Supplemental Materials

Table S1. Measurements of each feature per disease state. Data is presented as mean, standard error, (range) of the median measurement of all volumes in that category.

		Morphologic Features			Mean Attenuation Coefficient			Stratification	
	Sample size	Average age	Epithelium depth	Loss of epithelial–stromal boundary visualization	Overall	Epithelium	Stroma	Epithelial–Stromal	Intra–epithelial
	#	[years]	[µm]	[%]	[mm⁻¹]	[mm⁻¹]	[mm⁻¹]	[a.u.]	[a.u.]
Contralateral	31	58	160 10 (120–260)	1 0 (0–4)	3.45 0.11 (2.26–4.17)	1.20 0.03 (0.99–1.74)	3.97 0.15 (2.43–5.64)	−0.52 0.02 −(0.69–0.27)	−0.18 0.01 −(0.28–0.10)
Benign	5	73	200 20 (140–280)	8 4 (1–18)	2.88 0.20 (2.30–3.44)	1.38 0.11 (1.13–1.66)	3.19 0.23 (2.60–3.85)	−0.41 0.03 −(0.50–0.32)	−0.17 0.02 −(0.22–0.11)
Mild dysplasia	8	47	210 10 (160–290)	5 3 (0–23)	3.62 0.14 (3.23–4.19)	1.36 0.09 (1.13–1.71)	4.35 0.18 (3.74–5.26)	−0.53 0.02 −(0.62–0.42)	−0.21 0.01 −(0.25–0.16)
Moderate dysplasia	10	58	320 70 (150–790)	22 10 (0–99)	3.44 0.19 (2.55–4.60)	1.80 0.21 (1.20–3.36)	4.01 0.25 (2.91–5.70)	−0.41 0.05 −(0.58–0.12)	−0.12 0.04 −(0.29–0.09)
Severe dysplasia	7	59	250 30 (180–360)	15 4 (0–27)	3.13 0.13 (2.61–3.71)	1.56 0.06 (1.25–1.71)	3.70 0.17 (3.15–4.53)	−0.43 0.03 −(0.57–0.35)	−0.16 0.03 −(0.25–0.08)
Carcinoma	9	56	560 80 (200–800)	77 9 (21–100)	3.05 0.12 (2.29–3.38)	2.48 0.22 (1.63–3.32)	3.56 0.18 (2.46–4.27)	−0.35 0.04 −(0.51–0.18)	−0.07 0.03 −(0.20–0.05)

Table S2. Mean measurements of each feature per disease state and sex. Data is presented as mean, standard error, (range) of the median measurement of all volumes in that category.

	Sex	Sample size	Average age	Morphologic Features		Mean Attenuation Coefficient			Stratification	
				Epithelium depth	Loss of epithelial–stromal boundary visualization	Overall	Epithelium	Stroma	Epithelial–Stromal	Intra–epithelial
	M F	#	[years]	[μm]	[%]	[mm^{-1}]	[mm^{-1}]	[mm^{-1}]	[a.u.]	[a.u.]
Contralateral	M	14	56	180 10 (120–260)	1 0 (0–4)	3.29 0.17 (2.26–4.71)	1.21 0.04 (1.00–1.50)	3.79 0.22 (2.43–5.64)	−0.50 0.02 −(0.69–0.35)	−0.17 0.01 −(0.27–0.10)
	F	17	60	140 10 (120–200)	0 0 (0–1)	3.58 0.14 (2.36–4.61)	1.19 0.05 (0.99–1.74)	4.12 0.20 (2.45–5.51)	−0.54 0.02 −(0.68–0.27)	−0.19 0.01 −(0.28–0.11)
Benign	M	3	79	220 30 (190–280)	13 5 (3–18)	2.76 0.27 (2.30–3.24)	1.49 0.14 (1.21–1.66)	3.07 0.28 (2.60–3.58)	−0.37 0.03 −(0.40–0.32)	−0.18 0.02 −(0.22–0.14)
	F	2	65	150 10 (140–170)	2 1 (1–3)	3.06 0.38 (2.69–3.44)	1.21 0.07 (1.13–1.28)	3.38 0.48 (2.90–3.85)	−0.47 0.03 −(0.50–0.45)	−0.17 0.05 −(0.22–0.11)
Mild dysplasia	M	3	52	240 30 (180–290)	4 4 (0–11)	3.37 0.09 (3.23–3.53)	1.33 0.15 (1.15–1.63)	4.09 0.11 (3.89–4.24)	−0.52 0.05 −(0.57–0.42)	−0.20 0.03 −(0.25–0.17)
	F	5	44	200 10 (163–230)	6 4 (0–23)	3.76 0.19 (3.24–4.19)	1.37 0.13 (1.13–1.71)	4.51 0.27 (3.74–5.26)	−0.54 0.02 −(0.62–0.50)	−0.21 0.01 −(0.24–0.16)
Moderate dysplasia	M	4	64	390 140 (230–790)	35 22 (3–99)	3.18 0.15 (2.86–3.49)	2.06 0.43 (1.55–3.63)	3.64 0.18 (3.40–4.17)	−0.33 0.07 −(0.43–0.12)	−0.07 0.06 −(0.18–0.09)
	F	6	54	280 90 (150–710)	13 9 (0–52)	3.60 0.28 (2.55–4.60)	1.62 0.21 (1.20–2.28)	4.26 0.39 (2.91–5.70)	−0.46 0.07 −(0.58–0.22)	−0.15 0.04 −(0.29–0.02)
Severe dysplasia	M	3	52	220 20 (180–240)	12 7 (0–26)	3.40 0.17 (3.12–3.71)	1.51 0.14 (1.25–1.71)	4.05 0.29 (3.52–4.53)	−0.47 0.06 −(0.57–0.37)	−0.15 0.04 −(0.20–0.08)
	F	4	65	280 40 (210–360)	17 5 (6–27)	2.93 0.11 (2.61–3.13)	1.60 0.05 (1.48–1.70)	3.44 0.11 (3.15–3.65)	−0.40 0.02 −(0.44–0.35)	−0.17 0.04 −(0.25–0.08)
Carcinoma	M	6	47	510 120 (200–800)	74 13 (21–100)	3.05 0.16 (2.29–3.31)	2.28 0.27 (1.63–3.17)	3.60 0.27 (2.46–4.27)	−0.37 0.05 −(0.51–0.18)	−0.09 0.05 −(0.20–0.05)
	F	3	76	670 60 (600–900)	82 11 (60–95)	3.06 0.23 (2.62–3.38)	2.89 0.25 (2.44–3.32)	3.48 0.11 (3.26–3.64)	−0.31 0.03 −(0.36–0.24)	−0.03 0.01 −(0.05–0.02)

