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DRILL GUIDE FOR MANDIBULAR STAPLES AND STAPLE CONSTRUCTION
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ABSTRACT OF THE DISCLOSURE

The present invention is particularly directed to a drill jig to be used for guiding a drill for making apertures through a mandibular jaw at symmetrically arranged points, said bores through the jaw adapted to receive the U-shaped mandibular staple over the free ends of which are threaded nuts which project above the said jaw adapted to be interlockingly nested and received within undercut apertures within a removable denture for anchoring the denture against slippage.

The present invention relates to a drill guide for mandibular staples and for the mandibular staple used therewith.

Disclosure

The present invention is directed to a drill guide or jig bore for mandibular staples to provide an accurate means for guiding the drilling of apertures through a mandibular jaw be it human or animal, which apertures once drilled, are adapted to receive a mandibular staple with fastening means thereon which retainingly engage the jaw and which provide a means for interlock with a denture removably mounted upon said jaw.

Heretofore in the use of dentures of the removable nature and particularly with reference to the lower mandibular jaw natural suction or cohesion is often reduced due to the age and wasting away of the jaw bone tissue. Various efforts have been employed to provide a means for anchoring the lower removable denture against accidental dislodgement.

The use of adhesives or mechanical devices heretofore attempted have been ineffective and inefficient for the intended purpose and accordingly it is the objective of the present invention to provide for the use of a mandibular staple which is actually secured to the mandibular jaw beneath the subcutaneous tissue, and which once secured in place by a pair of nuts is so arranged that the nuts themselves are adapted to be interlockingly nested within undercut apertures within a removable denture for anchoring the denture against accidental displacement with respect to the jaw.

These and other objects will be seen from the following specification and claims in conjunction with the appended drawings in which:

FIG. 1 is a perspective view of the present drill guide shown in exploded relation with respect to a mandibular jaw and a drill used with the said drill guide, fragmentarily shown.

FIG. 2 is a front elevational view illustrating the present mandibular staple as assembled upon and to the mandibular jaw and with the removable denture shown in dotted lines, portions of the mandibular staple as cutaway being shown for illustration of the process.

FIG. 3 is a partly sectional plan view of the present drill guide.

FIG. 4 is a fragmentary section taken in the direction of arrows 4—4 of FIG. 3.

FIG. 5 is a side elevational view of the present mandibular staple before assembly and cutting off.

It will be understood that the above drawing illustrates merely a preferred embodiment of the invention and that other embodiments are contemplated within the scope of the claims hereafter set forth.

Referring to the drawing FIGS. 1 and 2 show a human mandible jaw which could also be for an animal which is dentureless and is adapted to receive a removable lower plate such as designated at 12, FIG. 2.

Mounted upon the mandible jaw 11 is the present mandibular staple generally indicated at 13, FIG. 2. Said staple is of U-shape including the bite 14 adapted to underly the mandible jaw when assembled, FIG. 2, and which includes free end portions 15, FIGS. 2 and 5, which are threaded at 16 to receive the removable irregularly shaped nuts 17, FIGS. 2 and 5. Said free ends after assembly of said nuts, FIG. 2 are cut off leaving the throw-away portions 36 FIG. 2. End portions of the staple are stone ground or otherwise smoothened, or maybe distorted if desired to anchor the nuts against loosening once assembled so as to operatively engage the upper surface of the mandibular jaw 11, FIG. 2. Shown in FIG. 2 is a screw 18 whose ends are socketed as at 19, of a polygonal shape, for example, in order to cooperatively register over and to interlockingly engage the respective nuts 17, to anchor the same against unloosening, the said spanner 18 being interposed below the removable denture 32, shown in dotted lines, FIG. 2.

Referring to FIG. 1 it is the drilling of the apertures 21 within the mandibular jaw 11 which presents the most significant problem, primarily because it is essential that the bores 21 through the jaw be accurately located symmetrically with respect to the jaw centerline inwardly of the conventional nerve centers 20 schematically shown in FIG. 1.

For this purpose there is provided the present drill guide or drill jig generally indicated at 22, FIG. 1 which provides a means of accurately locating the drill 25 before the apertures 21 are formed within the mandibular jaw.

The present drill guide 22 includes an elongated body 23 preferably of stainless steel or other inert material, which may be a plastic substance or some alloy, for example a chromium or molybdenum alloy for illustration. The body 23 has formed therethrough a series of pairs of symmetrically arranged and spaced jig bored 24, there being an inner pair as shown in FIG. 3 which are symmetrically arranged with respect to the connecting arm 26 and an outer parallel spaced pair of bores 24 which are spaced from each other a distance different from the spacing between the inner pair of bores 24 as best shown in FIG. 3.

Arm 26 which projects centrally from the body 23 terminates in the transverse elongated rod support 27 secured thereto and parallel with body 23 and including formed therethrough corresponding pairs of spaced symmetrically arranged parallel slots 28, each of the said slots 28 being opposed from and parallel to a corresponding bore 24 in a symmetrical relationship.

