

ORIGINAL ARTICLE

Minor cutaneous ambulatory surgery and cryotherapy. Comparative study between a dermatologist and family physicians

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Abstract. *Introduction.* Lack of diagnostic skill in cutaneous surgery may lead to erroneous and potentially detrimental therapies. This study compares the diagnosis and treatment in cutaneous surgery, including cryotherapy, between a dermatologist and family physicians.

Methods. It is an observational, prospective study on a random sample of patients that consulted the dermatologist for candidate lesions. Each lesion was independently evaluated by a dermatologist and a family physician, both of whom assigned the clinical diagnosis and therapeutic advice. Concordance for diagnosis, recommended treatment and indication for cryotherapy was calculated by Cohen's kappa coefficient.

Results. Six hundred forty-six lesions were evaluated. Global kappa indexes were 0.69 (95 % CI, 0.65-0.73) for diagnostic concordance, 0.62 (95 % CI, 0.56-0.67) for recommended treatment and 0.73 (95 % CI, 0.67-0.78) for indication of cryotherapy. Diagnostic concordance was significantly better for melanocytic nevus, achrochordon and for lesions with multiple and monomorphous presentation, and worse for isolated pigmented lesions. For recommended treatment concordance was better for multiple and monomorphous lesions and worse for skin cancer and seborrheic keratosis. For indication of cryotherapy concordance was worse for skin cancer, melanocytic nevus, achrochordon and seborrheic keratosis. Family physicians made an erroneous indication for cryotherapy in 5.88 % of cases, including 3 non melanoma skin cancers.

Conclusions. Concordance between dermatologists and family physicians for minor cutaneous surgery is generally good. Family physicians should be more careful in evaluating solitary pigmented lesions and patients at risk for skin cancer.

Key words: clinical competence, family physicians, Primary Care, minor surgery, cryotherapy.

CIRUGÍA MENOR AMBULATORIA DERMATOLÓGICA Y CRIOTERAPIA. ESTUDIO COMPARATIVO ENTRE UN DERMATÓLOGO Y MÉDICOS DE FAMILIA

Resumen. *Introducción.* En cirugía dermatológica, una menor habilidad diagnóstica podría conducir a tratamientos erróneos y potencialmente perjudiciales. En este trabajo se compara el diagnóstico y la decisión terapéutica en cirugía dermatológica, incluyendo la crioterapia, entre un dermatólogo y médicos de familia.

Métodos. Estudio prospectivo observacional, sobre una muestra no seleccionada de pacientes que consultan al dermatólogo por lesiones candidatas. Cada lesión fue evaluada independientemente por un dermatólogo y un médico de familia, consignando ambos el diagnóstico clínico y el consejo terapéutico. Se calculó la concordancia para el diagnóstico, tratamiento recomendado e indicación de crioterapia mediante el estadístico kappa de Cohen.

Resultados. Se evaluaron 646 lesiones. Los índices kappa globales fueron 0,69 (intervalo de confianza [IC] del 95 %, 0,65-0,73) en concordancia diagnóstica, 0,62 (IC del 95 %, 0,56-0,67) en tratamiento recomendado y 0,73 (IC del 95 %, 0,67-0,78) en indicación de crioterapia. La concordancia diagnóstica resultó significativamente mejor en nevus melanocítico, acrocordón y en lesiones con presentación múltiple y monomorfa, y peor en lesiones pigmentadas aisladas. En tratamiento recomendado fue mejor para lesiones múltiples y

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monomorfas, y peor en cáncer de piel y queratosis seborreica. En indicación de crioterapia fue peor en cáncer de piel, nevus melanocítico, acrocordón y queratosis seborreica. Los médicos de familia indicaron crioterapia incorrectamente en el 5,88 % de casos, incluyendo tres cánceres de piel no melanoma.

Conclusiones. La concordancia entre dermatólogos y médicos de familia en cirugía menor dermatológica es en general buena. Los médicos de familia deberían ser cautos en lesiones pigmentadas solitarias y pacientes de riesgo para cáncer de piel.

Palabras clave: competencia clínica, médicos de familia, Atención Primaria, cirugía menor, crioterapia.

