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The use of dynamic patches in patients after cardiac surgery in the first stage of late hospital rehabilitation

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Summary

Introduction:
The use of dynamic slicing effectively supports the rehabilitation process. Thanks to the possibilities and a few contraindications, this method can be used in patients with limitations to physical therapy. Kinesiology Taping, we can use as a method of reducing edema and, at the same time, as a form of increasing the mobility of a given body segment.

Aim: The aim of the study is to show that dynamic taping can be used already in patients in the first days after cardiac surgery. The described methods were aimed at: improving the lymphatic system and blood circulation, and consequently reducing edema, reducing pain by loosening fascial and fascial structures, and supporting non-physiologically strained muscle.

Conclusions:
Kinesiology Taping is a method with 24-hour influence which improves the cardiovascular system. The simplicity of applying the patch, the effectiveness of various slicing techniques, and the hypoallergenicity of the tapes cause that it should be more often used as a separate or complementary method of physiotherapy.
The method of dynamic slicing influences the reduction of edema, pain sensation and increase of physical activity among patients.

Results:
In the study group, edema reduction was observed in all patients, and in 7 patients the measurements showed the same circuits as before cardiac surgery. Pain reduction was reported on average by 2 points on the VAS scale.

Discussion:
Lietz-Kijak and his colleagues provided patients with orthognathic surgery with two lymphatic applications on both sides of the face-skull. The second test was performed 10 days after the application of the tape. All patients had a reduction in edema and the result was statistically significant. The use of KinesioTapping following invasive arthroscopy of the knee joint was carried out by Gülenç together with co-researchers. The authors have not noted statistically significant changes in the reduction of edema. This may be due to too short a time with the tape being applied. Bialoszewski in the presented study examined 24 patients in whom similar results were presented to those presented in the above work. The results were statistically significant.

Keywords: Kinesiology taping; cardiac surgery; swelling

Admission

Kinesiology Taping is a method of therapeutic growing around the world since the 70s the founder of the method is considered to be a Japanese chiropractor, physiotherapist, Dr. Kenzo Kase [12]. Dr. Kase working on the tape, along with the engineers involved in medical biotechnology has created a flexible patch and wrapping method called - Kinesiology

Tapingiem. Polish method to reach the autumn of 2002.

Kinesiology Taping is a method of kinesiology rights conditions. It involves stimulation of self-regulation processes in the body, and the starting point for the treatment of skin are and muscle [8]. Dr. Kenzo based on their own experience felt that pain, swelling, tingling sensations arise from non-physiological systems work myofascial, ligament, nerve, or lymphatic, and not directly from the place of occurrence of symptoms ie. From inside the joints. Starting from these assumptions, developed and implemented in everyday practice of professional applications that were designed to correct the abnormal functioning of the fascia and muscles. Therapy involves activation of processes that lead to ensure homeostasis. The Polish nomenclature has been adopted name dynamic slicing [13].

Cardio is the branch of medicine dealing with the surgical treatment of heart and blood vessels. Many cardiac surgery is performed through median sternotomy, or the surgical cutting of the bridge giving the operator access to the entire mediastinum, and great heart. Another method of cutting is thoracotomy. In relation to the place to be operated, cutting is performed at three different points of the side of the chest. Distinguished thoracotomy postero-lateral, antero-lateral and axillary. Many operations carried out with the use of cardiopulmonary bypass (on-pump CABG), and other ie. OPCAB MIDCAB or TEACAB - without the use of [4]. All these operations, regardless of the access method of performing the procedure or type of surgery is often associated with frequent complications. The most common of them are lymphatic edema. Another pains are transferred and pain syndromes. A final problem, and also the negative postoperative complication are non-physiological, tension structures, musculo-fascial-ligament. After surgery sternotomy patients, fear of traffic. Appears forced position positional, ie the upper limbs. Przywiedzione elevation to the body and shoulders. After several hours, muscular, ligament and myofascial pain is generating stagnation. Excessive voltages of these structures can lead to decreased mobility m. Al. chest, the acromioclavicular joint and the glenohumeral joint. Rehabilitation of patients before and after surgery is very important. Lets get back to full fitness before the operation, improve the quality of life and to get rid of the pain by improving exercise tolerance, Headaches are already moved in 3 days after surgery. The reduction of pain and improvement of feelings, is obtained by applying an application using the technique and the method of wrapping the muscle trigger points.

The aim of the work is to demonstrate that the dynamic patches reduces pain, normalizes muscle tension and reduces swelling.

Material and research methods

The study was performed at the Department of Cardiac Surgery Teaching Hospital No. 2 of the Pomeranian Medical University in Szczecin. Tested 132 people. The assay was performed in triplicate, prior to cardiac surgery, 2, and 5 days after surgery. The study was 35 women and 97 men, whose average age was 61 years. Before measurements researcher interviewed, among others, taking into account the tested physical activity and medical history.

