

Supplementary File 1- Raw data for keratoplasty in the Mucopolysaccharidoses

| Patient | Eye | Sex | Age at K (in years) | K Type | MPS Type | Follow up (in months) | BCVA pre-K in logMAR | BVCA last visit in logMAR | Complications/ management | Other surgical procedures | Co-morbidities of eye/optical pathway |
|---------|-----|-----|---------------------|--------|----------|-----------------------|----------------------|--|---|---|---|
| 1 | L | F | 26.8 | PK | 1-H | 52 | 0.50 | 0.30 | none | - | - |
| | R | F | 27.2 | PK | | 39 | 0.60 | 0.40 | none | - | - |
| 2 | L | F | 13.7 | PK | 1-H | 13 | 0.80 | 1.00 | none | - | ON pallor |
| 3 | L | M | 25.3 | PK | 1-S | 196 | CF 10 cm | 0.7 until 168 months due to retinal degeneration | 3 rejections treated, recurrence of corneal deposits in periphery 43 mos after PK | PK with trabeculectomy (combined procedure), phaco with IOL 82 mos after PK | elevated IOP before PK, retinal degeneration, died age 42 |
| | R | | 27.6 | PK | | 157 | CF 10 cm | 0.7 until 168 months due to retinal degeneration | none | Trabeculectomy 11 mos before PK (did not lower IOP) | elevated IOP before PK, retinal degeneration, died age 42 |
| 4 | R | F | 34 | PK | 1-S | 108 | 0.60 | 0.18 | none | - | elevated IOP before PK, died age 43 |
| 5 | R | F | 19 | PK | VI | 89 | 1.30 | 0.18 | none | - | elevated IOP before PK |
| 6 | R | M | 22 | PK | 1-HS | 14 | CF 20 cm | 0.30 | none | - | elevated IOP before PK |
| 7 | L | F | 17 | PK | VI | 128 | LP | 0.48 | corneal abscess and rejection, glaucoma, cataract | cyclodiode | optic neuropathy (possible raised ICP), glaucoma |

| | | | | | | | | | | | |
|----|---|---|----|------|------|-----|--------|------|--|---|---|
| 8 | L | F | 26 | PK | 1-HS | 79 | HM | HM | none | - | optic neuropathy (possible raised ICP), retinopathy |
| | R | | 28 | PK | | 54 | HM | HM | glaucoma, epithelial rejection, cataract | cyclodiode, phaco, and IOL, YAG capsulotomy | optic neuropathy, retinopathy |
| 9 | L | F | 11 | PK | 1-HS | 23 | LP | 0.60 | none | - | retinopathy |
| 10 | R | F | 24 | PK | 1-HS | 56 | CF | 0.18 | epithelial rejection 4 episodes, all settled | - | pre-op ocular HTN, fine post-op, exotropia |
| | L | | 27 | PK | | 23 | HM | 0.18 | epithelial rejection, settled with treatment | - | pre-op ocular HTN, fine post-op, exotropia |
| 11 | R | F | 24 | PK | 1-S | 96 | NR | 0.10 | none | - | - |
| | L | | 26 | DALK | | 80 | NR | 0.10 | none | - | - |
| 12 | R | M | 35 | PK | 1-S | 156 | NR | 0.30 | none | - | retinal degeneration, 10 degree VF |
| | L | | 38 | PK | | 120 | NR | 0.30 | none | - | - |
| 13 | R | F | 26 | PK | 1-S | 56 | CF 1cm | 0.20 | none | - | elevated IOP prior to PK and in non-op eye, normalized after PK |
| 14 | R | F | 31 | PK | 1-S | 106 | 0.60 | 0.10 | graft rejection x3, controlled with steroids, subtle post subcapsular cataract | - | - |
| | L | F | 32 | PK | | 94 | 0.60 | 0.20 | none | - | - |
| 15 | L | F | 11 | PK | 1-S | 6 | 0.70 | 0.70 | none | - | - |

