Antonella Tosti
Doris Hexsel *Eds.*

Update in Cosmetic Dermatology

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Antonella Tosti • Doris Hexsel
Editors

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Skin Evaluation Systems

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Core Messages

- Skin evaluation and its correct interpretation are of extreme importance for clinical diagnosis and also in research.
- Skin evaluation must start with a clinical exam and different assessment methods can be chosen according to the conditions or treatment results to be assessed.

1.1 Introduction

Skin evaluation and its correct interpretation are of extreme importance. Skin evaluation requires efficient and well-defined methods to diagnose the skin conditions or diseases and also to follow treatment response. These methods include the use of technological and validated resources, such as devices and scales.

In this chapter, qualitative, semiquantitative, and quantitative skin evaluation methods will be discussed. The qualitative methods are subjective and range from physical examination to the clinical evaluations, including the photographic documentation. The semiquantitative methods include the grade and photographic scales,

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which were created to facilitate the rating of specific skin conditions. Quantitative methods are based on objective measurements of certain skin features, such as photodamage signs, pigmentation, sebum, and hydration.

1.2 Qualitative Evaluation of Skin

1.2.1 Clinical Exam

The dermatological exam begins with physician's questions to the patients about their skin condition and related symptoms. Demographic data, including age, gender, and race, besides previous conditions, medications, and family medical history are important elements. The skin should be always evaluated in a well-illuminated place, with direct light. The exam is performed from head to toe, including hair, mucosa, nails, and ganglions. It is also recommended using instruments, such as dermatoscope, Wood's lamp, and digital photography, according to each patient's needs.

1.2.1.1 Dermatoscope

The dermatoscope is a magnifier used to diagnose skin pigmentation disorders and to distinguish benign from malignant lesions, including melanomas [32]. Digital dermatoscopes allow keeping and enlarging images and for further analysis (Fig. 1.1).

1.2.1.2 Wood's Lamp

Wood's lamp is an ultraviolet light used to diagnose some hair and skin conditions (Fig. 1.2) such as melasma, vitiligo, and porphyria. When fluorescence is applied onto the skin, the epidermal pigment is highlighted, but the same does not happen to the dermal pigment.

1.2.1.3 Photographic Documentation

Photographic assessment of the skin can be important to record patient's medical history, to follow up patients, and also when a second opinion is sought. Photographic assessment significantly improves patients' understanding on their diagnostic and treatment progression [27].

Before acquiring the images, it is suggested to ask patients to sign an informed consent form for photographs, especially if the patient can be recognized. Define high-quality standards to create and maintain photographic patient records as well as to guarantee and maintain patient anonymity and confidentially [19].

Standard photographic methodology is recommended to collect and store patient's images. The images should be always taken using the same parameters, such as camera settings, patient position, and light. Some pictures require a point-source flash, while others require elimination of shadows caused by using a ring flash [19].

The minimum setup needed to document face and body is composed by digital camera; proper light source; appropriate computer to store, analyze, and display the digital files; and a trained photographer.

Fig. 1.1 Digital dermatoscope, used to diagnose pigmentation disorders

The photographer is responsible for controlling the standards previously defined when taking the photographs. Moreover, he/she must be patient, especially early on to keep the patient calm to achieve good quality images.

Most of the current digital cameras available in the market offer high resolution. For dermatological use, a resolution of four million pixels is enough [27]. Low-resolution images should be avoided.

Light source positioning is crucial for the photograph quality. Wrong positioning of the lights can create shadows, compromising the skin evaluation. The background must be neutral, monochromatic, and non-reflective, preferably dark. A dark and opaque background provides greater control of the illumination over the subject. The positioning of light source should be the same at all time points for the same subject.

The relatively equal position of the subject to the camera enables the acquisition of the same field size before and after treatment. Makeup, jewelry, and clothing that might interfere the images should be removed. For facial photographs, usual

Fig. 1.2 Wood's lamp, an ultraviolet light used to diagnose hair and skin conditions

positions are front, oblique view (45°), and lateral (left and right), and a neutral face expression during the shoot is required (Fig. 1.3).

A standardized setup and imaging procedure is recommended for better correlations between before and after treatment images. Further correlation between the two images could be accomplished using anatomical landmarks. The after treatment image should be compared to the before image immediately after acquisition for consistency and to retake if necessary.

Some objective imaging tools were developed to standardize the photographic position and to assure the photographic quality. Companies like Canfield Scientific™ and FotoFinder Systems™ developed a series of methods and equipments to obtain standardized, reproducible, serial medical photographs and documentation reducing the photographic variables of images.

