

Semenov D. Psychological support in postoperative pain management in patients with maxillofacial frac. *Journal of Education, Health and Sport*. 2019;9(10):337-345. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.3581416>
<http://ojs.ukw.edu.pl/index.php/johs/article/view/7654>
<https://apcz.umk.pl/czasopisma/index.php/JEHS/article/view/7654>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

© The Authors 2019;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland

Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike. (<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 03.10.2019. Revised: 08.10.2019. Accepted: 30.10.2019.

Psychological support in postoperative pain management in patients with maxillofacial fractures

D. Semenov

Zaporizhzhya State Medical University

Abstract

Relevance. Psychological distress in persons with maxillofacial area fractures are not sufficiently developed in key of their influence on postoperative pain intensity, patients interpersonal sensitivity and emotional reactions. In the context of maxillofacial reconstructive surgery the psychological support of patients is promising direction to improve the condition of patients in postoperative period. **The aim:** to determine the effect of psychological support on the intensity and additional characteristics of postoperative pain in patients with maxillofacial fractures. **Materials and methods.** 120 patients with maxillofacial area fractures, undergoing reconstructive surgery at Municipal Clinical Hospital of Emergency and Rapid Care (Zaporizhzhya, Ukraine) were examined. The study was performed on 2 parallel groups, by 60 patients in each. Patients of the main group underwent original model of psychological support and standard postoperative treatment, patients of control group underwent only standard postoperative treatment. Clinical, radiological, psychological and statistical methods were used. **Results.** The normalization of patient's psychological response to postoperative pain and rational perception of physical discomfort were found. **Conclusion.** The original model of psychological support in the postoperative period of reconstructive surgical interventions for maxillofacial fractures reduces the subjective intensity of postoperative pain among the contingent of patients.

Key words: psychological support; postoperative pain; maxillofacial fractures.

Relevance. Maxillofacial area fractures are taking considerable place among surgical pathology in Ukraine. These types of injury need treatment approach that combines stomatological, functional, plastic and aesthetic interventions realized in one reconstructive surgery protocol [1, 4].

Currently, due to the significant progress maxillofacial area reconstructive surgery methods and techniques, development of its technological aspects, high availability of novel diagnostic technologies, differences in maxillofacial surgery effectiveness is mostly local and due to financial and organizational reasons [1, 3, 4].

Meanwhile one of the main aspects of maxillofacial surgery effectiveness is postoperative pain syndrome that involves not only somatic manifestation, but also massive psycho-emotional component. Its therapy must provide psychological support as an addition to pharmacological providing [2, 5, 6, 7].

Psychological distress in persons with maxillofacial area fractures are not sufficiently developed in key of their influence on postoperative pain intensity, patients interpersonal sensitivity and emotional reactions. In the context of maxillofacial reconstructive surgery the psychological support of patients is promising direction to improve the condition of patients in postoperative period.

The aim is to determine the effect of psychological support on the intensity and additional characteristics of postoperative pain in patients with maxillofacial fractures.

Materials and methods. The study conducted in a prospective design during 2016-2018. 120 patients with maxillofacial area fractures, undergoing reconstructive surgery at City Clinical Hospital of Emergency and Rapid Care (Zaporizhzhya, Ukraine) were examined. Study performed on 2 parallel groups 60 patients each. Patients of main group underwent original model of psychological support and standard postoperative treatment, patients of control group underwent only standard postoperative treatment.

The main group (MG) – included 60 people, who underwent original model of psychological support and standard postoperative treatment.

The control group (CG) – included 60 people, who standard postoperative treatment.

Clinical, radiological, psychological and statistical methods were used.

Study results. The original model of psychological support was applied on MG patients in first 14 days of reconstructive surgery postoperative period.

Psychological support model consist of 2 stages:

I stage – “phobia-orientated” is realized in 4 sessions (15 min. each, 1 session a day, 60 min. total), two days before and two days after constructive surgery. The doctor discusses the

mechanism of trauma and traumatic experience with patient, doctor should focus on explanation and demonstration of differences between trauma and the surgical process.

Main techniques are: demonstration of radiological scans of trauma impact on facial structures and explanation of mechanisms of conducted surgical reconstruction and similar surgical cases positive results; discussion of traumatic and operative experience. The surgical techniques should be discussed with the patient underlining that intervention is not an injury but the way to treat: surgeon will “place back damaged fragments”, "replace broken fragments with new ones”, etc.

