RESEARCH PAPER

APPLICATION OF MAXILLOFACIAL FRACTURE SCALES AND ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH COMBINED MAXILLOFACIAL TRAUMA

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ABSTRACT

The article presents the scientific aspects of maxillofacial surgery worldwide, outlining aspects of combined traumatic brain injury. It also discusses modern methods of surgical treatment for combined maxillofacial trauma. A differentiated approach to the treatment of combined maxillofacial trauma is described. Quality of life and pain syndrome are assessed using questionnaires. The effectiveness of surgical treatment and its impact on patients' quality of life are determined.

Keywords: developmental history, algorithm, questionnaires, scales, combined maxillofacial and craniocerebral trauma, differentiated approach.

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Introduction

Injuries to the maxillofacial region are often accompanied by damage to the organs of vision, the brain, and the paranasal sinuses, and can be combined with injuries to vital internal organs of the thoracic and abdominal cavities. Therefore, patients in this group are generally classified as severely injured. Thus, issues of diagnosis and treatment of maxillofacial injuries are relevant in emergency medicine and are among the most pressing in modern maxillofacial surgery [1,7,9,14].

Traumatic brain injury is one of the pressing problems of modern medicine. Traumatic damage to the skull and brain accounts for 30–40% of the structure of all injuries and ranks first in terms of mortality and disability among patients of working age [6,8,9].

For fractures of the facial bones, diagnosis begins with radiography – a traditional, routine, and still primary diagnostic method [1,6,7,9,11], which allows identifying fractures and deformations of the facial skeleton, improper positioning of fragments, as well as foreign bodies that may be localized in the paranasal sinuses and orbits [1,2,3,6,7].

For an accurate diagnosis according to modern concepts, multi-slice computed tomography is required in 100% of cases, and in some situations, ultrasound and magnetic resonance imaging [1,9,13,14].

In modern practice, various scales for assessing the severity of injuries and functional impairments in combined trauma are widely used. Scales such as APS, NISS, ISS, ICISS, GCS, SOFA, APACHE II, MODS II, RTS, MPM II, SAPS II, as well as combined clinical-anatomical assessment systems, including RISC II, TRISS, PTS ASCOT, and others, are applied. However, the creation of a universal scale is hampered by the variety of injuries and impairments, as well as the insufficient study of predictors of trauma outcome. The proposed survival coefficients and prognostic factors are tied to specific polytrauma databases, which differ in mortality rates and quality of medical care, affecting their prognostic value [4,5,6,7,10,12].

Nowadays, the quality of life of patients is an important criterion for evaluating the effectiveness of treatment in clinical studies. Quality of life is characterized by changes in the patient's physical, emotional, and social well-being resulting from the disease or treatment [8].

Objective – to improve treatment outcomes for patients with combined maxillofacial trauma through the application of modern methods of comprehensive diagnosis and differentiated treatment tactics, along with quality-of-life assessment.

Material and Methods

We analyzed the data obtained from examining 234 patients with combined maxillofacial trauma who received treatment in the Department of Maxillofacial Surgery of the Tashkent Medical Academy of the Ministry of Health of the Republic of Uzbekistan from 2019 to 2024.

Our chosen differentiated approach to tactics, conservative and surgical treatment was based on the clinical picture, objective indicators of instrumental examination, the severity of neurological signs, and assessment of patients' consciousness using the Glasgow Coma Scale and other methods.

To assess quality of life, we used the European Quality of Life Questionnaire Euro Qol-5D and a visual analogue scale (VAS) to determine the intensity of pain syndrome, both having undergone a standard validation procedure. After establishing the

diagnosis, all patients underwent surgical intervention – colostomy, application of various anastomoses, and other reconstructive surgical methods.

Results and Discussion

All 234 patients with combined maxillofacial trauma were divided into two groups depending on the severity of the injury. The first group included 104 (44.4%) patients with moderate severity who received conservative treatment in the lower zone of the maxillofacial region and had moderate brain contusions. The second group included 130 (55.5%) patients whose injury was assessed as severe, with severe brain contusions; they mainly received surgical treatment of the lower and middle zones of the maxillofacial region.