The OMNIA Imaging System (Canfield Scientific, USA) is a device that standardizes nine photographic angle positions (90°, 67.5°, 45°, 22.5° for left and right

Fig. 1.3 Photographic studio

sides and center 0º) (Fig. 1.4). It can also be coupled with image software such as Mirror™ (Canfield Scientific™, USA), which will be discussed in Sect. 1.4.1.

FotoFinder™ is a photographic system that can be customized for a specific study. All images can be exported and sent to a central server database maintaining their authenticity. Another integrated option is FotoFinder Mediscope Towerstation™, which automatically controls a digital camera permanently connected to the computer.

1.2.2 Qualitative Skin Scales

Qualitative scales permit a more specific evaluation of the skin characteristics, increasing the accuracy of the evaluation. A number of scales have been developed, and the most used for cosmetic purposes are mentioned below.

The Fitzpatrick classification (Table 1.1) known as the Fitzpatrick skin types or Fitzpatrick phototypes depends on the amount of melanin in the skin. It allows evaluating the pigment sensibility to UV light [15].

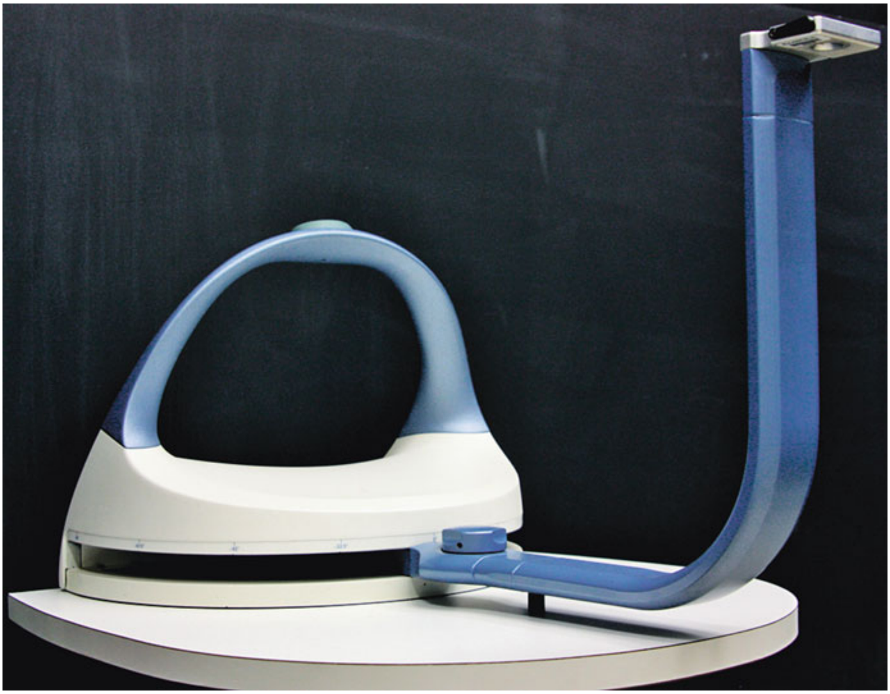


Fig. 1.4 Omnia™ device used to take standard photographs

Table 1.1 Fitzpatrick skin classification

Skin type	Skin color	Tanning ability
I	Pale skin	Always burns, does not tan
II	Fair skin	Burns easily, tans poorly
III	Darker white skin	Tans after initial burn
IV	Light brown skin	Burns minimally, tans easily
V	Brown skin	Rarely burns, tans darkly easily
VI	Dark brown or black skin	Never burns, always tans darkly

Source: Fitzpatrick [15]

The Glogau scale (Table 1.2) is another qualitative skin scale [16]. It is a systematic skin classification of photoaging that permits comparison of therapies and clinical results. Clinical signs of photoaging of the skin include rhytids, lentigines, keratoses, telangiectasia, loss of translucency, loss of elasticity, wrinkles, and sallow color.

The Baumann scale, also called Skin Type Indicator (Table 1.3), identified 16 skin types categorized according to four scales: oily versus dry (O/D), sensitive versus resistant (S/R), pigmented versus nonpigmented (P/N), and tight versus wrinkled (T/W). By answering a 64-question test, the reader is assigned a four-letter type ("OSNW," for example, would mean that a person's skin has been rated as oily, sensitive, and nonpigmented, with a tendency to wrinkle) [5].

