

TITLE: KNEE REPLACEMENT PROSTHETIC

FIELD OF INVENTION

The present invention is directed to a system and method for enabling natural knee movement after knee arthroplasty, specifically an implantable knee prosthetic that enables natural knee movement, and methods of using the same.

BACKGROUND

Total or partial knee replacement surgery is called knee arthroplasty. Total or partial knee replacement may be done to relieve knee pain, for example, knee pain caused by arthritis. Although there are many types of arthritis, most knee pain is caused by three types: osteoarthritis, rheumatoid arthritis, and post-traumatic arthritis, and the like. Prosthetic knee implants are utilized to repair and/or replace damaged bone and tissue in the human body. For example, a knee prosthetic may include a tibial component that is attached to a resected or natural proximal tibia, a femoral component attached to a resected or natural or natural distal femur, and a meniscal component coupled with the tibial component and the femoral component. Usually, the meniscal component is used to provide an appropriate level of friction and contact area at the interface between the femoral component attached to the tibial component via a locking mechanism, or the like. The locking mechanism may present problems such as, but not limited to, backside wear and/ or micromovements between two surfaces. However, these prosthetics may not allow for natural knee movement when implanted and thus, there is a need for the same. For example, these prosthetics may not provide the appropriate level of flexion and/ or freedom of rotation and/ or may be mobile-bearing prosthetics.

Knee replacement systems in prior art for enabling knee movement in leg comprises a prosthetic having:

- a. A tibial portion at least partially implantable on a resected surface of a tibia,
- b. A plate portion attached to the tibial portion and at least partially implantable in a meniscal space, wherein the plate portion comprises:

- i. A top surface having a medial recess and a lateral recess for receiving a medial condyle and a lateral condyle of a femur or a femur component; and
- ii. A bottom surface attached to a top surface of the tibial portion wherein the tibial portion and the plate portion are one piece.

5 SUMMARY OF INVENTION

A knee replacement system for enabling natural knee movement in a leg is provided. The system includes a prosthetic having a tibial portion at least partially implantable on a resected surface of a tibia; a plate portion attached to the tibial portion and at least partially implantable in a meniscal space. Preferably, the plate portion comprises a top surface having a medial recess and a lateral recess articulating with medial and lateral condyle of femur or femoral component respectively; and a bottom surface attached to a top surface attached to a top surface of the tibial portion. Preferably, the tibial portion and the plate portion are one piece. Preferably, the prosthetic consists essentially of polyethylene. The plate portion may further include a medial side surface attached to at least a portion of the top surface and at least a portion of the bottom surface and defining a medial side edge; a lateral side surface attached to at least a portion of the bottom surface and defining a lateral side edge; a posterior side surface attached to at least a portion of the top surface and at least a portion of the bottom surface and defining a posterior side edge; and an anterior side surface attached to at least a portion of the top surface and defining an anterior side edge. Preferably, at least a portion of one of the medial side edge, lateral side edge, posterior side edge, or anterior side edge is oblique. Preferably, the plate portion is not comprised essentially of a metal.

Preferably, at least a portion of the medial side edge and at least a portion of the lateral side edge are oblique. Preferably, at least a portion of the posterior side edge is oblique. Preferably, at least a portion of the anterior side is oblique. Preferably, each of the medial side edge and the lateral side edge is oblique from about 15 to about 60 degrees. Preferably, the posterior side edge is oblique from about 15 to about 60 degrees. Preferably, the anterior side is oblique from about 15 to about 60 degrees. The system may further comprise a femoral component, wherein the femoral component comprises a

medial condyle and a lateral condyle, wherein the femoral component is at least partially implantable on a resected portion of the femur. The system may further include a patellar component, coupled to the femoral component and implantable on an anterior distal portion of the femur that is adapted to provide a contacting surface for a patella of the leg.