Introduction

Outpatient dermatologic surgery is relatively simple—so simple, in fact, that health care systems in many countries work on the assumption that it can be competently performed by a family physician. These techniques consequently feature in many family physician and community medicine training programs. Nonetheless, the possibility of erroneous clinical diagnosis by a family physician has generated controversy, as there is a risk that potentially serious lesions may be treated incorrectly.¹⁻¹⁰

Given that simple excision, cryotherapy, electrocoagulation, and curettage are relatively easy techniques to learn, the real debate is centered on the diagnostic capability of family physicians. Comparative studies of family physicians and dermatologists are required, given that dermatology specialists are likely to make more accurate diagnoses.¹¹

Studies published to date comparing the outpatient dermatologic surgery skills of family physicians and other nondermatology specialists with those of dermatologists have certain limitations, including, for example, the fact that patients were preselected, that photographs rather than actual patients were evaluated, and that comparisons were based exclusively on lesions analyzed histologically.^{6,9,10,12-17} Few of these studies used nonbiopsied lesions. In some cases it could even be argued that results were biased in favor of the specialty of the authors. As for cryotherapy, we are unaware of the existence of any comparative study of the performance of family physicians and dermatologists.

We analyzed the similarity between family physicians and dermatologists in terms of diagnostic and therapeutic decisions in regard to skin lesions that were candidates for outpatient dermatologic surgery, including cryotherapy. Our main aim was to determine a priori the type of skin lesions that are most likely to be diagnosed incorrectly by family physicians.

Material and Methods

A prospective, observational study was undertaken with the participation of a dermatologist and 4 family physicians.

The dermatologist had specialized in the Spanish medical resident system and had acquired 9 years experience as a staff physician.

The family physicians completed a questionnaire prior to implementation of the study in order to determine their experience of dermatology. They were profiled as follows: all 4 had trained as family physicians in the Spanish medical resident system and had between 8 and 17 years' experience in clinical practice; overall, they had spent between 8 and 12 weeks in undergraduate, medical residency, and/or postgraduate dermatology training; none of the physicians had undertaken any subspecialist training in surgery or dermatology or had attended courses or retraining courses in dermatology in the previous 12 months; finally, 2 of the 4 physicians occasionally performed outpatient dermatologic surgery in their primary care centres, although none performed cryotherapy.

In order to determine that the 4 participating family physicians were representative, our questionnaire was sent to 73 family physicians in the same health care area, 48% of whom responded. The respondents were profiled as follows: 69% had specialized via the Spanish medical resident system; average staff physician experience was 12 (range, 1-40) years; average training in dermatology was 7 (range, 0-20) weeks; no respondent had undertaken subspecialist training in dermatology or surgery; 20% had taken dermatology retraining courses in the previous 12 months; 51% occasionally carried out outpatient dermatologic surgery (3% regularly); finally, 20% occasionally performed cryotherapy (9% on a regular basis).

The study population consisted of patients referred to the dermatology department of the Sant Boi de Llobregat hospital—with a catchment population of 115 000—

belonging to the town of the same name located near Barcelona, Spain. Patients are referred to this hospital by family physicians in 5 primary care centers.

For the purposes of the study, the participating family physicians went to the dermatologist's surgery on 6 working days. All the patients who attended the surgery on these 6 days were included in the study, irrespective of whether they were attending the surgery for advice or for the treatment of lesions that were potential candidates for outpatient dermatologic surgery. Each lesion was independently examined, first by the family physician and then by the dermatologist. The medical history obtained for the patients was left to the discretion of each physician. The unit of analysis was the skin lesion. Only lesions corresponding to the presenting complaint were included, and inflammatory dermatoses and lesions detected by the participating doctors were excluded. The following data were compiled by the doctors: a single clinical diagnosis; a single recommended treatment if the lesion was to be treated; and a yes-or-no response to the question aimed at indicating the appropriateness of cryotherapy: "Can cryotherapy be performed?" A further 2 diagnostic responses were permitted: "Don't know, possibly a benign lesion," and "Don't know, possibly a malignant lesion." In the case of presentations of multiple monomorphous lesions, these were counted just once.

After case report forms were completed by the family physicians, the dermatologist evaluated each cryotherapy indication as correct, incorrect, or arguable. An indication was rated as incorrect when the treatment was medically unacceptable (eg, an indication of cryotherapy for melanocytic nevus or skin cancer on the basis of unfounded clinical suspicion) and an indication was rated as arguable when the cryotherapy was medically acceptable but more appropriate as a second-line treatment (eg, failure to prescribe cryotherapy for verruca vulgaris or seborrheic keratosis, or prescribing cryotherapy for dermatofibroma).

The diagnostic gold standard was the histopathology report when available and the dermatologist's diagnosis when no biopsy had been performed.⁹

The database was designed to record, in addition to the individual diagnoses, the following clinical situations: multiple and monomorphous lesions, nonpigmented head and neck lesions, single pigmented lesions, head and neck lesions in patients aged over 60 years, cystic lesions, and preneoplastic and neoplastic lesions.