Table 1.2 Glogau classification of aging skin

Skin type	Description	Characteristics
Type I	Mild	Early photoaging Early pigmentary changes No keratoses Fine wrinkles Early 20s or 30s
Type II	Moderate	Early to moderate photoaging Early senile lentigines No visible keratoses 30s to 40s
Type III	Advanced	Advanced photoaging Dyschromia and telangiectasia Visible keratoses Wrinkles at rest 50 plus
Type IV	Severe	Severe photoaging Dynamic and gravitational wrinkling Multiple actinic keratoses 60s or 70s

Source: Glogau [16]

Table 1.3 The Baumann Skin Type Indicator

	Oily		Dry		
	Pigmented	Nonpigmented	Pigmented	Nonpigmented	
Wrinkled	OSPW	OSNW	DSPW	DSNW	Sensitive
Tight	OSPT	OSNT	DSPT	DSNT	Resistant
Wrinkled	ORPW	ORNW	DRPW	DRNW	Sensitive
Tight	ORPT	ORNT	DRPT	DRNT	Resistant

Abbreviations: *D* dry, *N* nonpigmented, *O* oily, *P* pigmented, *R* resistant, *S* sensitive, *T* tight, *W* wrinkled

1.3 Semiquantitative Skin Evaluation

Semiquantitative evaluation qualifies the object, turning them into numbers in order to quantify them. However, it is important to differentiate between ordinal scales in which numbers are assigned to range a condition and those in which the ranking generates a sum, as the Likert scale [31].

The Likert scale is a popular method that allows the researcher to quantify opinion-based items. Questions are typically grouped together and rated or responded to base on a five-point scale. This scale typically ranges in order from one extreme to the other, such as (1) very interested, (2) somewhat interested, (3) unsure, (4) not very interested, and (5) not interested at all.

Table 1.4 Ranges of Griffiths scale

Store	Damage
0	No damage
2	Mild damage
4	Moderate damage
6	Moderate/severe damage
8	Severe damage

Source: Griffiths et al. [17]

In general, the semiquantitative scales are developed to evaluate a specific skin condition or a treatment. They can be also photonumeric. On the following examples of semiquantitative methods (scales), some specific cosmetic skin conditions will be better explained.

1.3.1 Skin Aging

Griffiths developed a photonumeric scale to assess the severity of cutaneous photodamage and its response to treatment [17] (Table 1.4).

An analogical visual scale for lip volume evaluation was developed by Rossi and colleagues [36]. This scale is very useful for soft tissue augmentation treatment evaluation. Another validated scale for evaluation of lip fullness was developed and published by Carruthers and colleagues [9].

Shoshani and coauthors validated the Modified Fitzpatrick Wrinkle Scale (MFWS) as a nasolabial wrinkle severity assessment tool. It is a reliable method for the quantitative evaluation of the nasolabial folds [38].

Day and coauthors proposed the Wrinkle Severity Rating Scale to describe the facial folds appearance. It ranges from extreme (score 5) to nonexistent (score 0) [11].

Other semiquantitative dermatological scales include: Fitzpatrick for perioral facial wrinkles [14], Lemperle Wrinkles Scale [30], Facial Attributes Scale [33], among others (Table 1.4).

1.3.2 Pigmentary Disorders

The visual hyperpigmentation scale consists of a series of plastic cards, printed with 10 different skin colors (A–J) and 10 pigment scores for each skin color (1–10), corresponding to 100 possibilities to graduate hyperpigmentation [41].

Melasma Area and Severity Index (MASI) is a score that objectively measures the severity of melasma [28]. It is obtained through the visual inspection of the face, without any risks for the patient. The face is divided in four areas: forehead, right malar region, left malar region, and chin, corresponding to 30, 30, 30, and 10 % of the face, respectively. Before calculating the MASI, it is necessary to graduate the areas of the face according to the following variables: afflicted area, hyperpigmentation, and homogeneity of hyperpigmentation. Pandya and colleagues assessed this tool, and state MASI is a reliable measure of melasma severity [35].

Hyperpigmentation/melasma status [42], color designation of melasma [18], and physician and patient global assessment (PGA) [42] are other commonly utilized tools to evaluate melasma improvement with therapy.

Wood's light is also a useful tool in the assessment of melasma (see Sect. 1.2.1.2). Although it does not measure melasma severity, it can accurately assist in the determination of the presence or absence of pigmentation and its location. It can also distinguish between pigmentary changes and changes due to superficial circulation or scarring.

1.3.3 Botulinum Toxin

Some photonumerical scales were created to evaluate the areas of face treated by botulinum toxin.

The four-point glabellar frown line scale was developed and validated by Hornek and colleagues (The Smile Group). It consists of an atlas with standardized photographs of glabellar frown lines [25]. Years later, the same group led by Hund developed the four-point clinical severity scores for lateral canthal lines (crow's feet) [26].

