CLAIMS

What is claimed is:

1. A method of forming an implant void in a sacroiliac joint (3) without the use of a rotary cutting instrument, the method comprising the steps of:

locating an insertion point in the sacroiliac joint (3), the insertion point defining an intended location for the implant void;

introducing a working channel (10) into the insertion point, the working channel (10) having an insertion end (11) and a working end (12) connected by a working channel (13), the insertion end (11) of the working channel (10) further comprising a first iliac contour (15), a first sacral contour (16), and insertion arms (14);

inserting the insertion arms (14) into the sacroiliac joint (3) at the insertion point such that the first sacral contour (16) seated against a sacrum bone (1) and the first iliac contour (15) seated against the ilium (2);

introducing an abrading device (30) into the working channel (10), the abrading device (30) comprising:

an abrading head (32) at a distal end of the abrading device (30), the abrading head (32) having:

abrading surfaces (33) on each of a first pair of opposing sides, the abrading surfaces (33) comprising one or more teeth, barbs,

blades, ridges, slots, broaches, or other members capable of abrading a cortical bone of the sacroiliac joint (3); and

an open tip (34) comprising a cutting edge (36) disposed at a leading edge of the open tip (34), the cutting edge (36) configured to cut bone tissue in the sacroiliac joint (3); and

a slide hammer assembly (40) at a proximal end of the abrading device (30), the slide hammer assembly (40) having a released position that enables operation of the slide hammer assembly (40), a locked position that prohibits operation of the slide hammer assembly (40), and a releasing means for transitioning the slide hammer assembly (40) between the locked position and the released position; and

advancing the abrading device (30) into the sacroiliac joint (3) such that the open tip (34) cuts bone tissue away from the sacrum (1) or the ilium (2) and the abrading surfaces (33) decorticate the cortical bone inside the sacroiliac joint (3), thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.

2. The method of claim 1, wherein, upon the abrading head (32) becoming lodged inside the sacroiliac joint (3), unlocking the slide hammer assembly (40) via the releasing means, and using the slide hammer assembly (40) to dislodge the abrading head (32) from the sacroiliac joint (3).

3. The method of claim 1, wherein introducing the working channel (10) into the insertion point further comprises:

introducing a joint locator (20) into the working channel (10) , the joint locator (20) having a penetration tip (23) at an insertion end (21), the penetration tip (23) comprising a second iliac contour (24) and a second sacral contour (25); and

placing the first and second iliac contours (15, 24) and the first and second sacral contours (16, 25) in mating alignment by fully inserting the joint locator (20) into the working channel (10), thereby defining a combined joint locator (20) and working channel (10) device.

4. The method of claim 3, wherein inserting the insertion arms (14) into the sacroiliac joint (3) further comprises inserting the combined joint locator (20) and working channel (10) device into the sacroiliac joint (3) at the insertion point such that the first and second sacral contours (16, 25) are seated against the sacrum bone (1) and the first and second iliac contours (15, 24) are seated against the ilium (2).

5. The method of claim 4, further comprising tearing through soft tissue above and inside the sacroiliac joint (3) via the penetration tip (23) until the first and second iliac contours (15, 24) abut the ilium (2) and the first and second sacral contours (16, 25) abut the sacrum (1).

6. The method of claim 2, wherein introducing the working channel (10) into the insertion point further comprises:

introducing a joint locator (20) into the working channel (10), the joint locator (20) having a penetration tip (23) at an insertion end (21), the penetration tip (23) comprising a second iliac contour (24) and a second sacral contour (25); and

placing the first and second iliac contours (15, 24) and the first and second sacral contours (16, 25) in mating alignment by fully inserting the joint locator (20) into the working channel (10), thereby defining a combined joint locator (20) and working channel (10) device.

7. The method of claim 6, wherein inserting the insertion arms (14) into the sacroiliac joint (3) further comprises inserting the combined joint locator (20) and working channel (10) device into the sacroiliac joint (3) at the insertion point such that the first and second sacral contours (16, 25) are seated against the sacrum bone (1) and the first and second iliac contours (15, 24) are seated against the ilium (2).

8. The method of claim 7, further comprising tearing through soft tissue above and inside the sacroiliac joint (3) via the penetration tip (23) until the first and second iliac contours (15, 24) abut the ilium (2) and the first and second sacral contours (16, 25) abut the sacrum (1).

9. The method of claim 1, wherein forming the decorticated implant void at the insertion point further comprises forming a generally rectangular cross sectional shape for the decorticated implant void such that the decorticated implant void is adapted for receiving a fusion implant (5) having a generally rectangular cross sectional shape.

10. The method of claim 9, wherein, upon the abrading head (32) becoming lodged inside the sacroiliac joint (3), unlocking the slide hammer assembly (40) via the releasing means, and using the slide hammer assembly (40) to dislodge the abrading head (32) from the sacroiliac joint (3).

11. The method of claim 9, wherein introducing the working channel (10) into the insertion point further comprises:

introducing a joint locator (20) into the working channel (10), the joint locator (20) having a penetration tip (23) at an insertion end (21), the penetration tip (23) comprising a second iliac contour (24) and a second sacral contour (25); and

placing the first and second iliac contours (15, 24) and the first and second sacral contours (16, 25) in mating alignment by fully inserting the joint locator (20) into the working channel (10), thereby defining a combined joint locator (20) and working channel (10) device.

