

Index

A

AC maintainer (ACM), 107, 108
Advanced cataracts, 9
Ambulatory surgery, 36
American Society of Cataract and Refractive Surgery (ASCRS), 37
Anesthesia. *See also* Regional anesthesia;
 Retrobulbar anesthesia
 additional anesthesia
 peribulbar, 173
 phacoemulsification, 173
 retrobulbar, 172
 sub-tenon's block, 174
 characteristics of, 36
 extracapsular cataract extraction, 35
 patient-reported pain in, 43
 phacoemulsification, 35, 37, 41, 44
 procedures, safety of
 globe perforation, 44
 hyaluronidase, 45
 intra-arterial injection, 45
 peribulbar anesthesia, 44
 perioperative myocardial ischemia, 46
 rapid distension, 45
 resuscitation equipment, 45
 sub-tenon delivery, 44
 trend in, 43–44
 types
 general, 36
 local, anesthetic delivery techniques,
 36–40
 topical, 40–42
 typical combination of, 37
Angle-closure glaucoma, 127
Anterior capsular opening, zonules
 intersection, 79

Anterior chamber (AC)
 nucleus prolapse (luxation), 102
 OVD, 106
 single hook method, 103
Anterior chamber maintainer (ACM), 3, 5
Anterior chamber paracentesis, 38, 39, 43
Anterior segment complications, MSICS
 cortical aspiration, 164–165
 nucleus delivery, 164
 nucleus through capsulorhexis, 164
 placement of IOL, 165–166
 scleral tunnel incision construction,
 162–163
Anterior vitrectomy, 176–177
Antibiotics, 160
Anti-glaucoma agents, 160
Anti-inflammatory agents, 159–160
Anti-inflammatory effect, 177
Arc length, 63
ASCRS. *See* American Society of Cataract
 and Refractive Surgery (ASCRS)
Astigmatically neutral funnel, 66

B

Bacterial colony-forming units, 159
Balanced salt solution (BSS), 149
Bent cystotome needle, 82, 85
Bimanual method
 cartwheeling technique, 105
 iris repositor, 103
Bisection/trisection nucleus delivery, 107
Bleeding, 38, 54, 161
Blindness, 2, 39
Blumenthal technique, 106
Blunt crescent blades, 73

- Blunt keratomes, 74
- Boramani closed chamber manual phacofragmentation blumenthal mini-nuc technique, 120 capsulorrhexis, 121 sheet's glide, 120 sinskey hook, 121
- Bowman's membrane, 56
- Brow effect, 50
- Brunescent cataracts, 99
- Buttonhole, 73, 150, 163
- C**
- Can opener capsulotomy advantages, 83 bent cystotome needle, 85 CCC, 82 disadvantages, 84 technique description, 82–83
- Can-opener technique, 175
- Capsular bag, 175, 176
- Capsular block syndrome, 99, 100
- Capsular tension ring (CTR), 176
- Capsular tension segment (CTS), 176
- Capsule opening anterior, 78 capsulorrhexis rim, 175 capsulotomy principles can opener, 82–86 CCC, 79–82 envelope/linear, 89–92 V-shaped, 86–89 CCC, 174 intracapsular cataract extraction (ICCE), 77 phacoemulsification, 174
- Capsulorrhexis, 4, 5, 8, 160, 164
- Capsulorrhexis forceps, 82
- Capsulotomy principles can opener, 82–86 CCC, 79–82 envelope/linear, 89–92 iatrogenic zonular dehiscence, 78 posterior capsule, 78 V-shaped, 86–89
- Cataract blindness, 2, 12
- Cataract surgical rate (CSR), 2
- Cautery blue zone bleeders, 60 scleral necrosis, 60 tunnel creation, 59 wet-field bipolar, 59
- CCC. *See* Continuous curvilinear capsulorrhexis (CCC)
- Centration implantation technique partial overlap, 136 shrink-wrap effect, 136
- Chemosis hemorrhage, 38, 161
- Chevron incision, 65, 66
- Chord length, 63
- Choroidal detachment, 167
- Classical blumenthal technique, 3
- Complication rate vs. different surgeon groups, 7, 8
- Computed tomography, 38, 39
- Conjunctiva closure, 155
- Conjunctival cul-de-sac, 158
- Conjunctival peritomy blue limbal zone, 59 blunt dissection, 58, 59 conjunctival flap, 56 conjunctival scissors, position and direction of, 58 fold, 57 inadvertent scleral injury, 56 surgical anatomy, 56 tenon opening, 57
- Connective tissue disorders, 72
- Considerable disability, 1
- Continuous curvilinear capsulorrhexis (CCC) advantages, 80–81 bent cystotome needle, 82 complications, 82, 86 disadvantages, 81–82 instrumentation, 82 modern IOLs, 79 PCR, 79 technique description anterior capsule, 79 central puncture initiation, 80
- Corneal astigmatism, 71
- Corneal clouding, 41
- Corneal endothelial damage, 63
- Corneal endothelium, 108
- Corneal erosion, 41, 46
- Corneoscleral tunnel creation, 53, 54
- Cortex aspiration lens-induced glaucoma, 132–133 PCR, 132
- Cortex removal cataract mature, 131 posterior polar, 132 traumatic, uveitic, 131

