

State Budgetary Institution Of Health Care  
of Nizhny Novgorod Oblast

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«Nizhny Novgorod City Clinical Hospital  
No. 37 for Avtozavodsky District »

AGREED BY:

Chief Medical Officer  
State Budgetary Institution Of Health Care No.  
«Nizhny Novgorod City Clinical Hospital  
No. 37 for Avtozavodsky District » (Russia)

«Report on the Experience of Clinical use of  
magnetotherapy device «ALMAG ACTIVE »

Magnetotherapy device «ALMAG ACTIVE » (according to GIKS. 941519. 114 TR) with accessories was used in the premises of the Physiotherapeutic Unit on the State Budgetary Institution Of Health Care of Nizhny Novgorod Oblast «Nizhny Novgorod City Clinical Hospital No. 37 for Avtozavodsky District » engaged in rehabilitation of patients with musculoskeletal conditions (injuries, fractures, ligamentous injuries).

The «ALMAG ACTIVE » magnetotherapy was given to various groups of patients undergoing rehabilitation after injuries, fractures, dislocations, ligamentous injuries, soft tissue bruises, and namely after:

<b>Diagnosis</b>	<i>Number</i> of patients	Age, <b>30-50 /</b> <b>51-70</b>	<b>Gender</b> , M/F
Colles fracture	21	5/ 6	7/14
Chisel fracture	8	3/5	3/5
Lateral malleolus fracture	17	7/10	10/7
Medial malleolus fracture	15	11/4	9/6
Calcaneal fracture	6	4/2	6/0
Tibial fractures (lower third)	4	3/1	3/1
Fracture of the surgical neck of humerus	12	4/8	4/8
Greater tuberosity fracture	10	3/7	6/4
Closed shoulder dislocation	11	6/5	8/3
Compression fracture, L1	3	3/0	1/2
Chest contusion	9	5/4	4/5
Broken ribs	7	4/3	5/2
Fracture of the base of the fifth <b>metatarsal</b>	3	2/1	1/2
Ankle ligament injuries	18	9/9	10/8
Conditions after knee arthroplasty	5	4/1	4/1

### **Used Treatment Methods «ALMAG ACTIVE »**

During the procedures, the contact method of exposure was used: the coils of the device were placed in the area of the injury (surface projection of the fracture, area of the soft tissue damage). Longitudinal or transverse arrangement of the coils was used. The treatment course began with program #3, which was used 5 times. Then program # 1 was used until the end of the course. The exposure time is 15 to 20 minutes with good tolerance. The procedures were performed daily from 10 to 20 per course.

The control group consisted of patients receiving other physiotherapy procedures (light therapy, phonophoresis, electrophoresis, heat therapy, UHF therapy), as well as a group of patients with existing contraindications to physical therapy (PT) (inc. magnet therapy) and patients receiving only exercise therapy.

<b>Diagnosis</b>	<b>Number of patients</b>	<b>Age, 30-50 / 51-70 years</b>	<b>Male/ Female</b>	<b>Treatment method</b>
Colles fracture	15	5/10	5/10	Light therapy
Chisel fracture	4	2/2	2/2	Heat therapy
Lateral malleolus fracture	12	5/7	6/6	Electrophoresis
Medial malleolus ankle fracture	9	7/2	6/3	Electrophoresis
Calcaneal fracture	6	4/2	6/0	UHF
Tibial fractures (lower third)	2	2/0	2/0	Heat therapy
Fracture of the surgical neck of humerus	8	4/4	3/5	Light therapy
Greater tuberosity fracture	6	4/2	2/4	Light therapy
Closed shoulder dislocation fracture	5	3/2	4/1	Heat therapy
Compression fracture, L1				High-frequency currents
Chest contusion	4	2/2	3/1	Light therapy
Broken ribs	4	2/2	3/1	Light therapy
Fracture of the base of the fifth metatarsal	2	1/1	1/1	Phonophoresis
Ankle ligament injuries	12	8/4	10/2	UHF
Conditions after knee arthroplasty	3	2/1	2/1	Light therapy

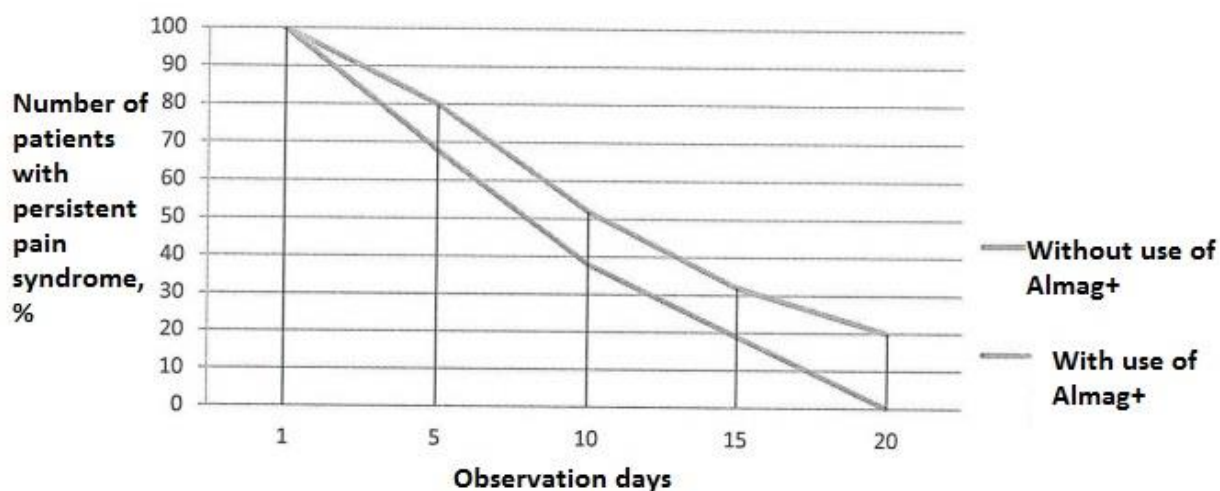
During the procedure, the following parameters were monitored in patients receiving the «ALMAG ACTIVE » magnetotherapy and in patients receiving other types of PT or exercise therapy:

