Total Hip Replacement

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The Hip Joint

I. The joint of the hip is a very unique and important joint of the body
   A. As it guides walking and running
   B. Also as being a support for the body above the hip

II. The hip joint is responsible for six types of movement for the thigh
   A. Flexion
   B. Extension
   C. Adduction
   D. Abduction
   E. Medial Rotation
   F. External Rotation
The Hip Joint (cont.)

I. It is the joint between the femur and the acetabulum of the pelvis
   A. The acetabulum is a circular cavity where the head of the femur bone goes into
      1. This is known as a ball and socket joint where the six movements of the thigh are possible
The Hip Joint

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Reasons to Get a Hip Implant

I. Many individuals may have pain in their hip caused by many illnesses, damage, etc.
   A. An example of an illness would be arthritis
      1. Arthritis is a complex illness that affects our joints
         a) Symptoms include swelling, pain and a lowered ability of movement or motion
         2. Osteoarthritis, Rheumatoid arthritis, post-traumatic arthritis, etc.
   ● Because of the pain and the lowered ability to move around the joint; a hip implant would be a good solution
Total Hip Replacement

I. First performed in 1960
II. This is where the hip joint is replaced by a new artificial hip
III. This should be the last option if other treatments are not working or if the person is in severe pain
IV. There are two types
   A. Cemented
   B. Cementless (press fit)
V. The bone and the cartilage of the joint is replaced by new components
   A. Acetabulum-replaced by a metal socket
   B. Femoral Head-replaced by a metal/ceramic ball
   C. Femur-is cemented or “press fit” to the bone
   D. Femur replaced by femoral stem
VI. A spacer is placed between the socket and the ball
Experiments

I. One study was done on a 74 year old woman with a 7 year old implanted hip joint
   A. Data was observed using a Kistler Force Plate
      1. Processing system, high speed video camera, licensed software for human gait modeling
   B. The parameters were set around normal limits (temperature, atmospheric pressure, etc.)
   C. Physiological parameters were recorded different times of the day
      1. Pulse
      2. Temperature
      3. Blood Pressure
      4. Weight/Height
   D. This woman requested to have her hip joint replaced because
      1. She need help during walking, would lose balance and experienced pain
   E. Observations showed that the hip joint showed functional and positional abnormalities
      1. The hip implant was worn out and there was a change in bone structure
   F. After this, her hip joint was replaced
Experiments

I. Results after the new hip was implanted
   A. For the following weeks, patient sometimes needed a crutch
   B. Slight pain
   C. Locomotor discomfort did not worsen

II. Displacement period of walking decreased
    A. Increased mobility
    B. Corrected balance
Experiments

Another study that observed two groups

I. Group 1: 17 patients had osteoarthritis of the hip and each patient was to receive a hip implant
   A. Observations were made before and after the surgery
      1. Immediately after surgery, the patients all had increased activity of the joint
         a) Caused by formative and resorptive bone remodelling
   B. A common trend that occurred
      1. After (a mean of) 2 months, the patients showed decreasing activity
      2. However, after (a mean of) 6 months, the activity went back to normal
      3. Activity of the affected hip matched that of the unaffected hip
   C. 5 out of 17 had results different than the mean
Experiments

I. Group 2: 28 patients who received Total Hip Replacement and were suspected of having a loose hip prosthesis
   A. Using a Sr Scintiscan, 78% (22/28) had a positive scan
      1. 16 of the 22 were being studied
         a) Loosening of the prosthesis was confirmed
         b) In 8 out of the 16 there was an infection
Discussion

- Total Hip Replacement is an effective method for replacing a hip joint
  - However, there can be problems with the joint itself
    - Loosening and Infections can occur
  - It is important to observe any pain or discomfort
  - It can be a sign that the hip joint can be loosening or becoming infected

- Disregarding some of these issues Total Hip Replacement has been a very successful surgery in medicine
Questions
Sources