In our study, we examined the influence of a differentiated approach on the results of conservative and surgical treatment based on the clinical picture, objective indicators of instrumental examination, and the sex and age aspects of the patients. In our study, all patients were distributed by sex and age groups according to the World Health Organization classification.

It should be noted that often patients received injuries at home from a low height: in the bathroom, from a chair, sofa, bed, cot, windowsill, stairs, while cycling. In the first group of patients with combined maxillofacial trauma, domestic injury (60.7%) was the main cause of trauma, and among these, injuries sustained from a fall from their own height predominated (61.1% of patients). Criminal injury was recorded in 12.4% and road traffic accidents in 15.4% of cases.

The most common cause of combined maxillofacial trauma was domestic injury – 142 (60.7%); road traffic accident – 36 (15.4%); criminal injuries were registered in 29 (12.4%); occupational injuries accounted for 14 (6.0%); 13 (5.5%) patients were admitted with an unknown cause.

According to our data, the largest number was due to domestic injury, accounting for more than half of all patients (60.7% and 61.1%, respectively), followed by road traffic accidents in 15.4% and criminal injuries in 12.4%, while unknown causes of injury accounted for 5.5% of cases.

Of the total 234 patients, the vast majority were conscious or moderately stuporous, totaling 168 (71.8%), while 63 (26.9%) patients were in a severe condition ranging from deep stupor to various levels of coma. In domestic injuries, the proportion of patients in an extremely severe condition increased to 3 (1.3%) cases.

According to the data obtained from our study, a significant portion of patients with combined maxillofacial trauma were men of working age – 184 (78.6%), which is a pressing issue both socially and economically.

In our study of all 234 patients, examination of somatic status revealed that among the 234 patients, 94 (40.2%) had somatic pathology, manifesting as arterial hypertension in 30 (31.9%), neurological pathology in 31 (32.9%), and ischemic heart disease in 7 (7.4%) cases. Gastroenterology issues were observed in 7 (7.4%), ENT organ pathology in 7 (7.4%), endocrinology in 7 (7.4%), oncology in 3 (3.2%), ophthalmology in 2 (2.1%), liver pathology in 2 (2.1%), and renal failure in 1 (1.1%) patient.

During examination, we noted concomitant somatic diseases in patients, which undoubtedly influenced the course of combined maxillofacial trauma. Thus, out of 234, 94 (40.2%) patients had concomitant somatic pathology, manifesting both in isolation and in combination.

Of significant interest from the perspective of diagnosis, determination of differentiated tactics, treatment results, and outcomes is the study of the clinical course features in patients with combined maxillofacial trauma.

Depending on the clinical phase of the course, patients with combined maxillofacial trauma were divided as follows: 128 (54.7%) patients – in the stage of clinical compensation; 64 (27.3%) – in the stage of clinical subcompensation; 33 (14.1%) – in the stage of moderate clinical decompensation; 9 (3.9%) – in the stage of clinical decompensation.

The severity of the condition in patients with combined maxillofacial trauma was determined upon admission to the emergency department of our hospital using the Glasgow Coma Scale and other scales and questionnaires to determine the degree of injury for a differentiated approach to treatment.

In our observations, out of 234 patients with combined maxillofacial trauma admitted for treatment, 117 (50%) were registered as being in a moderate condition upon admission, slightly more than a third, 85 (36.3%), were in a severe condition, and only 29 (12.4%) were in a satisfactory condition; 3 (1.3%) cases were admitted in an extremely severe condition (see Fig. 1).

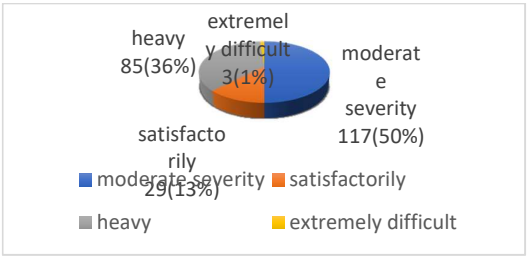

Fig. 1. Condition of patients with combined maxillofacial trauma upon admission n=234

In all 234 cases of patient examination, we approached each case individually and made differentiated decisions when determining further treatment tactics to further improve outcomes.

