

Record 1/8 CA2583238C APPARATUS FOR SEALING A VASCULAR PUNCTURE | APPAREIL D'OBTURATION D'UNE PONCTION VASCULAIRE

Title: APPARATUS FOR SEALING A VASCULAR PUNCTURE | APPAREIL D'OBTURATION D'UNE PONCTION VASCULAIRE

Assignee/Applicant: ACCESSCLOSURE INC., MOUNTAIN VIEW, CA, US

Publication Number:  [CA2583238C](#)

Publication Date: 2015-12-29

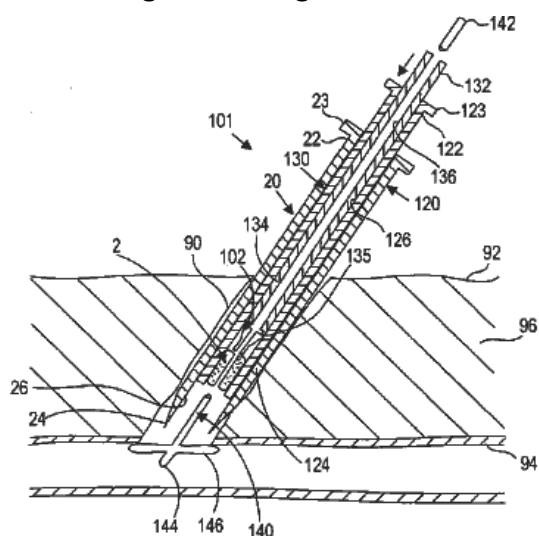
Priority Number: US2004982385A | WO2005US39693A

Abstract (Spanish):

Independent Claims:

1. An apparatus for sealing a puncture extending through tissue, comprising: a tubular member comprising a proximal end, a distal end sized for insertion through the puncture, a lumen extending between the proximal and distal ends, and a distal opening in communication with the lumen; a bioabsorbable plug disposed within the lumen, the plug comprising hydrogel; a bioabsorbable anchoring element disposed within the lumen proximal to the plug; and a pusher member slidable within the lumen of the tubular member that deploys the plug and anchoring element through the lumen and out the distal opening of the tubular member.

Front Page Drawing:



Title: Anchoring device and method for sealing punctures in vessels

Assignee/Applicant: x Site LC., Totowa, NJ, US

Publication Number:  **US6048357A**

Publication Date: 2000-04-11

Priority Number: US1998112234A

Abstract (Spanish):

Independent Claims:

1. A device for sealing a puncture in a blood vessel wall within a living body, comprising:

- * a flexible tube including an opening, wherein the flexible tube extends from a proximal end which, when the device is in an operative position, is located outside the living body, to a distal end which, in the operative position, is located within the living body on a distal side of the puncture;
- * an inner member slidably received within the flexible tube so that the inner member may be moved proximally and distally with respect to the flexible tube;
- * an adhesive channel extending from an adhesive inlet port to an adhesive exit port, the adhesive inlet port being outside the living body when the device is in the operative position and the adhesive exit port being adjacent to the puncture when the device is in the operative position; and
- * a discrete flexible anchor member a first end of which is coupled to the inner member so that, when the inner member and the first end of the anchor member are moved with respect to the outer member, a second end of the anchor member moves between a first position in which it is received within the flexible tube and a second position in which it extends through the opening outside the flexible tube.

14. A method of sealing a puncture in a tissue within a living body, comprising the steps of:

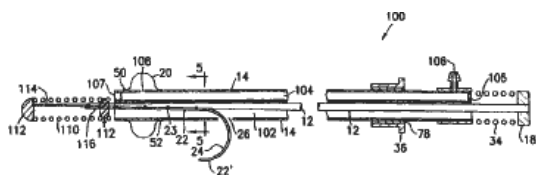
- * inserting a puncture sealing device into a living body so that a proximal end of the device remains outside the body while a distal portion of the device penetrates through a puncture formed in a tissue within the body so that a distal end of the device is located within a body cavity bounded by the tissue;
- * expanding a seal radially outwardly from the device to prevent the flow of bodily fluids to the puncture, wherein the seal is spaced distally from the anchor member;
- * extending an anchor member radially outwardly from the device from an insertion/retraction position into an anchor position;
- * partially withdrawing the device proximally from the body until the anchor member contacts the tissue of the body cavity adjacent to the puncture to locate the device in a desired position relative to the puncture;
- * applying an adhesive to the puncture via an adhesive lumen extending from an adhesive inlet port to an adhesive exit port;
- * returning the seal to its pre-expansion position;
- * retracting the anchor member into the insertion/retraction position; and
- * withdrawing the device from the body through the sealing material while maintaining the sealing material in place to seal the puncture.