Clinical sense: prevention of trauma-related psychological distress and fear of re-experiencing the trauma within the operation (due to deep intervention and anesthesia-induced violations of consciousness).

Purpose: to eliminate preoperative fear associated with traumatic experience.

II stage –“pain-orientated” is realized in 8 sessions (15 min. each day, 1 session every 2 days, 120 min. total), session content depends on the patient's complaints about postoperative pain, sensation violations, physical discomfort, functional violations, aesthetic worries and postoperative psychological experience. Within this stage, the doctor builds a concept of association between rates of tissue regeneration and postoperative pain, underlining that pain is a sign of proper nerve functioning that indicates adequate local tissue sensibility, discusses possible reasons for sensation violations, physical discomfort, functional violations and makes prognosis, demonstrates approaches of aesthetic rehabilitation and discusses patients personal postoperative experience.

Main techniques: demonstration the process of local tissue regeneration using, demonstration of neural paths that involved into trauma, discussion on postoperative experience.

Clinical sense: in early postoperative period pain dramatically impacts on postoperative psychological experience that deepens the distress and increases negative connotation of pain.

The psychological support model should also take into account types of posttraumatic defects, which could be presented as aesthetic, functional, dental or psychological violations that need additional interventions.

Additional interventions to psychological support are presented in table 1.

Table 1

Additional interventions to psychological support for aesthetic, functional, dental or psychological violations

Violations	Target	Methods of support
Aesthetic	Pain interpretation as a marker of facial structures disfiguration.	Explanation of absence of connection between pain intensity and surgical trauma.
	Fantasies on future persistent appearance disorders.	Formation of concept of pain as a marker of tissue regeneration and safety of neural paths.
Functional	Interpretation of anesthesia and paraesthesiae as signs of nerve damage.	Explanation of anesthesia and paraesthesiae due to postoperative edema of the neural paths.
	Fear of persistent loss of sensitivity or persistent presence of paraesthesiae	Formation of concept of anesthesia as a “functional block” for “unnecessary pain”, paraesthesiae as a “replacement of pain”.
Dental	Physical feeling of dental damage	Demonstration the techniques of dental reconstruction with discussion on future dental reconstructive interventions.
Imaginary	Fear of pain, pain anxious expectation	Formation of concept of pain as a marker of tissue regeneration and safety of neural paths.

To study the mechanisms of psychological support impact on pain perception, MG and CG patients were compared by psychogenic pain characteristics (table 2).

Table 2

Psychogenic pain characteristics in MG and CG patients

Psychological pain characteristics	MG (N=60)	p (χ^2)	CG (N=60)
Presence of senestopathy	4	0,14	9
Dislocated pain sensation	3	0,11	8
Hypochondriac fixation on pain	9	0,01	21
Presence of pain psychological triggers	13	0,04	23
Pain anxious expectation	7	0,01	35

Presence of senestopathy is an unpleasant, aggravated sensation that has not somatic analogues and therefore cannot be accurately described by the patient when formulating complaints (“bone shivering”/ “muscle itching” / “skin twisting”, etc.) is a sign of dissociative or hypochondriac pain component. In MG this characteristic was registered in 4 patients, in CG in 9 patients ($p(\chi^2)=0,14$).

Dislocated pain sensation is a feeling of displacement of pain localization from affected to unaffected zone, it can be caused by neural paths injury and postoperative edema. In absence of organic factors is a sign of dissociative pain component. In MG this characteristic was registered in 3 patients, in CG in 8 patients ($p(\chi^2)=0,11$).

Hypochondriac fixation on pain is the occurrence of obsessive aggravating ideas about the negative effects of trauma (persistent dysfunction, chronic pain, progress of septic complications, etc.) which occurs when patient experiencing pain and pain itself causing such thoughts, it is a major hypochondriac pain component. In MG this characteristic was registered in 9 patients, in CG in 21 patients ($p(\chi^2)=0,01$).

Presence of pain psychological triggers is increased pain in response to psychologically significant stimuli (memories associated with trauma or surgery), is a major dissociative pain component. In MG this characteristic was registered in 13 patients, in CG in 23 patients ($p(\chi^2)=0,04$).

Pain anxious expectation is the presence of anxiety associated with pain in the vicious circle: pain causes anxiety that occurs after taking analgesics (waiting for analgesic effect ending), and anxiety causes pain (by fixing attention on feelings in the injured area), is a major anxiety pain component. In MG this characteristic was registered in 7 patients, in CG in 35 patients ($p(\chi^2)\leq 0,01$).

