

## A CLINICAL AND STATISTICAL STUDY OF MAXILLOFACIAL FRACTURE IN THE UIJUNGBU AREA

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*The author has arrived at the following result after having carried out multilateral study based on a total of 282 maxillofacial fracture patients who have receive treatment at the Euijeongbu general hospital and Shinchun general hospital in the northern district of Kyunggido from march 1988 to august 1990.*

- 1. Sex distribution of Mx. facial fx. patient was higher in male by 4.6 : 1 and was predominant in the 3rd decade with 40.4% followed in decreasing order by the 2nd decade and the 4th.*
- 2. A majority were in the Mn. with 40.2% followed in decreasing order by zygoma, nasal bone and maxilla.*
- 3. For the sex distribution according to anatomy, male to female ratio was 6.2 : 1 in the mandible, followed in decreasing order by zygoma, and nasal bone with predominance in male.*
- 4. Car accident with 42.8% was the most common cause of fx. followed in decreasing order by violence, workmen's accident, and fall down.*
- 5. The involvement of other trauma areas are head, 79.0%, abdomen - thorax, and the extremities in decreasing order.*
- 6. In the mandibular fx. a majority were in the symphysis with 73.9% followed in decreasing order by angle, Condyle, and body.*
- 7. Maxillary fx. of the type LeFort II was estimated to be 41.2%*
- 8. Fracture in the zygoma including zygomatic arch was estimated to be 72.5%*

### I . INTRODUCTION

The treatment of Maxillofacial fracture has been practiced since B.C. 5 and documents reporting the treatments applied by Gilmen(1887)<sup>23)</sup> and Angle (1890)<sup>17)</sup> at the end of the 19th century have been published nowadays as the number of dentists majoring in oral surgery is increasing in our country, a large part of the treatment of maxillofacial fracture are managed by them<sup>28)</sup>.

Although there has been some reports concerning clinical and statistical studies based on maxillofacial fractures that occurred in a few places throughout the country, the author would like to make a report

on the analysis of patients with maxillofacial fracture in the uijungbu area which is the center of the northern medical district with an aim to contribute to the development of treatment of maxillofacial fracture patients.

### II. SUBJECT AND METHOD

The subject of study is the 282 patients with maxillofacial fracture who were treated at the emergency center, dental clinics or the department of ENT of the Uijungbu St. general hospital and the Shinchun general hospital which are situated in the northern area of Kyungido, from the period march 1988 to

august 1990. The analysis is based on the frequency of incidence and the methods of treatments.

### III. Result

#### (1) Frequency of incidence

##### ① Period

The period of incidence is as shown in table 1. with a total of 307 cases and the average of 3 month period was 30.7 cases.

##### ② Age and sex

The age distribution is as shown in table 2. The age of occurrence was the highest in the 3rd decade of life with 114 patients which makes up 40.4%. The incidence was 232 for men and 50 for female with a ratio of 4.6 : 1.

##### ③ Location

The local distribution is as shown in table 3. The incidence for mandibular simple fracture was 39% with 110 among a total of 282 patients and ranked the highest, followed in decreasing order by zygoma,

nasal bone, and maxilla.

##### ④ sex distribution according to location

The sex distribution according to location is shown in table 4. male to female ratio in the mandible was 6.2 : 1 and there was a greater occurrence for men in decreasing order of zygoma, maxilla, and nasal bone.

##### ⑤ Cause

The incidence rate of cause is as shown in table 5. The most common causes were car accident 42.8 % with 121 patients and violence 32.0% with 90 patients followed in decreasing order by workmen's accident, fall down, and sports.

##### ⑥ Involvement with other departments

An estimated percentage of 38.7%, 109 patients among a total of 282, showed anatomical involvement of the traumatized area with other areas. When classified according to anatomical areas, among a total of 114 followed in decreasing order by abdomen - thorax and the extremities.

Table 1. Period of incidence of maxillofacial fracture

Period	Freg	period	Freg	period	Freg
1988. 3~5	31	1989. 3~5	31	1990. 3~5	32
6~8	37	6~8	28	6~8	41
9~11	39	9~11	25		
12~1989.2	23	12~1990.2	19	(Total)	306

Table 2. Age and sex distribution of Mx. facial Fx.

Age	Male	Female	No (percentage)
0~10	20	4	24 ( 8.5%)
11~20	50	7	57 (20.2%)
21~30	94	20	114 (40.4%)
31~40	38	13	51 (18.1%)
41~50	15	5	20 ( 7.1%)
51~60	11	0	11 ( 3.9%)
60~and older	4	1	5 ( 1.8%)
Total	232(82.3%)	50(17.7%)	282 (100%)

Table 3. Anatomic distribution of Mx. facial Fx.

Location	Male	Female	No
Mn	98	12	110
Mx	15	2	17
Zy	58	12	70
Na	48	16	64
Mn+Mx	4	2	6
Mn+Zy	2	0	2
Mn+Na	1	1	2
Mn+Mx+Zy	0	1	1
Mn+Zy+Na	0	0	0
Mn+Mx+Na	1	1	2
Mx+Zy	4	2	6
Mx+Na	0	1	1
Mx+Zy+Na	1	0	1

Note : Mn - mandible, Mx - maxilla, Zy - zygoma and arch, Na - nasal bone

Table 4. Sex distribution according to area of Mx facial Fx.

