



Early rehabilitation in patients operated for breast carcinoma

Rana rehabilitacija bolesnica operisanih zbog karcinoma dojke

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postoperativne komplikacije.

Introduction

The most often complication of breast surgery with dissection of axilla is decrease in the range of shoulder joint of the ipsilateral arm motion, the feeling of heavy arm, secondary lymphedema of the arm, and very rarely pain and weakness of the arm's muscles. Persistence of these symptoms leads to permanent dysfunction of the arm¹⁻⁴.

Decrease in the range of motion is a consequence of surgery and scarring of the healed wound, which decreases the amount of movement at each joint on the operated side^{4,5}. A reduced range of shoulder joint motion is diagnosed in 2%–51% patients who underwent surgery for breast carcinoma^{2,4}.

Secondary lymphedema of the arm is a consequence of mechanical insufficiency of the lymphatic system caused by the surgery and later, by post-irradiation fibrotic changes, and is manifested by abnormal accumulation of interstitial fluid, rich in proteins⁶. In the majority of studies, secondary lymphedema of the arm occurs in 10%–30% of patients following the breast carcinoma therapy⁴.

For postoperative complications reduction, numerous rehabilitation programs and instructions were developed with the aim of damage prevention, maximizing the occurred damage (range of motion, muscle power) and minimizing the risk for development of secondary lymphedema of the arm^{1-4, 7-12}. In breast carcinoma patients, rehabilitation has become more significant due to quality of life awareness of the oncological patients⁸.

It arises dilemma when to start with the rehabilitation program: most of the authors agree in that the program should start in the first several days after the surgery^{1-4, 7-12}, while the other authors consider that early beginning of re-

habilitation in patients with axilla dissection is associated with an increased risk from postoperative complications: longer drainage period, seroma formation, postoperative infection and consequential longer hospitalization^{1, 2, 8}. In a controlled, randomized study, a hypothesis that exercises do not increase the risk of occurrence of secondary lymphedema of the arm has been confirmed¹³.

Exercises are efficient, safe and preferred interventions in a postoperative period⁴. Early rehabilitation and later home-based exercises program, education^{14, 15}, as well as a continuous follow-up of patients^{7, 9} were identified as interventions for the improvement of life in women with breast carcinoma in all 4 dimensions: physical, emotional, social and cognitive¹⁵. Type, duration, frequency and intensity of exercises vary in the studies¹⁶. Education and follow-up of patients with breast carcinoma enable prevention, detection of early and late occurrences of postoperative damages⁸.

A lack of rehabilitation interventions in patients operated for breast cancer is a consequence of no standardized exercises program available, so it is necessary to homogenize a reproducible regime⁹.

Early rehabilitation in breast carcinoma patients who underwent surgery at the Oncology Institute of Vojvodina

The Rehabilitation Department was founded in 1996 as an organizational unit of the Oncology Institute of Vojvodina. Its activities are designed for preventive oncological rehabilitation in breast carcinoma patients, and, to some less extent, for other segments of oncological rehabilitation – restitutive, supportive and palliative oncological rehabilitation¹⁷. Cooperation with other medical personnel, based on

the horizontal correlation from the moment of diagnosis, during the therapy and the post-therapeutic period, enabled a continuous follow-up of all breast cancer patients by the physiatrist at the Oncology Institute of Vojvodina (Figure 1).

Evaluation

Basic data – preoperative measuring includes measuring shoulder joint range of motion for both arms (flexion,