Histological studies were only ordered when indicated in accordance with the dermatologist's routine practice. In the event of a discrepancy between participating physicians, diagnostic and therapeutic procedures were implemented in accordance with the best interests of the patient.

For the statistical analysis, agreement between the dermatologist and family physicians was calculated on the basis of simple agreement and κ agreement. Proportions

Table 1. Most Frequent Diagnoses

Diagnosis	n
Melanocytic nevus	177
Seborrheic keratosis	121
Acrochordon	67
Viral verruca	55
Basal cell carcinoma	34
Actinic keratosis	31
Epidermal cyst	20
Dermatofibroma	19
Dysplastic nevus	14
Capillary angioma	13
Age spots	9
Milium cyst	7
Molluscum contagiosum infection	6
Trichilemmal cyst	6
Squamous cell carcinoma	5
Facial fibrous papule	4
Lipoma	4

were compared using the χ^2 test. Significance levels were set at 5% and the data were analyzed using the SPSS statistical package.

Results

A total of 646 lesions were evaluated in 401 patients, 175 of whom were men, with a mean (SD) age of 47 (22) years, and 226 of whom were women, with a mean (SD) age of 46 (20) years. Table 1 lists the most frequent diagnoses.

Agreement indices for diagnosis were 72% for simple agreement and 0.69 (95% confidence interval [CI], 0.65-0.73) for κ agreement. Agreement indices for recommended treatment were 76% for simple agreement and 0.62 (95% CI, 0.56-0.67) for κ . Finally, agreement indices in regard to the cryotherapy indication were 83% for simple agreement and 0.73 (95% CI, 0.67-0.78) for κ agreement.

The figure shows κ agreement between the dermatologist and the family physicians (for a 95% CI) for the most frequent individual conditions and for specific clinical situations. Significant differences were found as described immediately below. Diagnostic agreement was highest for melanocytic nevus and acrochordon compared to other diagnoses. Agreement was worse for isolated pigmented