26. A device for sealing a puncture in a tissue within a living body, comprising:

- * a flexible tube including an opening, wherein the flexible tube extends from a proximal end which, when the device is in an operative position, is located outside the living body, to a distal end which, in the operative position, is located within the living body on a distal side of the puncture;

- * an inner member slidably received within the flexible tube so that the inner member may be moved proximally and distally with respect to the flexible tube;
- * an adhesive lumen extending through the flexible tube from an adhesive inlet port to an adhesive exit port, the adhesive inlet port being outside the living body when the device is in the operative position and the adhesive exit port being adjacent to the puncture when the device is in the operative position; and
- * a flexible anchor member a first end of which is coupled to the inner member so that, when the inner member is moved with respect to the outer member, a second end of the anchor member moves between a first position in which it is received within the flexible tube and a second position in which it extends through the opening outside the flexible tube, wherein, when in an unstressed state, a first substantially straight portion of the flexible anchor member extends from the first end thereof substantially parallel to the inner member, to a second portion which is curved so that the second end of the flexible anchor member extends toward the distal end of the flexible tube.

Front Page Drawing:



Title: Introducer with vascular sealing mechanism

Assignee/Applicant: WEADOCK; KEVIN S

Publication Number:  **US6110184A**

Publication Date: 2000-08-29

Priority Number: US1999366900A

Abstract (Spanish):

Independent Claims:

1. A surgical instrument adapted to be inserted through a puncture in a wall of a patient's blood vessel for use in placing a medical device into the lumen of the blood vessel, the instrument comprising:

- * (a) an elongated introducer having a substantially cylindrical wall with an exterior surface and an interior surface, the interior surface defining an inner bore traversing the length of the introducer, in which (i) the introducer has a proximal end and a distal end with the distal end configured to be inserted through the puncture into the vascular lumen, (ii) the inner bore is dimensioned to receive the medical device and opens at the distal end so that the medical device may protrude from the distal end into the vascular lumen when the distal end is inserted into the vascular lumen, and (iii) the wall has a channel therein that opens to the exterior surface at one point adjacent the distal end and at another point adjacent the proximal end to define a distal window and a proximal window, respectively; and

- * (b) a vessel-engaging component comprising an elongated filament engaged in the channel having a first end, a second end, and an expandable part at the second end changeable from a first configuration to at least a second, expanded configuration, in which (i) the first end protrudes from the proximal window beyond the exterior surface and is adjustable from a first state to at least a second state, and (ii) the second end is disposed adjacent the distal window with the expandable part positioned at the distal window such that, when the first end is in the first state, the expandable part is seated substantially within the channel adjacent the distal window, and when the first end is adjusted from the first state to the at least second state, the expandable part is changed from the first configuration to the at least second configuration and is pushed out of the distal window, whereby the diameter of the expandable part in the second configuration together with the diameter of the distal end of the introducer are adapted to be larger than the size of the puncture,

- * whereby the vessel-engaging component is adapted for use in determining the location of the puncture in that, when the distal end of the introducer is inserted into the vascular lumen, the proximal end of the introducer and the first end of the filament protrude beyond the patient's skin such that the first end of the filament may be adjusted from the first state to the at least second state to change the expandable part from the first configuration to the at least second expanded configuration, such that pulling the introducer in a direction opposite the blood vessel causes the expandable part to be engaged on the vascular wall at the location of the puncture to provide resistance in pulling the introducer away from the blood vessel.