- swelling in the injury area (during examination),
- pain syndrome (patient survey, Visual Analog Scale (VAS)),
- range of motions in the joints (goniometry),

- fracture union processes (X-ray).

Evaluation of the results of applying «ALMAG ACTIVE »

The regression of pain syndrome was assessed using the VAS scale. The control survey was conducted every five days. The observations confirm a more pronounced suppression of the pain syndrome in patients with uncomplicated fractures after treatment with «ALMAG ACTIVE ».



In the control group, which did not receive magnetotherapy, regression of pain syndrome was observed in 20% of patients by the 5th day of treatment, by the 10th day - in 48%, by the 15th day - in 68%, by the 20th day - in 80%.

In the group where magnetotherapy from «ALMAG ACTIVE » was used, there was observed a positive effect of the device in the form of suppression of the pain syndrome in a larger number of patients: in 32 % of patients by day 5 of the treatment, by day 10 — in 62 %, by day 15 — in 81 %, by day 20 — in all patients.

The suppression of the pain syndrome acted as a background for faster mobilization of the damaged limbs in patients receiving «ALMAG ACTIVE » magnet therapy.

**Goniometry Indicators for Uncomplicated Fractures**

Diagnosis	End of immobilization, flexion/extension of the ankle of the knee	Day 5, flexion/extension of the ankle joint	Day 10, flexion/extension of the ankle joint	Day 15, flexion/extension of the ankle joint	Day 20, flexion/extension of the ankle joint
Ankle fracture	100°/110°	120°/100°	130°/95°	135°/90°	140°/85°

with magnetotherapy					
Ankle fracture, without magnetotherapy	100°/110°	120° /1 05°	120° /1 00°	125°/100°	130°/95°

Diagnosis	End	Day 5,	Day 10,	Day 15,	Day 20,
	of immobilization, flexion/extension of the radiocarpal of the knee	flexion/extension of the radiocarpal joint	flexion/extension of the radiocarpal joint	flexion/extension of the radiocarpal joint	flexion/extension of the radiocarpal joint
Colles fracture, with magnetotherapy	162°/140°	160°/140°	150° /130°	140°/120°	130°/115°
Colles fracture, without magnetotherapy	162°/140°	160°/140°	155°/140*	150°/135°	140°/120°

When the magnet therapy with «ALMAG ACTIVE » was given starting from day 1-3 after the immobilization (through the cast), edema and post-traumatic hematoma improved by the end of immobilization, the fracture union processes accelerated, which was confirmed by X-ray.

#### The fracture union processes according to X-ray

Diagnosis	Day 12 of immobilization	Day 24 of immobilization
Fracture union in the group of patients receiving magnet therapy	weak	satisfactory expressed
Fracture union in the group patients who did not receive magnet therapy	no fracture union processes	weak/moderate

Thus, the positive effect of the magnet therapy resulted in a reduced time of recovery of the limb functionality.

#### Rehabilitation time in patients with uncomplicated fractures

Rehabilitation time	Chisel fracture	Colles fracture	Lateral malleolus fracture
In the group of patients received magnet therapy	30-35 days.	35-40 days.	40-45 days.
In the group of patients did not	40-45 days.	50-60 days.	60-65 days.

receive magnet therapy			
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In a group of 150 people who received ALMAG ACTIVE magnetotherapy, they showed good tolerance to the procedures and adherence to treatment. Only 5 people (3.3%) with comorbidities required correction of the treatment plan, in particular - reduction of the exposure and frequency of procedures. No side effects were observed during the procedures.

## **Conclusion**

Based on the experience of using «ALMAG ACTIVE » in patients with skeletal injuries (fractures, dislocations, damage to the ligamentous apparatus of the joints, etc.), it can be noted that magnetotherapy has a pronounced analgesic, decongestant, anti-inflammatory, trophico-regenerative effect on injured limbs.

In this regard, the effectiveness of treatment was noted in the form of regression of such symptoms as edema of the damaged area; resorption of hematomas; suppression of pain syndrome; and, as a result of the above, improved mobility and range of motion in the limbs.

It is recommended to start the procedure 1-3 days after the injury through a gyps; in this case the fracture union and recovery processes are significantly enhanced, and the time of rehabilitation is reduced.

It should be noted that magnetotherapy (in particular, with «ALMAG ACTIVE») is the method of choice for rehabilitation of patients after metallic osteosynthesis and total joint replacement.

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