

Claims

1. A surgical device for laparoscopic surgery, comprising:
 - an elongated substantially inner rigid cannula ~~(101)~~ having a first passageway ~~(320)~~ extending from a distal end of the inner rigid cannula to a proximal end of the inner rigid cannula;
 - a handle ~~(710)~~ connected to the proximal end of the inner rigid cannula;
 - an outer, nonconductive, flexible cannula ~~(102)~~ having a second passageway ~~(330)~~ extending therethrough wherein at least a portion of the inner rigid cannula is deposited and translatable within the second passageway of the outer flexible cannula, there being clearance ~~(110)~~ between an interior surface ~~(120)~~ of the outer flexible cannula and an outer surface ~~(130)~~ of the inner rigid cannula to allow fluid flow therebetween, and wherein the outer cannula is disposed within a trocar to a surgical site; and
 - a clamping device ~~(145)~~ fixedly connected to a proximal end of the outer flexible cannula and having a mechanism operable to constrict and releasably seal the interior surface of the outer flexible cannula to the outer surface of the inner rigid cannula proximate to the proximal end of the inner rigid cannula and wherein the clamping device is operable to establish a predetermined shape of a portion of the outer flexible cannula responsive to securing and forming a seal between the interior surface of the outer flexible cannula to the outer surface of the inner rigid cannula with the portion of the flexible cannula extending beyond the distal end of the inner rigid cannula.
2. The surgical device of claim 1, further comprising a vacuum source coupled to the first passageway of the inner rigid cannula.
3. The surgical device of claim 1, further comprising a fluid source coupled to the first passageway of the inner rigid cannula.

4. The surgical device of claim 1, wherein the outer flexible cannula includes a curvilinear shape memory.
5. The surgical device of claim 1, wherein the outer flexible cannula, having a predetermined curvilinear shape, is elastically deformable so as to accept the inner rigid cannula.
6. The surgical device of claim 1, wherein ~~responsive to the clamping device seals~~ the outer flexible cannula to the inner rigid cannula such that a portion of the outer flexible cannula ~~extending~~ extends beyond the distal end of the inner rigid cannula, ~~causing~~ that portion of the outer flexible cannula returns to an original form a predetermined curvilinear shape.
7. The surgical device of claim 1, wherein responsive to the clamping device sealing the outer flexible cannula to the inner rigid cannula at a point where a distal end of outer flexible cannula ~~extending~~ extends beyond the distal end of the inner rigid cannula, the outer flexible cannula ~~returns to a~~ forms a predetermined, preexisting curved shape and wherein a degree of curvature is based on an extent of the portion of outer flexible cannula extending beyond the distal end of the inner rigid cannula.
8. The surgical device of claim 1, wherein the outer flexible cannula translates freely along the inner rigid cannula.
9. The surgical device of claim 1, wherein the inner rigid cannula is substantially coextensive with the outer flexible cannula and wherein the outer flexible cannula is longitudinally and radially movable with respect to the inner rigid cannula.
10. The surgical device of claim 1, wherein the outer flexible cannula is electrically nonconductive.
- ~~11. A method of using a surgical device for localized fluid injection or removal during laparoscopic surgery, the method comprising:~~

~~—— positioning (810) the surgical device proximate to a surgical site wherein the surgical device includes an elongated substantially inner rigid cannula having a first passageway extending from a distal end of the inner rigid cannula to a proximal end of the inner rigid cannula and an outer flexible cannula having a second passageway extending therethrough wherein at least a portion of the inner rigid cannula is deposited within the second passageway of the outer flexible cannula, there being clearance between an interior surface of the outer flexible cannula and an outer surface of the inner rigid cannula operable to allow fluid flow therebetween;~~

~~—— sliding (820) an outer flexible cannula along the inner rigid cannula such that a distal end of the outer flexible cannula extends beyond the distal end of the inner rigid cannula;~~

~~—— releasably sealing (840) the interior surface of the outer flexible cannula to the outer surface of the inner rigid cannula proximate to the proximal end of the inner rigid cannula; and~~

~~—— applying (860) a fluidic force to the first passageway.~~

- ~~12. The method of using a surgical device according to claim 11, wherein responsive to a portion of the outer flexible cannula extending beyond the distal end of the inner rigid cannula, that portion of the outer flexible returns to an original curvilinear shape.~~
- ~~13. The method of using a surgical device according to claim 12, further comprising restoring the portion of the outer flexible cannula extending beyond the distal end of the inner rigid cannula to a preexisting curved state.~~
- ~~14. The method of using a surgical device according to claim 11, further comprising positioning the inner rigid cannula substantially coextensive with the outer flexible cannula, wherein the outer flexible cannula is longitudinally and radially movable with respect to the inner rigid cannula.~~

- ~~15. The method of using a surgical device according to claim 11, further comprising elastically deforming the outer flexible cannula so as to conform to the inner rigid cannula.~~
- ~~16. The method of using a surgical device according to claim 11, further comprising translating the outer flexible cannula freely along the inner rigid cannula.~~
- ~~17. The method of using a surgical device according to claim 11, wherein the fluidic force removes fluid from the surgical site.~~
- ~~18. The method of using a surgical device according to claim 11, wherein the fluidic force injects fluid to the surgical site.~~