- cortex aspiration
 - lens-induced glaucoma, 132–133
 - PCR, 132
- cortical cleanup, 128–129
- device, 126–127
- epinucleus, 127
- IOL and incision cataract surgery, 126
- positive pressure, 130–131
- pseudo-exfoliation syndrome (PXF), 130
- Simcoe cannula, 126, 127
- small pupil/poor visualisation, 130
- Cortical aspiration
 - incomplete cortical clean-up, 165
 - single-port aspiration cannula, 164
 - zonular dialysis, 165
- Cortical/capsular connections, 98
- Cortical cleaving hydrodissection, 95
- Cryoanalgesia, 41
- Cryopexy, 39
- Cyclodialysis spatula, 176
- Cycloplegics, 160
- Cystoid macular edema (CME), 167

- D**
- Deeper plane/premature entry, 67
- Deep incision, 72
- Descemet's membrane detachment,
 - 74, 155, 165
- Dimple-down technique, 69
- Dropped nuclei, 3, 9
- Drug allergy, 162
- Dysphotopsias, 177

- E**
- ECCE. *See* Extracapsular cataract extraction (ECCE)
- Endophthalmitis, 71, 158, 159, 166
- Endothelial injury, 164
- Envelope/linear capsulotomy
 - advantages, 90
 - complications, 92
 - cystotome/Vannas scissor, 90, 91
 - disadvantages, 90
 - instrumentation, 91
 - technique description, 89–90
- Excess mortality, 1
- Expulsive hemorrhage, 166–167
- External sclera incision
 - depth of, 72
 - incision width, 71–72
 - wound placement, 71
- Extracapsular cataract extraction (ECCE),
 - 3, 77, 101, 171, 172
- Extraocular muscles injury, 162

- F**
- Femtosecond laser technology, 13
- Fish-mouthing effect, 153
- Fluid-filled syringe, 86
- Fluid shear effect, 98
- Foldable IOL, 144–145
- Forward propagation, 68
- Forward wriggling movement, 73
- Fourth-generation fluoroquinolone, 159
- Frown incision, 4, 64, 66
- Fundus fluorescein angiography, 167

- G**
- Globe akinesia, 40
- Globe perforation, 53, 161
- Gram-positive microorganisms, 166
- Gross domestic product (GDP), 2

- H**
- Hard cataract management, 110
- Healed scleritis, 72
- Hennig fish hook technique
 - extraction, nucleus, 112, 113
 - nucleus delivery, 106
- Hennig technique, 112
- High-speed vitrectomy, 177
- High-volume surgery, 9
- Horizontal sutures
 - Fine's infinity, 152, 153
 - Shepherd's single, 152
- Hydro-cannula, 149, 155
- Hydrodelineation, 99
- Hydrodissection
 - anterior capsule, 98
 - cannula types, 98
 - capsulorhexis, 96
 - complicated scenario, 99
 - fluid wave, 96–97
 - PCO, 98
 - techniques, 95–98
- Hydroexpression, 4, 106
- Hydroprolapse
 - hydrodissection cannula, 102
 - nucleus lateral pole, 103
 - Sinsky hook, 102
- Hydrostatic pressure, 109

Hydroxypropyl methylcellulose (HPMC),
102, 103
Hypermaturation Morgagnian cataract, 106