The intensity and localization of postoperative pain was determined according to visual analogue scale (VAS) providing a range of results from 0 to 10. Comparison matrices for pain levels in MG and CG was formed (table 3).

According to the results of a comparative analysis of the pain intensity among MG and CG patients, differences were found in patients with mandibular fractures in zygomatic ($p=0,02$) and maxillary ($p=0,03$) zones. Similar data obtained for patients with alveolar fractures: pain intensity in CG patients significantly higher than in MG patients in zygomatic ($p\leq 0,01$) and maxillary ($p\leq 0,01$) zones. Graphical presentation of pain intensity showed in pictures 1 and 2.

Table 3

Pain levels in MG and CG

Fracture type	Groups	Contingent (N)	Zones				
			Nasal	Zygomatic	Maxillar	Mandiblar	Frontal
Mandibular fracture	MG	4	0	0	2,0±0,5	5,2±0,3	0
	CG	5	0	1,8±0,6	4,2±0,6	7,0±0,8	0
	p		1	p=0,02	p=0,03	p=0,08	1
Alveolar fracture	MG	16	0	0	0	5,7±0,4	0
	CG	7	0	2,1±0,2	2,2±0,3	6,1±0,5	0
	p		1	p≤0,01	p≤0,01	p=0,54	1
Maxillar fracture	MG	8	2,6±0,4	2,1±0,2	6,1±0,6	1,5±0,5	0
	CG	10	4,1±0,6	4,6±0,5	7,2±1,0	3,1±0,5	0
	p		p=0,06	p≤0,01	p=0,36	p=0,04	1
Zygomatic fracture	MG	12	2,1±0,3	6,1±0,5	2,7±0,4	0,8±0,2	0
	CG	15	4,5±0,5	7,7±0,8	5,3±0,6	2,1±0,5	2,8±0,7
	p		p≤0,01	p=0,10	p≤0,01	p=0,02	p≤0,01
Nasal fracture	MG	22	6,1±1,0	2,4±0,9	2,3±0,7	0	3,7±0,6
	CG	9	7,1±0,6	3,5±0,7	4,0±0,4	0	4,8±0,4
	p		p=0,39	p=0,34	p=0,04	1	p=0,14
Naso-orbit-etmoidal complex fracture	MG	15	5,4±0,8	4,1±0,5	5,2±0,6	2,1±0,4	2,3±0,5
	CG	19	7,2±0,5	5,9±1,2	6,0±0,6	2,2±0,5	5,4±1,0
	p		p=0,07	p=0,18	p=0,31	p=0,87	p=0,01
Multiple fractures	MG	35	4,2±0,5	5,1±1,2	5,4±0,9	4,1±1,0	2,0±0,5
	CG	40	4,5±0,4	5,7±0,8	5,5±1,0	4,8±0,5	2,6±0,5
	p		p=0,67	p=0,68	p=0,94	p=0,53	p=0,40

In patients with maxillar fractures, the intensity of pain in MG patients was significantly higher than in CG patients in zygomatic ($p \leq 0,01$) and mandibular ($p = 0,04$) zones. In patients with zygomatic fracture pain intensity in nasal ($p \leq 0,01$), maxillar ($p \leq 0,01$),

mandibular ($p=0,02$) and forehead ($p\leq 0,01$) zones was higher in MG than in CG. Graphical presentation of pain intensity showed in pictures 3 and 4.

