

The utilization of a biological adhesive for wound treatment: Comparison of suture, self-sealing sutureless and cyanoacrylate closure in the tensile strength test.

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Abstract:

We produced a measurement apparatus for testing the tensile strength of wounds during cataract surgery, and tested the tensile strength of treated wounds including wounds sutured with various methods, non-sutured and wounds treated with various bio-tissue adhesives. Methods. In cataract surgery on white rabbits eyes, a corneoscleral incision 5 mm in length was made 2.5 mm from the limbus corneae, and entry into the anterior chamber was obtained 0.5 mm to the clear cornea. After treatment for closure, the corneoscleral piece was subjected to the tensile strength test. Results. The tensile strengths just after surgery were (1) 0 gf/mm² after self-sealing sutureless closure; (2) 114 gf/mm² after vertical suture closure (one stitch with 10-0 nylon); (3) 125 gf/mm² after horizontal suture closure (one stitch with 10-0 nylon); (4) 143 gf/mm² after infinity suture closure (with 10-0 nylon); (5) 112 gf/mm² after fibrin glue (BeriplastP) application (instilled on the surface of scleral incision); (6) 121 gf/mm² after fibrin glue application (glued on corneoscleral wound); (7) 131 gf/mm² after cyanoacrylate closure (instilled on the surface of scleral incision); (8) 139 gf/mm² after cyanoacrylate closure (glued on corneoscleral wound). The respective strengths at four days after surgery were: (1) 86; (2) 131; (3) 137; (4) 175; (5) 109; (6) 43; (7) 138; and (8) 108 gf/mm². At 28 days after surgery, the respective strengths were (1) 164; (2) 167; (3) 184; (4) 209; (5) 322; (6) 195; (7) 251; and (8) 175 gf/mm². Conclusion. The use of fibrin glue in treatment of a wound in cataract surgery is beneficial in assisting this

treatment.