The respective parallel elongated slots 28 are of U-shape in cross-section and open outwardly of the end face of the support 27 and the retaining plate 29 is mounted over said rod support 27 and secured thereto by fasteners 30 for the purpose of anchoring the U-shape director rod 31 within one of the said slots 28 as hereafter described.

Said director rod is of general U-shape, FIGS. 1 and 4, includes bite 32, long arm 33 and short arm 35. The long arm, FIG. 4 is cutaway to provide a flattened portion 34 adapted for cooperative registry with the retaining plate 29 in the assembly shown in FIGS. 1 and 4 and to facilitate longitudinal adjustment of the said locator rod with respect to the rod support 27.

In use the lower end of the short arm 35 of said director rod is adapted for vertical registry, FIG. 1 with a pre-selected point marked in some manner upon the
mandibular jaw 11 upon the interior thereof, which is to be the axis or correspond to the axis for the drilling of a proper bore through said jaw as shown at 21 for receiving the mandibular staple 13.

For this purpose the locator rod is manually adjusted and locked with respect to the drill guide assembly so that the short arm 35 of the director rod is in registry with the exact location which has been marked upon the interior of the mandibular jaw for the drilling of a suitable bore through such as shown in FIG. 1. So located and due to the symmetry of construction the corresponding jig bore 24 is adapted to serve as the guide for drill 25 located in direct axial registry with short arm 35 and the said marking on the jaw. This guarantees that when drilling occurs using the body 23 and the corresponding aperture 24 as a jig, the drilling up through the undersurface of the mandible jaw will be accurate.

The present construction provides for symmetrical arrangement of the respective bores 24 and the respective slots 26 so that once the particular symmetrical markings have been made upon the mandibular jaw 11, FIG. 1, inwardly of the nerve endings 20 to avoid problems, it becomes a simple matter to use the drill 25 through the corresponding bore 24 in said body for securing the first aperture therethrough as indicated at 21, FIG. 1.

Once the first aperture has been completed through the mandible jaw, by retaining the short arm 35 in the position shown in FIG. 1 the same or a different drill may be applied to the corresponding other spaced symmetrical bore 24 for drilling of the second aperture 21 through the mandible jaw. Said apertures are adapted to cooperatively receive the free ends 16 of staple 13 of FIG. 2.

As a final step once the apertures 21 have been properly drilled through the mandible jaw, it being understood that the subcutaneous tissue prior to drilling has been cut away and turned back, the staple 13 is properly assembled, as shown in FIG. 2 through the said apertures 21. The nuts 17, are threaded thereover into cooperative retaining registry with a top portion of jaw 11, FIG. 2. After this the free ends 36 are cut away as shown in FIG. 2 so as to flush with the upper ends of nuts 17.

It is contemplated in the present construction that the said denture 12 will have a pair of similarly and symmetrically arranged under-cut apertures adapted to cooperatively receive the projecting nuts 17 to thus anchor the denture against accidental displacement with respect to jaw 11.

The nuts 17 are tapered and quadrangular with an under-cut lower border 37 to protect the soft tissue of the gum around the pin. The quadrangular and tapered contour will allow for positive seating in removable denture 12.

Having described my invention reference should now be had to the following claims. I claim:

1. A drill guide for mandibular staples comprising:
an elongated body having a pair of spaced symmetrically arranged parallel jig bores;
an arm on and projecting from said body;
an elongated rod support secured on said arm parallel to said body and including a pair of spaced symmetrically arranged parallel slots, each slot opposed from and parallel to a corresponding bore; and a U-shaped director rod having a long arm adjustable nested and secured within a slot and a short arm spaced from and in axial registry with a corresponding bore; said director rod being so adjusted on said support that the end of its short arm is in registry with a pre-determined point on one side of a mandible jaw through which a bore is to be drilled; a corresponding jig bore being in axial registry therewith upon the opposite side of said jaw, adapted to guidably receive a drill.

2. In the drill guide for mandibular staples of claim 1, a pair of symmetrically arranged points for drilling through said jaw being pre-selected corresponding to and adapted for registry with said jig bores respectively; whereby the other jig bore is automatically located relative to said jaw to guidably receive a drill for a second bore therethrough.

3. In the drill guide of claim 1, there being a second pair of spaced symmetrically arranged parallel jig bores in said body at a different spacing than said first pair of jig bores; there being a second corresponding pair of spaced symmetrically arranged parallel slots in said rod support, each opposed from and parallel to a corresponding second bore; said director rod being selectively nested and secured in one of said slots.

4. In the drill guide of claim 1, said rod support slots opening laterally outward; the securing of said director rod including a retainer plate removably secured to said rod support over said slots.

5. In the drill guide of claim 4, portions of said long arm being flat.

6. The method of locating and retaining a removable denture upon a mandible jaw which comprises:
(1) accurately drilling a pair of spaced bores through a mandible jaw;
(2) projecting the free ends of a U-shaped mandibular staple through said bores into snug engagement with said jaw;
(3) threading fasteners over the free ends of said staple into cooperative retaining registry with said jaw; and
(4) mounting a preformed apertured denture upon said jaw and snugly nesting said fasteners into the denture apertures.

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