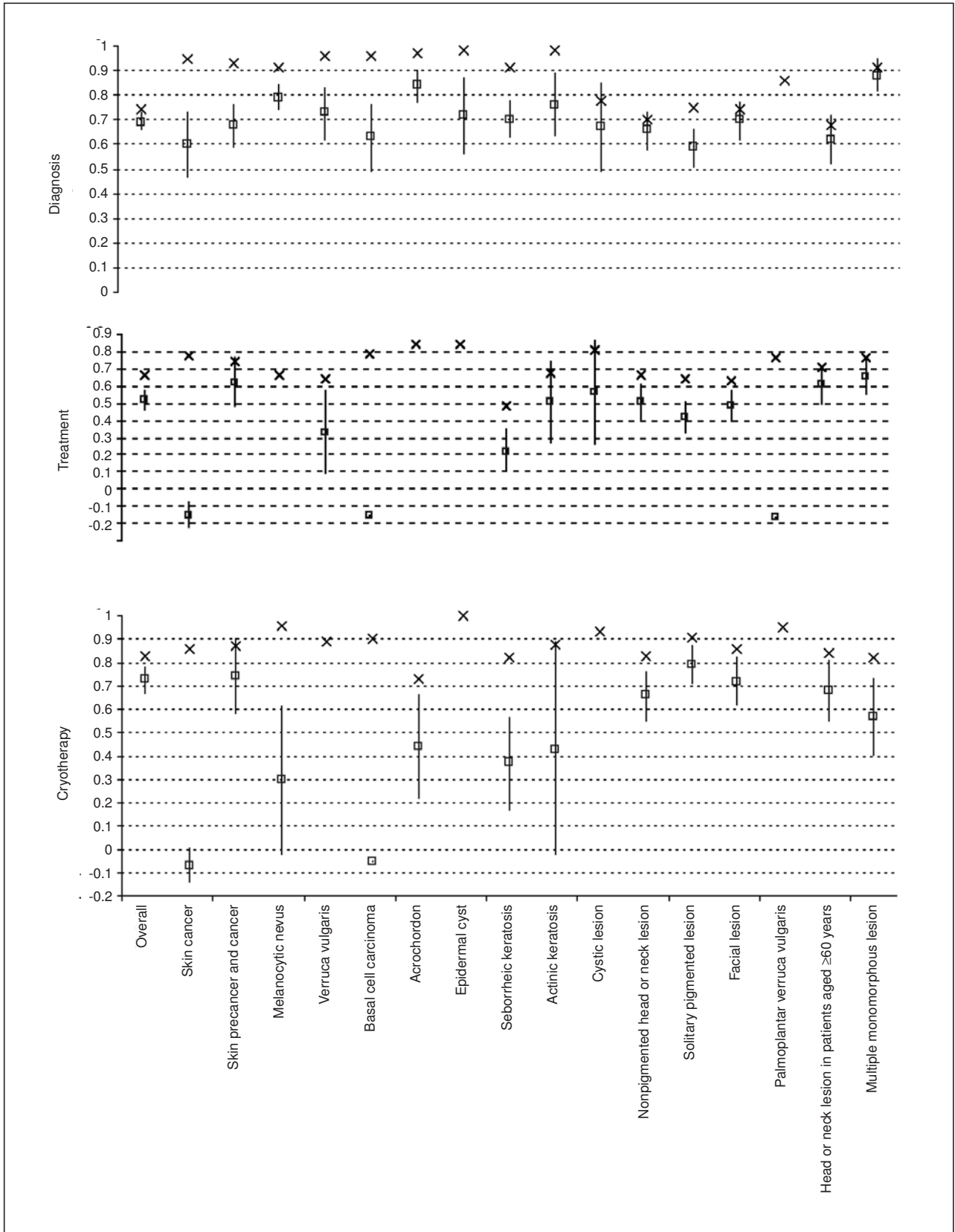


Figure. Simple and κ agreement between a dermatologist and family physicians in different disease categories. X indicates simple agreement and □ indicates κ with 95% confidence intervals (where applicable).

lesions compared to other diagnoses, but was better when lesions presented in multiple and monomorphous form.

Agreement on which treatment to prescribe was significantly lower for skin cancer and seborrheic keratosis, and higher for lesions presenting in multiple and monomorphous form.

As for cryotherapy, agreement was lowest for skin cancer, melanocytic nevus, acrochordon, and seborrheic keratosis.

We also compared agreement between the 4 participating family physicians; furthermore, in an endeavor to detect bias, agreement between study participation days for the family physicians, patient origins in terms of referral, and visit type was compared (Table 2). No differences were found (χ^2 test) between these variables.

In regard to cryotherapy, the opinion of the dermatologist was that the family physicians made correct recommendations to use or not use this technique in 561 of the 646 cases (87%), made an arguable decision in 65 cases (10%), and made an incorrect decision in 14 cases (3%). The erroneous cryotherapy indications were as follows: melanocytic nevus (7 cases), basal cell carcinoma (2 cases), squamous cell carcinoma (1 case), and a case each for 4 other kinds of lesion. The family physicians indicated treatment with cryotherapy for 238 of the 646 evaluated lesions; for 14 of these lesions the indication was incorrect (5.88%).

A histological study was performed for 273 lesions. Simple agreement between the initial clinical diagnosis and the histological result was 78.02% for the dermatologist and 64.83% for the family physicians. In relation to skin cancer, sensitivity of 88.57%, specificity of 95.79%, a positive predictive value of 75.60%, and a negative predictive value of 98.27% were found for the dermatologist. For the family physicians the corresponding values were 71.42%, 94.95%, 67.56% and 95.76%.

Discussion

In our study, the overall level of agreement in regard to diagnosis, recommended treatment, and cryotherapy indication (κ values of 0.69, 0.62 and 0.73, respectively) could be rated as satisfactory.¹⁸

Clearly, more doubts are raised in regard to the diagnostic skills of physicians who are not dermatologists, rather than in regard to their ability to perform outpatient dermatologic surgery.⁵ Our aim was to compare the extent of diagnostic and therapeutic agreement between a dermatologist and family physicians in routine clinical practice and to identify clinical situations associated with a greater risk of erroneous diagnosis by family physicians.

Agreement largely depends on how diagnoses are distributed in the analyzed groups. Diagnoses that are difficult for family physicians have been described for specific

Table 2. Comparison of Agreements Between Participating Family Physicians, Participation Day, Patient Origin, and Visit Type

	<i>P</i> ^a		
	<i>Diagnosis</i>	<i>Treatment</i>	<i>Cryotherapy</i>
Participating family physician	.06	.08	.12
Participation day	.08	.72	.08
Patient origin ^b	.86		
Visit type ^c	.79		

^a χ^2 test, with significance set at $P < .05$; ^bhealth care area; ^cfirst visit

areas.^{9,10,17} Stratification in different groups in terms of diagnostic complexity limits the likelihood of erroneous results: the greatest levels of agreement are typically obtained in studies referring to skin lesions representing minimal diagnostic difficulty.² Our impression is that the family physicians were able to make correct diagnoses for many pathologies, but that diagnostic and therapeutic difficulties arose in specific clinical situations—for example, in regard to isolated pigmented lesions, and head and neck lesions in elderly patients.