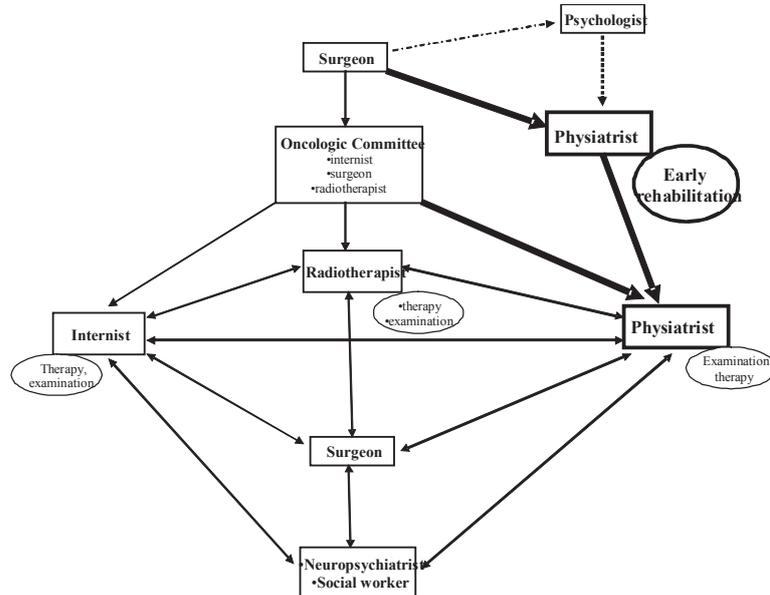


Fig. 1 – Significance and role of rehabilitation in the patients surgically treated for breast cancer at the Oncology Institute of Vojvodina

Based on the data from the literature, clinical experience, presented results¹⁸⁻²¹ and current possibilities, early rehabilitation algorithm in patients with breast carcinoma diagnosis was defined in the Rehabilitation Department (Figure 2).

abduction, external and internal rotation and extension); the borderline value of the motion reduction range is $\geq 10^\circ$; measuring the volume of both arms at 5 symmetrical, clearly defined levels; the borderline value of the volume is ≥ 2 cm; psychological evaluation.

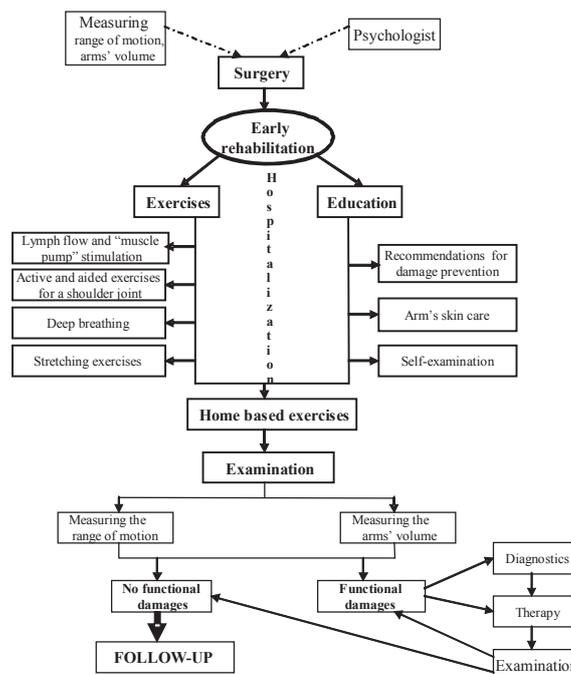


Fig. 2 – Early rehabilitation and follow-up in the breast cancer operated patients at the Oncology Institute of Vojvodina

According to the defined algorithm preoperative measurements are not mandatory because the first contact the physiatrist – the physiotherapist – the patient is most often immediately after the surgery. If there are any functional damages, a preoperative evaluation of the functional status is performed in cooperation with the surgeon.

Also, psychological evaluation is not obligatory since it is impossible to have a permanently engaged professional (no legal obligation to employ a psychologist or a defectologist) (Figure 1).

Early rehabilitation program during hospitalization

Kinesitherapy program starts on the 2nd postoperative day. It includes active exercises for the hand, radiocarpal joint and elbow to stimulate lymph flow and strengthening of the “muscle pump”; exercises with active and actively-aided movements in the shoulder joint (shoulder circling, wall climbing, elbow pushing); deep breathing; stretching exercises (neck movements, arm lifts).

The exercises are designed to maintain or increase the range of motion, to provide and increase lymph flow, to prevent fibrous adhesions and maintain the muscle power. The exercises are performed each day during hospitalization.

In patients with signs of wound infection or febrile state, kinesitherapy program is postponed until they become stable.

Educating a patient includes recommendation on later complications prevention (secondary lymphedema of the arm, brachial plexus damages), i.e. how to behave and what to avoid (risk factors)¹⁷; on skin care of the ipsilateral arm; and education on how to notice any changes in the skin of the arm, postoperative cut, drain (self-examination).

