. Displaced fractures underwent reduction of fracture with internal and external nose retainers.

Of the 317 patients enrolled in study 132 (41.64%) had nasal pyramid trauma and 62 (19.56%) had nasal bone

fracture. (Table 3) All patients with nasal pyramid fracture showed simultaneously soft tissue damage (facial ecchymosis, contusions, abrasions, bruising, edema or swelling, deep wounds). (Figure 2A, 2B) 11 patients (17.74% of patients with nasal pyramid fractures) had other major injuries (polytrauma, ear trauma, fractures of the sinus wall, zygomatic bone fracture).

Among patients with displaced fractures, 3 patients had extra-ENT polytrauma, 1 patient had concomitant otic injury (clinical objectified by hearing loss), no patients had cervical trauma and 1 patient had fractured

the left maxillary sinus upper wall. In the subgroup of the patients with fractures without displacement, 1 patient was polytraumatized, 3 patients had ear trauma (hearing loss, tympanic membrane rupture), no patient had anterior cervical trauma, 1 patient had concomitant fracture of the lateral wall of the maxillary sinus and 1 patient had fracture of the right zygomatic bone.

185 (58.36%) patients have craniofacial trauma without nasal pyramid trauma and 255 (80.44%) do not show fracture of the nasal pyramid.

Among patients with nasal pyramid trauma, 70 (53.03%) have only soft-tissue injury without fracture, 39 (29.55%) had fractures without displacement and 23 (17.42%) with displacement. (Figure 2C)

14 (22.58%) of patients with fractured nasal bones had open fractures and the remaining 48 (77.42%) had fracture with intact skin. (Table 4) (Figure 2D)

Of the 62 patients with nasal pyramid fractures, 14 (22.58%) had open fractures (5 patients with displaced fractures and 9 without). From the data collected from the patients, epistaxis was present in 51 cases (82.26%), 19 patients with displaced fractures and 32 patients with fracture without displacement.

21 patients with nasal bone fractures reported loss of consciousness in history (8 patients with displaced fractures and 13 without displacement).

In the subgroup of patients with nasal bone fractures, etiology is also dominated by human aggression, 58 patients (93.55%), 21 patients with displaced fractures and 37 fractures without displacement. At 2 patients the etiology is traffic accident.

Situation of patients with fractures of the nasal pyramid is featured in Table 2.

Of the total patients, 49.53% (157 patients) had spontaneously stopped anterior nosebleeds, 1 patient of them presenting epistaxis in the emergency room (due to a hypertensive attack).

