HIP IMPLANT

TECHNICAL FIELD

[0001] This document relates to hip implant devices and related surgical methods.

CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims the benefit of U.S. Patent Application No. 61/322,750 filed on April 9, 2010, which is incorporated herein by reference in its entirety.

BACKGROUND

[0003] Total hip replacement (THR) is a surgical procedure in which various components of a patient's hip joint are replaced with artificial components in order to restore functionality of the patient's hip.

[0004] In one common THR procedure, an artificial acetabular cup is implanted in place of the patient's natural acetabulum, and a femoral prosthesis is implanted into the patient's femur. The femoral prosthesis has a head that engages the artificial acetabular cup to allow the femoral prosthesis/acetabular cup combination to function much like the natural hip joint. However, the ability of an artificial hip joint to function like the patient's natural hip joint depends on how well the components of the artificial hip fit when implanted into a particular patient.

SUMMARY

[0005] Provided are femoral components for hip implant devices and related surgical methods. One example femoral component comprises a neck having a central axis and a body distal to the neck. The body has a tapered portion and a largest cross section perpendicular to the neck central axis. The largest cross section perpendicular to the neck central axis has a maximum height dimension and a maximum width dimension, wherein the maximum height dimension is about 23.9 mm or less and can optionally be between about 20.3 mm and 23.9 mm. The maximum width dimension can be about 18.5 mm or less, and is optionally between about 15.7 mm and 18.5 mm.

[0005a] In one aspect, the present invention provides for a femoral component of a hip implant device, comprising:

(a) a neck having a central axis; and

(b) a body distal to the neck, the body having a tapered portion, wherein the body has a largest cross section perpendicular to the neck central axis, the largest cross section perpendicular to the neck central axis having a maximum height dimension and a maximum width dimension, wherein the maximum height dimension is 23.9 mm or less.

[0005b] In another aspect, the present invention provides for a femoral component of a hip implant device, comprising:

(a) a neck having a central axis;

(b) a body distal to the neck and having a tapered portion, wherein the body has a largest cross section perpendicular to the neck central axis, the largest cross section perpendicular to the neck central axis having a maximum height dimension and a maximum width dimension, wherein the maximum width dimension is 18.5 mm or less.

[0006] In some ~~aspects~~examples, the tapered portion is tapered from proximal to distal in the sagittal and coronal planes. The tapered portion can be further tapered in the lateral to medial in cross section.

[0007] Optionally, the body has an exterior surface and a porous surface coating is applied circumferentially to the surface of the body. The porous surface coating can be applied by plasma spray. The porous surface coating can optionally comprise metal such as, for example, titanium.

[0008] Another example femoral component of a hip implant device comprises a neck and a body distal to the neck. The body has a tapered portion and a stem portion having a distal tip and a central axis. The length of the body as measured from the medial junction of the neck and body along an axis parallel to the central axis of the stem portion can be about 125 mm or less. For example, the length of the body can be, or can be less than, about 125, 120, 115, 110, 105, 100, 95, 90, 85 or 80 mm, or any value there between.

[0009] The body can further comprise a lateral humped portion. The device can have a triple taper geometry. In this triple taper geometry, the tapered portion is tapered proximal to distal in the sagittal and coronal planes and in the lateral to medial in cross section. The stem portion can be optionally positioned in the diaphysis of a femur and does not contact the cortex of the intramedullary canal.

[0010] In some ~~aspects~~examples, the body has an exterior surface and the femoral component further comprises a porous surface coating applied circumferentially to the surface of the body. The porous surface coating can be located proximal to the stem portion and can optionally coat the humped portion. The porous surface coating can be applied by plasma spray.

[0011] In yet another example, a femoral component of a hip implant device comprises a neck and a body distal to the neck. The body has a tapered portion and a stem portion having a distal tip. The stem portion is proportioned such that the stem portion has no substantial contact with the intramedullary canal cortex when the femoral component is implanted in a femur. The body can optionally comprise a lateral humped portion.

[0012] Optionally, the stem portion has no contact with the intramedullary canal cortex when the femoral component is implanted in a femur. Optionally, the stem portion has only tangential contact with the intramedullary canal cortex when the femoral component is implanted in a femur. In some examples, the stem portion has a central axis and the length of the body as measured from the medial junction of the neck and body along a axis parallel to the central axis of the stem portion is about 125