Home-based rehabilitation exercises include practising these exercises at home 3 times a day, 5–10 repetitions; up to the pain limit. If infection occurs in the area of the postoperative cut, the residue of the breast tissue or ipsilateral arm, the patient should stop the exercises (seroma formation is not a contraindication) and be referred to the surgeon for examination.

Follow-up

First examination in the Rehabilitation Department follows the Oncological Committee (4–6 weeks after the surgery) in accordance with the “horizontal correlation” system (Figure 1), for examination by the physiatrist including measuring the range of motion and registration of the

obtained parameters; measuring the volume of extremities and registration of the obtained parameters.

The next examination is performed after 3 months, while the following ones comply with the therapeutic procedures, or, if any of post-therapeutic complications appears, it is necessary to make the diagnosis according to indications (magnetic resonance imaging, ultrasound diagnostics, electromyoneurography, etc.). The principles of reconstitute, supportive or palliative oncological rehabilitation are also applied.

This procedure in the Rehabilitation Department at the Oncology Institute of Vojvodina, horizontal correlation of all medical segments that participate in the breast carcinoma treatment, implementation of principles of preventive oncological rehabilitation, continuous follow-up and early detection of complications, significantly reduce the number and severity of post-therapeutic complications.

Out of 360 randomly selected patients, surgically treated at the Oncology Institute of Vojvodina, in the period 2000–2009, reduction of the range of motion in the shoulder joint ($\geq 10^\circ$) was registered in 96 patients (26.67%) (Table 1). The most usual range reduction were in two movements (flexion and abduction). In more than half of the patients, the reduction was up to 30% for abduction and flexion movements and up to 20% for movements of internal rotation, external rotation and extension (Table 2).

Table 1
Incidence of movement reduction in the shoulder joint in the patients surgically treated for breast carcinoma at the Oncology Institute of Vojvodina

Number of reduced movements	Patients n (%)
0	264 (73.33)
1	25 (6.94)
2	27 (7.5)
3	19 (5.28)
4	18 (5.0)
5	7 (1.95)

Low incidence of secondary lymphedema of the arm in comparison to data from the literature⁴ and high presence of mild clinical forms are presented in Table 3 and Table 4 respectively.

Damages of the brachial plexus were actually individual cases, mostly of less severe degree.

Table 2
Degree of the reduction in the shoulder joint motion range in the patients surgically treated for breast carcinoma at the Oncology Institute of Vojvodina regarding the type of motion

Type of motion	Mild reduction (%)	Modest or severe reduction (%)
Abduction	45.63*	54.37†
Flexion	63.49*	36.51†
Interval rotation	63.46•	36.54+
Exsternal rotation	64.59•	35.41+
Extension	92.68	7.32+

*reduction range < 30°; • reduction < 20°; † reduction $\geq 30^\circ$; + reduction $\geq 20^\circ$

Table 3

Secondary lymphedema of the arm (SLEA) in the patients surgically treated at the Oncology Institute of Vojvodina, 2003–2007

Year	Number of surgically treated patients	Patients with SLEA n (%)
2003	409	40 (9.78)
2004	362	30 (8.3)
2005	362	38 (10.5)
2006	318	28 (8.81)
2007	384	35 (9.11)

Table 4
Clinical forms of secondary lymphedema of the arm in the patients surgically treated for breast carcinoma at the Oncology Institute of Vojvodina, 2003–2007

Clinical forms	Patients n (%)
Mild ¹	109 (63.74)
Moderate ²	43 (25.15)
Severe ³	19 (11.11)

¹ arm volume difference of 2–2.9 cm at at least 1 level;

² volume difference of 3–4.9 cm; ³ volume difference of ≥ 5 cm

The results of postoperative breast cancer treatment in the Rehabilitation Department including the designed algorithm were recognized by the National Committee for preparation of the National Guide of Clinical Practice for Breast Carcinoma (one author of this paper is a member of the team). This is the first time rehabilitation in breast carcinoma is placed within the legal framework.

In conclusion, our answer to the question “Is physiotherapy useful for the breast cancer patients?”²¹ is: Yes, indeed!

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