

The invention relates to a body which is provided with an external screw thread and has at least one plastic which, at least in the end portion of the screw thread, at least partly overlaps this portion and/or at least partly replaces it.

According to the purpose for which they are used, there is a greater or lesser need to prevent screwed connections from becoming loose by means of an anti-twist mechanism. In the field of dental prosthetics, for example, it is absolutely essential for necessary screwed connections to be fitted so that they can be unscrewed, yet are still firm. Loosening must be prevented in particular in the case of parts which are screwed directly into an implant, such as, for example, implant extensions, implant posts, posts for attachments, etc., or in the case of screws which are used to secure crowns, bridges and other superstructures in dental prosthetics.

US-A-,319,689 discloses an anti-twist mechanism for screw nuts in which a retaining element must be deformed in order to perform its function.

US-A-2,568,640 also discloses an anti-twist mechanism for screw nuts. The principle may also be used to retain a screw in a recess with an internal thread. However the screw must be provided at its tip with a V-shaped recess in which a correspondingly shaped plastic part must be inserted in order to obtain an anti-twist mechanism.

A body of the above-mentioned type which is provided with an external thread is known, for example, from US-A-2,852,056. The screw described in this document must, however, be specially provided with particularly formed lateral recesses in which the corresponding plastic part can engage. It is, moreover, difficult to insert the plastic part in lateral recesses of this kind.

The object of the invention is therefore to provide a body of the type according to the preamble which enables unscrewing or loosening of the screwed connection to be prevented in a particularly simple and inexpensive manner.

This object is solved according to the invention in that the plastic part comprises a recess which is in engagement with a lug provided in the extension of the tip of the screw thread.

Because the plastic part according to the invention is in direct contact with the corresponding internal screw thread in sub-areas of the screw thread, the plastic material is squeezed in this region when the screw is screwed in and frictional engagement is effected. Because of the recess in the plastic part, the latter can be pushed onto the tip of the screw thread in a surprisingly simple manner which ensures that the plastic part performs its function reliably.

In this respect it is particularly preferable for both the lug and the recess in the plastic part to be cylindrical and disposed centrally with respect to the

cross section of the screw thread or of the plastic part.

The invention also proposes forming the plastic part such that it tapers towards its tip, in which case it is particularly preferable for the screw thread to project beyond the plastic part, at least in a sub-area. The body according to the invention can thus be screwed in without any problems, as its thread turns can engage largely without obstruction with the thread turns of the complementary internal screw thread. A frictional engagement is not established until the moment when the tip of the plastic part comes into contact with a corresponding inner end of the internal screw thread and the sides of the plastic part are thus pushed outwards.

It is particularly preferable to use the body according to the invention in dental prosthetics as an implant extension, an implant post, a post for attachments, a screw for securing crowns, bridges and other superstructures or similar.

Further features and advantages of the invention will emerge from the following description, in which embodiments are explained in detail (without of course any restriction to this field of application) on the basis of the drawings, in which:

Figure 1 is a side view of an embodiment of a screw for securing crowns, bridges and other superstructures;

Figure 2 shows the embodiment of Figure 1 in a part-sectional view which is turned through 90°;

Figure 3 is a plan view of the embodiment of Figure 1 onto the tip of the screw without a plastic part;

Figure 4 is a side view of the plastic part for the anti-twist mechanism according to the invention;

Figure 5 is a plan view of the plastic part of Figure 4 from the screw side;

Figure 6 is a side view of an embodiment of an implant extension provided with the anti-twist mechanism according to the invention for use in an endosseous dental implant;

Figure 7 is a sectional view of the embodiment of Figure 6;

Figure 8 is a part-sectional view of the plastic part shown in Figures 6 and 7 for the anti-twist mechanism; and

Figure 9 is a plan view from the extension part of the plastic part shown in Figure 7.

Figures 1 and 2 show, as an example of the invention, a metal screw 1 provided with the anti-twist mechanism according to the invention for securing crowns, bridges and other superstructures. In this case the upper part of the screw 1 with the screw thread 10 serves to screw this screw into the internal thread of an extension part or into another internal thread, while the part of

the screw shown at the bottom of the drawing (screw head) holds the dental prosthesis. A screw 1 of this kind can be connected to an implanted basic body either directly or indirectly (via an intermediate piece which can be screwed into the basic body or an appropriate extension).

