SURGICAL INTRODUCER

FIELD OF THE INVENTION

The present invention relates to a surgical introducer for inserting an implant into the cartilage of a human ear.

BACKGROUND OF THE INVENTION

Prominent ear deformity is common amongst the human population. An ear which projects more than 20mm from the side of the head is increasingly perceived as prominent as this distance increases. By this estimate, up to 10% of the population may be affected. It is desirable to correct the prominence very early in life when the cartilage is soft and pliable. However, often the prominence is ignored and not treated. Consequently, many children suffer the psychological consequences associated with prominent ears. These consequences can persist into adulthood.

The ear cartilage is cup-shaped and is formed of the conchal fossa and the antihelical fold which allows the ear to lie flat against the side of the head. Prominence may be the result of abnormal formation of the antihelical fold. Alternatively, it may be the result of a deep conchal fossa. One or both of these abnormalities may need to be addressed when correcting prominence of the ear. However, even for ears with a deep conchal bowl, accentuation of the antihelical fold will make a difference to the perception of prominence. In most cases the prominence is apparent at birth.

International patent application number PCT/GB2012/000282 discloses an implant formed of shape-memory material in the shape of a horseshoe for reshaping the cartilaginous portion of an ear. The implant is flattened and loaded into an introducer which assists with insertion of the implant into the ear. When the implant is in the desired position it is deployed to reshape the cartilaginous portion of the ear because it reverts to its horseshoe shape when released from the introducer.

The implant is inserted into the ear using an introducer which holds the implant in its first configuration, and upon insertion the implant adopts its second pre-programmed configuration. The introducer comprises a handle and a slider movable relative to the handle.

The present invention seeks to provide improvements over the introducer disclosed in PCT/GB2012/000282.

SUMMARY OF THE INVENTION

Herein disclosed is a surgical introducer for inserting an implant into a human ear, the introducer comprising a handle, a slider movable relative to the handle between a first position and a second position, a retaining means being at least partially defined by the slider, and a releasable locking mechanism biased to lock the slider in said first or second position, wherein, when the slider is in said first position an implant is engaged by the retaining means and when the slider is moved towards said second position the implant is deployed.

According to an aspect of the present invention, there is provided a surgical introducer for inserting an implant into a human ear, the implant comprising engaging members and being formed from a shape memory material which transforms from a first, substantially planar configuration to a second, horseshoe shaped, preprogrammed configuration, wherein the implant is biased in the second, pre-programmed configuration, the introducer comprising: a handle defining a body and a longitudinal channel in the body to house a retaining guide and receive a deployment member; wherein, the retaining guide is configured to hold the implant in the first, substantially planar configuration; wherein, the deployment member is configured to push the implant from the retaining guide to insert the implant into the ear; and a locking mechanism, characterised in that, the handle further comprises a first locking configuration and a second locking configuration in the body of the handle according to a first position and second position of the deployment member respectively and the locking mechanism comprises a resilient spring formed integrally with the deployment member, wherein at least a portion of the resilient spring is wider than the channel such that when the implant is held by the retaining guide and the deployment member is in the first position, the resilient spring engages with the first locking configuration and when the resilient spring is depressed and the deployment member is move to the second position, the resilient spring engages with the second locking formation.

During surgery, precise control over deployment of the implant is critical to the resulting adjustment to prominence of an ear. If deployment were to occur inadvertently in the wrong position the patient's ear would not take the desired shape. The implant would then need to be removed and further implant inserted. Provision of a locking mechanism means that deployment can only occur upon the conscious decision of a surgeon to extend the slider into a second position

The retaining means is further defined by the handle.

The handle comprises a body and a slider support member.

The body of the handle comprises a channel to house the slider support member and receive the slider.

The channel comprises a locking formation having a first locking position and a second locking position according to the first position and second position of the slider respectively.

Provision of a locking formation limits longitudinal movement of the slider to between two fixed positions. This provides certainty to a surgeon that the implant is securely retained by the introducer when the slider is in a first position and that the implant will be deployed when the slider is moved to a second position.

The locking mechanism comprises a resilient spring engageable with the locking formation of the handle.

Use of a resilient spring biases the locking mechanism in the locked position. The slider cannot be extended, and the implant deployed, without a conscious decision by the surgeon to overcome the spring in order to extend the slider.

The locking mechanism and the slider are formed from a unitary component.

Forming the slider and resilient spring from a unitary component simplifies the construction of the introducer and minimises manufacturing costs.

The resilient spring comprises a first portion having a first width received by the channel and a second portion having a second width, greater than the first width engageable with the locking formation of the channel.

The slider may further comprise a visual indicator to assist an operator in identifying when the introducer has been inserted a sufficient distance into the ear of a patient.

Provision of a visual indicator provides the surgeon with a visual aid to identify when the introducer has been inserted the correct distance into the patients ear before deployment of the implant.

The visual indicator may be an embossment.

The handle may comprise two openings therethrough to each receive a finger of an operator and/or a trigger position to receive a user's index finger.

The surgical introducer for inserting an implant into a human ear may be as described with reference to, and or as shown in, the drawings.

The introducer is provided in combination with an implant formed of shape-memory material and having a first configuration when retained by the retaining means of the introducer and a second pre-programmed configuration when deployed into a patient's ear.

CLAIMS

1. A surgical introducer for inserting an implant into a human ear, the implant comprising engaging members and being formed from a shape memory material which transforms from a first, substantially planar configuration to a second, horseshoe shaped, preprogrammed configuration, wherein the implant is biased in the second, pre-programmed configuration, the introducer comprising: a handle defining a body and a longitudinal channel in the body to house a retaining guide and receive a deployment member; wherein, the retaining guide is configured to hold the implant in the first, substantially planar configuration; wherein, the deployment member is configured to push the implant from the retaining guide to insert the implant into the ear; and a locking mechanism, characterised in that, the handle further comprises a first locking configuration and a second locking configuration in the body of the handle according to a first position and second position of the deployment member respectively and the locking mechanism comprises a resilient spring formed integrally with the deployment member, wherein at least a portion of the resilient spring is wider than the channel such that when the implant is held by the retaining guide and the deployment member is in the first position, the resilient spring engages with the first locking configuration and when the resilient spring is depressed and the deployment member is move to the second position, the resilient spring engages with the second locking formation.

2. A surgical introducer for inserting an implant into a human ear according to claim 1 wherein the slider further comprises a visual indicator to assist an operator in identifying when the introducer has been inserted a sufficient distance into the ear of a patient.

3. A surgical introducer for inserting an implant into a human ear according to claim 2, wherein the visual indicator is an embossment.

4. A surgical introducer for inserting an implant into a human ear according to any preceding claim, wherein the handle comprises two openings therethrough to each receive a finger of an operator.