communication with both the valve and the first syringe, wherein the cannula includes an inner cannula configured to deliver the composition and an outer cannula, the outer cannula disposed concentrically around the inner cannula.

[0006a] In a second aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, a delivery system includes a delivery device. The delivery device includes a trigger mechanism, a pusher, a valve, and a cannula. The pusher is configured to engage with the trigger mechanism and retain a first syringe at least by coupling with a plunger of the first syringe. The valve is fluidly coupled to the first syringe. The cannula extends distally from and is fluidly coupled to the valve. The delivery system further includes a second syringe fluidly coupled to the valve, the second syringe further including a composition. Depressing a plunger of the second syringe causes the composition to be expelled out of the second syringe, through the valve, and into the first syringe. Activation of the trigger mechanism causes the pusher and the plunger of the first syringe to translate in a distal direction, such that the composition in the first syringe is expelled out of the first syringe, through the valve, through the cannula, and out of a distal end of the cannula, wherein the cannula includes an inner cannula configured to deliver the composition and an outer cannula, the outer cannula disposed concentrically around the inner cannula, and wherein the valve is a two-way check valve, such that the composition can only flow in a first direction, from the second syringe through the valve into the first syringe, and in a second direction, from the first syringe through the valve into the cannula.

[0006b] In a third aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, a kit includes a pre-filled sodium chloride solution syringe, a thrombin vial, a pre-filled gelatin matrix syringe, and a delivery device. The delivery device includes a trigger mechanism, a pusher, a valve, and a cannula. The pusher is configured to engage with the trigger mechanism, the pusher further configured to retain a delivery syringe at least by coupling with a plunger of the delivery syringe. The valve is fluidly coupled to the delivery syringe. The cannula extends distally from and is fluidly coupled to the valve. The pre-filled gelatin matrix syringe fluidly couples to the valve. Depressing a plunger of the pre-filled gelatin matrix syringe causes a composition is expelled out of the pre-filled gelatin matrix syringe, through the valve, and into the delivery syringe. Activation of the trigger mechanism causes the pusher and the plunger of the delivery syringe to translate in a distal direction, such that the

CLAIMS

The invention is claimed as follows:

1. A delivery device comprising:

a trigger mechanism;

a pusher, configured to engage with the trigger mechanism, the pusher further configured to retain a first syringe at least by coupling with a plunger of the first syringe;

a valve fluidly coupled to the first syringe; and

a cannula extending distally from and fluidly coupled to the valve,

wherein activation of the trigger mechanism causes the pusher and the plunger of the first syringe to translate in a distal direction, such that a composition in the first syringe is expelled out of the first syringe, through the valve, through the cannula, and out of a distal end of the cannula, and

wherein the valve is further configured to engage with a second syringe, such that the second syringe is in fluid communication with both the valve and the first syringe,

wherein the cannula includes an inner cannula configured to deliver the composition and an outer cannula, the outer cannula disposed concentrically around the inner cannula.

2. The delivery device of claim 1, wherein engagement between the valve and the second syringe is a luer lock engagement.

3. The delivery device of claim 1, wherein the valve is a two-way check valve.

4. The delivery device of claim 1, wherein the valve is a user-selectable stopcock valve.

5. The delivery device of claim 1, wherein the outer cannula is stainless steel.

6. A delivery system, comprising:

a delivery device, including:

a trigger mechanism;

a pusher, configured to engage with the trigger mechanism, the pusher further configured to retain a first syringe at least by coupling with a plunger of the first syringe;

a valve fluidly coupled to the first syringe; and

a cannula extending distally from and fluidly coupled to the valve; and

a second syringe fluidly coupled to the valve, the second syringe including a composition,

wherein depressing a plunger of the second syringe causes the composition to be expelled out of the second syringe, through the valve, and into the first syringe,

wherein activation of the trigger mechanism causes the pusher and the plunger of the first syringe to translate in a distal direction, such that the composition in the first syringe is expelled out of the first syringe, through the valve, through the cannula, and out of a distal end of the cannula, wherein the cannula includes an inner cannula configured to deliver the composition and an outer cannula, the outer cannula disposed concentrically around the inner cannula, and

wherein the valve is a two-way check valve, such that the composition can only flow in a first direction, from the second syringe through the valve into the first syringe, and in a second direction, from the first syringe through the valve into the cannula.

7. The delivery system of claim 6, wherein engagement between the valve and the second syringe is a luer lock engagement.

8. The delivery system of claim 6, wherein the outer cannula is stainless steel.

9. The delivery system of claim 6, wherein the pusher includes a plurality of teeth, and wherein the trigger mechanism includes a ratchet, the ratchet configured to engage with the plurality of teeth of the pusher.

10. The delivery system of claim 6, further including a window indicator that indicates an amount of the composition remaining in the first syringe.

11. A kit comprising:

a pre-filled sodium chloride solution syringe;

a thrombin vial;

a pre-filled gelatin matrix syringe; and

a delivery device, including:

a trigger mechanism;

a pusher, configured to engage with the trigger mechanism, the pusher further configured to retain a delivery syringe at least by coupling with a plunger of the delivery syringe;

a valve fluidly coupled to the delivery syringe; and

a cannula extending distally from and fluidly coupled to the valve;

wherein the pre-filled gelatin matrix syringe fluidly couples to the valve,

wherein depressing a plunger of the pre-filled gelatin matrix syringe causes a composition to be expelled out of the pre-filled gelatin matrix syringe, through the valve, and into the delivery syringe, and

wherein activation of the trigger mechanism causes the pusher and the plunger of the delivery syringe to translate in a distal direction, such that the composition in the delivery syringe is expelled out of the delivery syringe, through the valve, through the cannula, and out of a distal end of the cannula.

12. The kit of claim 11, wherein the delivery device further includes a window indicator that indicates an amount of the composition remaining in the delivery syringe.

13. The kit of claim 11, wherein the cannula includes an inner cannula configured to deliver the composition and an outer cannula, the outer cannula disposed concentrically around the inner cannula.

14. The kit of claim 13, wherein the outer cannula is stainless steel.

15. The kit of claim 11, wherein the pusher includes a plurality of teeth, and wherein the trigger mechanism includes a ratchet, the ratchet configured to engage with the plurality of teeth of the pusher.

16. The kit of claim 11, wherein the valve is a two-way check valve, such that the composition can only flow in a first direction, from the matrix syringe through the valve into the delivery syringe, and in a second direction, from the delivery syringe through the valve into the cannula.

17. The kit of claim 11, wherein engagement between the valve and the matrix syringe is a luer lock engagement.