13. A surgical instrument adapted to be inserted through a puncture in a wall of a patient's blood vessel for use in placing a medical device into the lumen of the blood vessel, the instrument comprising:

- * (a) an elongated introducer having a substantially cylindrical wall with an exterior surface and an interior surface, the interior surface defining an inner bore traversing the length of the introducer, in which (i) the introducer has a proximal end and a distal end with the distal end configured to be inserted through the puncture into the vascular lumen, (ii) the inner bore is

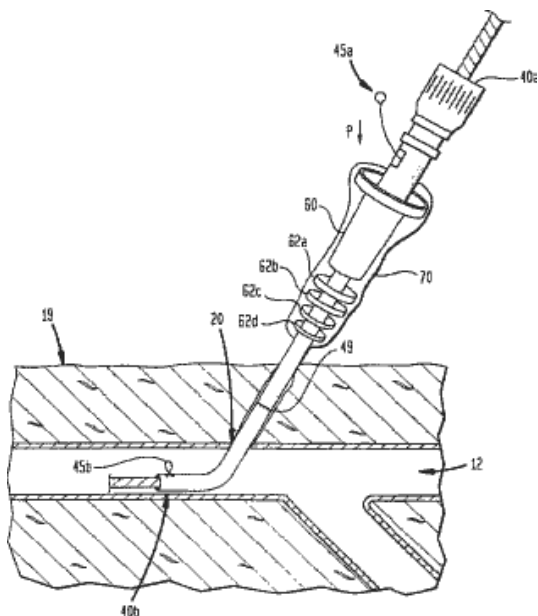
dimensioned to receive the medical device and opens at the distal end so that the medical device may protrude from the distal end into the lumen when the distal end is inserted into the lumen, and (iii) the wall has a channel therein that opens to the exterior surface at one point adjacent the distal end and at another point adjacent the proximal end to define a distal window and a proximal window, respectively; and

* (b) a vessel-engaging component comprising an elongated filament slidably engaged within the channel having a first end, a second end, and an expandable part at the second end, in which (i) the first end protrudes from the proximal window beyond the exterior surface and may be pulled out from or pushed toward the proximal window, and (ii) the second end is disposed adjacent the distal window with the expandable part positioned at the distal window such that, when the first end is pulled out from the proximal window, the expandable part is seated substantially within the channel adjacent the distal window, and when the first end is pushed toward the proximal window, the expandable part pops out of the distal window and changes into a deformed configuration, whereby the diameter of the expandable part in the deformed configuration together with the diameter of the distal end of the introducer are adapted to be larger than the size of the puncture,

* whereby the vessel-engaging component is adapted for use in determining the location of the puncture in that, when the distal end of the introducer is inserted into the lumen, the expandable part may be changed to its deformed configuration, such that pulling the introducer in a direction opposite the blood vessel causes the expandable part to be engaged on the vascular wall at the location of the puncture to provide resistance in pulling the introducer away from the blood vessel; and

* (c) a sealing component comprising an applicator with a hemostasis valve and a plurality of rings, the applicator and plurality of rings being suspended on the exterior surface of the wall, wherein the plurality of rings are fabricated from at least one of a thrombogenic material, a heparin-inactivating agent, a pain killer, and an antibiotic or antimicrobial composition and are disposed between the applicator and the distal end so that when the applicator is pushed toward the distal end, the applicator pushes the plurality of rings toward the distal end.

Front Page Drawing:



Title: Arterio-seal sheath with ots(option-to-seal)

Assignee/Applicant:

Publication Number:  **US20050107750A1**

Publication Date: 2005-05-19

Priority Number: US2003510500P

Abstract (Spanish):

Independent Claims:

1. A means to beginning an intravascular procedure, comprising:

- a) a side-port with matching calibration markings as distal member of sheath and a movable reminder member calibration markings on distal member of sheath,
- b) a diameter with sufficient difference from a standard catheter to allow monitoring blood pressure while simultaneously performing the intravascular procedure, and
- c) a slanted entry on distal member,

whereby said sheath will allow accurate recording of sheath's position in blood vessel, smoother sheath entry into blood vessel, and simultaneous drawing of blood pressure from the heart for certain medical diagnostic procedures.