5 In a preferred embodiment, the prosthetic comprises: a tibial portion at least partially implantable on a resected surface of a tibia; a plate portion attached to the tibial portion and at least partially implantable in a meniscal space. Preferably, the plate portion comprises a top surface having a medial recess and a lateral recess for receiving a medial condyle and a lateral condyle of a femur or a femur component. Preferably, the prosthetic is
10 implantable as one piece. Preferably, the prosthetic includes an anterior side surface center axis; a first protrusion on a first side of anterior side surface; and a second protrusion on a second side of anterior side surface. Preferably, each of the anterior side surface center axis, the first protrusion, and the second protrusion comprise a height, wherein the height of the anterior side surface center axis is from about 14mm to about 21 mm the height of
15 the first and second protrusion is from about 11mm to about 18 mm.

In a preferred embodiment, a method of implanting a prosthetic of the present invention is provided. The method includes resecting a tibia of a knee.

In a preferred embodiment, a knee replacement system for enabling natural knee movement comprising a prosthetic is provided. The prosthetic includes a plate portion at
20 least partially implantable in a meniscal space. Preferably, the plate portion includes a medial side surface attached to at least a portion of the bottom surface and defining a medial side edge; a lateral side surface attached to at least a portion of the top surface and at least a portion of the bottom surface and defining a lateral side edge; a posterior side surface attached to at least a portion of the top surface of the bottom surface and defining a
25 posterior side edge; an anterior side surface attached to at least a portion of the top surface and at least a portion of the bottom surface and defining an anterior side edge. Preferably, at least a portion of one of the medial side edge, lateral side edge, posterior side edge, or anterior side edge is oblique.

BRIEF SUMMARY OF DRAWINGS

The invention may be more readily understood by referring to the accompanying drawing in which:

FIG.1 is an anterior view of a prosthetic of the present invention;

5 FIG.2 is an anterior view of the prosthetic of FIG. 1 and having a femoral component;

FIG.3 is a posterior view of the prosthetic of FIG.1

FIG.4 is a side view of the prosthetic of FIG. 1

FIG.5 is a perspective view of the prosthetic of FIG.1

FIG.6 is a perspective view of FIG.1

10 FIG.7 is a perspective view of FIG.1

FIG.8 is a side view of prosthetic of FIG.1

FIG.9 is a top plan view of prosthetic of FIG.1

FIG.10 is a top plan view of the prosthetic of FIG.1

FIG.11 is a posterior view of the prosthetic of FIG.1

15 FIG.12 is an anterior view of the prosthetic of FIG.1

FIG.13 is a side view of the prosthetic of FIG.1

FIG.14 is a bottom view of prosthetic of FIG.1

FIG.15 is a bottom view of the prosthetic of FIG.1

FIG.16 is a perspective view of the prosthetic of FIG.1

20 FIG.17 is a perspective view of the perspective of FIG.1

FIG.18 is a perspective view of the prosthetic of FIG.1

FIG.19 is a perspective view of the prosthetic of FIG.1

FIG.20 is a side plan view of the prosthetic of FIG.1

FIG.21 is a perspective view of the prosthetic of FIG.1

FIG.22 is a perspective view of the prosthetic of FIG.1

5 FIG.23 is a top plan view of the prosthetic of FIG.1

FIG.24 is a posterior view of the prosthetic of FIG.1

FIG.25 is a perspective view of the prosthetic of FIG.1

FIG.26 Top view of prosthetic of FIG.1

FIG.27 is a bottom plan view of prosthetic of FIG.1

10 DETAILED DESCRIPTION OF THE INVENTION

It will be appreciated that terms such as "front", "back", "top", "bottom", "left", "right", "horizontally", "up", "down", "upwardly", "downwardly", "side", "medial" and/or "lateral" used herein are merely for ease of description and refer to the orientation of the components as shown in the figures. It is to be understood that any orientation of the
15 prosthetic, and the components thereof described herein, is within the scope of the present invention.

As used herein, "anterior" refers to direction generally toward the front of the patient. As used herein, "posterior" refers to an opposite or substantially opposite direction of anterior, i.e., generally towards the back of the patient.