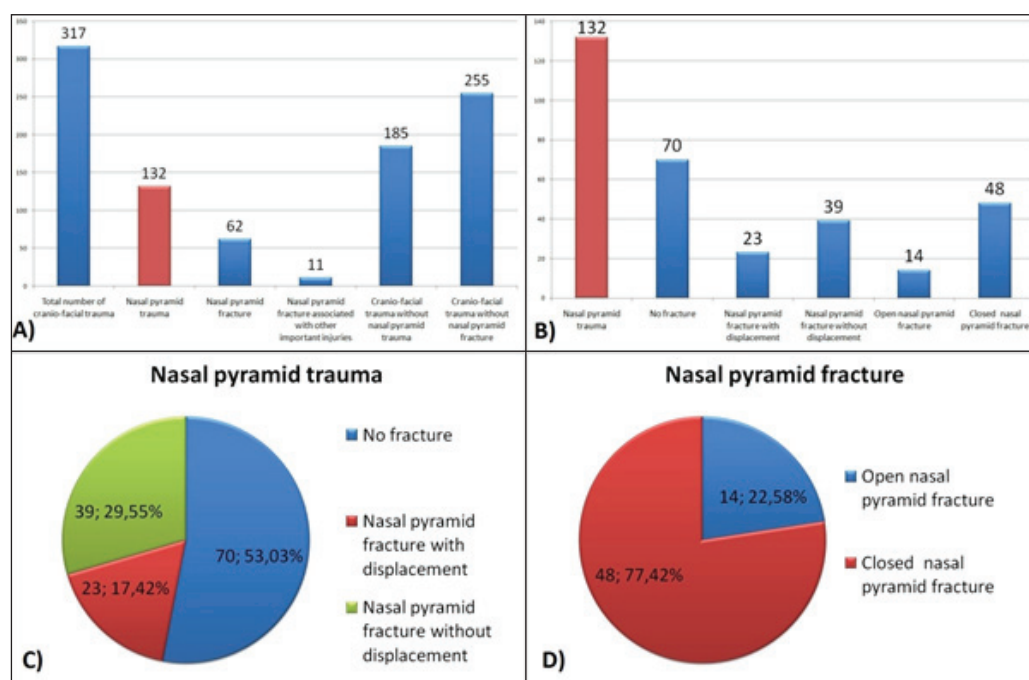


Figure 2: A) Craniofacial trauma, B) Nasal pyramid trauma, C) Fracture/no fracture lesions, D) Open/closed fractures

Table 1: Age groups distribution

Age groups	Number of patients	Percent from total number of patients
<19	26	8,2%
20-29	119	37,54%
30-39	77	24,29%
40-49	56	17,67%
50-59	26	8,2%
60-69	8	2,52%
70-79	4	1,26%
>80	1	0,32%
	137	100%

Table 2: Nasal pyramid fractures (* number of patients and percentage of all patients with fractures of the nasal pyramid)

Nasal pyramid fracture	Number	Open fracture	Loss of consciences	Epistaxis	Extra-ENT polytrauma	Otic trauma	Human aggression	Accident	Unspecified
With displacement	23 (37,10%)	5 (8,06%)	8 (12,9%)	19 (30,65%)	3 (4,84%)	1 (1,61%)	21 (33,87%)	1 (1,61%)	1 (1,61%)
Without displacement	39 (62,90%)	9 (14,52%)	13 (20,97%)	32 (51,61%)	1 (1,61%)	3 (4,84%)	37 (59,68%)	1 (1,61%)	1 (1,61%)
Total	62 (100%)	14 (22,58%)	21 (33,87%)	51 (82,26%)	4 (6,45%)	4 (6,45%)	58 (93,55%)	2 (3,22%)	2 (3,22%)

Table 3: Cranio-facial trauma (*percent from total number of cranio-facial trauma)

	Number of patients / Percent*
Total number of cranio-facial trauma	317
Nasal pyramid trauma	132 (41,64%)
Nasal pyramid fracture	62 (19,56%)
Nasal pyramid fracture associated with other important injuries	11 (3,47%)
Cranio-facial trauma without nasal pyramid trauma	185 (58,36%)
Cranio-facial trauma without nasal pyramid fracture	255 (80,44%)

From the soft tissue damage, bruising (128 patients), followed by nose contusion and abrasions (86, 84 patients respectively) are the most common.

Discussions and Conclusions

During one year the number trauma presenting to the Colțea Hospital ENT emergency room exceed 1000 patients of whom 317 cases have medico-legal implications.

In recent years is noted an increased incidence of the craniofacial trauma and especially of the nasal pyramid trauma trough human aggression.

The typical patient is a young adult male, from urban environment. This last characteristic can be influenced by the diagnostic's centre where survey was conducted location. Age and sex distribution are consistent with the data from the literature [2,3,4].

Most patients present promptly to the doctor, during the day in which the injury took place or the next days. Late submissions are rare and are mostly related to the correction of various defects (eg post-traumatic nasal septum deviation) or deficits (eg hearing loss) acquired after trauma.

Patients most commonly present with cranio-facial trauma (82.97%) and most common mechanism is human aggression (90.85%). Polytrauma is observed in 6.94% of patients. Affirmative loss of consciousness was reported in 21.77% of patients.

Table 4: Nasal pyramid trauma (*percent from total number of nasal pyramid trauma, ** percent from total number of nasal pyramid fracture)

	Number of patients / Percent*
Nasal pyramid trauma	132
No fracture	70 (53,03%)
Nasal pyramid fracture with displacement	23 (17,42%)
Nasal pyramid fracture without displacement	39 (29,55%)
Open nasal pyramid fracture	14 (22,58%**)
Closed nasal pyramid fracture	48 (77,42%**)

The most common fracture was that of the nasal bones (19.56%). Of these, 62.9% are without displacement and 37.1% with displacement.

Percentages of patients who present posttraumatic epistaxis and who have no nasal bleeding are almost equal. The most common soft-tissue damages are bruises, contusions and abrasions, in opposition with the deep wounds. (Figure 1D)

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