

the needle in the desired lateral direction, e.g., toward the urethra. This step is complicated by the fact that the orifice 24 of the needle 14 is difficult to visualize through the cystoscope 70. Further, once the needle 14 has entered the tissues of the patient, the physician cannot see the orifice 24 to orient the needle. However, the physician can easily visualize the stripe 38 on an exposed length of the cannula 12 through the cystoscope, even when the needle has entered the tissues of the patient. Since the stripe 38 on the cannula 12 is angularly aligned with the orifice 24 of the needle 14, the physician can determine the orientation of the needle orifice by observing the orientation of the stripe on the cannula. The physician then grasps the wings 50 of the hub 18 and rotates the cannula assembly 10 until the stripe 38 is oriented in the desired direction of injection. In this manner the physician can maneuver the cannula assembly 10 into the proper location for injection. The plunger of the syringe can then be depressed to inject the collagen into the tissues of the patient. The physician monitors the procedure through the cystoscope 70 and continues to inject collagen until coaptation of the urethra is achieved.

The graphics 56 embossed on a face of the main body portion 48 provide an additional means for determining the angular orientation of the needle. Since the graphics 56, like the stripe 38, are oriented with the orifice 24 of the needle 14, the physician can observe the hub 18 to determine the orientation of the needle orifice. This method provides the further advantage that since the hub 18 remains exterior to the cystoscope 70, the orientation of the needle orifice 24 can be determined without having to view the cannula assembly through the cystoscope.

As will be appreciated, the utilization of a non-coring needle provides substantial advantages. As the needle 14 penetrates the tissues of the patient, the non-coring tip 20 slits the tissues, rather than coring. When the needle 14 is later withdrawn, the needle tract immediately seals and resists backflow of the injected collagen. The non-coring needle further allows the tissue to heal more quickly and to retain the collagen in the desired location.

While the present invention has been disclosed with respect to a particular embodiment comprising a non-coring needle wherein the bevel surface 22 has substantially a 0° angle with respect to the longitudinal axis of the needle, it will be appreciated that a 0° bevel is not mandatory to achieve a non-coring action. It has been found that bevel surface orientations of up to 5° with respect to the longitudinal axis will resist coring, though such angles will tend to cut a C-shaped flap in the tissues rather than slitting them. However, the C-shaped flap also seals quickly and prevents backflow. As the bevel face orientation increases beyond 5° and approaches 30°, the needle will core with increasing severity, with the disadvantages enumerated above.

While the present invention has been disclosed with respect to the use of a cannula assembly 10 in conjunction with a cystoscope 70 for injecting collagen into the periurethral tissues of a patient as a treatment for urinary incontinence, it will be appreciated that the invention is easily adapted for use with other types of endoscopes, and can be used to inject viscous substances other than collagen, in locations other than the periurethral tissues, for purposes other than treatment of urinary incontinence.

Also, while the present invention has been disclosed with respect to a preferred embodiment 10 which employs a longitudinal stripe 38 on the cannula 12 and graphics 56 embossed on the hub 18 to indicate orientation of the orifice 24 of the needle 14, it will be appreciated that the invention is not limited to a stripe or to embossed graphics, and that different indicia may be placed on the cannula assembly to indicate the orientation of the needle orifice.

Finally, it will be understood that the preferred embodiment has been disclosed by way of example, and that other modifications may occur to those skilled in the art without departing from the scope and spirit of the appended claims.

What is claimed is:

1. A method for injecting a viscous material into the tissues of a patient, comprising the steps of:

inserting an endoscope having a working channel into the body of a patient to a point proximate to an injection location;

inserting an apparatus comprising a cannula having a non-coring needle disposed at the forward end thereof through said working channel of said cystoscope and into the tissues of said patient to a point immediately adjacent said injection location, said non-coring needle having an orifice on one side thereof, and said apparatus further comprising indicia inscribed thereon in predetermined alignment with said one side of said non-coring needle upon which said orifice is located, said indicia being visible to said physician when said needle is positioned adjacent said injection location;

observing the orientation of said indicia to determine the orientation of said needle orifice;

rotating said cannula and said needle until said orifice on said needle is aligned toward said injection location; and

injecting a viscous substance through said cannula and said needle into said injection location.

2. The method of claim 1, wherein said indicia is inscribed on said cannula in predetermined alignment with said one side of said non-coring needle upon which said orifice is located, and wherein said step of observing the orientation of said indicia to determine the orientation of said needle orifice comprises the step of observing said indicia on said cannula through said endoscope when said needle positioned adjacent said injection location.

3. The method of claim 2, wherein said indicia on said cannula comprises a stripe placed on said cannula in predetermined alignment with said one side of said non-coring needle upon which said orifice is located, and wherein said step of observing said indicia on said cannula through said endoscope when said needle is positioned adjacent said injection location comprises the step of observing said stripe on said cannula through said endoscope when said needle is positioned adjacent said injection location.

4. The method of claim 1, wherein said apparatus further comprises a needle hub disposed at a rearward end of said cannula, said needle hub remaining outside said patient when said cannula and needle are inserted through said working channel of said endoscope, said needle hub having indicia inscribed thereon in predetermined alignment with said orifice of said needle; and wherein said step of observing the orientation of said indicia to determine the orientation of said needle