Figure 2 shows that the plastic part 20 tapers towards its tip and is provided with a lug 14 which is in engagement with a corresponding recess 22 in the plastic part 20. In the illustrated case - see Figure 3 - both the lug 14 and the recess 22 in the plastic part 20 are cylindrical and disposed centrally with respect to the cross section of the screw thread 10 or the plastic part 20. As can also be seen in Figure 3, only two relatively narrow regions of the screw thread remain in the end portion 13 of the screw thread, while the two larger regions 16 are filled by lateral tongues 26 of the plastic part 20. Because of the conical construction of the plastic part 20, the screw thread 10 projects at least partly beyond the plastic part 20, as can be seen in Figure 2, a feature which provides the above-mentioned advantages when the body according to the invention is screwed in.

A more detailed formation of an exemplary embodiment of the plastic part 20 is provided by Figures 4 and 5, which clearly show the lateral tongues 26, which replace a proportion of the screw thread 10 in its part 13, the cylindrical recess 22, which is provided to engage with the lug 14 of the screw 1, and the taper of the plastic part 20 towards the tip.

As can be seen in Figures 6 and 7, the frictional engagement in the region of the screw thread (not drawn in Figure 6), which is an aim of the invention, can, however, also be achieved in a different manner in constructional terms. For example, the drawing shows a metal extension 5 which can be placed by way of a shoulder 7 against the upper edge of an implantable basic body, into which it can be screwed, and is also to be used with an endosseous dental implant, as may serve, for example, as an intermediate element - as mentioned above - for a corresponding screw 1. Here too a lug 14', onto which a corresponding plastic part 30 is pushed, can be seen at the tip 12' of the screw thread 10'. In the illustrated embodiment of the invention this plastic part 30 comprises lateral recesses 16' which also extend in the longitudinal direction of the screw thread 10' and are in engagement with complementary tongues 36 of the plastic part 30. A part of the screw thread 10' is thus again replaced by plastic material.

The tongues 36 of the plastic part 30 are in this case narrower, although longer than in the embodiment according to Figures 1 and 2. During the screwing-in action the squeezing of the plastic material again produces the desired frictional engagement. This is either achieved by the tongues 36 bulging out as a result of pressure on the distal end of the plastic part 30 when screwing in or by the tongues projecting slightly beyond the crests of the screw thread 10' and thus effecting the appropriate frictional engagement.

Finally, Figures 8 and 9 - similarly to Figures 4 and 5 - are detailed views of the plastic part 30 of Figures 6 and 7 in a part-sectional side view and a plan view, respectively. These clearly show the lateral tongues 36 and the recess 32, which is also disposed centrally here and is to engage with the lug 14' of the extension 5.

It is of course also possible, in the simplest arrangement of the invention (although this is not shown in the drawings), to place a plastic part with one-piece or multi-piece lateral lamellae over the provided screw thread, which is without recesses, in order to achieve the desired effect. However the solutions represented in detail above are more elegant and durable (because the plastic part wears less).

The features of the invention disclosed in the above description, in the drawings and in the claims may be essential to realise the invention in its various embodiments both individually and in any desired combination.



Claims

1. A body which is provided with an external screw thread and has at least one plastic part (20, 30) which, at least in the end portion (13, 13') of the screw thread (10, 10'), at least partly overlaps this portion and/or at least partly replaces it, characterised in that the plastic part comprises a recess (22, 32) which is in engagement with a lug (14, 14') provided in the extension of the tip (12, 12') of the screw thread (10, 10').
2. A body according to claim 1, characterised in that both the lug (14, 14') and the recess (22, 32') are cylindrical and disposed centrally with respect to the cross section of the screw thread (10, 10') or of the plastic part (20, 30).
3. A body according to one of the preceding claims, characterised in that the plastic part (20, 30') tapers towards its tip.
4. A body according to claim 3, characterised in that the screw thread (10, 10') projects beyond the plastic part (20, 30), at least in a sub-area.
5. Use of a body according to one of the preceding claims in dental prosthetics as an implant extension, an implant post, a post for attachments, a screw for securing crowns, bridges and other superstructures or similar.