| | | | | | | | | | | | |
|----|---|---|------|----|------|-----|--------|------|-----------------|--------------------------|--|
| 16 | L | F | 23 | PK | VI | 22 | 1.30 | 1.30 | none | 4x cyclophotocoagulation | L eye, glaucomatous atrophy |
| 17 | L | M | 32 | PK | 1-S | 46 | HM 1 m | 0.30 | none | - | - |
| 18 | R | F | 8 | PK | 1-HS | 90 | NR | LP | none | - | optic atrophy due to raised ICP |
| | L | | 12 | PK | | 120 | NR | LP | none | - | optic atrophy due to raised ICP |
| 19 | R | F | 16 | PK | VI | 63 | LP | LP | none | - | elevated IOP; hyperopia, PEV: decreased amp, increased latency |
| | L | | 16 | PK | | 63 | LP | LP | none | - | elevated IOP; hyperopia, PEV: decreased amp, increased latency |
| 20 | R | F | 21 | PK | VI | 55 | HM | HM | none | - | elevated IOP; PEV: red amp |
| | L | | 21 | PK | | 55 | HM | HM | none | - | elevated IOP; PEV: red amp |
| 21 | R | M | 14 | PK | VI | 61 | LP | LP | reopacification | - | elevated IOP; hyperopia, PEV: red amp, increased latency |
| | L | | 14 | PK | | 61 | LP | LP | reopacification | - | elevated IOP; hyperopia, PEV: red amp, increased latency |
| 22 | R | M | 11.7 | PK | 1-H | 13 | 0.60 | 0.56 | none | triple (PCIOL) | elevated IOP |
| 23 | L | F | 19.2 | PK | 1-H | 24 | 0.92 | 0.40 | none | - | - |
| 24 | R | M | 52 | PK | IV | 132 | 1.16 | 0.10 | none | PRK | glaucoma |
| | L | | 60.1 | PK | | 31 | 1.30 | 0.10 | none | - | - |
| 25 | R | M | 63.3 | PK | IV | 83 | NR | 0.30 | none | Triple (PCIOL) | - |
| | L | | 65.3 | PK | | 59 | 1.30 | 0.40 | none | Triple (ACIOL) | - |
| 26 | R | F | 24.4 | PK | VI | 91 | 0.30 | 0.40 | rejection | - | ON edema |

| | | | | | | | | | | | |
|----|---|---|------|------|------|-----|------|-----------------------------------|----------------------|-----------|---|
| | L | | 28.2 | PK | | 46 | 0.70 | 0.30 | rejection | Repeat PK | - |
| 27 | L | F | 13.9 | DALK | I-H | 38 | 1.30 | 0.10 | none | - | treated pre-op for increased IOP, but K thick (0.816); normal IOP post-op |
| 27 | R | F | 15 | DALK | I-H | 26 | 1.00 | 0.30 | 1 | | |
| 28 | L | M | 13.8 | PK | VI | 5 | 0.01 | LP | keratitis, rejection | - | - |
| 29 | L | F | 26 | PK | I-HS | 120 | HM | HM | | | |
| | R | | 29 | PK | I-HS | 84 | HM | HM (cataract, secondary glaucoma) | | | |
| 30 | R | M | 18 | PK | I-H | 9 | 1.00 | 0.60 | | | |
| 31 | L | F | 17 | PK | I-H | 186 | NR | HM | | | |
| 32 | L | F | 11 | PK | I-H | 33 | 1.43 | 0.60 | | | |

Abbreviations: L, left eye; R, right eye; M, male; F, female; PK, penetrating keratoplasty; DALK, deep anterior lamellar keratoplasty; I-H, Hurler syndrome; I-HS, Hurler-Scheie syndrome; I-S, Scheie syndrome; IV, Morquio syndrome; VI, Maroteaux-Lamy syndrome; BCVA, best corrected visual acuity; Pre-K, pre-keratoplasty; NR, not recorded; HM, hand motion; CF, count fingers; LP, light perception; mos, months; IOL, intraocular lens; IOP, intraocular pressure; ON, optic nerve; PCIOL, posterior chamber intraocular lens; ACIOL, anterior chamber intraocular lens; K, cornea; PEV, visual evoked potential; HTN, hypertension; ICP, intracranial pressure; VF, visual field.