2. A means to seal puncture wounds in a blood vessel, comprising:

- a) an inner-wall anchoring member that unfolds from its center as it is being deployed,
- b) an outer-wall covering member with sufficient surface area to completely cover wound site,
- c) a securing member in some form of a bio-absorbable mesh,
- d) a diameter with sufficient difference from said sheath's diameter to allow easy movement of said sealing means, and
- e) a means to deliver antibiotics or anti-microbial agents to wound site and its immediate surrounding,

whereby said sealing means ensure easy and guaranteed deployment of said anchoring member and complete coverage of wound opening due to the three layers of sealing and lower the chances of infections at wound site to promote faster healing and hemostasis.

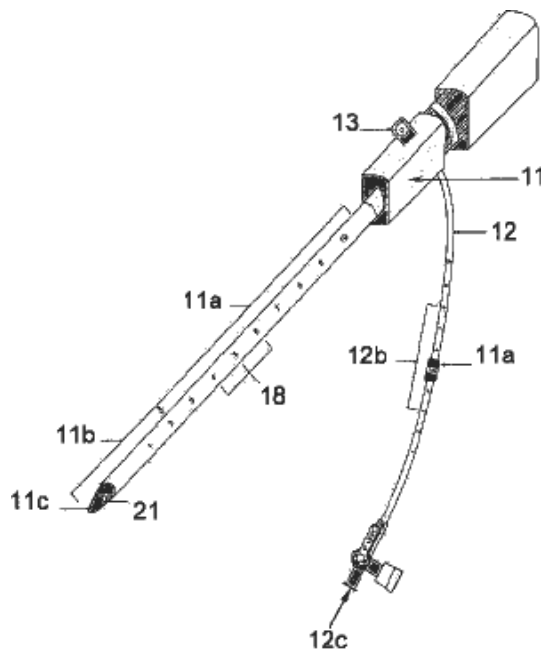
3. A method to begin an intravascular procedure, comprising:

- a) transferring of marking calibrations on said sheath is to the said matching marking calibrations on side-port,
- b) sealing of wound site is optional and not mandatory, thus the sheath can be left in patients as long as needed,
- c) monitoring blood pressure from the heart simultaneously performing the intravascular procedure because of sheath's varying diameters, and
- d) inserting sheath with ease through tissues and blood vessels because of the slanted entry point on distal end of sheath.

4. A method for sealing wound site of blood vessels, comprising:

- a) placing the anchoring member inside the blood vessel
- b) placing of securing member directly on top of outer-wall covering member,
- c) sealing wound site without changing the pre-procedural sheath, and
- d) a method to delivering antibiotics or anti-microbial agents to the wound site and immediate surrounding area.

Front Page Drawing:



Record 5/8 US20140214075A1 APPARATUS AND METHODS FOR SEALING A VASCULAR PUNCTURE

Title: APPARATUS AND METHODS FOR SEALING A VASCULAR PUNCTURE

Assignee/Applicant: AccessClosure Inc., Mountain View, CA, US

Publication Number:  [US20140214075A1](#)

Publication Date: 2014-07-31

Priority Number: US2006825410P | US2007854534A

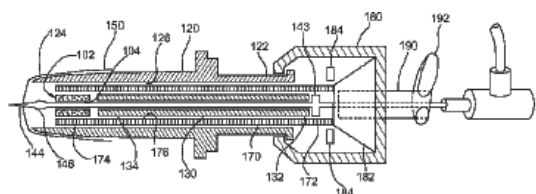
Abstract (Spanish):

Independent Claims:

1-38. (canceled)

39. A method for closing a puncture extending through tissue to a body lumen, comprising:
forming a first seal in the puncture, said step of forming a first seal comprising:
providing an apparatus comprising an elongate occlusion member including an expandable member on a distal end thereof; a tubular member slideably disposed around the occlusion member; and a sealant disposed within the tubular member adjacent the expandable member;
introducing the occlusion member distal end including the sealant disposed thereon and adjacent the expandable member, into the puncture with the expandable member in a contracted condition until the expandable member and the sealant extend from the puncture into the body lumen;
radially enlarging the expandable member;
at least partially withdrawing the occlusion member from the puncture until the expanded expandable member contacts a wall of the body lumen adjacent the puncture, thereby withdrawing the sealant back into the puncture;
disengaging the tubular member from the occlusion member;
exposing the sealant within the puncture by at least partially withdrawing the tubular member; and
forming a second seal in the puncture.