20 As used herein, "attached" and/or "attached to" and/or any grammatical version thereof, may refer to "formed from" and/or "joined" and/or "connected" together. As used herein, for example, if two components are attached, they may be formed as one.

For example, they do not need to be joined together.

As used herein, "height" and/or "height at center axis" refers to the height at the center of the component/ surface, or substantially at the center of the component surface. For example, reference to "height at center of protrusion" may refer to the height at the middle of, or substantially at the middle of, the portion of the anterior surface that protrudes.

5 Referring to FIGS.1-27, a preferred embodiment of a prosthetic is shown and described. Generally, prosthetic 100(called CHANDRA) includes a tibial portion 102 and a plate portion 104. Preferably, tibial portion 102 and plate 104 portion are one piece. As such, there is no need to use a locking mechanism or the like to attach tibial portion 102 to plate 104 portion, since they are preferably formed from one piece and/or one piece. When
10 implanted, tibial portion 102 may be affixed at least partially to a resected or natural tibia, and plate portion 104, may be disposed at least partially in a joint space of a knee, i.e., between the tibial and femoral bones, or a meniscal space. Preferably, plate portion 104 comprises top surface 108, and top surface 108 includes an articulating surface (FIG:9). Preferably, plate portion 104 portion is adapted to receive/engage/ attach to, etc. a femoral
15 component 130 (as shown in FIG.2) via, for example, its articulating surface. Preferably, prosthetic 100(CHANDRA) is comprised of polyethylene, i.e., tibial portion 102 and plate portion 104 are both comprised of polyethylene and /or any other plastic, and preferably, prosthetic 100 (CHANDRA) is not comprised of metal and/ or is not substantial comprised of metal. In other embodiments, tibial portion 102 and plate portion 104 are not formed as
20 one piece, i.e, they are formed as separate pieces and are attached/ joined together; and /or may be attached/engaged/coupled to each other in any way. Other embodiments, do not include tibial portion 102, i.e., tibial portion 102 is omitted. In this manner, plate portion 104 may be used, for example, in connection with any other knee prosthetic component and/or any other tibial portion component now known or later contemplated, and/ or may
25 be used in connection with a metal plate.

In an embodiment a metal backed tibial portion may be attached to the plate portion 104 having a top articulating surface 108(FIG. 7).

In a preferred embodiment, one or more of the following may be implanted with prosthetic 100 (CHANDRA) femoral component 130 (shown in FIG.2), patellar component

134 (not shown), or any other component needed for total or partial knee replacement now known or later contemplated. Preferably, prosthetic CHANDRA is implanted with femoral component 130. For example, femoral component 130 may be disposed on plate portion 104, i.e., at a top, articulating surface of plate portion 104. Preferably, patellar flange 134 is coupled to femoral component 130 and implantable on an anterior distal portion of the femur that is adapted to provide a contacting surface for a patella of a leg. Preferably, patellar component 134 is implantable to replace the patella of the leg.

The component used, for example, in connection with prosthetic 100(CHANDRA) may be available from known medical device suppliers, such as, but not limited to, Stryker, Zimmer, Depuy and the like. In other embodiments, patellar component 134 may be omitted, i.e., for example, in the event that they do not need to be replaced and/ or one or more components of the knee are not resected. In yet other embodiments, any other components for total or partial knee replacement may be used with prosthetic 100(CHANDRA) of present invention.

15 In a preferred embodiment, and referring to FIG.1, tibial component 102 includes tibial stem 102a. Preferably, at least a portion of tibial stem 102a is implantable on a tibia/ resected surface of tibia.

Preferably, tibia stem 102a and tibial component 102 are one piece. In other embodiments, tibial stem 102a and tibial component 102 are one piece. In other embodiments, tibial stem 102a and tibial component 102 may be separate pieces, and may be attached/engaged/joined together in any way. In yet other embodiments, tibial stem 102a is omitted.

