

# FEMORAL AMPUTATION: The importance of good distal support

In the UK each year, around 1,800 above-knee amputees receive a prosthetic leg. The Keep Walking Femoral Implant is an interesting development that is currently available in Spain, but is not available in the UK – yet. Henk van Haarlem explains how it works...



**The consequences of a femoral amputation vary enormously depending on the level at which the amputation is performed. They can go from a knee disarticulation, passing through different levels of the femoral shaft; up to a hip disarticulation, in which the femur is completely extirpated. In general, we can say that the higher the level of amputation, the more difficult it will be to preserve the functionality of the resulting stump and the more discomfort patients will suffer when fitting the prosthetic socket.**

However there is another factor that affects functionality of the stump and patient's comfort in a fundamental manner while using the prosthesis. That factor is the presence or absence of distal (end) support in the stump. Distal support offers the patient the possibility to partially weight-bear on the end part of the stump, reducing pressures on the lower part of the pelvis (ischium) — as some of the most usual problems are due to this ischium loading — improved prosthesis control, as well as its perception and more balanced walking. At mid- to long-term, distal support reduces the likelihood of osteoporosis, which can develop when the femur is not loaded.

A knee disarticulation preserves the femur and the femoral condyle (the rounded end of the bone) completely, and thereby provides the stump with a natural support in a way that load can be transmitted through the femur. One of the problems associated with this type of amputation is that the condyles in both femurs stay at the same level. As a result, the articulation level of the orthopedic leg will be lower than the one on the healthy knee and therefore they will be decompensated (unless it is a bilateral knee disarticulation).

To solve this articular-line issue, there are different surgical techniques:

1. Gritti-Stokes Amputation. An amputation which is performed above the knee, using the kneecap to block the femoral canal. It permits distal load bearing.
2. Shortening the femur. A technique in which

a portion of the mid-third of the femur shaft is eliminated, fusing the upper and lower parts with osteosynthesis. This way a 'natural' support is obtained, with the condyles at different heights, which facilitates correct prosthesis fitting (with articular levels at the same height). This is a complex technique and is rarely performed.

3. An implant for distal support. Such an implant is introduced in the femoral canal after a transfemoral amputation. The implant provides an ample surface for distal support that permits load transfers to the femur. The benefit of the implant is that it can be placed in previously amputated patients who thereby recover the capacity of distal load they lost with the amputation, acquiring also all the benefits associated with distal load bearing. An implant of this type, since it stays completely within the stump, does not pose an added infection risk.

In accordance with the clinical trial performed with this implant<sup>1)</sup>, it provides benefits for all transfemoral amputees, independent of the cause for amputation. There is, however, a group that has benefitted significantly from its features during the clinical trial. They are amputees of vascular origin with associated comorbidities and over 50 years of age.

Scientific literature also evidences the functional advantages of patients who have distal support versus those who do not, so all patients who are prescribed a prosthetic leg could benefit from such a feature. In this sense, when a transfemoral amputation is to be carried out, it would be convenient to take into account the importance of good distal support and ways to obtain it.

*For more information on the Keep Walking Femoral Implant, contact [info@iplantekeepwalking.es](mailto:info@iplantekeepwalking.es) or visit [implantekeepingwalking.es](http://implantekeepingwalking.es)*

<sup>1)</sup> Multi-centric clinical trial with 30 patients, performed at five hospitals. Principal investigator Dr Lluís Guirao of Hospital de Mataró, Spain.