Other validated grading scales for dynamic wrinkles (those that could be treated with botulinum toxin) were published, such as the validated grading scale for crow's feet [6], validated grading scale for marionette lines [8], and validated grading scale for forehead lines [7].

Minor's test or iodine-starch test evaluates before and after hyperhidrosis treatments by showing residual areas of sweating in the treated areas. The colorful complex formed by Minor's test allows the visualization of the area covered by the effects of botulinum toxin on sweat glands, also known as diffusion or fields of anhydrotic effect. Hexsel and coauthors reinforced a standardized technique to perform Minor's test and created the Sweating Intensity Visual Scale. It is an objective scale to grade the sweat intensity and can be used to categorize degree of hyperhidrosis [22].

1.3.4 Cellulite

While the previous classification of cellulite [34] describes different grades of cellulite, which is very important, there are additional key morphological aspects that affect cellulite severity and, therefore, can be targeted by treatment options. For this reason, Hexsel, Dal'Forno and Hexsel created and validated the cellulite severity scale (CSS) [21] as a new method to objectively measure and grade cellulite severity. The proposed new scale expands the current classification allowing a comprehensive measurement of the intensity of the condition. Four important clinical and morphological aspects and the previous classification are assessed in this scale: A) Number of evident depressions; B) Depth of depressions; C) Morphological appearance of skin surface alterations; D) Grade of laxity, flaccidity, or sagging skin; E) Classification by Nürnberger and Müller. It is an objective method that can facilitate patient follow-up and measure treatment outcomes.

1.3.5 Quality of Life

There are scales developed with the aim of measuring the impact of some diseases or conditions in patient's quality of life. Some of the most used scales include the DLQI for all cutaneous diseases [2], melasma quality of life questionnaire (MelasQol) [4], the Acne Quality of Life Scale [20], Psoriasis Disability Index [13], and Cellulite Quality of Life Scale (Celluqol®) [23].

1.4 Quantitative Skin Evaluation

1.4.1 Imaging Measurement Tools

In vivo imaging of the skin has improved the assessment of initial versus treated skin within cosmetic procedures and research.

Unfortunately, many of these systems use software exclusively for PCs with Windows operating systems. Thus, they cannot take advantage of the graphics presentation possible with the speed of Apple's new Power Mac G5 with its 64-bit processor offering 8 GB of RAM [1].

1.4.1.1 Three-Dimensional Skin Microphotography

Three-dimensional microphotography with equipments like Primos™ measurement device (Canfield Scientific™) has been shown to quantitatively measure skin roughness, wrinkles, and nodule formations and to track changes over time. It can help evaluating the efficacy of non-ablative laser therapy used to minimize acne scarring and facial lines.

The absolute measurement of wrinkle depth by light transmission of a silicone replica (Skin-Visiometer® SV 600) is considered a simple way to diagnose the topography of the skin surface. The device works based upon a parallel light source and a black and white CMOS camera with 640 * 480 pixels that reads the topography of the skin by light transmission of a very thin, especially blue-dyed silicone. The very viscous two-part silicone, mixed under vacuum to avoid bubbles, fills even the smallest skin depths and reproduces them in detail. The replica reproduces the heights and depths of the skin as a negative, that is, wrinkles are higher in the replica as the silicone is thicker in this place. These special parameters have been created to describe the skin topography volume and unfolded surface, which can be displayed quickly in a colored 3D image.

Skin Evidence™ (La Licorne, France) and Visioscope® (Courage-Khazaka, Germany) are also capable of analyzing skin relief (see Sect. 1.4.1.3).

1.4.1.2 Quantitative Reproducible Facial Image Analysis

Visia™ and Visia™ CR (Canfield Scientific™, USA) are imaging booths in a self-contained unit that generates quantitative values for skin features. It provides new detection and analysis of subsurface vascular and melanin conditions. It separates the color signatures of red and brown skin components for analysis of conditions

Fig. 1.5 Visia™ imaging booth

such as rosacea, spider veins, melasma, acne, and wrinkles. There is a true UV photo mode that provides the most complete data for sun damage and a UV fluorescence imaging to reveal porphyry (*P. acnes*). It consists of an interactive system through which the dermatologist uses a digital imaging booth with a high-resolution camera to process images with proprietary software (Fig. 1.5). The software is designed to evaluate skin surface imperfections and show the patient the potential results of cosmetic procedures [1]. All the high-resolution images are stored in file, registered under the patient's name, allowing a complete procedure follow-up.