In a preferred embodiment, and referring to FIG.25 plate portion 104 comprises a medial portion 104a, a lateral portion 104b, and a middle portion 146. Preferably, middle portion 146 form an arch as shown in FIG. 11, 13 and 19. Preferably these portions are one piece. Preferably, when prosthetic Chandra is implanted into a knee, medial portion 104a is situated on the medial side of the knee (i.e., towards the middle side of the body), and lateral portion 104b is situated on the lateral side of the knee (i.e towards the outside of the body), and lateral portion 104b is situated on the lateral side of the knee (i.e., towards

the outside of the body). As such, it is to be understood that these designations (“medial” and/or “lateral”) depend on whether prosthetic 100(CHANDRA) is configured for use on the right or left knee, and both are contemplated in the invention described herein.

Preferably, presence of an arch and/or height scheme as described herein may allow one to sit cross-legged. In other embodiments, medial portion 104a, lateral portion 104b, and/or middle portion 146 may be formed separately and may be attached/ engaged/ joined together by any means known in the art. In yet other embodiments, an arch is omitted.

In a preferred embodiment, and as shown in FIG 3 & 25 centre 146 of plate portion 104, i.e., centre 114 of middle portion 146, has a height measured from bottom of plate 104 that is the same or substantially similar or more than the height at centre of or substantially center of each of medial side edge and/or lateral side edge. Preferably, the foregoing heights may be from about 5mm, and more preferably, from about 6mm to about 13mm. In other embodiments, the height at center of, or substantially center of, medial side edge and/or height at center of, or substantially center of lateral side edge is same or may not be the same.

In a preferred embodiment, and referring to FIGS.1,3,4,8,9,11,13,14,25 plate portion 104 comprises a top surfaces 108, a bottom surface 106, a medial side surface 116a, a lateral side surface 116b, a posterior side surface 112a, and an anterior side surface 112b. It is to be understood that since plate portion 104 is substantially oval, these side surfaces may not have distinct boundaries. Preferably, medial side surface 116a and top surface 108 define an edge 118a, and lateral side surface 116b and top surface 108 define an edge 118b, preferably, posterior side surface 112a and top surface 108 define an edge 120a (Fig.3,13,23), and anterior side surface 112b and top surface 108 define an edge 120b(Fig.1).

As used herein, edges 118a and 118b may be referred to herein singularly and collectively as “118” (Fig.13, 23) and edges 120a and 120b may be referred to singularly and collectively as “120” (Fig.26). It is to be understood that edges 118 and/or edges 120 may be a line, or substantially linear and/ or edges 120 may be a line, or substantially

linear and/ or edges 120 may be a line or substantially linear and/ or edges 118 and/or 120 may have a surface area (i.e., plan).

In a preferred embodiment, and referring to FIGS. (1,12,13), anterior side surface 112b comprises an indentation 138 and/or any other part of knee and/or component. Preferably, indentation 138 has an oblique edge at indentation 138. Preferably, indentation 138 prevents anterior knee pain and knee discomfort, for example, in extreme flexion. Preferably, indentation prevents, for example, the problem of patella jump while trying to do extension from extreme flexion. In other embodiments, indentation 138 is omitted. It is to be understood that indentation 138 may be of any shape/ size, depending on, for example, the size of prosthetic CHANDRA. In addition, any other suitable structure may be used in lieu of, or in addition to, indentation 138. In other embodiments, indentation 138 does not have an oblique edge.

In a preferred embodiment, and referring to FIG.25, top surface 108 comprises a medial recess 116a for receiving a medial condyle 136a(not shown) of a femur and/or femoral component and a lateral recess 116b for receiving a lateral condyle 136b (not shown) of a femur and/or femoral component on its articulating surface. As used herein, recesses 116a and 116b may be referred to as "116" singularly and collectively. Preferably, recesses 116 are situated on either side of middle portion 146. Preferably, recesses 116 and middle portion 146 form an arch as shown in FIGS.11 and 21, 25. In this regard, and as used herein, an arch may refer to the middle portion 146 being not as defined (i.e., the boundary between each of the recesses 116 and middle portion 146 is not as defined). Preferably, each of medial recess 116a and lateral recess 116b is oval or substantially oval in shape.