In our studies, an extremely severe condition was observed in 3 (1.3%) patients with severe brain

contusion, fracture of the skull base with liquorrhea, and multiple injuries to the midface.

A severe condition was observed in 85 (36.3%) patients with multiple injuries to the midface and severe brain contusion.

Patients with moderate brain contusions and fractures of the lower face, 117 (50%), were assessed as being in a moderate condition. In our observations, 29 (12.4%) patients showed a satisfactory condition.

Patients with combined maxillofacial trauma underwent a general clinical and neurological examination upon admission to the hospital, assessing the level of consciousness impairment, the severity of general cerebral, focal, dislocation, brainstem symptoms, and meningeal symptoms.

All 234 patients underwent clinical and neurological examination upon admission and during follow-up, assessing the level of consciousness impairment according to the GCS, the severity or presence of general cerebral, focal, brainstem symptoms, and meningeal symptoms.

A study of our sample of 234 patients with combined maxillofacial trauma showed that 135 patients retained clear consciousness, accounting for 57.7% of observations. Moderate stupor was present in 33 (14.1%) and deep stupor in 24 (10.3%) patients. The distribution of patients in a severe condition was as follows: stupor – 16 (6.8%), coma I – 14 (6.0%), coma II – 9 (3.8%) cases. The remaining 3 (1.3%) patients had coma III (see Table 1).

Table 1

Assessment of the level of consciousness impairment in patients with combined maxillofacial trauma n=234

Level of Consciousness	GCS Score (points)	Absolute Number	
Clear consciousness	14-15	135	57.7
Moderate stupor	13	33	14.1
Deep stupor	11-12	24	10.3
Stupor	9-10	16	6.8
Coma I	7-8	14	6.0
Coma II	5-6	9	3.8
Coma III	3-4	3	1.3
Total		234	100

Based on our analysis, the main patterns in the clinical course of combined maxillofacial trauma were identified. Thus, a characteristic change in the level of consciousness from clear consciousness to coma was noted.

All 234 patients with combined maxillofacial trauma underwent instrumental examination methods upon admission to the hospital based on existing standard treatment methods and our developed algorithms and maxillofacial fracture scales.

All 234 patients with combined maxillofacial trauma were divided into two groups depending on the severity of the injury.

In our studies, the absence of skull fractures was registered in 85 (36.3%) out of 234 patients, while the presence of skull fractures on craniography was observed in 149 (63.7%) observations.

Of these 149 (100%), calvarial fractures were present in 120 (80.5%), fractures of both the calvarium and skull base in 26 (17.5%), and skull base fractures in 3 (2.0%) patients.

In our studies of 234 patients, absence of skull fractures was registered in 85 (36.3%), while presence of skull fractures on craniography was observed in 149 (63.7%) cases. Among these, calvarial fractures were in 120 (80.5%), combined calvarial and skull base fractures in 26 (17.5%), and skull base fractures in 3 (2.0%). This distribution by group is shown below (see Table 2).

Table 2

Indicators of the number of patients with fractures of the calvarium and skull base, n=234

Fracture Localization	Total	Group 1	Group 2
	n=234, %	n=104, %	n=130, %
Calvarial fracture	120 (51.3%)	19 (8.1%)	101 (43.2%)
Combined calvarial and skull base fracture	26 (11.1%)	0	26 (11.1%)
Skull base fracture	3 (2.0%)	0	3 (2.0%)
Total number of patients	149	19	130
Note: Differences in indicators are statistically significant (P < 0.001)			

Fracture Localization	Total	Group 1	Group 2
	n=234, %	n=104, %	n=130, %
Calvarial fracture	120 (51.3%)	19 (8.1%)	101 (43.2%)
Combined calvarial and skull base fracture	52 (22.2%)	0	52 (22.2%)
Skull base fracture	3 (2.0%)	0	3 (2.0%)
Total number of patients	175	19	156
Note: Differences in indicators are statistically significant (P < 0.001)			

Our 234 patients did not undergo neurosurgical operations, as selection was carried out at the diagnostic stage based on the severity of damage to the body according to our developed algorithm and maxillofacial fracture scale.