I

Ideal incision depth, 66
Ideal tunnel, 70
Inadvertent premature entry, 68
Incision
cautery, 59–60
complications of
internal corneal incision, 74–75
sclerocorneal tunnel, 73–74
tunnel construction, 71–72
conjunctival peritomy, 56–59
scleral
depth, 66
location, 66
shape, 63–66
size, 62–63
sclerocorneal tunnel construction
extension, 69–70
initiation, 66–67
keratotomy, 69
propagation, 68
variations in, 4
wound construction, 55
Incision size, 3, 6, 7
Incision width, 71–72
Induced astigmatism, 60, 71
Inferior hemisphere, 129
Initial groove, 73
Instruments and supplies
artery clamp, 18, 19
Barraquer's blade breaker, 20, 21
calipers, 17–19
crescent knife, 20, 21
cyclodialysis spatula, 32
cystotome, 28–30
double-barrelled simcoe cannula, 30–32
eyelid speculum, 17, 18
forceps
corneal, 23, 24
curved needle holder, 25, 26
harms tying, 24, 25
McPherson's, 25
Shepard IOL, 25, 26
toothed, 23
utrata, 23, 24
hydrodissection cannulas, 33
irrigating vectis, 31, 32
keratome, 22, 23

scissors
Castroviejo corneoscleral, 27, 28
eyelash-cutting, 27
vannas, 28
Westcott conjunctival, 27
side port, 21, 22
silcock's needle holder, 19, 20
sinsky hook, 29, 31
superior rectus forceps, 19, 20
Internal corneal incision, 74–75
Interrupted sutures, 72
Intracamerular injection, 159
Intracapsular cataract extraction (ICCE), 77
Intraocular
inflammation, 157, 160
manipulation, 3
Intraocular lens (IOL)
choice, 177
implantation, 53
implantation techniques, 136
insertion
leading haptic, 137
trailing haptic, 137–141
PCR, 81
placement
clinical scenarios, 166
corneal edema or striate
keratopathy, 165–166
decentration, 165
descemet's membrane detachment, 165
dislocation, 165
uveitis glaucoma hyphema
syndrome, 165
sulcus
foldable, 144–145
zonular dialysis, 143–144
viscoelastics removal, 145–147
Intraoperative bleeding, 163
Intravenous access, 37
Inverted batwing incision, 65, 66
IOL. *See* Intraocular lens (IOL)
Iridodialysis, 73
Iris chaffing, 73
Iris tissue injury, 164
Irregular incision, 75, 162
Irrigating cannula, 5
Irrigating vectis, 164
Ischemic necrosis, 162

J

Jaws slider pincer technique, 107
J-shaped cannula, 98, 127, 128

K

- Kansas serrated fragment forceps, 114, 115, 119
- Keratotomy, 69
- Kongsap technique, 107

L

- Lahan technique, 112
- Lateral rectus bridle suture, 50, 52
- Leading haptic insertion technique, 137
- Lens delivery
 - cataract surgery, 101
 - hydroprolapse, 102–103
 - nucleus delivery
 - phacofragmentation, 114–122
 - prolapse (luxation), AC, 102
 - scleral tunnel, 106–107
 - prolapse
 - large hard nucleus, 105
 - posterior polar cataract, 106
 - small pupil, 105
 - Sinsky hook prolapsing
 - bimanual, 103–105
 - single, 103
 - toto nucleus extraction, 107–114
 - viscoprolapse, 103
- Lens epithelial cells (LECs), 98
- Lens-induced glaucoma, 132–133
- Lens-zonule complex, 177
- Local anesthesia
 - peribulbar, 39
 - retrobulbar, 37–39
 - sedatives, 37
 - sub-tenon, 39–40
- Long tunnel, 74
- Loose zonules, prolapsing lens, 176–177
- Low-potency steroid, 160

M

- Manual cellulose sponge vitrectomy, 177
- Manual multi-phacofragmentation (MPF)
 - racquet-shaped nucleotome, 122
 - scleral tunnel incision, 121
 - surgical technique, 122
- Manual phaco fracture, 5
- Manual small-incision cataract surgery (MSICS)
 - advantages/disadvantages
 - advanced cataracts, appropriateness for, 9

- intraoperative and postoperative complications, 7–8
- surgically induced astigmatism, 6–7
- surgical times, 9
- vs. ECCE, 6–7

- Mature cataract, 131
- McPherson forceps, 119, 137
- Modified fish hook technique, 5
- Monofilament nylon suture, 157
- Multiple-quadrant hydrodissection, 98, 99
- Mydriatics, 158, 160

N

- Nonsteroidal anti-inflammatory drugs (NSAIDs), 158–160, 167
- Nuclear delivery, 176
- Nucleotomy, 164
- Nucleus delivery
 - extraction, toto
 - blumenthal technique, 107–108
 - hydroexpression, irrigating vectis, 107–109
 - phacofragmentation, 114–122
 - prolapse (luxation), AC, 102
 - scleral tunnel, 106–107
- Nucleus trisection, 5