In a preferred embodiment, and referring to FIG.26, the long axis width 140 of recess 116 is from about 50mm to about 80mm and the short axis length 142 of recess 116 is from about 30mm to about 55mm. preferably, recess 116 is from about 6mm to about 15mm in depth at centre 144. In other embodiments, the long axis width 140 may be less than about 50mm or greater than about 80mm; the short axis length 142 may be less than about 30mm or greater than about 55mm; and/or the depth at centre 144 (Fig.26) may be less

than about 6mm or greater than about 15mm, without departing from the scope of the invention.

Preferably, between recesses 116 is middle portion 146. In other embodiments, each of medial recess 116a and lateral recess 116b may have any long axis width and/or short axis
5 lengths, depending for example, of the size of the knee/ size of the prosthetic implanted and/or they may have known widths/lengths (Fig.26). For example, since prosthetic 100(CHANDRA) preferably comprises an arch, and, in this regard, middle portion 146 may not be as defined, i.e., medial recess 116a and/ or lateral recess 116b may be larger recesses 116 may or may not be symmetrical to each other. In yet other embodiments,
10 medial recess and/ or lateral recess is any other shape, i.e., not oval or substantially oval. In yet other embodiments, an arch is omitted.

In a preferred embodiment, one or more of the edges are oblique or sloping (or are "oblique edges"). The oblique edge may be of a plane that is different from the plane of the side surface and the plane of the top surface 108. It is to be understood that one or more of
15 these oblique edges may be curved and/or sloping. Preferably, and as discussed further below, these oblique edges allow for better natural knee movement, such as when sitting cross-legged and/ or other instances that require extreme flexion. The sloping edge allows more room for, for example, the condyles to articulate about top surface 108 of plate portion 104. The inventive oblique/ sloping edges of the subject invention will be
20 described further below in terms of height and degree of incline/ sloping.

In a preferred embodiment, medial side surface 116a comprises a medial side surface centre axis 150a (shown in FIG.4); lateral side surface 116b comprises a lateral side surface centre axis 150b (shown in FIG.8); anterior side surface 112b comprises an anterior side surface centre axis 152b (shown in FIG. 1 and FIG.25); and posterior side surface 112a
25 comprises a posterior side surface center axis 152a (shown in FIG.11). Preferably, anterior side surface center axis 152b is situated at indentation (FIG 1)138. In other embodiments, anterior side surface center axis 152b is not situated at indentation 138. For example, the size of medial portion 104a and/or lateral portion 104b may dictate whether anterior side surface center axis 152b is at indentation 138 or not. It is to be understood that each axis is

at center of, or substantially at the center of, each side surface. In other embodiments, the one or more center axis described above is omitted.

In a preferred embodiment, at medial side surface center axis 150a, height 150ah (FIG 4) is from about 6mm to about 14mm; more preferably from about 8mm to about 12mm; and most preferably from about 12mm; and most preferably from about 9mm to about 10mm. in other embodiments, height 150ah may be more than about 14mm or less than about 6mm. it is to be understood that edge 118a may be sloping. As such, and for sake of simplicity, height 150ah is measured from bottom surface 106.

In a preferred embodiment, at lateral side surface center axis 150b, height 150bh (FIG.8) is from about 7mm to about 14mm; more preferably from about 8mm to about 12mm; and most preferably from about 9mm to about 10mm. In other embodiments, height 150bh is less than about 7mm or greater than about 14mm. It is to be understood that edge 118b may be sloping. As such, and for the sake of simplicity, height 150ah is measured from bottom surface 106.

In a preferred embodiment, at posterior side surface center axis 152a, height 152ah is from about 6mm to about 12mm; more preferably from about 7mm to about 11mm; and most preferably from about 8mm to about 10mm.

In a preferred embodiment, an anterior side center axis 152b, height 152bh (FIG:1 and FIG. 25) is from about 7mm to about 20mm; more preferably from about 8mm to about 18mm; most preferably from about 9mm to about 16.5mm. It is to be understood that the edge 120b (FIG.26) may be sloping. As such, and for sake of simplicity, height 152bh is measured from bottom surface 106. It is to be understood that height 152bh is preferably measured at indentation 138. Additionally, it is to be understood that anterior side surface center axis height 152bh is preferably greater than posterior side surface center axis height 152ah. In other embodiments, however, height 152ah is not measured from indentation 138.

