



**Figure 33-1.** Perfusion change in PACG. (A) OCT angiogram of the peripapillary area in normal and (B) PACG eyes.

**TABLE 33-1. CHANGES IN VISUAL FIELD, STRUCTURE, AND BLOOD FLOW IN PRIMARY ANGLE-CLOSURE GLAUCOMA**

VARIABLES	NORMAL	PACG	P VALUE*
	(N=20)	(N=20)	
<b>VF</b>			
MD (dB)	-1.28 ± 1.07	-7.98 ± 5.90	<0.001
PSD (dB)	1.9 ± 0.4	5.3 ± 3.6	<0.001
NFL thickness (μm)	111.5 ± 7.6	117.6 ± 33.5	0.441
Peripapillary vessel area density (%)	66.0 ± 2.0	56.4 ± 5.8	<0.001
PACG, primary angle-closure glaucoma; VF, visual field; MD, mean deviation; PSD, pattern standard deviation; NFL, retinal nerve fiber layer.			
Numbers displayed are mean ± standard deviation.			
*Differences between groups were tested with the Kruskal-Wallis test.			

still decreased during follow-up.<sup>6,7</sup> The decrease in NFL thickness during follow-up could be caused either by the subsiding of edema or by damage due to reduced perfusion.

As reduced perfusion has also been recorded in POAG eyes, we thought it might be interesting to compare the 2 types of glaucoma to see if they involve a similar change in retinal perfusion. Using the same system and software as above, a group of POAG eyes with similar glaucoma damage was recruited. Compared to POAG eyes, the perfusion in PACG eyes seemed to be evenly reduced. In POAG eyes, on the other hand, perfusion was much lower in the inferior temporal area than in other parts of the eye (Table 33-2). This is in accordance with the frequent superonasal visual field damage in POAG eyes,<sup>11</sup> and despite a similar mean deviation in the visual field results, the PACG group had a much smaller pattern standard deviation ( $P=0.001$ ). The reason for the different changes in perfusion and visual

field in these two types of glaucoma was not fully understood. Here is a possible explanation. Hayreh<sup>12</sup> pointed out that in the peripapillary choroid, the obliteration caused by high IOP was usually more marked in the superior and inferior parts and less in the temporal and nasal. As the disc and peripapillary area also receives blood flow from the choroid,<sup>13</sup> although we did not measure choroid perfusion this time, vessels in a different part of the disc area might respond differently to high IOP. As in POAG eyes, the IOP was usually moderately elevated, and the difference in vessels could be demonstrated. However, in PACG eyes, the IOP at the acute attack could far exceed the normal level, so all vessels might be affected. Future studies that include measurement of choroid blood flow might be able to tell us more. However, in a group of eyes with more severe glaucoma, Sihota et al<sup>14</sup> observed a different pattern. In their study, POAG eyes showed diffuse damage on fluorescein