ADVICE

Sarcopenia and rehabilitation after liver surgery: how to regain muscle strength

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Loss of muscle mass is a hidden risk after major cancer surgery in older age. What sarcopenia is, why it is dangerous and what a six-month physical therapy programme achieved for patients after liver resection.

After major liver surgery, most people think about the wound, their blood tests and chemotherapy. Rarely about their muscles. And that is a mistake: older people with cancer often develop sarcopenia, the loss of muscle mass and strength. It quietly takes away the ability to get up from a chair with ease, climb stairs and stay steady on one's feet, and after surgery it noticeably slows recovery.

This article is about how to recognise sarcopenia and what can be done about it. It is based on research by physical therapist and surgeon Artem Mykytiuk on patients aged 60–75 after liver resection for colorectal cancer metastases.

What sarcopenia is

Sarcopenia is a progressive and generalised loss of skeletal muscle. Primary sarcopenia is related to age: after 50–60, muscles gradually waste away even in healthy people. Secondary sarcopenia is caused by inactivity, malnutrition or illness.

In cancer patients the two mechanisms overlap. Appetite falls, and the tumour releases inflammatory substances that speed up the breakdown of protein. The extreme degree of this process is cachexia, a wasting that can no longer be fully reversed by ordinary nutrition.

The main sign of sarcopenia is reduced muscle strength. It is confirmed by a decrease in muscle mass (for example, on CT) or a decline in physical performance: slow walking, difficulty getting up from a chair, loss of balance.

Why it matters before surgery

Sarcopenia is associated with more frequent postoperative infections, longer hospital stays and poorer treatment outcomes. That is why it is worth assessing before planned surgery, as a risk factor that can be influenced. Unlike age, muscles respond to training.

How the study was designed

The study included 96 people aged 60–75, with an average age of 69. They were divided into three groups:

- 33 healthy people of the same age without cancer or sarcopenia, for comparison
- 31 patients after liver resection who received standard care: diet, activity restrictions because of the wound, information about follow-up
- 32 patients after the same operation who completed a six-month physical therapy programme.

All patients had sarcopenia confirmed before surgery: low grip strength, a low SPPB score and a reduced muscle area on CT. People with a complicated postoperative course, marked cognitive impairment or cachexia were not included in the study.

The programme step by step

1–2 days before surgery

Education: which movements are allowed after surgery and which should be avoided because of the abdominal wound; how to put on compression stockings and a postoperative abdominal binder; the basics of nutrition.

In hospital, the first week

- getting out of bed on day 1–2, compression stockings, the binder, special therapeutic nutrition

- breathing exercises
- exercises in positions that do not strain the abdominal wall
- walking at a moderate pace, up to 50–60% of maximum heart rate
- light dumbbells of 0.5–1 kg: 2–4 exercises, one set of 6–8 repetitions
- daily 30–40-minute sessions with a physical therapist.

At home, the first three weeks

- protein: 1–1.2 g per kilogram of body weight per day
- learning how to prevent falls
- exercises for balance, coordination and joint mobility
- brisk walking at 60–70% of maximum heart rate
- 1–1.5 kg dumbbells and resistance bands: 4–6 exercises, 2 sets of 8–10 repetitions
- 60-minute sessions: three a week with the therapist and three on your own.

From the first to the sixth month

The first three months coincide with chemotherapy, so the sessions move to telerehabilitation and independent training. The load increases gradually: brisk walking, light jogging or a treadmill, exercise machines, 6–8 strength exercises in 3 sets of 10–15 repetitions. At least three independent sessions a week and one meeting with the therapist every two weeks.

The load was adjusted to each patient's condition: weakness, tiredness, low mood, fear of movement, the side effects of chemotherapy.

Results after six months

Both groups of patients improved, but in those who followed the programme the improvements were considerably greater:

- Grip strength increased by 36% in men (by 18% in the standard care group) and by 70% in women (versus 34%).
- The SPPB physical performance test improved by 66% versus 40%, moving from the sarcopenia range to pre-sarcopenia.
- Six-minute walk distance rose from 277 to 338 metres, almost to the level of healthy peers (351 m).
- Cancer-related fatigue decreased by 33%, twice as much as with standard care.
- Fear of movement (kinesiophobia) fell by 55% versus 18%; nutritional status also improved.
- Balance and fall risk. The time on the Timed Up and Go test fell from 22 to 15 seconds, and body sway on the stabilometric platform decreased noticeably. In the standard care group balance barely changed.

Quality of life improved too: by 29% on the SarQoL sarcopenia questionnaire (daily activities and mobility by a third), while on the EORTC QLQ-C30 scale physical and role functioning improved significantly and fatigue decreased.

To be honest about the limitations: this is a small study, the groups were not randomised, and muscle strength never reached the level of healthy people. Even so, the direction of the effect is clear and agrees with international data on the benefits of physical activity in cancer.

What to take away

- If you have major surgery ahead of you, ask your doctor about an assessment of your muscle strength and nutrition.
- You can and should move after surgery, from the first or second day, under the supervision of a specialist.
- Chemotherapy is no reason to stop exercising: the load is simply reduced and adjusted.
- Protein in your diet: at least 1 g per kilogram of body weight, unless your doctor advises otherwise.
- Balance exercises are as important as strength exercises: falls in older age are dangerous.

If you or someone close to you has been scheduled for cancer surgery, start with a consultation with a surgical oncologist. You can book by phone on the numbers in the contacts section.

Sources

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This article is for information only and does not replace a consultation with a doctor. The treatment approach is decided by a doctor after an in-person examination and assessment.