Table S3. Measurements of other pathologic results in contralaterals. Data is presented as mean, standard error, (range) of the median measurement of all volumes in that category.

	Sample size	Average age	Morphologic Features		Mean Attenuation Coefficient			Stratification	
			Epithelium depth	Loss of epithelial-stromal boundary visualization	Overall	Epithelium	Stroma	Epithelial-Stromal	Intra-epithelial
	#	[years]	[μm]	[%]	[mm⁻¹]	[mm⁻¹]	[mm⁻¹]	[a.u.]	[a.u.]
Acanthosis	13	57	170 10 (120−260)	1 0 (0−4)	3.42 0.16 (2.37−4.57)	1.18 0.05 (0.99−1.50)	3.96 0.21 (2.56−5.42)	−0.53 0.02 −(0.68−0.36)	−0.19 0.01 −(0.27−0.13)
No Acanthosis	18	58	150 10 (120−260)	1 0 (0−4)	3.44 0.16 (2.26−4.71)	1.22 0.04 (1.02−1.74)	3.95 0.22 (2.43−5.64)	−0.52 0.03 −(0.69−0.27)	−0.17 0.01 −(0.28−0.10)
Keratosis	15	55	160 10 (120−260)	1 0 (0−4)	3.63 0.15 (2.92−4.71)	1.17 0.04 (0.99−1.50)	4.23 0.19 (3.24−5.64)	−0.56 0.02 −(0.69−0.44)	−0.19 0.01 −(0.27−0.11)
No keratosis	16	60	160 10 (120−200)	1 0 (0−4)	3.24 0.16 (2.26−4.21)	1.23 0.05 (1.02−1.74)	3.68 0.21 (2.43−4.95)	−0.49 0.03 −(0.63−0.27)	−0.17 0.01 −(0.28−0.10)

Table S4. Measurements against future progression status for mild and moderate dysplastic lesions (P = progressors, NP = non−progressors). Data is presented as mean, standard error, (range) of the median measurement of all volumes in that category. 'Difference' is the pairwise subtraction of contralateral median value from lesion median value for each volume.

	Progression status	Sample size	Average age	Morphologic Features		Mean Attenuation Coefficient			Stratification	
				Epithelium depth	Loss of epithelial–stromal boundary visualization	Overall	Epithelium	Stroma	Epithelial–Stromal	Intra–epithelial
	P / NP	#	[years]	[μm]	[%]	[mm^{-1}]	[mm^{-1}]	[mm^{-1}]	[a.u.]	[a.u.]
Contralateral	P	4 (1 D1, 3 D2)	55	150 20 (120–200)	0 0 (0)	3.32 0.16 (2.99–3.60)	1.09 0.07 (0.99–1.29)	3.77 0.18 (3.45–4.10)	−0.55 0.03 −(0.60–0.46)	−0.18 0.02 −(0.21–0.14)
	NP	11 (6 D1, 5 D2)	54	160 10 (120–260)	1 0 (0–3)	3.81 0.16 (3.05–4.61)	1.18 0.05 (1.00–1.50)	4.47 0.20 (3.47–5.51)	−0.58 0.02 −(0.68–0.44)	−0.18 0.01 −(0.24–0.13)
Lesion	P	4 (1 D1, 3 D2)	55	190 20 (160–230)	7 5 (0–21)	3.45 0.19 (3.02–3.86)	1.32 0.13 (1.13–1.70)	4.04 0.24 (3.56–4.59)	−0.51 0.04 −(0.56–0.38)	−0.18 0.01 −(0.21–0.16)
	NP	11 (6 D1, 5 D2)	54	220 20 (150–290)	5 2 (0–22)	3.60 0.15 (2.86–4.60)	1.47 0.10 (1.13–2.25)	4.35 0.21 (3.40–5.70)	−0.50 0.03 −(0.62–0.28)	−0.18 0.02 −(0.29–0.03)
Difference	P	4 (1 D1, 3 D2)	55	40 20 (30–50)	7 5 (0–21)	0.13 0.19 (0.03–0.27)	0.24 0.13 (0.13–0.41)	0.27 0.24 (0.11–0.51)	0.04 0.04 (0.01–0.07)	0.005 0.01 (−0.04–0.05)
	NP	11 (6 D1, 5 D2)	54	60 20 (−80–140)	5 2 (−3–22)	−0.21 0.15 (−0.60–0.36)	0.30 0.10 (−0.12–1.15)	−0.12 0.21 (−0.77–0.26)	0.08 0.03 (−0.05–0.32)	0.003 0.02 (−0.09–0.18)