O

- Ophthalmic viscosurgical devices (OVD)
 - AC, 103, 104
 - corneal endothelium, 102
 - phaco-punch technique, 110
- Ophthalmologists, 161
- Optic atrophy, 39
- Optic-haptic junction, 139, 143
- Optic nerve injury, 161–162
- Orbital decompression, 38
- OVD. *See* Ophthalmic viscosurgical devices (OVD)

P

- Panretinal photocoagulation, 39
- Pathological myopia, 72
- PCR. *See* Posterior capsule rupture (PCR)
- Penultimate step, 53
- Perfluoropropane gas (C3F8), 165
- Peribulbar anesthesia, 39, 167
- Perioperative myocardial ischemia, 46
- Persistent diplopia, 45

- Phacoemulsification, 97
 capsule opening, 176–177
 cataract surgical method, 12
 comparison to, 10–12
 cost of, 10
 disadvantage of, 10
 ECCE *vs.* MSICS
 additional anesthesia, 172–174
 incision, 174
 ultrasonic probe, 172
 indications for, 171
vs. PCR rate, 6, 8
 surgically induced astigmatism of, 6
 visual outcomes of, 11
- Phacolytic glaucoma, 9
- Phacomorphic glaucoma, 9
- Phaco-punch technique
 advantages/disadvantages, 111
 OVD, 110
 Sinskey hook, 106, 110, 111
 visco cannula, 111
- Phacosection/phacofragmentation
 nucleus delivery
 Kansas fragment removal forceps,
 114, 115
 snare
 bisection, 119
 nucleus division, 117
 trisector
 fragmentation, 116
 nucleotomy, 115
 26 G visco cannula, 116–117
- Phacotrisection technique, 5
- Polymethyl methacrylate (PMMA), 4, 8, 10,
 135, 136, 177
- Poor sealing effect, 74
- Positive pressure, 130–131
- Postanesthetic allergic reaction, 162
- Posterior capsular extension, 79
- Posterior capsular opacification (PCO),
 8, 81, 98
- Posterior capsular tear. *See* Zonular dialysis
- Posterior capsule rupture (PCR)
 cortex aspiration, 132
 intraoperative and postoperative, 8
 IOL implantation, 81
- Posterior polar cataract, 132
- Post-op astigmatism, 151
- Post operative care
 complications and management
 anesthesia-related, 161–162
 anterior segment, 162–166
 posterior segment, 166–167
 surgically induced astigmatism and
 refractive surprises, 167–168
 medications
 perioperative, 159
 postoperative, 159–160
 preoperative, 158–159
 self-sealing incision, 157
 suture removal, 157–158
- Post operative endophthalmitis
 (POE), 159, 160
- Post scleral buckle surgery, 161
- Povidone iodine, 158–159
- Premature entry, 73, 74, 150, 163
- Prep/drape
 betadine painting, 49
 bridle suture
 complications, 53–54
 technique, 50, 51
 tips, 50
 uses of, 53
 subconjunctival injection, 49
 wire speculum, 49
- Prolapse
 adequate-sized capsulorrhexis, 105
 hydrodissection, 106
 large hard nucleus, 105
 posterior polar cataract (lollipop
 technique), 106
 small pupil, 105
- Prolapsing lens
 anterior vitrectomy, 176–177
 CTR, 176
 CTS, 176
 IOL choice, 177
 nuclear delivery, 176
- Pseudo-exfoliation syndrome (PXF), 130
- Ptosis, 162
- Pupillary peaking, 143
- R**
- Regional anesthesia
 peribulbar, classifications, 39
 retrobulbar
 complications, 38–39
 pearl, 37–38
 sub-tenon, pearl, 40
- Remnant tenons, 59
- Retinal detachment, 167, 177
- Retrobulbar anesthesia
 complications

- blindness, 39
- hemorrhage, 38
- optic atrophy, 39
- retinal vascular obstruction, 39
- retrobulbar block, 38
- ocular akinesia, 37, 38
- pearl perforation, 37
- Retrobulbar hemorrhage, 38, 39, 43, 161
- Retrobulbar space, 37, 38
- Retro-illumination, 147
- Rigid IOL haptic insertion
 - leading, 137
 - trailing, 137–141
- Rochester epidemiology project data, 2