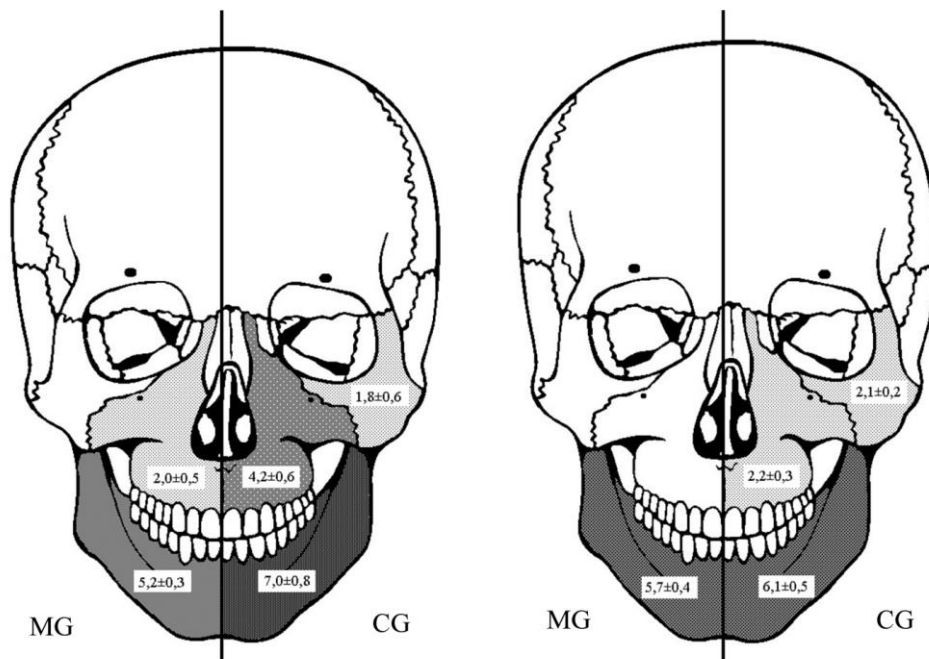


Fig.1 and 2. Graphical presentation of pain intensity mandibular (left) and alveolar (right) fractures according to VAS data.

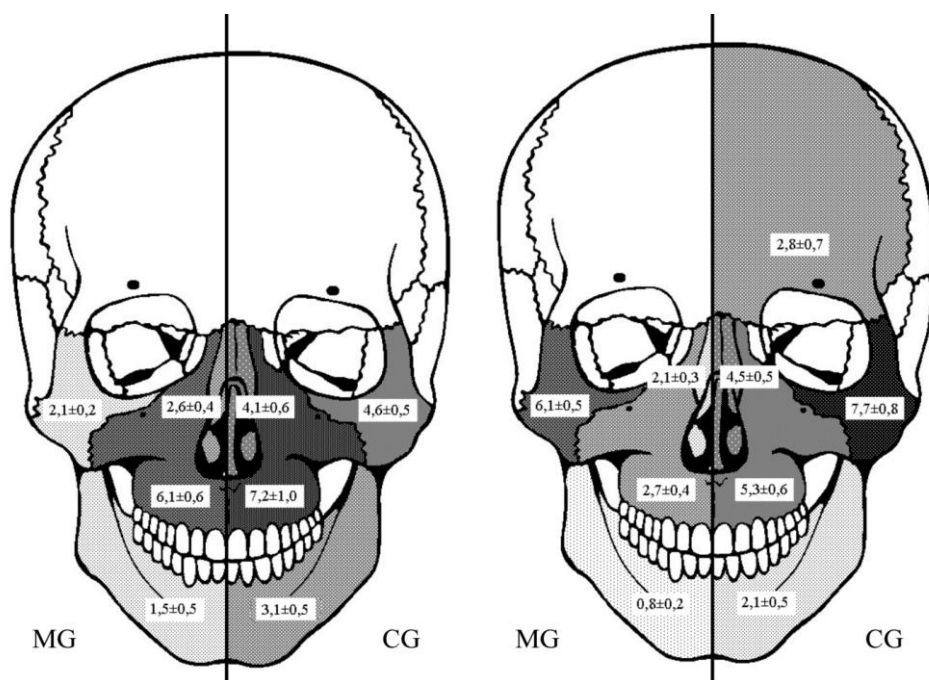


Fig.3 and 4. Graphical presentation of pain intensity inmaxillar (left) and zygomatic (right) fractures according to VAS data.

In patients with nasal fractures, difference in pain intensity between MG and CG was found only in maxillar zone ($p=0,04$), MG patients had lower pain levels. At fractures of the naso-orbit-etmoid complex, difference in pain intensity between MG and CG was found only in forehead zone ($p=0,01$)MG patients had lower pain levels. Graphical presentation of pain intensity showed in pictures 5 and 6.