Location	Male	Female	Male : Female
Mn	106	17	6.2 : 1
Mx	25	9	2.8 : 1
Zy	65	15	4.3 : 1
Na	50	19	2.6 : 1

Note : Mn - mandible, Mx - maxilla, Zy - zygoma and arch, Na - nasal bone

(2) Fracture and Treatment

① Mandible

In the mandible 89.4% were simple fracture which was 110 cases among a total of 123. As shown in table 7. When classified according to area there were a total of 221 areas with an average of 1.8 areas per patient. There were 75 cases of symphysis invol-

Table 5. Cause distribution of Mx. facial Fx.

cause	T.A	F.g	F.d	S.p	I.A	Others
cause	121	90	12	3	35	21
percentage	42.8%	32.0%	4.4%	1.2%	12.3%	7.3%

Note : T.A - traffic accident F.g - fight F.D - fall down S.p - sports I.A - industrial accident

Table 6. Involvement of other trauma area

area	Head	Abdomen thorax	extremities	other
cause	90	14	7	3
percentage	79.0%	12.3%	6.1%	2.6%

Table 7. Area distribution of mandibular fracture

area	right	left	total	percentage
Symphysis	75		75	33.9%
Body	14	20	34	15.4%
Angle	26	40	66	29.9%
Ramus	1	3	4	1.8%
Condyle	18	24	42	19.0%
Total	59	87	221	100%

ved 33.9%, followed in decreasing order by angle >condyle>body>ramus.

Concerning the methods of treatment 67.5% 83 cases among 123, were treated by closed reduction only and there were 3 cases which were left untreated due to circumstances.

### ② Maxilla

In the maxillary fx., as shown in table 8. The fracture type Lefort II was estimated to be 41.2% and 20 cases were treated by closed and open reduction and fixation by wiring.

### ③ Zygoma and zygomatic arch

As shown in table 9. among a total of 80 cases, 70 cases, 87.5% were simple fracture most of the cases, 48 cases, were treated by Gillis operation.

Table 9 Zygoma and zygomatic arch Fx.

area	Rt	Lt	Both	No	Percentage
Zy	1	2	0	3	3.8%
ZA	18	39	1	58	72.5%
Zy+ZA	10	8	1	19	23.7%
Total	29	49	2	80	100%

Note : Zy - Zygoma, ZA - Zygomatic arch

## IV. DISCUSSION

The condition of trauma due to fracture is diverse according to areas involved and pattern of force<sup>2)</sup>. Since the facial bone is a very complex bone made up of many kinds of bone morphologically and structurally the condition of trauma is also very diverse<sup>18,20,24,26,27)</sup>. Though, in general, anatomically weak spots of the jaws separate when they receive external force, there can be a lot of variation according to the pattern of external force<sup>3,19,25)</sup> and the condition of patients at that moment. In this study, car accident rated 42.8% of the cause which is similar to other areas 38.4%~45.2% and violence, 32.0%, is slightly higher than that of other areas<sup>4,11,6)</sup>. This may

Table 8. Area distribution of Mx. Fx.

	No	Percentage
Lefort I	5	14.6%
Lefort II	14	41.2%
Lefort III	3	0.9%
Others	12	35.3%
	34	100%

### ④ Nasal bone

As shown in table 10, among a total of 69 cases 64 cases 92.8% were simple fracture and 58 cases 84.1% were treated by closed reduction.

#### Table 10. Treatment of nasal bone

Total 69 Cases :

closed reduction—58 cases(84.1%)

open reduction—3 cases (4.4%)

observation—8 cases(11.5%)

have some relation to the fact that among the mandible and zygoma fractures, fracture on the left side was 15 times more than that on the right<sup>21,22)</sup>. The period of incidence during the 2.5 years of this study did not show clear characteristics and the male to female ratio was 4.6 : 1 which was slightly higher for male compared to urban areas<sup>5,8,9,10,12,13,14,15)</sup>. There were 24 patients 18.5%, in the 0-10yr age group and continued followup study is recommended since the growth of facial bone has not terminated for this age group<sup>1,6)</sup>.

## V. CONCLUSION

The author has arrived at the following conclusion

after having carried out multilateral study based on a total of 282 maxillofacial fracture patients who have receive treatment at the Euijeongbu general hospital and Shinchun general hospital in the northern district of Kyunggido from marh 1988 to august 1990.

1. Sex distribution of Mx. facial fx. Patient was higher in male by 4.6 : 1 and was predominant in the 3rd decade with 40.4% followed in decreasing order by the 2nd decade and the 4th.
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7. Maxillary fx. of the type Le Fort II was estimated to be 41.2%.
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국문초록

## 의정부지역의 악안면 골절에 대한 임상 통계적 연구

가톨릭대학 의학부 치과학교실

김 현 태

경기도 북부 지역의 중심인 의정부소재 종합병원인 의정부성모병원과 신천병원에 1988년 3월에서 1990년 8월까지 내원한 총 282명의 악안면 골절 환자를 다각적으로 분석하여 다음과 같은 견해를 얻었기에 보고하는 바이다.

1. 악안면 골절 환자의 성별 발생빈도는 남자에서 4.6:1로 호발하였고 연령별로는 20대(40.4%)가 가장 많고 10대, 30대의 순이었다.
2. 부위별 발생빈도는 하악골이 40.2%로 가장 많았고 관골, 비골, 상악골의 순이었다.
3. 부위에 따른 성별 발생빈도를 살펴보면 하악골에서 남녀비율이 6.2:1이며 관골, 상악골, 비골의 순으로 남자에 호발함을 알 수 있다.
4. 골절의 원인은 교통사고가 42.8%로 가장 많았고 폭력사고, 산재, 낙상 등의 순이었다.
5. 타부위 손상과의 관련성은 두경부(79.0%), 복·흉부, 상하지 순이었다.
6. 하악골 골절에서는 정중부가 33.9%로 가장 많았고 우각부, 파두, 골체부 순이었다.
7. 상악골 골절은 LeFort II type의 골절이 41.2%를 차지했다.
8. 관골부위의 골절은 관골궁을 포함한 골절이 72.5%를 차지했다.