Bone-Anchored Prosthetics Greatly Improve Quality Of Life

Today sees the presentation of a study that, for the first time, shows the results of treatment using prostheses attached to titanium implants in the bones of patients with above-the-knee amputations. It reveals that the treatment improves function and quality of life in nine out of ten patients, and is the result of research carried out at the Sahlgrenska Academy and Sahlgrenska University Hospital that is being presented this week at the International Society of Orthopaedic Surgery and Traumatology (SICOT) annual international conference in Gothenburg.

In the study, researchers at the Center of Orthopaedic Osseointegration (COO) and the orthopaedic clinic at Sahlgrenska University Hospital in Mölndal treated 51 patients who had been amputated above the knee, with a two-year follow-up period. The patients were aged between 20 and 65, with 55 percent being male.

"The treatment improves both function and quality of life in more than nine out of ten patients," says Brånemark, a researcher at the Sahlgrenska Academy and orthopaedic surgeon at Sahlgrenska University Hospital. "It's important to point out that this treatment is intended for younger amputees and is not suitable for patients who have had amputations as a result of vascular disease."

More than 2,000 leg amputations are carried out each year in Sweden. While most are on elderly patients with diabetes or impaired blood circulation, some are on younger patients. Normally a leg prosthesis is attached to the amputated stump using a socket. The new technique means that the prosthesis can easily be screwed tight to a titanium implant that is anchored to the bone and protrudes from the stump.

"Attaching prostheses directly to the bone with an implant has long been an unattainable vision, and this has been in development for more than 20 years. But we are now seeing the international breakthrough for this revolutionary treatment," says Brånemark, one of the authors behind the study, who explains that work is now underway on treating other amputations such as fingers and arms.

The studies have been carried as a collaboration between Sahlgrenska University Hospital, the Department of Orthopaedics and Department of Biomaterials at the Sahlgrenska Academy, and the BIOMATCELL VINN Excellence Center of Biomaterials and Cell Therapy at the University of Gothenburg.

Osseointegration, a way of attaching prostheses directly to the bone, was developed in the 1960s by professor Per-Ingvar Brånemark. He discovered that titanium is not rejected by the body, but instead fuses with the surrounding bone tissue. It was originally used to replace lost teeth using titanium dental implants, a

treatment method that has spread worldwide. Osseointegration now has many applications, including leg, arm and face prostheses, and is also used to attach hearing aids.

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