In a preferred embodiment, and as shown in FIG.1, anterior side surface 112b includes a first protrusion 154 and a second protrusion 156. Protrusion 154 comprises a protrusion

center axis 154a and protrusion 156 comprises a protrusion center axis 156a. preferably, protrusion center axis 154a comprises a height 154ah at center axis 154a and protrusion center axis 156a comprises a height 156ah at center axis 156a.

5 In a preferred embodiment, height 154ah and/or height 156ah may be from about 10mm to about 15mm; more preferably from about 12mm to about 14mm; and most preferably from about 12.5mm to about 13.5mm. In other embodiments, height 154ah and/or height 156ah may be greater than about 15mm or less than about 10mm.

10 In a preferred embodiment, height 152ah is about 2.5mm greater than each of height 154ah and 156ah. In a preferred embodiment of present invention, however, this ratio/relationship between the height at the opening and/or indentation and the height at each of the protrusions is increased. Preferably, the greater difference in height in the present invention preferably prevents anterior subluxation or dislocation. In other embodiments, height 152ah is not greater than (or about 2.5 greater than) each of heights 154ah and/or 156ah and/or may be the same or similar to what is currently known in the art. Height
15 152bh is 2.5 times greater than height 152ah.

In a preferred embodiment, edge 118a is oblique. Preferably, edge 118a is oblique from about 75 degrees; more preferably, from about 15 degrees to about 60 degrees; most preferably, from about 30 to about 45 degrees. In other embodiments, edge 118a is not oblique. In yet other embodiments, edge 118a is oblique less than about 10 degrees or
20 greater than about 75 degrees. In yet other embodiments, edge 118a is not oblique (FIG.23).

In a preferred embodiment, edge 118b is oblique. Preferably, edge 118b is oblique from about 10 degrees to about 75 degrees; more preferably, from about 10 degrees to about 75 degrees; more preferably, from about 15 degrees to about 60 degrees; and most preferably,
25 from about 30 to about 45 degrees. In other embodiments, edge 118b is not oblique. In yet other embodiments, edge 118b is oblique less than about 10 degrees or greater than about 75 degrees. In yet other embodiments, edge 118b is not oblique (FIG.23).

In a preferred embodiment, edge 120a is oblique. Preferably, edge 120a is oblique from about 10 degrees to about 75 degrees; more preferably, from about 15 to about 60 degrees; and most preferably, from about 30 to about 45 degrees. In other embodiments, edge 120a is not oblique. In yet other embodiments, edge 120a is oblique less than about 10 degrees or greater than about 75 degrees. In yet other embodiments, edge 120a is not oblique (FIG.9, 11).

In a preferred embodiment, edge 120b is oblique. Preferably, edge 120b is oblique from about 10 degrees to about 75 degrees; more preferably, from about 15 to about 60 degrees; and most preferably, from about 30 to about 45 degrees. Preferably, edge 120b is oblique at indentation 138. In other embodiments, edge 120b is not oblique. In yet other embodiments, edge 120b is not oblique. In yet other embodiments, edge 120b is oblique less than about 10 degrees or greater than about 75 degrees. In yet other embodiments, edge 120b is not oblique (FIG.12).

In a preferred embodiment, each of edge 118a, 118b, 120a, 120b, and indentation 138 is oblique and/or sloping (FIG.1,11,12,23). In other embodiments, one or more of the foregoing edges, but not all, may be oblique. The height at each side surface and/ or degree of incline/ sloping may be based on a variety of factors, for example, on size of prosthetic CHANDRA and/or whether femoral component 130 is used or not, etc.