When examining 149 patients, calvarial fractures were identified in 120 (68.6%). Combined calvarial and skull base fractures, which could coexist in our observations, were present in 52 (29.7%) cases, and isolated skull base fractures in 3 (1.7%). The total of 175 (100%) findings, broken down by group, is shown below (see Table 3).

Table 3

Indicators of the number of patients with fractures of the calvarium and skull base, n=234

Based on our study data, the time from the moment of injury to hospitalization for patients with combined maxillofacial trauma ranged from several minutes to several days, which was related to their general somatic status.

All 234 patients were distributed by treatment method as follows: 104 (44.4%) underwent conservative treatment, and 130 (55.5%) underwent surgical treatment. Among the 130 patients in the second group, 104 (80%) underwent surgical treatment.

Regarding the location of maxillofacial fractures and treatment methods, patients were distributed as follows. Representatives of the first group received conservative treatment – 104 (44.4%),

including fractures of the mandible in 74 (31.6%), zygomatic bone in 21 (9.0%), maxilla in 5 (2.1%), and nasal bones in 4 (1.7%).

The second group included 130 (55.5%) patients, of whom 104 (80%) were operated on, with fractures of the mandible in 96 (41.0%), zygomatic bone in 6 (2.6%), maxilla in 1 (0.4%), and nasal bone in 1 (0.4%). Twenty-six patients (20%) in the second group were treated conservatively, including mandibular fractures in 16 (6.8%), zygomatic bone fractures in 8 (3.4%), maxillary fracture in 1 (0.4%), and nasal bone fracture in 1 (0.4%) (see Table 4).

Table 4

Indicators of treatment types in patients with maxillofacial fractures, n=234

umber of patients, treatment type	axilla	andible	ygomatic bone	asal bones
roup 1 n=104 (44.4 %)	(2.1 %)	4 (31.6 %)	1 (9.0 %)	(1.7%)
ll patients treated conservatively				
roup 2 n=130 (55.5 %)				
urgical treatment – 104 (80%)	(0.4 %)	6 (41.0 %)	(2.6 %)	(0.4%)
onservative	(0.4 %)	6	(3.4 %)	(0.4%)
umber of patients, treatment type	axilla	andible	ygomatic bone	asal bones
treatment – 26 (20%)		(6.8 %)		
otal 234	(3.0 %)	86 (79.5 %)	5 (14.9 %)	(2.6%)
ote: Differences in indicators are statistically significant (P < 0.001)				

If we analyze the data obtained from the study of 234 patients with maxillofacial fractures by group, the total number of fracture sites was 456 (100%), including mandibular fractures in 362 (79.4%), zygomatic bone in 66 (14.5%), maxilla in 16 (3.5%), and nasal bones in 12 (2.6%) cases.

In our study of 234 patients, clinical and radiological examination revealed that fractures of the middle and lower parts of the maxillofacial region were observed in 456 cases. This is due to the anatomical features of the location of these structures when injured by various causes and their vulnerability.

In our studies, indicators for the first group were: fracture in the parasymphyseal region – 54 (14.9%), in the mandibular angle region – 50 (13.8%), in the condylar process region – 34 (9.4%), in the mandibular body region – 13 (3.6%), and in the mandibular ramus region – 6 (1.7%) observations.

According to our data, indicators for the second group were: fracture in the parasymphyseal region – 71 (19.6%), in the mandibular angle region – 65 (17.9%), in the condylar process region – 44 (12.1%), in the mandibular body region – 18 (5.0%), and in the mandibular ramus region – 7 (1.9%) observations.

Our analysis of the data obtained from studying 234 patients with maxillofacial fractures showed the following results: fractures of the mandible in 186 (79.5%), zygomatic bone in 35 (15.0%), maxilla in 7 (3.0%), and nasal bones in 6 (2.5%) observations.