Mirror™ imaging software (Canfield Scientific™, USA) can simulate treatment results and also objectively measure some efficacy parameters expressed in centimeters, such as brown lift (Fig. 1.6) and field effects promoted by botulinum toxin action (Fig. 1.7). Furthermore, this software measures and analyzes facial angles which can be helpful in preoperative analysis and planning the procedure [46]. The ease and speed of image alteration lies at the heart of this sophisticated software, making patient consultations streamline and informative.

The Visioscan® VC 98 (Courage-Khazaka, Germany) is an accurate equipment that provides a high degree of stability visualizing a sharp, non-glossy image of the skin surface shown by a special UV-A light video camera with a high-resolution black and white video sensor and a ring-shaped UV-A light source for uniform illumination of the skin. The device can be used in various fields of application, such as the clinical diagnosis in dermatology, due to its capacity to quantitatively and qualitatively describe clinical parameters of the skin surface: skin smoothness, skin roughness, scaliness, and wrinkles.

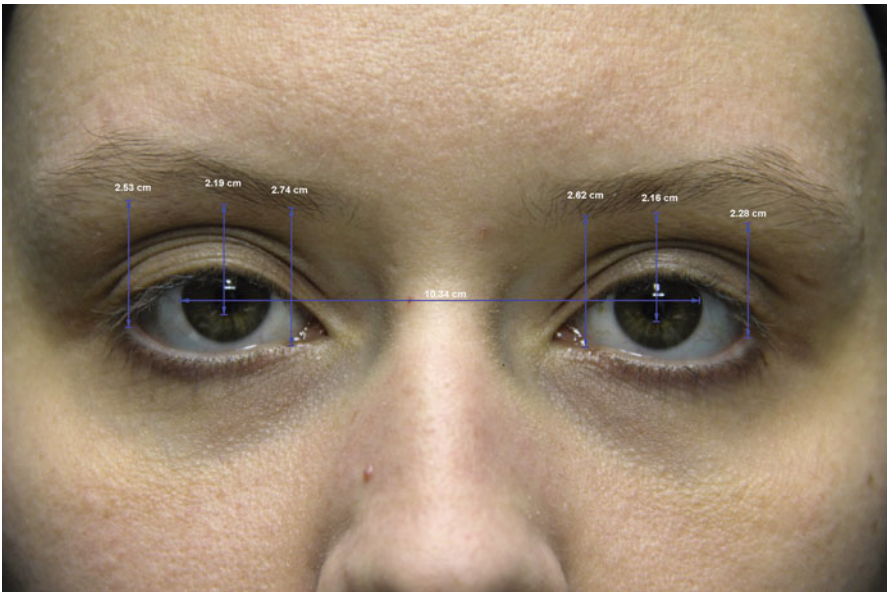


Fig. 1.6 Results of a patient before and after treatment measured by Mirror™ imaging software

1.4.1.3 Biometrical Image Tools

Skin Evidence™ Visio (La Licorne, France) is a biometrical tool designed to facilitate an early and accurate diagnosis and to evaluate objectively the treatment results (Fig. 1.8). It is an imaging device that contains standardized illumination with normal and polarized light together with a quantitative analysis for skin surface (cutaneous microrelief) [3], pigmentation, vascular abnormalities, sebum measurement, hair distribution, and growth (Fig. 1.9). Skin Evidence™ is a system based on four separate parts: a high-performance computer, a video probe, a unified probe, and software. The probes are connected to the computer by a USB cable.

Visioscope® BW 30 (Courage-Khazaka, Germany) is a handheld video camera with a special UV light source designed to visually magnify skin, hair, and scalp on a video screen. The camera shows a skin area of 6×8 mm and monitors the skin texture (smoothness, wrinkles), desquamation (scaliness), skin impurities (reddening, pigmentation spots, acne, comedones, etc.), hair structure, dandruff, and condition of the scalp. There is also a color version (Visioscope® Color 32) that is a handheld video camera connected with a video monitor very similar to Visioscope BW 30, with white light source instead to UV light. It is recommended for use in viewing and diagnosing skin, hair, and scalp conditions. The camera records a color view of 6×8 mm.