The next stage of the study was evaluation of measurement circuits and pain VAS. For this study, the method of scoring by Kasperczyk, wherein the specified components according to the degree of distortion assigned a certain number of points, which is a valid system 0pkt assessment element, and 3 or 5 - varying degrees of distortion. Measurements using anthropometric measurements made in accordance with the guidelines by Zembaty - the ankle, the knee, the calf at the widest point and 15cm from the top of the top of the kneecap. Studied both limbs. All measurements were performed 2 times. The subject under study is in a free lying position on the couch [3,14].

Persons who during the test on the second day after cardiac surgery was found lower extremity edema qualified to application patches Kinesio Taping. In a further study in five days after surgery was re-test measurements of the lower limbs in accordance with the described conditions.

adopted patch Kinesio Taping is cotton, elastic band, which does not contain any therapeutic agents, only acrylic adhesive applied sinusoidal. The patch has a width of 5 cm,

and the length of individually adapted to each patient. Tapes used in kinesiology taping their properties are similar to human skin. Permeable to air, so the processes do not interfere with thermoregulation. One of the important features of the patch is its water-resistance and its fast drying after dipping. Thanks to this property does not limit the activities of daily hygiene. The tape is hypoallergenic [7,13].

The application of the patch using a technique used to reduce lymphatic edema. The shape of the patch is obtained by dividing it so that the patch does not exceed the width of 1,25cm. Tape glued to the locus of the voltage edema 10% - i.e. that it holds the tape affixed to paper. This application by lifting the skin, reduces stress on the fascia and all the deeper structure. This facilitates the flow of lymph in the lymphatic vessels. Prepared by the procedure differential pressure, direct excessive amount of accumulated fluids into the lymphatic channels, and lymph nodes [2,7,13].

Base for a plaster, winding 10% is adhered to the vicinity of the lymph nodes. In the case of upper limb - axillary nodes. The swelling of the foot, lower leg edema small - popliteal lymph nodes, in the case of swollen entire lower limb - inguinal lymph nodes. Striped or fan-shaped glued starting from the base lymph nodes, ending with the distal parts of the body. You can apply simple gluing or so. Crisscross - crossbreeding with tails. The ends are rounded patch patch which protects against breaking,

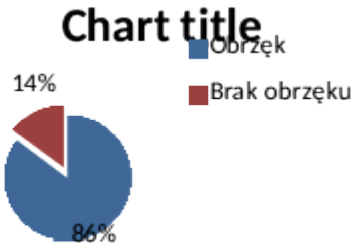
It was used to evaluate pain international visual scale (VAS called. Visual Analog Scale) where the patient himself determines the degree of pain. 0 - means no pain, and 10 - unbearable pain [2,13]. Below are examples of applications of patches Kinesio Taping of the patients after cardiac surgery. Below in Figures 1 and 2 show two variants of the application Kinesio Taping on lower limb edema.

Dig. 1 - Swelling of the left lower limb. Glued database applications without tension over the popliteal lymph nodes. Tape divided into 6 whiskers led around the swollen limb.

Dig. 2 - Swelling of the left lower limb. Base two strips glued on without tension popliteal lymph nodes. Both strips are divided into 6 whiskers led around the swollen limbs - starting from a tape medial side, the other from the side. This is a technique crisscross.

RESULTS

132 people were tested. In 19 patients had edema (Figure 3.).



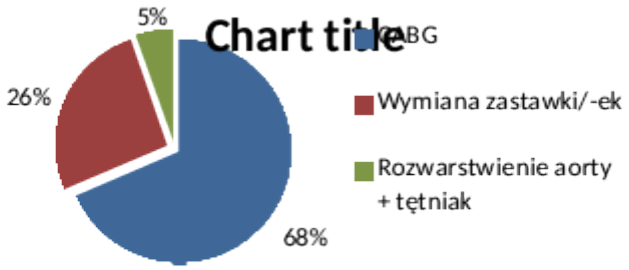
Dig. 3 people diagnosed with edema

In the group of patients qualified for Kinesio Taping applications were 12 women and 7 men. The average values of weight, height, and BMI are presented in the table below.

Tab. 1 metric patients evaluated.

parame-ters	Women	Men	Together
n =	12	7	19
age	60	63	61
weight	67	93	77
growth	158	177	167.5
BMI	27	thirty	27
* N - the number of people			

Type of cardiac surgery described in the study group are shown in Figure 4. In 13 patients underwent coronary artery bypass grafting. 5 people qualified for replacement heart valve, 1 person operating supplies required due to aortic dissection and aneurysm.



