CLAIMS

1. A surgical tool for shearing tissue at a target surgical site, the surgical tool comprising:

a cannula assembly with a distal end and a proximal end, comprising an elongated tube within a flexible sheath, the flexible sheath disposed along a longitudinal axis passing axially through a first lumen of the elongated tube,

wherein the distal end of the cannula assembly forming a surgical blade and the distal end of the cannula assembly having a beveled tip; and

an axial ball joint in a body of the surgical tool, coupled to the elongated tube at the proximal end, that when rotated, causes the surgical blade to rotate about a longitudinal axis, so as to shear a portion of tissue at a target surgical site.

2. The surgical tool according to claim 1, wherein the sheared portion comprises eye tissue excised from a trabecular meshwork of an eye.

3. The surgical tool according to claim 1, further comprising a biopsy collection chamber in the body for collecting the sheared portion of tissue.

4. The surgical tool according to claim 3, wherein the biopsy collection chamber comprises a sieve for capturing pieces of tissue from the sheared portion.

5. The surgical tool according to claim 1, further comprising a vacuum pump configured to suck the portion into the first lumen at the distal end prior to shearing the portion with the surgical blade.

6. The surgical tool according to claim 1, further comprising a vacuum pump configured to suck the sheared portion through the first lumen into a biopsy collection chamber.

7. The surgical tool according to claim 1, wherein a second lumen is formed between the flexible sheath and the elongated tube along the longitudinal axis.

8. The surgical tool according to claim 7, further comprising a connector hub attached to a body of the surgical tool comprising a central inner hub hole and one or more outer hub holes coupled to the cannula assembly at the proximal end; and

wherein the elongated tube is placed within the central inner hub hole in the connector hub, and wherein the one or more outer hub holes in the connector hub are coupled to the second lumen.

9. The surgical tool according to claim 7, further comprising an infusion tube in the body of the surgical tool coupled to the second lumen at the proximal end of the cannula assembly through the one or more outer hub holes.

10. The surgical tool according to claim 9, further comprising an irrigation fluid inlet formed in the body of the surgical tool and coupled to the infusion tube.

11. The surgical tool according to claim 10, wherein the flexible sheath comprises outlet holes into the second lumen near the distal end of the cannula assembly such that irrigation fluid introduced through the irrigation fluid inlet in the body of the surgical tool may pass through the outlet holes at the distal end to irrigate the target surgical site.

12. The surgical tool according to claim 1, further comprising a button that may be pushed by a user to toggle between cutting, aspiration, or infusion functions at the target surgical site.

13. The surgical tool according to claim 1, wherein the flexible sheath is an inflatable sheath.

14. The surgical tool according to claim 4, wherein the sieve is of hemispherical shape, flat shaped, conical shaped or dome shaped.

15. The surgical tool according to claim 4, wherein the sieve is a membrane with partial coverage within the biopsy collection chamber.

16. The surgical tool according to claim 4, wherein the sieve comprises a plurality of holes.

17. The surgical tool according to claim 6, wherein a predefined time interval is used between applying the vacuum to the tissue at the target surgical site and initiating rotation of the blade and infusion for washing the blood from the target surgical site.