7E10 Helix^{3D} Hip Joint

Coding Justification

Effective: January 1, 2015

L5961 ADDITION, ENDOSKELETAL SYSTEM, POLYCENTRIC HIP JOINT, PNEUMATIC OR HYDRAULIC CONTROL, ROTATION CONTROL, WITH OR WITHOUT FLEXION AND/OR EXTENSION CONTROL[1]

Polycentric Hip Joint with External Hip Rotation

Conventional prosthetic hip joints have a single axis, comparable to a normal door hinge. These joints allow movement in one plane: flexion and extension. The motion of the sound hip is a much more complicated three-dimensional movement, involving inward and outward rotation during stance and swing phase. This rotation is necessary to compensate for the natural pelvis rotation that stabilizes gait and allows the body to pivot around the foot that is planted securely on the ground.

The patented polycentric frame design of the 7E10 Helix^{3D} Hip Joint provides a three-dimensional movement of the hip joint during walking that closely resembles the normal hip joint movement in the sound leg. During stance and swing phase, the hip unit rotates contrary to the pelvis to compensate for the pelvic rotation. The rotation is directly related to flexion and extension of the hip. This prevents high torsion on the prosthetic components, socket, skin and backbone/trunk.

The polycentric design of the Helix allows for leg length reduction during the swing phase. Both the knee joint and the hip joint are simultaneously flexed during the mid-swing phase. When the simultaneous knee and hip flexion are combined by the shortening effect of the polycentric hip joint structure, the result is increased ground clearance while swinging the prosthesis forward. This helps reduce the risk of falling and increases security.

Hydraulic Hip Joint

Hip joints are aligned in the lower frontal part of the prosthesis. With this alignment the hip joint will always extend at heel strike, as necessary for safety considerations to the end-user. In conventional prostheses, this extension movement is free and undamped. Because of the off-center alignment, balancing on this free moving joint is not possible. The alignment leads to unstable trunk movements and a high impact at full extension of the hip joint. This impact is transferred through the socket and subsequent to the skin, pelvis and backbone. To prevent this impact, amputees tilt their pelvis forward before heel strike, to bring the hip joint back into the extended position before really putting weight on the prosthesis. This is very energy consuming. Berghof describes these effects in Kinematic Gait Analysis of Hip Disarticulation Patients.[2]

7E10 Helix^{3D} Hip Joint

Coding Justification

Effective: January 1, 2015

The 7E10 Helix^{3D} Hip Joint contains a hydraulic unit that 1) controls the three-dimensional movement of the hip joint during walking that closely resembles the normal hip movement in the sound leg, and 2) allows for a damped, controlled heel strike in the stance phase with significantly reduced hyperlordosis as well as a natural hip joint extension so that the user can accomplish a more controlled, smooth roll-over on the prosthesis under full load.

The Helix allows the user to balance on the extending hip joint without compensational movements. The adjustable damping force is set to a level that allows for a symmetrical extension speed compared to the contralateral leg. The upper body remains much more stable and high impact forces at full extension are prevented.

The amount of flexion during swing phase can be controlled by the hydraulic unit in the Helix Hip Joint. After reaching the desired stride length, an adjustable high flexion damping controls the hip joint. Uncontrolled buckling of the prosthesis is prevented by this high damping. The damping can be adjusted to support the amputee in sitting down, thereby reducing the stress on the contralateral leg.

Hip Flexion Assist

The 7E10 contains two Polyurethane Spring Elements that store energy during stance phase. To initiate swing phase, this energy is released as soon as knee flexion takes place. Simultaneous hip and knee flexion provide more clearance at mid-swing.

The Polyurethane Spring Elements also flex the hip when the prosthesis is lifted. This provides good support when the user starts walking with the prosthetic limb from a standing position. The amount of flexion during swing phase is controlled by the hydraulic unit.

[1] The product/device "Supplier" (defined as an O&P practitioner, O&P patient care facility, or DME supplier) assumes full responsibility for accurate billing of Ottobock products. It is the Supplier's responsibility to determine medical necessity; ensure coverage criteria is met; and submit appropriate HCPCS codes, modifiers, and charges for services/products delivered. It is also recommended that Supplier's contact insurance payer(s) for coding and coverage guidance prior to submitting claims. Ottobock Coding Suggestions and Reimbursement Guides are based on reasonable judgment and are not recommended to replace the Supplier's judgment. These recommendations may be subject to revision based on additional information or alpha-numeric system changes.

[2] Berghof R. Kinematic Gait Analysis in Patients with Hip Disarticulation Prostheses. Ortho¬pädie-Technik. 1995;(46)762-767