Dermascan® (Cortex Technology, Denmark) is a high-resolution ultrasound equipment (Fig. 1.10) that provides a dimensional measurement and diagnoses the structural changes of the skin. It displays the layers of the epidermis, dermis, and subcutaneous tissues in a color LCD panel, in 2D or 3D resolution. The exam is

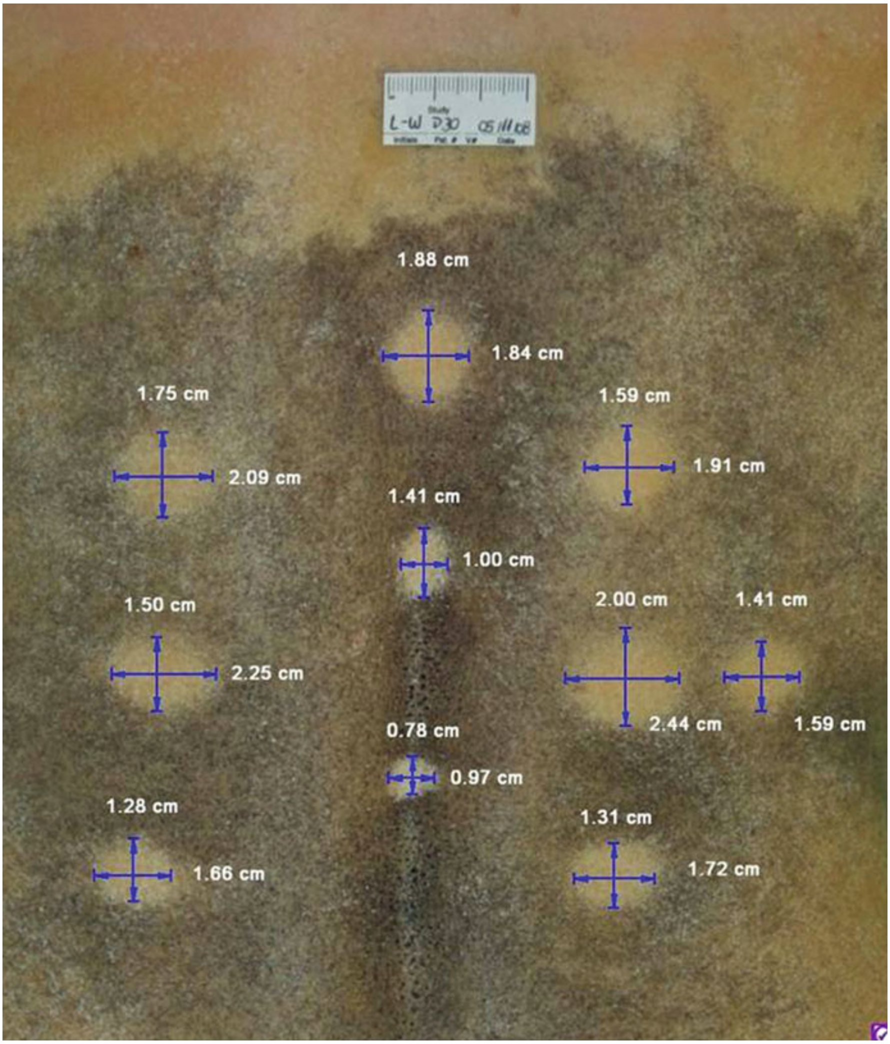


Fig. 1.7 Measurement of botulinum toxin action halos by Mirror™ imaging software

quick and does not cause any harm to the patient, being a positive way to keep the progress of the treatment, tracking before and after of the same skin site enabling a comparison of trends in skin condition. It has been mainly used for the assessment of photoaging and cellulite.

Reflectance confocal microscopy technology is a technique that allows physicians to obtain high-resolution optical images that are acquired point-by-point and reconstructed with a computer, allowing three-dimensional reconstructions of topologically complex objects. It provides direct, noninvasive, serial optical sectioning of intact, thick, living specimens with a minimum sample preparation as well as a

