MEDICAL DEVICE INSERTION APPARATUS, SYSTEM AND METHOD

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a Continuation of U.S. patent application Ser. No. 15/468,412, filed Mar. 24, 2017 and entitled Medical Device Insertion Apparatus, System and Method, now U.S. Pat. No. 10,500,374, issued Dec. 10, 2019 (Attorney Docket No. U87), which is a Continuation of U.S. patent application Ser. No. 12/910,210, filed Oct. 22, 2010 and entitled Medical Device Insertion Apparatus, System and Method (Attorney Docket No. 102), now U.S. Pat. No. 9,603,622, issued Mar. 28, 2017, each of which is hereby incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present invention relates to medical device insertion and more particularly, to apparatus, system and method for medical device insertion.

BACKGROUND INFORMATION

[0003] Inserting a medical device into a patient may present difficulties. For example, when inserting a medical device or catheter into a patient's vein, the needle may enter the vein on one side and proceed to pierce through the opposite side, presenting an injury to the patient. Other difficulties exist with respect to releasing the catheter at the proper position such that the catheter is in the vein. Thus, difficulties exist when determining the proper time to release the catheter such that it is in the vein, but before the needle pierces the opposing wall of the vein. Additional situations regarding the insertion of a catheter or other medical device present similar difficulties, thus, the insertion difficulties are not only limited to catheters or insertion into veins.

[0004] Accordingly, there is a need for a device to aid with proper insertion of a medical device, including a catheter, into a patient that reduces the occurrence of unintentional piercing by the introduction needle and releasing the medical device or catheter prior to insertion into the desired area.

SUMMARY

[0005] In accordance with one aspect of the present invention, an insertion device is disclosed. The insertion device includes a base portion, a top portion slidably connected to the base portion, an introduction needle, a catheter in slidable relation to the introduction needle, and a substantially cylindrical flash chamber, the flash chamber having an inlet in fluid communication with the introduction needle. The flash chamber is connected to the base portion, the top portion slidably engages with the flash chamber, and the catheter and the top portion slidably advance with respect to the introduction needle and the base portion.

[0006] Some embodiments of this aspect of the present invention may include one or more of the following, in any combination or separately: wherein the flash chamber further includes an insert; wherein the insert is a cylindrical insert; and/or wherein the insert includes a color contrasting to the color of a flash fluid; and/or wherein the insert includes a material having wicking properties; and/or wherein the wicking material further includes an assay test strip wherein the assay test strip indicates the presence of one or more indicators in a fluid; and/or wherein the flash chamber further includes a filter; and/or wherein filter includes a membrane material; and/or wherein the flash chamber further includes an expandable membrane in fluid communication with the introduction needle; and/or wherein the insertion device further includes a needle guard removably connected to the base portion; and/or wherein the top portion further includes an opening to at least a portion of the flash chamber whereby the flash chamber may be viewed; and/or wherein the device further includes a locking mechanism, wherein as the top portion advances with respect to the base portion, the locking mechanism moves from an unlocked position to a locked position, whereby in the locked position, the top portion is positioned about the needle; and/or wherein the catheter further includes a distal end including a non-perpendicular angle to the axis of the catheter and an underside conforming to a keel of the introduction needle.

[0007] Additionally, some embodiments of any aspect of the present invention may include one or more of the following, in any combination or separately, wherein the device further includes a locking mechanism having a first end and a second end, the locking mechanism located on the base portion; and a clip connected to the top portion, wherein the clip adapted to accommodate and control the locking mechanism and wherein the clip slidably engages the locking mechanism, wherein as the top portion slidably advances with respect to the base portion, the clip slidably advances from the first end of the locking mechanism to the second end of the mechanism, whereby the locking mechanism moves from an unlocked to a locked position and whereby in the locked position, the top portion is positioned about the needle.

[0008] In accordance with another aspect of the present invention, an insertion device is disclosed. The insertion device includes a base portion, a top portion slidably connected to the base portion, a substantially cylindrical flash chamber, the flash chamber having an inlet and adapted for connection to an introduction needle, wherein the top portion slidably engages with the flash chamber, and a locking mechanism, wherein as the top portion advances with respect to the base portion, the locking mechanism moves from an unlocked position to a locked position.

[0009] Some embodiments of this aspect of the present invention may include one or more of the following, in any combination or separately: wherein the flash chamber further includes an insert; and/or wherein the insert is a cylindrical insert.

[0010] In accordance with another aspect of the present invention, a method is disclosed. The method includes generating 2.45 GHz Radio Frequency energy using a magnetron, moving a needle towards an object and a contact, maintaining a connection between the needle and the contact, generating a plasma arc, and moving the needle into contact with the object.

[0011] Some embodiments of this aspect of the present invention may include one or more of the following, in any combination or separately: wherein the method further includes moving the needle into contact with a die cavity for a predetermined amount of time and removing the needle from the die cavity; and/or wherein the method further includes moving the needle into contact with a plastic tube, melting the plastic tube, and cooling the plastic tube wherein the plastic tube forms a seal about the needle.