Front Page Drawing:



Title: Apparatus and methods for sealing a vascular puncture

Assignee/Applicant: Accessclosure Inc., Mountain View, CA, US

Publication Number:  **US7993367B2**

Publication Date: 2011-08-09

Priority Number: US2007864835A

Abstract (Spanish):

Independent Claims:

1. A system for sealing a puncture extending through tissue, comprising:
an introducer sheath comprising a proximal end, a distal end sized for insertion through a puncture through tissue, and a lumen extending between the proximal and distal ends;
a tubular member comprising a proximal end, a distal end sized for insertion into the introducer sheath lumen, a lumen extending between the tubular member proximal and distal ends;
a sealant disposed within the tubular member lumen; and
a pusher member disposed within the tubular member lumen for deploying the sealant distally from the tubular member lumen when the tubular member is retracted proximally relative to the pusher member; and
a locking element carried on the tubular member comprising one or more features for coupling the introducer sheath to the tubular member when the tubular member is advanced into the introducer sheath lumen such that subsequent proximal movement of the tubular member causes corresponding proximal movement of the introducer sheath such that sealant is deployed beyond the introducer sheath distal end,
wherein the one or more first features are carried on a sleeve that is free to float on the tubular member.
14. A system for sealing a puncture extending through tissue, comprising:
an introducer sheath comprising a proximal end, a distal end sized for insertion through a puncture through tissue, and a lumen extending between the proximal and distal ends;
a tubular member comprising a proximal end, a distal end sized for insertion into the introducer sheath lumen, a lumen extending between the tubular member proximal and distal ends;
a sealant disposed within the tubular member lumen; and
a pusher member disposed within the tubular member lumen for deploying the sealant distally from the tubular member lumen when the tubular member is retracted proximally relative to the pusher member; and
a locking element carried on the tubular member for coupling the introducer sheath to the tubular member when the tubular member is advanced into the introducer sheath lumen such that subsequent proximal movement of the tubular member causes corresponding proximal movement of the introducer sheath such that sealant is deployed beyond the introducer sheath distal end, wherein the locking element comprises one or more first detents for engaging one or more mating features within the introducer sheath proximal end when the tubular member is advanced into the introducer sheath to couple the introducer sheath to the locking element, and wherein the locking element comprises a sleeve slidable over the tubular member and an extension extending distally from the sleeve, the extension sized for insertion into the introducer sheath proximal end and comprising the one or more first detents thereon.
16. An apparatus for sealing a puncture extending through tissue having an introducer sheath therein, comprising:
an elongate positioning member comprising a proximal end, and a distal end including an expandable element thereon;

Title: Apparatus and methods for sealing a vascular puncture

Assignee/Applicant: Access Closure Inc., Santa Clara, CA, US | Bagaoisan Celso J., Union City, CA, US | Duong Sieu, Campbell, CA, US | Co Fred H., Santa Clara, CA, US | Domingo Juan, Lathrop, CA, US

Publication Number:  **US9364206B2**

Publication Date: 2016-06-14

Priority Number: US200898380A

Abstract (Spanish):

Independent Claims:

1. A method for sealing a puncture extending through tissue to a body lumen, comprising:
introducing an introducer sheath into the puncture;
advancing a tubular member carrying a sealant therein into the introducer sheath;
engaging a plurality of outwardly projecting barbs circumferentially disposed about a distal tip of a tubular extension on the tubular member with a proximal end of the introducer sheath to couple the introducer sheath to the tubular member; and
retracting the tubular member at least partially from the puncture, thereby retracting the introducer sheath with the tubular member at least partially from the puncture and exposing the sealant within the puncture distally beyond the introducer sheath,
wherein the step of engaging comprises passing the distal tip of the tubular extension and the plurality of barbs beyond abutment features disposed on the introducer sheath.
8. A method for sealing a puncture extending through tissue to a body lumen, comprising:
introducing an introducer sheath into the puncture;
advancing a tubular member carrying a sealant therein into the introducer sheath;
engaging a plurality of outwardly projecting barbs circumferentially disposed about the tubular member with a proximal end of the introducer sheath to couple the introducer sheath to the tubular member; and
retracting the tubular member at least partially from the puncture, thereby retracting the introducer sheath with the tubular member at least partially from the puncture and exposing the sealant within the puncture distally beyond the introducer sheath,
wherein the step of engaging comprises passing the plurality of barbs beyond abutment features disposed on the introducer sheath,
wherein, in the engaging step, a locking element is disposed about the tubular member, and the locking element comprises the plurality of barbs to engage with the introducer sheath, wherein the locking element comprises a sleeve disposed on the tubular member and an extension extending from the sleeve that is inserted into the introducer sheath proximal end when the tubular member is advanced into the introducer sheath, and
wherein the extension is expandable from a contracted condition to accommodate insertion into the introducer sheath and an expanded condition when the tubular member is advanced distally into the introducer sheath to prevent subsequent removal of the extension from the introducer sheath.
9. A method for sealing a puncture extending through tissue to a body lumen, comprising:
introducing an introducer sheath into the puncture;
advancing a tubular member carrying a sealant therein into the introducer sheath;
engaging a plurality of outwardly projecting barbs circumferentially disposed about the tubular member with a proximal end of the introducer sheath to couple the introducer sheath to the tubular member; and