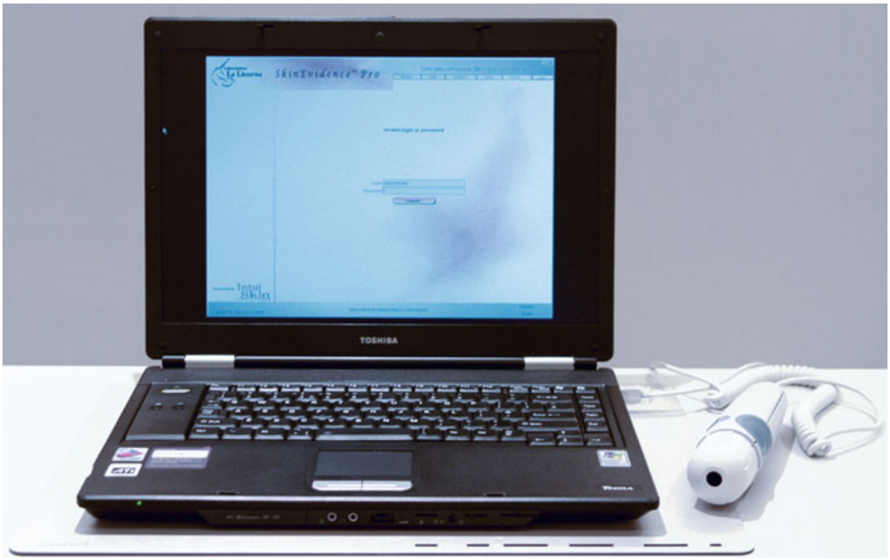
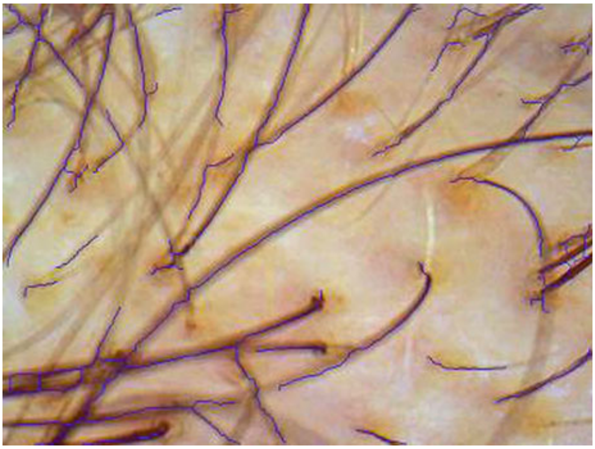


Fig. 1.8 Skin Evidence™ device

Fig. 1.9 Hair evaluation by the Skin Evidence™ device



marginal improvement in lateral resolution. With this technology it is possible to examine cellular and structural details, including the nucleus, blood circulation, and microvascularization, without the necessity to process the tissue as in the histology. The first works in the area characterized the morphology of the normal skin**,** whereas the following publications elucidated the biggest histological parameters of a series of inflammatory and proliferated injuries of skin's conditions as skin cancer. The VivaScope® (Lucid Inc, USA) is the pioneer in the development of the reflectance confocal microscopy technology.

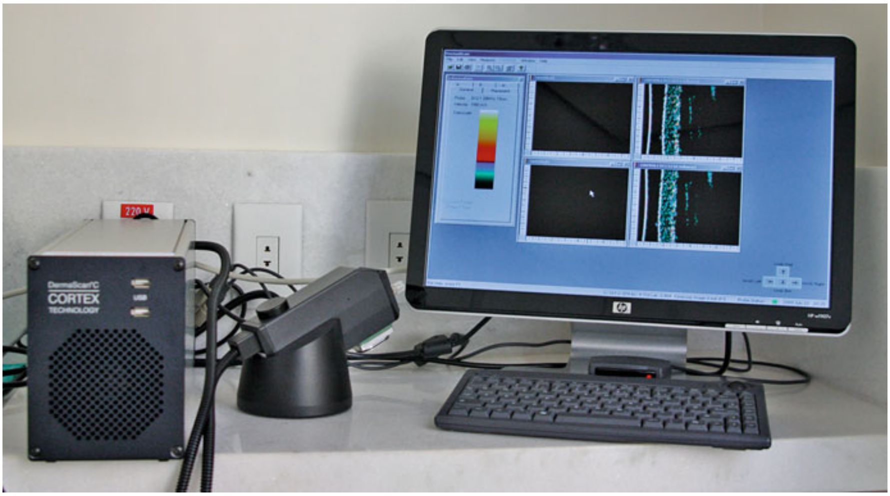


Fig. 1.10 Dermascan® device

Confocal Raman spectroscopy is a spectroscopic technique used to study vibrational, rotational, and other low-frequency modes in a system. It is a noninvasive optical technique that can probe the molecular structure and conformation of biochemical constituents. This technology can monitor the amount of chemical compounds, in vivo. Confocal Raman microspectroscopy is able to determine depth profiles of water concentration in the skin [44]. Advances in Raman hardware and probe design have reduced spectral acquisition times, paving the way for clinical applications. In vivo real-time Raman can be a very promising research and practical technique for skin evaluation [45].

Magnetic resonance imaging (MRI) is a medical imaging technique most commonly used in radiology to visualize the internal structure and function of the body. MRI provides much greater definition between the different soft tissues of the body than computed tomography (CT), making it especially useful in neurological, musculoskeletal, cardiovascular, and other areas, such as dermatological imaging. Hexsel and coauthors evaluated 30 female patients and compared subcutaneous tissue in areas with and without cellulite on the buttocks of the same subjects using MRI, a noninvasive technique. Results of the MRI analysis showed that cellulite depressions on the buttocks were significantly associated with the presence of underlying fibrous septa [24].