In a preferred embodiment, tibial portion 102 and plate portion 104 are made of durable, wear-resistant, shock-absorbing, biocompatible material. Preferably, tibial portions 104 are made of durable, wear- resistant, shock-absorbing, biocompatible material. Preferably, tibial portion 102 and plate portion 104 are comprised of polyethylene, or the like. Preferably, tibial portion 102 and plate portion 104 consists of any biocompatible material. Preferably, tibial portion 102 and portion 104 do not comprise a metal.

Preferably prosthetic 100(CHANDRA) is manufactured in a milling, casting, injection molding, sanding, polishing and/or any other suitable manufacturing and finishing process. In other embodiments, prosthetic 100 (CHANDRA) comprises a metal.

In a preferred embodiment, a metal plate is not disposed between tibial portion 102 and plate portion 104. As such, there is no need for a locking mechanism between a metal plate and plate 104 in the present invention. As such, there is less or none backside wear and/or micromovements between two surfaces. In other embodiments, metal plate may be included. However preferred embodiment can also be used with metal backed plate with portion 108 of tibial plate portion locked with metal backed plate.

In a preferred embodiment, prosthetic 100(CHANDRA) allows for a greater range of natural knee movement. For example, the one or more beveled/ sloping edges on plate 104 provide more space for any femur/ femoral component articulating on plate 104 to move/ rotate over plate 104. As such, the knee has a greater range of motion. For example, its design and/or composition allow for better flexion of the knee. Preferably, patients having prosthetic 100(CHANDRA) allows for rotation of femur/ femoral component over it. Preferably, use of prosthetic 100 (CHANDRA) allows for flexion up to about 150 degrees.

In a preferred embodiment, prosthetic 100 (CHANDRA) has many advantages. For example, use of prosthetic 100(CHANDRA) of the present invention, allows for little or none metal to be placed inside the human body; thereby, there is less chance for infection. Furthermore, use of prosthetic 100(CHANDRA) preserves more bone. Additionally, its cost-effective. Its use reduces and/or eliminates the problems associated with a prosthetic having a locking mechanism.

In a preferred embodiment, the prosthetic 100 (CHANDRA) is implanted with known methods. For example, the worn tibia is resected and/or prepared (i.e., the damaged part of the joint is removed from the surface of the bones), and the surfaces are shaped to hold prosthetic 100(CHANDRA) and/or any other joint component, i.e., a femoral component 130. Prosthetic 100 is attached to the tibia/knee cap with either cement or special material or without it. When fit together, prosthetic 100 (CHANDRA) (and any other joint parts implanted) form the joint, relying on the surroundings muscles and ligaments for support and function. Currently, prosthetics comprise metal-backed meniscal components that have rotating platforms. Preferably, however, the present invention does not comprise a rotating component.

The foregoing embodiments are merely examples of the present invention. Those skilled in the art may make numerous uses of and departures from, such embodiments, without departing from the scope and spirit of the present invention. Accordingly, the scope of the present invention is not to be limited or defined by such embodiments in any way, but rather, is defined solely by the following claims.

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Claims:

1. Knee replacement system for enabling natural knee movement in a leg comprises a prosthetic having:

- a tibial portion at least partially implantable on a resected surface of a tibia;

- a plate portion attached to the tibial portion and at least partially implantable in a meniscal space, wherein the plate portion comprises:

- a top surface having a medial recess and a lateral recess for receiving a medial condyle and a lateral condyle of a femur or a femur component and

- a bottom surface attached to a top surface of the tibial portion, wherein the tibial portion and the plate portion are one piece;

- a medial side surface attached to at least a medial portion of the top surface and at least a medial portion of the bottom surface and defining a medial side edge, wherein at least a portion of the medial side edge is oblique with respect to the medial portion of the top surface;

- a lateral side surface attached to at least a lateral portion of the top surface and at least a lateral portion of the bottom surface and defining a lateral side edge, wherein at least a portion of the lateral side edge is oblique with respect to the lateral portion of the top surface;

- a posterior side surface attached to at least a posterior portion of the top surface and at least a posterior portion of the bottom surface and defining a posterior side edge, wherein at least a portion of the posterior

side edge is oblique with respect to the posterior portion of the top surface;
and

an anterior side surface attached to at least an anterior portion of
the top surface and at least an anterior portion of the bottom surface and
defining an anterior side edge, wherein at least a portion of the anterior
side edge is oblique with respect to the anterior portion of the top surface.