Dig. 4 Type cardiac surgery for which they were qualified patients

Lower extremity edema in the group qualified for therapy with dynamic slicing of all subjects was reduced, and in 7 of the circuit 3 study was like before heart surgery. Mean values for swelling the size of all subjects are presented in Table 2.

Tab. 2 Medium-sized swelling for all test

Date of examination / Dimensions (cm)	**Ankle**	**Widest point drumsticks**	**Knee-joint**	**15 cm from the upper thigh to the top of the patella**
before surgery	26.9	39.5	40.1	46.8
3 day after surgery	29.3	42	42.5	49.3
3 days after application of the patch	27.1	39.9	40.3	46.9

The statistical analysis was obtained after the surgery and after the slicing dynamic application presented in the table below. The data described in consideration of the right and left limbs. In most cases, tests performed indicate that a statistical significance between the slicing dynamic, and the reduction of edema.

Tab. 3 Statistical analysis between slicing dynamic, and the reduction of edema

KD LAW			**LEFT KD**		
ankle			ankle		
before surgery	5 day	p = 0.66	before surgery	5 day	**p = 0.05**
2 day	5 day	**p <0.001**	2 day	5 day	**p <0.001**
knee-joint			knee-joint		
before surgery	5 day	p = 0.45	before surgery	5 day	**p = 0.04**
2 day	5 day	**p <0.001**	2 day	5 day	**p <0.001**
at its widest point drumsticks			at its widest point drumsticks		
before surgery	5 day	**p = 0.05**	before surgery	5 day	**p = 0.05**
2 day	5 day	**p <0.001**	2 day	5 day	p = 0.21
15 cm from the top of the patella			15 cm from the top of the patella		
before surgery	5 day	p = 0.39	before surgery	5 day	p = 0.17
2 day	5 day	**p = 0.03**	2 day	5 day	p = 0.08

The mean value of pain VAS after cardiac surgery prior to application Kinesio Taping in the study group was 6. In another study, subjective assessment of pain in patients was lower at 4. The chart below shows the test persons determined the pain intensity before and after application Kinesio Taping.

DISCUSSION

A similars work on the use of this method have already been carried out. The work published Szczegielniak et al., 2007. In his work, they showed the possibility of using this method even several weeks after cardiac surgery using among others Applications for the scar. They demonstrate a decrease in pain sensation, additional stabilization of the wound and reduction of swelling due to kinesiology taping method [10].

On the other hand Lipińska and others in his work on the dynamic slicing in women after mastectomy show that all the people who have been subjected to significant improvement plastrowaniu obtained, which is a statistically significant reduction of edema. Furthermore shown that after application of lymphoid art, the subjects received growth of muscle strength and increased range of motion [5].

Interesting study on the impact of Kinesiology Taping for back pain published Ciosek et al \. In his work show Dynamic patches that significantly reduces pain. All patients who used the application on the stretch of the LS spine there was a significant improvement in spinal rotation in both directions. They showed a statistically essence of improvement during test Fingers-floor [1].

Lietz-Kijak and colleagues studied 16 patients with postoperative swelling after surgery bilateral sagittal osteotomy of the mandible. The researchers assessed the patients 4 days after surgery and supplying the two applications on both sides of the lymphatic twarzo-skull. A second study performed 10 days after application of the tape. All patients had reduction of edema, and the result was statistically significant [15].

The analysis of the reduction of swelling after invasive knee arthroscopy performed Gülenç along with co-investigators. The group of 42 patients were divided into two groups who experienced significant differences in the measurement of the diameter of the limb and without differences. The researchers evaluated the diameters of the lower limb using anthropometric measures at the mid-thigh, knee, at mid-shin and ankle height. Also they analyzed the pain using the VAS scale. In the group in which there were significant differences in the application lymphatic used. The third evaluation of the diameter of the authors conducted 2 days after application of the patch. There was no difference in the symptoms of pain between the two groups. The authors noted a statistically significant change in the reduction of swelling. This may be due to the short time of the applied tape [16].

Białoszewski and fellow researcher in the present study examined 24 patients, who reported similar results to those presented in the above work. Patients were randomly divided into two groups, which have undergone a 10-day physiotherapy. In the first group additionally used lymphocytic application, and the control group received a standard lymphatic drainage. The results were assessed by comparing the circuit of the lower limbs before and after treatment. Applied application resulted in a reduction in the circumference of thighs and crotch significantly more than the control group. The results were statistically significantly [17].

CONCLUSIONS

1. Taping kinesiology can be used as a support treatment of patients after cardiac surgery.
2. Application of Application Kinesio Taping reduces swelling and subjective sensations of pain.
3. Reduce swelling improves the physical activity levels of patients treated surgically.

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