

# History of Cataract Surgery

A cataract is a clouding of the normally clear lens of the eye and can be addressed through a procedure that removes the affected lens and replaces it with a manmade lens known as an intraocular lens or IOL.<sup>1</sup> Associated with improvements in vision, overall health, and cognitive and emotional well-being,<sup>2</sup> cataract surgery is a safe and effective procedure<sup>1</sup> and is the most commonly performed surgery in the world.<sup>3</sup>

One of the oldest surgical procedures known, cataract surgery was first documented in the fifth century BC.<sup>4</sup>

- 1747** French ophthalmologist Jacques Daviel is credited with the first Extracapsular Cataract Extraction, a technique that uses a small incision to remove the lens and minimize the wound.<sup>5,6</sup>
- 1753** London surgeon Samuel Sharp performs the first Intracapsular Cataract Extraction, a technique that uses a large incision to remove the entire natural lens and capsule.<sup>7</sup>
- 1949** Intraocular lenses, manmade lenses made of polymethylmethacrylate, are introduced by Sir Harold Ridley in London.<sup>8</sup> Previously, thick hyperopic glasses were prescribed to patients after their natural lenses were replaced.<sup>4</sup>
- 1950s** The first foldable IOLs made of hydrogel are introduced and allow for smaller incisions and faster healing time.<sup>9</sup>
- 1967** Phacoemulsification surgery, which uses ultrasonography to break the cataract into small pieces so that it can be aspirated and replaced with an IOL, is introduced by Dr. Charles Kelman.<sup>4</sup>
- 1978** Kai-yi Zhou invents the first foldable IOL made of silicone, which was quickly adopted by the market.<sup>9</sup>
- 1997** The FDA approves the first multifocal IOL.<sup>9</sup> Multifocal IOLs provide high-quality vision at multiple distances, with enhanced vision at a distinct distance customized to suit the patient's lifestyle.<sup>4</sup>
- 1998** Toric IOLs are rolled out to correct astigmatism. Toric IOLs have different powers in different meridians of the lens to correct the asymmetric power of the eye that is characteristic of astigmatism.<sup>10</sup>
- 2004** Aspheric IOLs, which closely match the shape and optical quality of the eye's natural lens, are introduced for sharper vision — especially in low light conditions and when the pupil is dilated.<sup>11</sup>
- 2010** Femtosecond laser is cleared by the FDA for cataract surgery.<sup>12</sup> The femtosecond laser replaces or supports a hand-held surgical tool used in phacoemulsification,<sup>13</sup> creating a more precise procedure and personalized patient experience.<sup>14</sup>
- 2011** The first Catalys system is introduced.<sup>15</sup>
- 2016** The FDA approves the first extended depth of focus IOL. Extended depth of focus IOLs provide high-quality, continuous vision – from near to far and points inbetween.<sup>16</sup>
- 2017** Johnson & Johnson acquires Abbott Medical Optics and gains global leadership in ophthalmic surgery.<sup>17</sup>

<sup>1</sup>Cataract Surgery. All About Vision. [www.allaboutvision.com/conditions/ataract-surgery.htm](http://www.allaboutvision.com/conditions/ataract-surgery.htm) <sup>2</sup>Cataract surgery and quality of life implications. US National Library of Medicine National Institutes of Health. [www.ncbi.nlm.nih.gov/pmc/articles/PMC2684074](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2684074) <sup>3</sup>The Journey to Femtosecond Laser-Assisted Cataract Surgery: New Beginnings or False Dawn?: Trikha S, Turnbull AM, Morris RJ, Anderson DF, Hossain P. (Cataracts, 2016) <sup>4</sup>The Evolution of Cataract Surgery: The Most Common Eye Procedure in Older Adults. Medscape. [www.medscape.com/viewarticle/579850\\_2](http://www.medscape.com/viewarticle/579850_2) <sup>5</sup>The History of Cataract Surgery. InTech. [http://cdn.intechopen.com/pdfs/42710/InTech-The\\_history\\_of\\_cataract\\_surgery.pdf](http://cdn.intechopen.com/pdfs/42710/InTech-The_history_of_cataract_surgery.pdf) <sup>6</sup>Cataracts Across Time. Unite for Sight. [www.uniteforsight.org/global-health-university/ataract-surgery](http://www.uniteforsight.org/global-health-university/ataract-surgery) <sup>7</sup>Early Intracapsular Cataract Extractions. American Academy of Ophthalmology. [www.aao.org/bccsnippetdetail.aspx?id=7850dcf5-4882-4f0e-a29c-1a03995ab444](http://www.aao.org/bccsnippetdetail.aspx?id=7850dcf5-4882-4f0e-a29c-1a03995ab444) <sup>8</sup>The History of Intraocular Lenses. [https://m3.healio.com/~media/book/ophthalmology/ataract-surgery-intraocular-lenses/66049\\_1p.pdf](https://m3.healio.com/~media/book/ophthalmology/ataract-surgery-intraocular-lenses/66049_1p.pdf) <sup>9</sup>A Brief History of IOL Materials. The Ophthalmologist. <https://theophthalmologist.com/issues/sinister-eclipse/a-brief-history-of-iol-materials> <sup>10</sup>Surgical correction of astigmatism during cataract surgery. Clinical and Experimental Optometry. <sup>11</sup>Aspheric IOLs: from Theory to Practice. Review of Ophthalmology. [www.reviewofophthalmology.com/article/aspheric-iols-from-theory-to-practice](http://www.reviewofophthalmology.com/article/aspheric-iols-from-theory-to-practice) <sup>12</sup>Femtosecond laser assisted cataract surgery, beginning of a new era in cataract surgery. US National Library of Medicine National Institutes of Health. [www.ncbi.nlm.nih.gov/pmc/articles/PMC4738656/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4738656/) <sup>13</sup>Laser Cataract Surgery. All About Vision. [www.allaboutvision.com/conditions/laser-ataract-surgery.htm](http://www.allaboutvision.com/conditions/laser-ataract-surgery.htm) <sup>14</sup>Surgical, CATALYS® System. Johnson & Johnson Vision. <https://surgical.jnjvision.com/us/systems/laser-ataract-surgery/catalys-precision-laser-system.html> <sup>15</sup>CATALYS and Phaco History. Johnson & Johnson Vision. <sup>16</sup>FDA approves first intraocular lens with extended range of vision for cataract patients. The U.S. Food and Drug Administration. [www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm511446.htm](http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm511446.htm) <sup>17</sup>Johnson & Johnson Vision Integration 2H 2017 External Talking Points