2. The knee replacement system of claim 1, wherein the medial condyle of the femur slides over the oblique medial side edge and a lateral condyle of the femur slides over the oblique lateral side edge and the oblique posterior side edge to allow for a cross legged positioning of the knee replacement
3. The knee replacement system of claim 1, wherein the medial side edge is oblique from about 15 to 60 degrees with respect to at least the portion of the medial side of the top surface and the lateral side edge is oblique from about 15 to 60 degrees to at least the portion of the lateral side of the top surface.
4. The knee replacement system of claim 1, wherein the posterior side edge is oblique from about 15 to 60 degrees.
5. The knee replacement system of claim 1, wherein the anterior side edge is oblique from about 15 to 60 degrees.
6. The knee replacement system of claim 1, further comprising a femoral component, wherein the femoral component comprises a medial condyle and a lateral condyle, wherein the femoral component is at least partially implantable on a resected portion of the femur.

7. The knee replacement system of claim 6, further comprising a patellar component implantable to replace the patella of the leg, that articulates with a temporary component.
8. The knee replacement system of claim 1, wherein an inner middle lateral side of the medial recess forms a first portion of an arched shaped middle portion of the top surface and an inner middle medial side of the lateral recess forms a second portion of the arched shaped middle portion of the top surface.
9. The knee replacement system of claim 1, wherein the anterior side surface comprises:
 - [a.] an anterior side surface center axis,
 - [b.] a first protrusion, and
 - [c.] a second protrusion,wherein the first protrusion includes a first protrusion center axis and the second protrusion includes a second protrusion center axis;
wherein the posterior side surface includes a posterior side surface center axis;
wherein a height of the first protrusion center axis from the top surface to the bottom surface is greater than a height of the posterior side surface axis and a height of the second protrusion center axis from the top surface to the bottom surface is greater than the height of the posterior side surface axis; and
wherein a height at an anterior side surface center axis from the top surface to the bottom surface height is greater than a height at a posterior side surface center axis from the top surface to the bottom surface height.
10. The knee replacement system as claimed in any of the preceding claims wherein the plate portion is not comprised essentially of a metal.

11. The knee replacement system as claimed in any one of the preceding claims wherein the prosthetic including the plate portion and the tibial portion is comprised essentially of a plastic.
12. The knee replacement system as claimed in claim 1 wherein a metal backed tibial portion is attached to the plate portion having a top articulating surface.
13. A knee replacement system comprising a prosthetic having:
 - a tibial portion implantable on a resected surface of a tibia;
 - a plate portion attached to the tibial portion and at least partially implantable in a meniscal space, wherein the plate portion comprises:
 - a top surface having a medial recess and a lateral recess for receiving a medial condyle and a lateral condyle of a femur or a femur component, wherein an inner middle lateral side of the medial recess forms a first portion of an arched shaped middle portion of the top surface and an inner middle medial side of the lateral recess forms a second portion of the arched shaped middle portion of the top surface;
 - a bottom surface attached to a top surface of the tibial portion;
 - a medial side surface attached to at least a medial side of the top surface and at least a medial side of the bottom surface and defining a medial side edge, wherein the medial side edge is oblique with respect to at least a portion of the medial side of the top surface; and
 - a lateral side surface attached to at least a lateral side of the top surface and at least a lateral side of the bottom surface and defining a lateral side edge, wherein the lateral side edge is oblique with respect to at least a portion of the lateral side of

the top surface, wherein the oblique medial side edge and the oblique lateral side edge provide for smooth sliding of the femur or the femur component on the tibia.

14. The knee replacement system of claim 13, wherein the arched shaped middle portion of the top surface further comprises:

a semicircular upwardly curved arch between the first portion and the second portion of the arched shaped middle portion of the top surface.