12. The method of claim 11, wherein inserting the insertion arms (14) into the sacroiliac joint (3) further comprises inserting the combined joint locator (20) and

working channel (10) device into the sacroiliac joint (3) at the insertion point such that the first and second sacral contours (16. 25) are seated against the sacrum bone (1) and the first and second iliac contours (15, 24) are seated against the ilium (2).

13. The method of claim 12, further comprising tearing through soft tissue above and inside the sacroiliac joint (3) via the penetration tip (23) until the first and second iliac contours (15, 24) abut the ilium (2) and the first and second sacral contours (16, 25) abut the sacrum (1).

14. The method of claim 10, wherein introducing the working channel (10) into the insertion point further comprises:

introducing a joint locator (20) into the working channel (10), the joint locator (20) having a penetration tip (23) at an insertion end (21), the penetration tip (23) comprising a second iliac contour (24) and a second sacral contour (25); and

placing the first and second iliac contours (15, 24) and the first and second sacral contours (16, 25) in mating alignment by fully inserting the joint locator (20) into the working channel (10), thereby defining a combined joint locator (20) and working channel (10) device.

15. The method of claim 14, wherein inserting the insertion arms (14) into the sacroiliac joint (3) further comprises inserting the combined joint locator (20) and working channel (10) device into the sacroiliac joint (3) at the insertion point such that

the first and second sacral contours (16, 25) are seated against the sacrum bone (1) and the first and second iliac contours (15, 24) are seated against the ilium (2).

16. The method of claim 15, further comprising tearing through soft tissue above and inside the sacroiliac joint (3) via the penetration tip (23) until the first and second iliac contours (15, 24) abut the ilium (2) and the first and second sacral contours (16, 25) abut the sacrum (1).

CLAIMS

What is claimed is:

1. A method of forming an implant void in a sacroiliac joint without the use of a rotary cutting instrument, the method comprising the steps of:

locating an insertion point in the sacroiliac joint, the insertion point defining an intended location for the implant void;

introducing a working channel into the insertion point, the working channel having an insertion end and a working end connected by a working channel, the insertion end of the working channel further comprising a first iliac contour, a first sacral contour, and insertion arms;

inserting the insertion arms into the sacroiliac joint at the insertion point such that the first sacral contour seated against a sacrum bone and the first iliac contour seated against the ilium;

introducing an abrading device into the working channel, the abrading device comprising:

an abrading head at a distal end of the abrading device, the abrading head having:

abrading surfaces on each of a first pair of opposing sides, the abrading surfaces comprising one or more teeth, barbs, blades, ridges, slots, broaches, or other members capable of abrading a cortical bone of the sacroiliac joint; and an open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint; and a slide hammer assembly at a proximal end of the abrading device, the slide hammer assembly having a released position that enables operation of the slide hammer assembly, a locked position that prohibits operation of the slide hammer

assembly, and a releasing means for transitioning the slide hammer assembly between the locked position and the released position; and

advancing the abrading device into the sacroiliac joint such that the open tip cuts bone tissue away from the sacrum or the ilium and the abrading surfaces decorticate the cortical bone inside the sacroiliac joint, thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.

2. The method of claim 1, wherein, upon the abrading head becoming lodged inside the sacroiliac joint, unlocking the slide hammer assembly via the releasing means, and using the slide hammer assembly to dislodge the abrading head from the sacroiliac joint.

3. The method of claim 1, wherein introducing the working channel into the insertion point further comprises:

introducing a joint locator into the working channel, the joint locator having a penetration tip at an insertion end, the penetration tip comprising a second iliac contour and a second sacral contour; and

placing the first and second iliac contours and the first and second sacral contours in mating alignment by fully inserting the joint locator into the working channel, thereby defining a combined joint locator and working channel device.

4. The method of claim 3, wherein inserting the insertion arms into the sacroiliac joint further comprises inserting the combined joint locator and working channel device into the sacroiliac joint at the insertion point such that the first and second sacral contours are seated against the sacrum bone and the first and second iliac contours are seated against the ilium.

5. The method of claim 4, further comprising tearing through soft tissue above and inside the sacroiliac joint via the penetration tip until the first and second iliac contours abut the ilium and the first and second sacral contours abut the sacrum.

6. The method of claim 2, wherein introducing the working channel into the insertion point further comprises:

introducing a joint locator into the working channel, the joint locator having a penetration tip at an insertion end, the penetration tip comprising a second iliac contour and a second sacral contour; and

placing the first and second iliac contours and the first and second sacral contours in mating alignment by fully inserting the joint locator into the working channel, thereby defining a combined joint locator and working channel device.

7. The method of claim 6, wherein inserting the insertion arms into the sacroiliac joint further comprises inserting the combined joint locator and working channel device into the sacroiliac joint at the insertion point such that the first and second sacral contours are seated against the sacrum bone and the first and second iliac contours are seated against the ilium.