retracting the tubular member at least partially from the puncture, thereby retracting the introducer sheath with the tubular member at least partially from the puncture and exposing the sealant within the puncture distally beyond the introducer sheath,

wherein, in the engaging step, a locking element is disposed about the tubular member, and the locking element comprises the plurality of barbs to engage with the introducer sheath,

wherein the locking element is a tubular sleeve, and

wherein the sleeve is freely slidable when not engaged with the introducer sheath.

10. A method for sealing a puncture extending through tissue to a body lumen, comprising: introducing an introducer sheath into the puncture;

advancing a tubular member carrying a sealant therein into a proximal end of the introducer sheath such that a plurality of outwardly projecting barbs circumferentially disposed about the tubular member are compressed radially inwardly as the barbs pass through an abutment in the introducer sheath proximal end and resiliently expand beyond the abutment, thereby engaging the expanded barbs with the abutment to couple the introducer sheath to the tubular member;

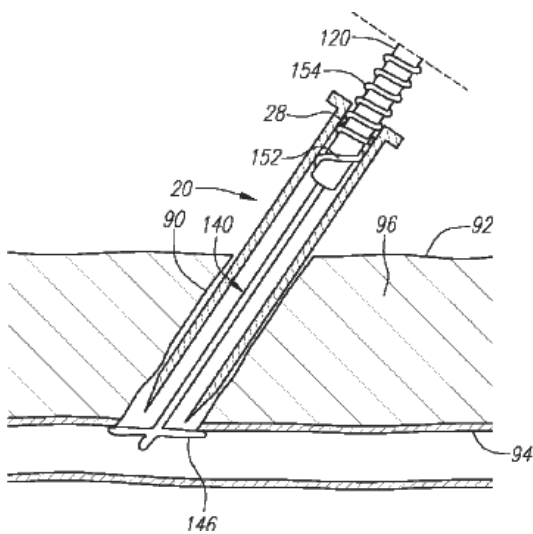
withdrawing a positioning element to contact the vessel wall prior to the retracting step; and

after the withdrawing step, retracting the tubular member at least partially from the puncture, thereby retracting the introducer sheath with the tubular member at least partially from the puncture and exposing the sealant within the puncture distally beyond the introducer sheath;

wherein the plurality of outwardly extending barbs are on a distal tip of a tubular extension on the tubular member, and

wherein the distal tip of the tubular extension and the plurality of barbs pass beyond the abutment when tubular member is advanced into the introducer sheath.

Front Page Drawing:



Title: Apparatus and methods for sealing a vascular puncture

Assignee/Applicant: Access Closure Inc., Santa Clara, CA, US | Uchida Andy H., Los Altos, CA, US
| To Kevin, San Jose, CA, US | Fell Brandon, Menlo Park, CA, US | Swenson Peter A., San Jose, CA, US

Publication Number:  **US9386968B2**

Publication Date: 2016-07-12

Priority Number: US13105822A

Abstract (Spanish):

Independent Claims:

