In 1932, Castroviejo applied the principles of previous corneal methods and developed the square keratoplasty technique.

**Principles**

- Donor material must be from the same patient or from the same species.
- Donor material must be taken from live patients or soon after death.
- The sooner the transplantation occurs after the graft has been dissected, the less degeneration of the finer structures.
- Total keratoplasty invariably resulted in opaque corneas.
- Lamellar keratoplasty is only applicable to very superficial lesions due to scarring.
- Scissors, forceps and sutures traumatize and opacify the implant.
- The donor transplant must correspond exactly with the host defect.
- The transplant must be held in position with sutures.

**Experiments / Results**

In 1932, Castroviejo reported his first experimental square corneal transplants on 40 rabbits with normal corneas. 35% maintained long-term clear transplants. He later experimented on 30 rabbits with leucomatous corneas and progressed to seven unselected human subjects, three of which remained clear.

In 1941, he reported on 200 human square corneal transplants with 90% obtaining long-term success.

**Outcome**

In the 1950s, square corneal grafts lost its popularity as circular trephines advanced and patients demanded the more aesthetically pleasing circular grafts. Castroviejo, as well as others, contributed to the advancement of circular grafts.

On January 1, 1987, aged 82, Castroviejo died from laryngeal cancer in Madrid as one of the 10 most influential ophthalmologists of the 20th Century.