8. The method of claim 7, further comprising tearing through soft tissue above and inside the sacroiliac joint via the penetration tip until the first and second iliac contours abut the ilium and the first and second sacral contours abut the sacrum.

9. The method of claim 1, wherein forming the decorticated implant void at the insertion point farther comprises forming a generally rectangular cross sectional shape for the

decorticated implant void such that the decorticated implant void is adapted for receiving a fusion implant having a generally rectangular cross sectional shape.

10. The method of claim 9, wherein, upon the abrading head becoming lodged inside the sacroiliac joint, unlocking the slide hammer assembly via the releasing means, and using the slide hammer assembly to dislodge the abrading head from the sacroiliac joint.

11. The method of claim 9, wherein introducing the working channel into the insertion point further comprises:

introducing a joint locator into the working channel, the joint locator having a penetration tip at an insertion end, the penetration tip comprising a second iliac contour and a second sacral contour; and

placing the first and second iliac contours and the first and second sacral contours in mating alignment by fully inserting the joint locator into the working channel, thereby defining a combined joint locator and working channel device.

12. The method of claim 11, wherein inserting the insertion arms into the sacroiliac joint further comprises inserting the combined joint locator and working channel device into the sacroiliac joint at the insertion point such that the first and second sacral contours are seated against the sacrum bone and the first and second iliac contours are seated against the ilium.

13. The method of claim 12, further comprising tearing through soft tissue above and inside the sacroiliac joint via the penetration tip until the first and second iliac contours abut the ilium and the first and second sacral contours abut the sacrum.

14. The method of claim 10, wherein introducing the working channel into the insertion point further comprises:

introducing a joint locator into the working channel, the joint locator having a penetration tip at an insertion end, the penetration tip comprising a second iliac contour and a second sacral contour; and

placing the first and second iliac contours and the first and second sacral contours in mating alignment by fully inserting the joint locator into the working channel, thereby defining a combined joint locator and working channel device.

15. The method of claim 14, wherein inserting the insertion arms into the sacroiliac joint further comprises inserting the combined joint locator and working channel device into the sacroiliac joint at the insertion point such that the first and second sacral contours are seated against the sacrum bone and the first and second iliac contours are seated against the ilium.

16. The method of claim 15, further comprising tearing through soft tissue above and inside the sacroiliac joint via the penetration tip until the first and second iliac contours abut the ilium and the first and second sacral contours abut the sacrum.

17. A method of forming an implant void in a sacroiliac joint without the use of a rotary cutting instrument, the method comprising the steps of:

locating an insertion point in the sacroiliac joint, the insertion point defining an intended location for the implant void;

introducing a working channel into the insertion point, the working channel having an insertion end and a working end, the insertion end of the working channel further comprising a first iliac contour, a first sacral contour, and insertion arms;

inserting the insertion arms into the sacroiliac joint at the insertion point such that the first sacral contour is seated against a sacrum bone and the first iliac contour is seated against an ilium;

introducing an abrading device into the working channel, the abrading device comprising:

an abrading head at a distal end of the abrading device, the abrading head having:

abrading surfaces on each of a first pair of opposing sides, the abrading surfaces capable of abrading a cortical bone of the sacroiliac joint; and

an open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint; and

advancing the abrading device into the sacroiliac joint such that the open tip cuts bone tissue away from the sacrum or the ilium and the abrading surfaces decorticate the cortical bone inside the sacroiliac joint, thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.

18. The method of claim 17, wherein introducing the working channel into the insertion point further comprises:

introducing a joint locator into the working channel, the joint locator having a penetration tip at an insertion end, the penetration tip comprising a second iliac contour and a second sacral contour; and

placing the first and second iliac contours and the first and second sacral contours in mating alignment by inserting the joint locator into the working channel, thereby defining a combined joint locator and working channel device.

19. The method of claim 18, wherein inserting the insertion arms into the sacroiliac joint further comprises inserting the combined joint locator and working channel device into the sacroiliac joint at the insertion point such that the first and second sacral contours are seated against the sacrum and the first and second iliac contours are seated against the ilium.

20. A method of forming an implant void in a sacroiliac joint without the use of a rotary cutting instrument, the method comprising the steps of:

locating an insertion point in the sacroiliac joint, the insertion point defining an intended location for the implant void;

introducing a working channel into the insertion point, the working channel having an insertion end and a working end, the insertion end further comprising insertion arms;

inserting the insertion arms into the sacroiliac joint at the insertion point;

introducing an abrading device into the working channel, the abrading device comprising:

an abrading head at a distal end of the abrading device, the abrading head having:

abrading surfaces on each of a first pair of opposing sides, the abrading surfaces capable of abrading a cortical bone of the sacroiliac joint; and

an open tip comprising a cutting edge disposed at a leading edge of the open tip, the cutting edge configured to cut bone tissue in the sacroiliac joint; and

advancing the abrading device into the sacroiliac joint such that the open tip cuts bone tissue away from a sacrum or an ilium; and

decorticating the cortical bone inside the sacroiliac joint using the abrading surfaces;

thereby forming a decorticated implant void at the insertion point without using a rotary cutting instrument.