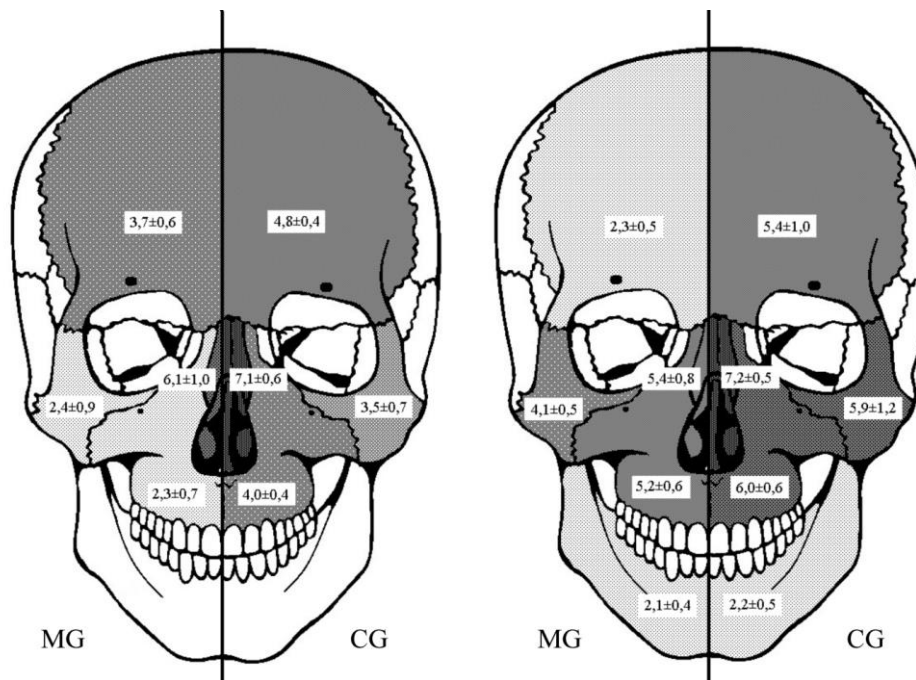


Fig. 5 and 6. Graphical presentation of pain intensity in nasal fractures (left) and naso-orbito-ethmoidal complex fractures (right) according to VAS data.

Conclusion

Analysis psychological support effect on postoperative pain perception in patients with maxillofacial fractures shows its ability to reduce pain levels by correction of psychological pain characteristics associated with presence of senestopathy, dislocated pain sensation, hypochondriac fixation on pain, presence of pain psychological triggers and pain anxious expectation. Postoperative pain levels reduced in mandibular and alveolar fractures in zygomatic ($p=0,02$) and maxillar ($p=0,03$) zones; in patients with maxillar fractures in zygomatic ($p\leq 0,01$) and mandibular ($p=0,04$) zones; in patients with zygomatic fractures in nasal ($p\leq 0,01$), maxillar ($p\leq 0,01$), mandibular ($p=0,02$) and forehead ($p\leq 0,01$) zones; in patients with nasal fractures in maxillar zone ($p=0,04$); in patients with naso-orbit-etmoid complex fractures in the forehead zone ($p=0,01$).

Considering the effectiveness of developed psychological support model it seems promising in search for a combined pharmacological and psychological algorithm that will provide complex pain management in the postoperative period of reconstructive surgical interventions on maxillofacial area.

References:

1. Afzelius L. E., Rosén C. *Facial fractures. A review of 368 cases* //Int. J.Oral Surg. 1980. № 9 (1). P. 25–32.
2. Briggs M., Closs J. S. *A descriptive study on the use of visual analogue scales and verbal rating scales for the assessment of postoperative pain in orthopedic patients* // J. Pain Symptom Manage. 1999. № 18. P. 438–446.
3. Elhammali N., Bremerich A., Rustemeyer J. *Demographical and clinical aspects on sports-related maxillofacial and skull base fractures on hospitalized patients* //Int. J.Oral Maxillofac.Surg. 2010. № 39(9). P. 857–862.
4. Motamedi M. H. *An assessment on maxillofacial fractures: a 5-year study of 237 patients* // J. Oral. Maxillofac. Surg. 2003. № 61(1). P. 61–64.
5. Riley J. L., Gilbert G. H. *Orofacial pain symptoms: on interaction between age and sex* //Pain. 2001.№ 90. P. 245–256.
6. Slade G. D., Diatchenko L., Bhalang K. et al. *Influence on psychological factors on risk on temporomandibular disorders* // J. Dent. Res. 2007.№ 86. P. 1120–1125.
7. Sloman R., Wruble A. W., Rosen G., Rom M. *Determination on clinically meaningful levels on pain reduction on patients experiencing acute postoperative pain* //Pain Manag. Nurs. 2006. № 7. P. 153–158.