- S**
- Sandwich technique, 4
- Schwalbe's line. *See* Descemet's membrane detachment
- Scleral buckling, 39
- Scleral disinsertion, 66, 72
- Scleral incision
 - astigmatically neutral funnel, 66
 - external
 - depth, 66
 - location, 66
 - shape, 63–66
 - size, 62–63
 - non-sagging, 61
 - wound gape, 62
- Scleral spur detachment, 163
- Scleral tunnel incision, 4–6
- Scleral tunnel nucleus delivery
 - phacofragmentation, 107
 - toto, 106
- Sclerocorneal tunnel, 86, 88
- Sclerocorneal tunnel construction
 - complications, 73–74
 - crescent blade, 69
 - extension, 69–70
 - ideal three-planed tunnel, 70
 - initiation, 66–67
 - internal view of, 70
 - keratome, 69
 - keratotomy, 69
 - propagation, 68
- Scleropocket tunnel dissection, 72
- Self-sealing corneal valve, 73
- Self-sealing incision, 157
- Severe positive pressure, 150
- Shrink-wrap effect, 136
- Side-port closure, 155
- Sideport wound, 149
- Sideward swiping movement, 73
- Sight-restoring cataract surgery, 1
- Simcoe cannula. *See also* Cortex aspiration
 - cataract surgery, 126
 - double-barrelled, 30–32
 - small pupil/poor visualisation, 130
 - utrata forceps, 91
 - viscoelastics removal, 85, 145
- Single hook method, 103
- Sinskey hook prolapsing
 - bimanual, 103–105
 - single, 103
- Slit-lamp biomicroscopy, 167
- Small pupil/poor visualisation, 130
- Smile incision, 63
- Snare technique, 5
- Straight incision, 63, 64
- Subconjunctival hemorrhage, 161
- Subincisional cortical removal, 128–129
- Suboptimal astigmatic effect, 174
- Subsequent buttonholing, 66, 67
- Sub-tenon anesthesia
 - globe akinesia, 40
 - pearl, 40
 - tenon capsule, 39
 - Westcott scissors, 40
- Sulcus, IOL placement
 - foldable, 144–145
 - forceps/Sinskey hook, 139
 - zonular dialysis, 143–144
- Superficial incision, 72
- Superior iridodialysis, 71
- Superior rectus bridle suture, 50, 51
- Surgically induced astigmatism (SIA)
 - vs. phacoemulsification and MSICS, 6
 - smaller incision, 6
 - temporal incisions, 7
 - tunnel construction, 6–7
- Suture
 - indications for, 150
 - removal, 157–158
 - tips for, 152–154
 - types of
 - box, 152, 154
 - crossed mattress, 152, 153
 - horizontal, 151–152
 - vertical, 151
- Sutureless large-incision manual cataract extraction (SLIMCE), 4
- Swiveling movement, 68

T

- Tenon capsule, 39
- Topical anesthesia, 153
 - anesthetic agents, 40
 - benzalkonium chloride, 42
 - cryoanalgesia, 41
 - epithelial toxicity, 40, 41
 - intracameral, 41–42
 - advantages of, 41–42
 - phacoemulsification, 41
 - viscoanesthesia, 42
 - viscous lidocaine gel, 41
 - visual recovery, 40
- Topical antibiotics, 158
- Topical lubricants, 160
- Torn capsule, prolapsing lens, 176–177
- Torn edges, 73
- Trailing haptic insertion technique
 - confirmatory signs, 141
 - forceps, 137–138
 - Sinsky hook, 137–141
- Transconjunctival peribulbar block, 174
- Traumatic cataract, 131
- Tunnel blade maintenance, 68

U

- Ultrasonic probe, 172
- Uveal incarceration, 167
- Uveal inflammation, 167
- Uveitic cataract, 131

V

- Valsalva manoeuvre, 130
- Valve effect, 69, 150

Vector analysis, 5

- Vertical suture, 151
- Viscoelastics, 127, 130
- Viscoexpression, 4, 106, 112. *See also*
 - Phaco-punch technique
- Viscoprolapse, 102, 103
- Vitreous hemorrhage, 167
- V-shaped capsulotomy
 - advantages, 87–88
 - complications, 89
 - disadvantages, 88
 - instrumentation, 89
 - sclerocorneal tunnel end, 86, 88
 - technique description, 86–87

W

- Weck-cel sponges, 150
- Wet-field bipolar vs. unipolar/thermal
 - ball point cautery, 59
- Wet-field cautery, 155
- Wound closure
 - checking, 149–150
 - construction, 150
 - sclerocorneal tunnel closing
 - conjunctiva closure, 155
 - intraocular pressure, 150
 - side-port closure, 155
 - suture, 150–154
- Wound construction, 55, 70, 71, 150
- Wound integrity, 73, 74
- Wound placement, 71
- Wound suturing, 171

Z

- Zonular dialysis, 143–144, 164, 165