BRIEF SUMMARY

[10a] According to a first aspect of the present invention, there is provided a stent delivery system, comprising: a delivery handle at a proximal end of the stent delivery system; a catheter hub; a delivery tip at a distal end of the stent delivery system, wherein the delivery tip comprises a tip distal end and a tip proximal end, and wherein the delivery tip has a first flexibility; a shaft extending from the delivery handle through the catheter hub and into the delivery tip, wherein the shaft comprises a coil and a stent bed, the coil having a coil distal end and a coil proximal end, the stent bed between the coil distal end and the tip proximal end; a stent loaded on to the stent bed, wherein the stent comprises a stent distal end, a stent proximal end, and a cylindrical body between the stent distal end and the stent proximal end, and wherein a first portion of the cylindrical body at the stent distal end has a greater flexibility than a second portion of the cylindrical body at the stent proximal end; and sheathing coupled to the catheter hub and moveable over the stent bed between pre-deployed and deployed positions, wherein the sheathing extends over the stent bed if in the pre-deployed position, wherein the sheathing is pulled back from the stent bed if in the deployed position, wherein the stent is compressed by the sheathing on the stent bed if in the pre-deployed position, wherein the stent expands if the sheathing is pulled back from the stent bed in the deployed position, wherein the sheathing comprises a sheathing distal end and a sheathing proximal end, and wherein the sheathing comprises a flexible section at the sheathing distal end, a semi-flexible section adjacent the flexible section, and a stiff section adjacent the semi-flexible section, wherein the combination of the stent bed, the first portion of the cylindrical body of the stent, and the flexible section of the sheathing has a second flexibility that is less than the first flexibility, and wherein the combination of the stent bed, the second portion of the cylindrical body of the stent, and the flexible section of the sheathing has a third flexibility that is less than the second flexibility.

[10b] As disclosed, there is provided a stent, comprising: a distal end having a first diameter; a proximal end having a second diameter that is greater than the first diameter; and a cylindrical body between the distal end and the proximal end, the cylindrical body comprising circumferential strut

segments and longitudinal connecting members, each of the circumferential strut segments comprising strut members arranged in a pattern, and each of the circumferential strut segments connected to at least one other of the circumferential strut segments by a portion of the longitudinal connecting members, wherein a first plurality of the circumferential strut segments at the distal end of the stent has a greater flexibility than a second plurality of the circumferential strut segments at the proximal end of the stent.

[11] Enhanced navigation of a stent delivery system for placement of a stent may be provided by increasing the flexibility of the stent delivery system and/or the stent from the proximal end toward the distal end of the system and/or stent, substantially as shown in and/or described in connection with at least one of the figures, as set forth more completely in the claims.

[12] These and other advantages, aspects and novel features of the present invention, as well as details of an illustrated embodiment thereof, will be more fully understood from the following description and drawings.

CLAIMS

What is claimed is:

1. A stent delivery system, comprising:

a delivery handle at a proximal end of the stent delivery system;

a catheter hub;

a delivery tip at a distal end of the stent delivery system, wherein the delivery tip comprises a tip distal end and a tip proximal end, and wherein the delivery tip has a first flexibility;

a shaft extending from the delivery handle through the catheter hub and into the delivery tip, wherein the shaft comprises a coil and a stent bed, the coil having a coil distal end and a coil proximal end, the stent bed between the coil distal end and the tip proximal end;

a stent loaded on to the stent bed, wherein the stent comprises a stent distal end, a stent proximal end, and a cylindrical body between the stent distal end and the stent proximal end, and wherein a first portion of the cylindrical body at the stent distal end has a greater flexibility than a second portion of the cylindrical body at the stent proximal end; and

sheathing coupled to the catheter hub and moveable over the stent bed between pre-deployed and deployed positions, wherein the sheathing extends over the stent bed if in the pre-deployed position, wherein the sheathing is pulled back from the stent bed if in the deployed position, wherein the stent is compressed by the sheathing on the stent bed if in the pre-deployed position, wherein the stent expands if the sheathing is pulled back from the stent bed in the deployed position, wherein the sheathing comprises a sheathing distal end and a sheathing proximal end, and wherein the sheathing comprises a flexible section at the sheathing distal end, a semi-flexible section adjacent the flexible section, and a stiff section adjacent the semi-flexible section,

wherein the combination of the stent bed, the first portion of the cylindrical body of the stent, and the flexible section of the sheathing has a second flexibility that is less than the first flexibility, and

wherein the combination of the stent bed, the second portion of the cylindrical body of the stent, and the flexible section of the sheathing has a third flexibility that is less than the second flexibility.

2. The system according to claim 1, wherein the coil comprises a loose wound region at the coil distal end having a greater flexibility than a tight wound region of the coil at the coil proximal end.

3. The system according to claim 2, wherein the combination of the loose wound region of the coil and the semi-flexible section of the sheathing has a fourth flexibility that is less than the third flexibility.

4. The system according to claim 3, wherein the combination of the tight wound region of the coil and the semi-flexible section of the sheathing has a fifth flexibility that is less than the fourth flexibility.

5. The system according to claim 4, wherein the combination of the tight wound region of the coil and the stiff section of the sheathing has a sixth flexibility that is less than the fifth flexibility.

6. The system according to claim 5, wherein the shaft adjacent the coil at the coil proximal end in combination with the stiff section of the sheathing has a seventh flexibility that is less than the sixth flexibility.

7. The system according to claim 1, wherein one or more of the delivery tip and the sheathing is made of a medical grade polymer.

8. The system according to claim 1, wherein the stent bed is a thin wall tube having a constant stiffness.

9. The system according to claim 1, wherein the delivery tip has a durometer of approximately 35.

10. The system according to claim 1, wherein one or more of:

the flexible section of the sheathing has a durometer of approximately 35,

the semi-flexible section of the sheathing has a durometer of approximately 55, and

the stiff section of the sheathing has a durometer of approximately 72.