

Regenerating muscles after cancer surgery

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Advancements in microsurgery are making it possible to harness the body's healing power to regenerate muscle strength after some cancer surgeries, particularly surgery to remove soft tissue sarcoma. Mayo Clinic orthopedic oncologists are teaming with plastic surgeons in a procedure they've coined "oncoregeneration." They are seeking to perfect this procedure in which large muscle is transferred to close a surgical wound and then coaxed to function like the muscle lost to cancer. This oncoregenerative surgery combines free muscle transfers with pain management and lymphatic reconstruction with a goal of restoring function, while preventing damaged nerves and lymph nodes that can cause pain and swelling.

"Quality of life after surgery is one of the biggest reason we started doing this surgery. Sarcoma patients were functional, but would get tired easily, mainly because they are relying on other muscle groups to restore the function that they once had. Sometimes being just OK after cancer surgery isn't good enough," says Matthew Houdek, M.D., an orthopedic oncologist at Mayo Clinic. "With this functional transfer, we are attempting to restore form and function of the muscle, so patients can get back to the lifestyle they once had."

Every year there are more than 13,000 new cases of [soft tissue sarcoma](#) diagnosed in America, and 5,000 people will die from it, according to the American Cancer Society. Just a few decades ago, the only way to treat it was through limb amputation. In more recent years, cancer could be controlled by removing only the tumor, but patients often suffered

severe limitations in mobility due to swelling, pain and loss of muscle.

The procedure at Mayo Clinic is a free flap surgery done under a microscope with high precision tools smaller than the tip of a pen. These micro tools protect [blood vessels](#), small nerves and small lymphatic vessels that can be less than 1 millimeter in diameter, so they can be transferred to the site of the tumor resection. Much like a plug placed in an electrical outlet, nerves and blood vessels from the healthy muscle are connected to the nerves and blood supply where the cancer was removed. That triggers a regeneration in which the transferred muscle may function like the one that had been removed.

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