1. A system for sealing a puncture extending through tissue, comprising:

an introducer sheath comprising a proximal end including a hub, a distal end sized for insertion through a puncture through tissue, and a lumen extending between the proximal and distal ends; a positioning member comprising an elongate member including proximal and distal ends, a housing on the proximal end, and an expandable positioning element on the distal end; and a cartridge advanceable along the positioning member from a proximal position adjacent the housing to a distal position, the cartridge comprising:

- a) a tubular member comprising a proximal end, a distal end sized for insertion into the introducer sheath lumen, and a lumen extending between the tubular member proximal and distal ends;
 - b) a sealant disposed within the tubular member lumen;
 - c) an advancer member disposed within the tubular member lumen for exposing the sealant distally from the tubular member lumen when the tubular member is retracted proximally relative to the advancer member; and
 - d) a sleeve slidably disposed over the tubular member distal end, at least a portion of the sleeve sized to abut the introducer sheath hub such that, when the tubular member is advanced from the proximal position to the distal position, the tubular member distal end enters the introducer sheath lumen through the hub while the sleeve is stopped by the introducer sheath hub and slides over the tubular member to expose the tubular member distal end within the introducer sheath lumen, wherein the sealant is disposed within the tubular member adjacent the tubular member distal end, and wherein the tubular member comprises a slitted distal tip comprising slits that allow the distal tip to open upon hydration and expansion of the sealant while the tubular member is located within the lumen of the introducer sheath;
- wherein the sleeve comprises an inner surface configured to provide different frictional interference with an outer surface of the tubular member to allow proximal movement and resist distal movement of the sleeve over the tubular member.

12. An apparatus for sealing a puncture extending through tissue having an introducer sheath therein that includes a proximal end including a hub, a distal end, and a lumen extending therebetween, the apparatus comprising:

a positioning member comprising an elongate member including proximal and distal ends, a housing on the proximal end, and an expandable positioning element on the distal end; and a cartridge advanceable along the positioning member from a proximal position adjacent the housing to a distal position, the cartridge comprising:

- a) a tubular member comprising a proximal end, a distal end sized for insertion into the introducer sheath lumen, and a lumen extending between the tubular member proximal and distal ends;
- b) a sealant disposed within the tubular member lumen adjacent the tubular member distal end;
- c) an advancer member disposed within the tubular member lumen for exposing the sealant distally from the tubular member lumen when the tubular member is retracted proximally relative to

the advancer member; and

d) a sleeve slidably disposed over the tubular member distal end, at least a portion of the sleeve sized to abut to the introducer sheath hub without coupling the sleeve to the introducer sheath hub such that, when the tubular member is advanced from the proximal position to the distal position, the tubular member distal end enters the introducer sheath lumen through the hub without locking to the hub while the sleeve is stopped by the introducer sheath hub and slides over the tubular member to expose the tubular member distal end within the introducer sheath lumen; wherein the sleeve comprises an inner surface configured to provide different frictional interference with an outer surface of the tubular member to allow proximal movement and resist distal movement of the sleeve over the tubular member.

25. A system for sealing a puncture extending through tissue, comprising:

an introducer sheath comprising a proximal end including a hub, a distal end sized for insertion through a puncture through tissue, and a lumen extending between the proximal and distal ends; a positioning member comprising an elongate member including proximal and distal ends, a housing on the proximal end, and an expandable positioning element on the distal end; and a cartridge advanceable along the positioning member from a proximal position adjacent the housing to a distal position, the cartridge comprising:

a) a tubular member comprising a proximal end, a distal end sized for insertion into the introducer sheath lumen, and a lumen extending between the tubular member proximal and distal ends;

b) a sealant disposed within the tubular member lumen;

c) an advancer member disposed within the tubular member lumen for exposing the sealant distally from the tubular member lumen when the tubular member is retracted proximally relative to the advancer member; and

d) a sleeve slidably disposed over the tubular member distal end, at least a portion of the sleeve sized to abut the introducer sheath hub such that, when the tubular member is advanced from the proximal position to the distal position, the tubular member distal end enters the introducer sheath lumen through the hub while the sleeve is stopped by the introducer sheath hub and slides over the tubular member to expose the tubular member distal end within the introducer sheath lumen, the sleeve comprising an inner surface configured to provide different frictional interference with an outer surface of the tubular member to allow proximal movement and resist distal movement of the sleeve over the tubular member.

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