To investigate this possibility, we classified our patients according to these specific clinical situations and compared the level of agreement for these situations with the remaining clinical situations. The most surprising finding was that our family physicians proved adept in diagnosing and treating lesions presenting in multiple and monomorphous form (eg, acrochordons, viral verrucae, capillary angiomas, and multiple seborrheic keratoses). Another notable finding was that diagnostic agreement was less likely for isolated pigmented lesions. The family physicians were, moreover, better able to diagnose seborrheic keratoses when these were numerous and similar. Although seborrheic keratosis is easily recognized when it occurs in multiple form, it is notoriously difficult to diagnose when it occurs as a single clinically pigmented lesion.

Cryotherapy is widely acknowledged to be simple to perform and so is likely to be performed effectively by family physicians.¹⁹⁻²¹ Nonetheless, this statement is not corroborated by any studies comparing the performance of family physicians and of dermatologists, who should be considered as the reference standard. In our study we found satisfactory agreement between a dermatologist and family physicians (κ , 0.73)—a finding all the more remarkable given that none of the participating family physicians performed cryotherapy in their own surgery. Nonetheless, 5.88% of the cryotherapy indications were erroneous, with agreement with the dermatologist lower for skin cancer, melanocytic nevus, acrochordon and seborrheic keratosis.

Family physicians, therefore, need to be particularly careful when dealing with isolated pigmented lesions and with lesions in patients at a risk of skin cancer (eg, elderly patients and patients with photo-exposed areas). Lesions detected by the participating physicians were excluded from our study to avoid bias (eg, the dermatologist might have chosen more difficult lesions or the family physicians might have selected more familiar and less serious lesions). We agree with other authors^{5,17} in that the skin biopsy is just one part of the diagnostic process in certain problematic inflammatory dermatosis cases; we also are of the opinion that biopsies should be performed by a dermatologist.

A possible source of bias is our nonrandomized selection of participating family physicians. To guarantee external validity, we would need to show that the participants were representative of all family physicians. The questionnaire issued to all family physicians in our health care area revealed that profiles in terms of age, experience, knowledge of dermatology, and use of outpatient dermatologic surgery techniques in clinical practice were similar for the participating family physicians and for other family physicians in our catchment area. The most frequent diagnoses in our study are similar to those described for routine practice in other studies.^{22,23}

Our study has other possible sources of bias. Learning by the participating family physicians could have improved their results in the last days of participation in the study; nonetheless, there were no differences in diagnostic and therapeutic performance according to study day. There was no evidence of bias originating with the patients themselves, given that no differences were found in diagnoses for first and subsequent visits, nor were differences encountered in diagnostic and treatment agreements between the participating family physicians.

Our research has the advantage that it was conducted on an unselected sample of patients attending a general dermatology surgery. Furthermore, since the family physicians in primary care centers in our health care area only occasionally practiced outpatient dermatologic surgery techniques, the patients in our study were theoretically not preselected prior to their visit to the dermatologist.

An analysis of correlation between clinical and pathological findings was not an aim of our study, given that biopsied lesions are precisely those that often pose the greatest diagnostic difficulties. Noteworthy in our study, however, was the fact that the positive predictive value for skin cancer was satisfactory—and not just for the dermatologists, but also for the family physicians. Other studies report positive predictive values for dermatologists in the range 50–60%,²⁴ and Whited et al⁹ found sensitivity of 57% for family physicians in diagnosing skin cancer.

Health care authorities should consider not just the demonstrably satisfactory performance of the family physicians, but also their attitude towards outpatient

dermatologic surgery. On questioning the family physicians, we found them to be equivocal in their willingness to perform outpatient dermatologic surgery.²⁵ It may be going too far, therefore, to oblige all family physicians to perform outpatient dermatologic surgery; we are of the opinion that this decision—ultimately based on setting, experience and attitude—should be left entirely to the physician's discretion.^{5,11}

We believe that the high agreement levels described are, to a certain extent, less important than the identification of certain subgroups or categories of skin lesions that should be approached with extreme caution by family physicians, given the association between these lesions and a greater risk of erroneous diagnosis (and, consequently, of unsuitable treatment and malpractice). This consideration is particularly important in view of the large number of outpatient dermatologic surgery techniques that are performed annually.

Conflicts of Interest

The authors declare no conflicts of interest.

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