1.4.2 Skin Features Measure Tools

1.4.2.1 Skin Reflectance Instruments

This kind of instruments quantify pigmentation based upon reflectance spectroscopy, that is, by measuring the intensity of light reflected from the skin. There are two types of instruments: narrowband reflectance spectrophotometers and tristimulus reflectance colorimeters.

Fig. 1.11 Mexameter®

The two commercially available narrowband reflectance spectrophotometers most used are Mexameter® MX (Courage-Khazaka, Germany) and Derma-Spectrometer (Cortex Technology, Denmark). Mexameter® MX (Courage-Khazaka, Germany) contains diodes emitting light at three wavelengths 568 nm (green), 669 nm (red), and 880 (infrared) (Fig. 1.11) [10]. It measures the major components of the color of the skin: melanin and hemoglobin (erythema). The probe is placed on the skin, and the reading of reflected light is showed on the screen. Hemoglobin, the chromophore primarily responsible for the skin's erythema, absorbs primarily in the green wavelengths (568 nm), and melanin, responsible for pigmentation, absorbs in all wavelengths but especially in the red spectrum (669 nm). The melanin index is calculated from the intensity of the absorbed and reflected light at wavelengths 660 and 880 nm. Therefore, the degree of pigmentation in a patient with melasma may be quantified for melanin ranging from white (1) to black (1,000). The erythema index is computed from the absorption and reflection of light at 565 and 660 nm. Similarly, the DermaSpectrometer's diodes emit light at wavelengths 568 nm (green) and 655 nm (red), and based upon absorption and reflectance determine erythema and melanin indexes.

The tristimulus colorimeters commonly used are the Chromameter CR200 and CR300 (Konica Minolta Holdings, Inc., Japan) and the Photovolt ColorWalk colorimeter (Protovolt Instruments Inc, USA). The tristimulus colorimeters are capable of measuring all colors in contrast to the narrowband, simple reflectance meters that measure only the intensity of erythema and melanin. With the tristimulus reflectance colorimeters, a pulsed xenon arc lamp is utilized as the light

Fig. 1.12 Corneometer- pH-Meter-Sebumeter®

source, and light reflected from the skin is analyzed at three wavelengths 450, 560, and 600 nm.

Clarys and coauthors compared two types of skin reflectance instruments: Minolta Chromameter CR200 and Mexameter® MX16. Color measurements were compared in vitro on standardized color charts and subsequently in vivo on different skin areas. The in vitro and in vivo repeatability as well as the sensitivity of the three instruments was rather good. The Chromameter and the two narrowband reflectance instruments were able to characterize skin color and small skin color changes [10]. Other study from Shriver and coauthors [39] also compared these two types of reflectometers. They conclude that the narrowband reflectance spectroscope is the preferred instrument as the melanin index and it is less likely to be influenced by the levels of hemoglobin in the skin [10].

1.4.2.2 Skin Barrier and Skin Surface Parameters

Courage-Khazaka (Germany) produces a three in one device which measures different skin characteristics, called Corneometer-pH-Meter-Sebumeter® (Fig. 1.12). The Corneometer® measures the stratum corneum's hydration levels, which is essential for a well-functioning skin barrier [29]. The measurement is based on the amount of the dielectric constant of the water in the superficial layer of the stratum corneum, ensuring that the measurement is not influenced by the capillary blood vessels. The pH Meter® measures the pH level on the skin surface. The skin pH is an important parameter [12] to assess the quality of the hydrolipidic film. These measures are mainly used to test the effects of soaps, cleansers, or detergents. The measurement is made through a probe, connected to an electronic meter that displays the pH reading. The Sebumeter® is responsible for measuring the amount of sebum on the skin [43]. The measurement is based on the principle of grease-spot photometry, when the measuring head of the cassette is placed on the skin (Fig. 1.12) [40].

1.4.2.3 Skin Elasticity Measurement

Cutometer® (Courage-Khazaka, Germany) is a device used to measure skin elasticity [37]. A probe is used to perform the measurements. When pressed on the skin, the result is a temporary vacuum that lifts, stretches, and releases the skin. These deflections are optically recorded and evaluated.

The elasticity measurement by Elastomer® EM 25 (Courage-Khazaka, Germany) indicates the biological skin age and is performed very quickly by the well-established suction method. The result is shown in percentage in the display. The interpretation can be done with a chart according to the age.

Conclusion

In recent years, several advances in skin evaluation systems allow state-of-the-art patient care while streamlining their clinical practice and improving their academic and research skills.

These technologies offer both enhanced clinical examination and improved methods of analyzing, grading, and standardizing results of daily practice and clinical research.

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