

## **Osseo integrated prosthesis**

Osseo-integration is the technique of fixing an external object to bone and then connecting a prosthesis to the protruding abutment, so relieving the need for a prosthetic socket. This has been used successfully in dentistry since 1965, however it took Professor Banemark from Sweden to bring it to prosthetics in the mid 1990's.

The technique has only been developed for above knee amputees and to date, only in small numbers at three hospitals in the world. The technique of osseo-integration is in two main parts with two operations 6 months apart. The first operation involves inserting a titanium fixture inside the femur bone and then waiting the six months for bone to form around the fixture so locking it into place. During this time the patient can still wear a standard prosthesis.

The second operation involves screwing a titanium abutment into the fixture inside the femur.

This abutment sticks through the skin and is the device used for locking onto the prosthesis. 6 weeks following the second operation a short training device is attached to the abutment to allow the patient to weight bear through the bone.

The training period is up to 3 months before full weight bearing can be taken through the bone.

In the early stages of the development of this technique it was found that infection would get into the area of skin surrounding the abutment, however this has now been largely managed through good medical intervention. To date very few have been done around the world, e.g. in England 11 patients have had the procedure done since 1997 and 9 are still using the system. This system requires large amounts of medial and rehabilitation input from staff and the patient and this has been a limiting factor as this procedure is not covered by health plans and patients have had to pay for it themselves.

One other draw back to the system is falling and to date in the UK, 5 of the 11 patients have had falls and have had to have surgery to replace the device in the bone or the titanium abutment.

This system certainly has its advantages with the removal of the socket so causing less skin irritations and not having to have various suspensions systems. We will look forward to the future to see if this technique becomes mainstream.

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