

Osseointegration



Description

Osseointegration involves the surgical implantation of a titanium stem directly into the bone of the residual limb. The bone ossifies or grows onto the implant creating a very secure bond from which to attach a prosthesis.

Osseointegration is the same sort of procedure used in Total Hip Replacement surgery. The significant difference is the lower portion of the stem is exposed through a surgically created stoma or hole in the tissues.

Downsides to the procedure are pain, cost, and all the difficulties associated with surgery (infections, bleeding, etc...). Leakage of bodily fluids from the stoma are expected and do not abate.

Once implanted an extensive rehabilitation program is required. The patient will be carefully reintroduced to weight bearing and closely monitored by a multi-disciplinary team. Rehabilitation takes many weeks.

Successful osseointegration creates integral attachment for a prosthesis completely removing the need for a prosthetic socket. The body will not reject the implant and ultimately there should be no need for medication as a result of the implant.

Osseointegration is effective for many levels of amputation. It is significantly more successful when the site is a long strong bone (femur, tibia, humerus or radius). This system uses constant pressure against a rotating surface to resist knee flexion. The amount of pressure is set by the Prosthetist and should not be altered by the user. External spring(s) may be used to assist the knee to straighten faster than it bends.

Advantages

- No Socket or associated pressure, heat, chafing or discomfort
- Prosthesis loads the structural bones, not the tissues
- Quick and easy to attach a prosthesis, even when sitting
- Intimate connection means greater comfort and walking control
- Improved proprioception (sense of natural limb)
- More natural gait and freedom of movement
- Unaffected by weight change or fluid variations of the residual limb
- Improved muscle strength

Disadvantages

- Very expensive
- Residual limb must be at least the manufacturers stated minimum length
- Requires at least one surgical procedure, possibly multiple procedures
- Open stoma in the distal tissues requires daily hygiene regime
- Stoma infections can occur
- Requires extensive rehabilitation over many weeks under careful supervision
- Pain is a factor during rehabilitation
- Overloading the stem can cause failure
- Some components can become loose over time