{Citation List}

{Patent Literature}

{0004}

{PTL 1}

Japanese Patent Publication No. 4493618

{Summary of Invention}

{0005}

When fixing the bone joining member to the bone, the bone must be corrected so that the osteotomy surfaces formed at the incision are in close contact with each other, and to do so, a compression force in the longitudinal axis direction of the bone, which is the direction in which the osteotomy surfaces are drawn toward each other, must be applied to the bone from both sides of the osteotomy surfaces. However, although the bone retainer described in PTL 1 is capable of applying a compression force to the bone and the bone joining member in the bone radial direction to bring the bone and the bone joining member into close contact with each other, the bone retainer cannot apply a force to the bone in the longitudinal axis direction and has a problem in that it is difficult to correct the bone so that the osteotomy surfaces are in close contact with each other.

{0005a}

An aspect of the invention is defined in the independent claim. Some optional features of the invention are defined in

the dependent claims.

{0006}

The present techniques may make it possible to provide a pressing tool for bone surgery, with which a compression force can be applied in both the bone radial direction and longitudinal axis direction so that close contact can be achieved between the bone and the bone joining member and between the osteotomy surfaces of the bone.

{0007}

Thus, in one arrangement there is provided a pressing tool for bone surgery, comprising: a pressurizing member formed substantially columnar shape having, at one end, a pressing surface formed of a convex and substantially spherical surface; and a hook member formed to have a hook shape that is to be engaged with a surface of a bone, the hook member having a support portion at a first end, the support portion supporting the pressing member so that the pressing surface is directed toward a second end, and a projection portion at the second end, the projection portion projecting toward the support portion and being to be bited into the surface of the bone, wherein the support portion supports the pressing member so that the pressing member is movable in a longitudinal direction toward the projection portion.

{0008}

According to one exemplary arrangement, after a bone

joining member is placed on a surface of the bone in which an incision is made so as to bridge the incision, the hook member engages with the surface of the bone in such a manner that the bone and the bone joining member are sandwiched in the bone radial direction between the projection portion and the support portion at two ends of the hook member, and the projection portion is allowed to bite into the surface of the bone to fix the projection portion to the surface of the bone. The pressing member supported by the support portion is moved toward the projection portion in such a manner that the pressing surface presses the bone joining member toward the bone. As a result, a compression force in the bone radial direction is applied to the bone and the bone joining member sandwiched between the projection portion and the pressing member, and thus the bone and the bone joining member can make close contact with each other.

{0009}

In this case, the direction in which the compression force is applied to the bone and the bone joining member is coincident with the direction in which the pressing member moves. Thus, when the hook member engages with the surface of the bone so that the longitudinal direction of the pressing member is inclined relative to the longitudinal axis direction of the bone, a compression force in both the bone radial

{0019}

In the aspect described above, the receiving surface of the receiving portion may have a solid angle of 4 steradians or more.

In this manner, the surface of the head portion opposite from the shaft portion can be more stably supported by the receiving surface, and a pressing force can be reliably applied from the pressing member to the bone joining member. The solid angle of the receiving surface is more preferably 2π steradians or more so that no less than half of the outer surface of the head portion can be supported by the receiving surface.

{0020}

The present techniques afford advantageous effects in that compression force can be applied in both the bone radial direction and longitudinal axis direction so that close contact can be achieved between the bone and the bone joining member and between the osteotomy surfaces of the bone.

{Brief Description of Drawings}

{0021}

The invention will now be described, by way of non-limiting example only, and with reference to the accompanying figures in which:

{Fig. 1A}

Fig. 1A is a diagram illustrating a high tibial osteotomy

that uses a pressing tool for bone surgery according to one embodiment of the present invention.

{CLAIMS}

{Claim 1}

A pressing tool for bone surgery, comprising:

a pressing member formed substantially columnar shape having, at one end, a pressing surface formed of a convex and substantially spherical surface; and

a hook member formed to have a hook shape that is to be engaged with a side surface of a bone, the hook member having a support portion at a first end, the hook member being configured for the support portion to support the pressing member for the pressing surface to be directed toward a second end, and a projection portion at the second end, the projection portion projecting toward the supporting portion and configured for biting into the side surface of the bone,

wherein the pressing tool is arranged for the support portion to support the pressing member such that the pressing member is movable in a longitudinal direction toward the projection portion.

{Claim 2}

The pressing tool for bone surgery according to Claim 1, wherein the pressing member has a male thread and a head portion that is disposed at one end of the male thread and has the pressing surface, and

the support portion has a screw hole to be fastened to the male thread.

{Claim 3}

The pressing tool for bone surgery according to Claim 1 or 2 or 3, wherein the projection portion is positioned on an extended line of an axis line along which the pressing member is movable.

{Claim 4}

The pressing tool for bone surgery according to Claim 1 or 2, wherein the projection portion is at a position offset from an extended line of an axis line, along which the pressing member is movable, in a direction intersecting the extended line.

{Claim 5}

The pressing tool for bone surgery according to any one of Claims 1 to 4, wherein a distance between an extended line of an axis line along which the pressing member is movable and a middle portion of the hook member is 15 mm or more and 35 mm or less.

{Claim 6}

The pressing tool for bone surgery according to any one of Claims 1 to 5, wherein the projection portion has one or more pyramid-shaped projections having pointed ends.

{Claim 7}

The pressing tool for bone surgery according to Claim 2, wherein the hook member has a slit that allows an interior of the screw hole and an exterior of the support portion to communicate with each other in a radial direction of the screw hole and that extends in a direction along a center axis of the screw hole, wherein a guide pin can be inserted into the screw hole in the radial direction.

{Claim 8}

The pressing tool for bone surgery according to any one of Claims 1 to 7, further comprising a plug having a receiving portion having a concave receiving surface arranged to support the pressing surface, and a connecting portion that can connect the receiving portion to a bone joining member that is to be fixed to the side surface of the bone.

{Claim 9}

The pressing tool for bone surgery according to Claim 8, wherein the plug has a through hole that opens substantially at the center of the receiving surface and allows a guide pin to pass therethrough.

{Claim 10}

The pressing tool for bone surgery according to Claim 8 or 9, wherein the receiving surface of the receiving portion has a solid angle of 4 steradians or more.