Table. Comparison of the advantages and disadvantages of different non-invasive examination methods for PWS

Methods	Advantage	Disadvantage
Dermoscopy	Easy to operate	Penetration depth is limited
	Assess vessel morphology	
	predict efficacy	
VISIA-CR™ system	Objectively assess the fading of lesions before and after treatment	Unable to assess deeper structures
	More accurate than naked-eye observation	
	Calculable erythema index to objectively evaluate efficacy	
Reflectance Confocal Microscopy（RCM）	With high resolution and high contrast	When the penetration depth is greater than 150μm, the imaging quality of PWS decreases
	Applied to the assessment of skin vascular structure, blood flow, and velocity	Penetration is limited to the upper dermis and cannot assess the deepest vessels
	Wide field of view	Image capture takes long
	Reduce motion artifacts during imaging to optimize treatment parameters	
	The maximum depth that can penetrate human skin is 250-300μm	
High-frequency Ultrasound (HFUS)	High resolution	Poor imaging contrast
	The skin and its appendages, subcutaneous tissue, and deep structures can be observed	When ultrasound is below 20MHz, it has poor ability to identify fine structures below the skin surface
	Measuring the thickness and depth of deep lesions in PWS	Unable to assess fading
	Assess hemodynamics	Ultrasound operators require high levels of precision and proficiency
Optical Coherence Tomography (OCT)	Monitoring cutaneous vasculopathy in situ, in vivo, and in real-time	Penetration depth is poor, about 2 mm
	Accurately measure vessel diameter and depth in PWS	Inability to distinguish PWS vessels from other structures such as cavities or sebaceous glands
1.Dynamic Optical Coherence Tomography(D-OCT)	Calculation of superficial plexus depth and diameter, as well as density characteristics of surface vessels	Handheld OCT probes are unstable when in contact with skin
	Assessing Vascular Characteristics of PWS	

Optical Coherence Tomography Angiography (OCTA)	Visualizing functional vascular networks within microcirculatory tissue beds	Artifacts may exist
	Imaging blood vessels based on flow properties	Unable to determine the direction of blood flow
Doppler Optical Coherence Tomography (Doppler-OCT)	Show blood flow and differentiate between blood vessels and other structures	Low resolution and sensitivity
	Measure deeper blood flow velocities and locate vessel walls	Small blood vessels as well as deeper vessels cannot be detected
Photoacoustic Imaging (PAI)	Good depth of penetration	Poor axial resolution and imaging capability
	High contrast ratio	
	Fine anatomy from the epidermis to the subcutaneous tissue can be depicted	
Laser Speckle Imaging (LSI)	Assessing changes in perfusion before and after PDL treatment	Produces significant motion artifacts
	Intraoperative monitoring tools	Maximum depth to generate laser scatter contrast information is limited
	With objective and quantitative data	
	Short detection time	
Laser Doppler Imaging (LDI)	Real-time measurement of microvascular perfusion in biological tissues	Lower spatial resolution and repeatability
	Evaluating Changes in PWS Perfusion After Sequential Laser Therapy	
	Visualizing perfusion in the microcirculatory system	