In the first group: mandibular fractures – 157 (34.4%), zygomatic bone – 32 (7.0%), maxilla – 7 (1.5%), and nasal bones – 9 (2.0%) observations.

In the second group: mandibular fractures – 205 (44.9%), zygomatic bone – 34 (7.5%), maxilla – 9 (2.0%), and nasal bones – 7 (1.5%) observations.

Based on the analysis of the data obtained from the study of mandibular fractures across groups of 234 patients, the total number of fracture sites was 362 (100%), including parasymphyseal region – 125 (34.5%), mandibular angle region – 115 (31.8%), condylar process region – 78 (21.5%), mandibular body region – 31 (8.6%), and mandibular ramus region – 13 (3.6%) observations.

In our study, fractures of the middle and lower parts of the maxillofacial region were observed in 456 cases. This is due to the anatomical features of the location of these structures when injured by various causes and their vulnerability.

Currently, there are many scales for assessing maxillofacial injuries, for example, the Facial Injury Severity Scale (FISS). The FISS scale is designed to assess the severity of isolated facial injuries. Another is the Acute Physiology and Chronic Health Evaluation (APACHE) scale, which determines the severity of the patient's health condition.

Based on the application of existing scales, considering their disadvantages, we developed a questionnaire to determine the severity of patients with combined maxillofacial trauma. We focused on a comprehensive questionnaire that could meet many requirements. Our questionnaire had to be easy to use and accurate in determining multiple injury parameters in patients, as shown in the table below (Table 5).

Table 5

Fracture Localization
Middle third fractures, total
Fracture of teeth, alveolar process of maxilla
Maxillary fracture, high level (Le Fort III)
Maxillary fracture, middle level (Le Fort II)
Maxillary fracture, low level (Le Fort I)
Naso-orbito-ethmoidal (NOE) complex fracture
Zygomaticomaxillary complex (ZMC) fracture
Lower third fractures, total
Parasymphyseal region fracture
Mandibular angle fracture
Mandibular condylar process fracture
Mandibular body/ramus fracture
Mandibular ramus fracture
Nasal bone fracture
Total number of fractures and points

Our developed questionnaire is convenient to use and maximally covers the parameters of maxillofacial injury. The severity level is established by assigning points. Based on the points accumulated, the patient's injury severity is graded as: mild; moderate; severe. The main part of the questionnaire is presented as a table with point parameters assigned for the type of maxillofacial injury (see Table 6).

Table 6

Indicators of the number of points in patients with maxillofacial fractures by group, n=234

Fracture Localization	Total n=234, points	Group 1 n=104, points	Group 2 n=130, points
Middle third fractures, total	9	4	5
Fracture of teeth, alveolar process of maxilla	4-178	1-76	3-102
Maxillary fracture, high level (Le Fort III)	6	4	1
Maxillary fracture, middle level (Le Fort II)	-6	-1	-5
Maxillary fracture, low level (Le Fort I)	6	3	2
Naso-orbito-ethmoidal (NOE) complex fracture	-36	-12	-24

Fracture Localization	Total	Group 1	Group 2
fracture, high level (Le Fort III)			
Maxillary fracture, middle level (Le Fort II)	8-32	4-16	4-16
Maxillary fracture, low level (Le Fort I)	6-12	3-6	3-6
Naso-orbito-ethmoidal (NOE) complex fracture	1 2-36	5-15	7-21
Zygomaticomaxillary complex (ZMC) fracture	5 6-56	2 6-26	3 0-30
Lower third fractures, total	3 62-366	1 57-158	2 05-208
Parasymphyseal region fracture	1 24-124	5 4-54	7 0-70
Mandibular angle fracture	1 14-114	5 0-50	6 4-64
Mandibular condylar process fracture	7 7-77	3 4-34	4 3-43
Mandibular body/ramus fracture	4 -8	1 -2	3 -6
Mandibular ramus fracture	3 1-31	1 3-13	1 8-18
Nasal bone fracture	1 2-12	5 -5	7 -7
Total number of fractures and points	4 56-544	1 98-234	2 58-310
Note: Differences in indicators are statistically significant ($P < 0.001$)			

Using our questionnaire, after obtaining the results, additional points are added to the total sum for: concomitant diseases; age over 50 years (2 points for every 10 years); alcohol or other substance intoxication; congenital anomalies; oncological diseases; other types of injuries. Two points are added for each descriptor. After obtaining the total sum, it is divided by three, where each 30% represents the degree of injury, i.e., mild degree up to 30%, moderate degree up to 60%, and severe degree up to 90% of the total points possibly obtained at maximum indicators. The maximum score is calculated by summing all high descriptor indicators and adding the indicators of additional parameters.

According to our study data, fractures of the middle third accounted for 94 (20.6%) and the lower third for 362 (79.4%) of the total 456 observed cases. These results are consistent with the literature data from global researchers and are reliable (see Table 7).

Table 7

Indicators of the number of fracture cases in patients by group, n=456

Fracture Localization	Total	Group 1	Group 2
	n=234, %	n=104, %	n=130, %
Middle third fractures, total	94 (100%)	41 (43.6%)	53 (56.4%)
Fracture of teeth, alveolar process of maxilla	6 (6.4%)	1 (1.1%)	5 (5.3%)
Maxillary fracture, high level (Le Fort III)	6 (6.4%)	2 (2.1%)	4 (4.2%)
Maxillary fracture, middle level (Le Fort II)	8 (8.5%)	4 (4.2%)	4 (4.2%)
Maxillary fracture, low level (Le Fort I)	6 (6.4%)	3 (3.2%)	3 (3.2%)
Naso-orbito-ethmoidal (NOE) complex fracture	12 (12.7%)	5 (5.3%)	7 (7.4%)
Zygomaticomaxillary complex (ZMC) fracture	56 (59.6%)	26 (27.7%)	30 (31.9%)
Lower third fractures, total	162 (100%)	157 (43.4%)	205 (56.6%)
Parasymphyseal region fracture	124 (34.2%)	54 (14.9%)	70 (19.3%)
Mandibular angle fracture	114 (31.5%)	50 (13.8%)	64 (17.7%)
Mandibular condylar process fracture	77 (21.3%)	34 (9.4%)	43 (11.9%)
Mandibular body/ramus fracture	4 (1.1%)	1 (0.3%)	3 (0.8%)
Mandibular ramus fracture	31 (8.6%)	13 (3.6%)	18 (5.0%)
Nasal bone fracture	12 (3.3%)	5 (1.4%)	7 (1.9%)
Total number of fractures and points	456 (100%)	198 (43.4%)	258 (56.6%)
Note: Differences in indicators are statistically significant ($P < 0.001$)			

Thus, based on the analysis of our study data, mandibular fractures most often occurred in the parasymphyseal region – 125 (34.5%), in the mandibular angle region – 115 (31.8%), and in the condylar process region – 78 (21.5%), which is consistent with data from global researchers.

The study of the quality of life of 234 patients was achieved using the European Quality of Life Questionnaire Euro Qol-5D.

We believe that treatment should primarily be aimed at relieving pain syndrome, which greatly affects the quality of life of patients. The study of QoL in all groups was conducted before and after treatment (Table 8).

Table 8

Indicators of the Euro Qol-5D questionnaire before treatment (n=234)

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
	04			.39658	.123	.08611	.66271
	30			.3404	.123	.08465	.6645
otal:	34			.361	.123	.086	.661705

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
				38		01	
ote: Differencesinindicatorsa							

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
restatistically significant (P<							

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
0.001)							

Our analysis of the quality of life study results of 234 patients showed that the data obtained in the two groups were different.

The quality of life of patients deteriorated significantly and recovered slowly in patients with concomitant somatic pathology.

According to our data, in all study groups, the parameters of the Euro Qol-5D questionnaire that deteriorated the most were pain/discomfort and anxiety/depression.

The quality of life indicators for patients in the first group were stable, as their injuries were of moderate severity.

The indicators for patients in the second group were labile, as their injuries and their course were severe, and pain syndrome came to the forefront. This strongly affected their quality of life for the worse, aggravating their general condition and somatic status (see Table 9).

Table 9

Indicators of the Euro Qol-5D questionnaire after treatment (n=234)

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
	04			.389222	.4979	.952088	0.57638
	30			.32599	.5244	.025	0.6124
otal:	34			.3549122	.4648448	.9752237	0.54345
ote: Dif							

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Health state)
ferencesin indicatorsare statisti							

roup	umberofpatients	(Mobility)	(Self-care)	A (Usualactivities)	/D (Pain/Discomfort)	/D (Anxiety/Depression)	Q-VAS (Healthstate)
callysignificant(P<0.001)							

The study of the quality of life of 234 patients showed that the parameters pain/discomfort and anxiety/depression suffer the most. This is contributed to by the emotional state, which forms a kind of vicious circle, reinforcing each other and worsening the quality of life of patients with combined maxillofacial trauma.

In our scientific research, we used a visual analogue scale to determine the intensity of pain syndrome in the observed patients.

We believe that, based on the study, pain syndrome as a strong irritant primarily affects the emotional state of patients, being a provoking factor for worsening condition and quality of life (see Table 10).

Table 10

Indicators of the VAS scale before treatment (n=234)

roup	umber of patients	–No pain (0)	–Mild pain (1-3)	–Moderate pain (4-6)	–Severe pain (7-9)	–Unbearable pain (10)
	04		0			
	30		2	3		
otal:	34		2	0		
ote: Differences in indicators ar						

roup	umber of patients	_No pain (0)	_Mild pain (1-3)	_Moderate pain (4-6)	_Severe pain (7-9)	_Unbearable pain (10)
estatistically significant (P< 0.001)						

In our studies, the use of the VAS scale after treatment with various surgical interventions gave the following results. After treatment, regression of pain syndrome was observed in both groups, up to complete disappearance. Mild pain persisted in only two patients in the first group and one patient in the second group, which proves the effectiveness of treatment methods with a differentiated approach. Postoperative pain perception parameters are shown in the following table (Table 11).

Table 11

Indicators of the VAS scale after treatment (n=234)

roup	umber of patients	_No pain (0)	_Mild pain (1-3)	_Moderate pain (4-6)	_Severe pain (7-9)	_Unbearable pain (10)
	04	00				
	30	31				
otal:	34	31				
ote: Differences in indicators are statistically sign						

roup	umber of patients	– No pain (0)	– Mild pain (1-3)	– Moderate pain (4-6)	– Severe pain (7-9)	– Unbearable pain (10)
ificant (P < 0.001)						

Thus, based on the study, the following conclusions can be drawn: avoidance behavior becomes entrenched very quickly because it leads to increased fear, limited physical activity, and other physical and psychological consequences that contribute to disability and the spread of pain. In turn, all the above factors contribute to the deterioration of patients' quality of life.

Conclusions

According to the data obtained from our study, a significant portion of patients with combined maxillofacial trauma were men of working age – 184 (78.6%), which is a pressing issue both socially and economically.

Examination of somatic status revealed that among the 234 patients, 94 (40.2%) had somatic pathology, manifesting as arterial hypertension in 30 (31.9%), neurological pathology in 31 (32.9%), and ischemic heart disease in 7 (7.4%) cases. Gastroenterology issues were observed in 7 (7.4%), ENT organ pathology in 7 (7.4%), endocrinology in 7 (7.4%), oncology in 3 (3.2%), ophthalmology in 2 (2.1%), liver pathology in 2 (2.1%), and renal failure in 1 (1.1%) patient.

Analysis of the obtained data from the study of 234 patients with maxillofacial fractures by group shows that the total number of fracture sites was 456 (100%), including mandibular fractures in 362 (79.4%), zygomatic bone in 66 (14.5%), maxilla in 16 (3.5%), and nasal bones in 12 (2.6%) cases, which is highly relevant.

The application of fracture scales and a differentiated approach in the treatment of the 234 studied patients had a strong impact on their quality of life, with improvement observed in all groups. The visual analogue scale and its five parameters allow for a more detailed study of pain syndrome, influencing the treatment outcome.

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