CLINICAL, DERMOSCOPIC AND HISTOPATHOLOGICAL STUDY OF SKIN TUMORS: A CROSS-SECTIONAL STUDY

BY

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In partial fulfilment of the requirements for the degree of MD

IN

DERMATOLOGY, VENEROLOGY AND LEPROSY

UNDER THE GUIDANCE OF

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I hereby declare that this dissertation entitled "**CLINICAL, DERMOSCOPIC AND HISTOPATHOLOGICAL STUDY OF SKIN TUMORS: A CROSS-SECTIONAL STUDY**" is a bonafide and genuine research work carried out by me under the guidance of Dr. KESHAVMURTHY ADYA, Professor & HOD, Department of Dermatology Venereology and Leprosy, at BLDE (Deemed to be University) Shri B.M. Patil Medical College and Research Centre, Vijayapura.

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LIST OF ABBREVIATIONS

BCC- Basal Cell Carcinoma

SK- Seborrheic Keratosis

MN- Melanocytic Nevi

BD- Bowens disease

SCC- Squamous cell carcinoma

PL- Polarized light

NPL- Non Polarized light

ILVEN- Inflammatory Linear Verrcous Epidermal Nevus

AC- Actinic Chelitis

ABSTRACT

BACKGROUND:

Skin tumors are commonly encountered, yet some are difficult to diagnose as they mimic other conditions. Dermoscopic evaluation is a non invasive diagnostic technique, although histopathology is the gold standard. Thus, diagnosis can be done by correlating clinical features, dermoscopy and histological features, which helps in early detection and treatment.

This study documents the prevalence of skin tumors in Southern India, with its dermoscopic and histopathological features.

AIMS AND OBJECTIVES:

To assess prevalence, dermoscopic features, histopathological characteristics of various skin tumors attending the OPD in the Northern part of Karnataka

MATERIALS AND METHODS:

A hospital based, cross-sectional study

Patients presenting with clinically diagnosed cases of skin tumors were subjected to clinical and dermoscopic evaluation and histopathological confirmation.

Tumors were classified into 5 categories- keratinocytic, melanocytic, appendageal, soft tissue and miscellaneous tumors. These were sub divided into benign, pre malignant and malignant tumors. The prevalence and dermoscopic features of these tumors was noted.

RESULTS:

Among 37589 patients attending dermatology OPD at Shri BM Patil medical college during this period, 116 patients had skin tumors; with a prevalence of 0.30

Out of 116 skin tumors observed, 65% were benign tumors (most prevalent- Melanocytic nevi in 13.79%; most common dermoscopic feature- brown globules), 14% were pre-malignant tumors (most prevalent- Actinic chelitis in 5.17%; most common dermoscopic feature- vascular polymorphism) 21% were malignant (most prevalent- basal cell carcinoma in 12.07%; most common dermoscopic feature- blue gray globules). Among the groups, 44.83% were keratinocytic tumors, 28.31% soft tissue tumors, 13.79% melanocytic tumors, 10.34% appendageal tumors, 3.45% miscellaneous tumors were seen.

CONCLUSION:

Benign tumors were most prevalent (most prevalent- pyogenic granuloma), followed by were malignant (most prevalent- basal cell carcinoma) and then the pre-malignant tumors (most prevalent- Actinic chelitis). There was a good agreement between clinic-dermoscopic diagnosis and histopathological confirmation. Hence it appears that the use of dermoscopy improves the clinical diagnostic protocol.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Skin is a complex organ composed of epidermis, dermis and skin adnexa giving rise to a multitude of tumours. A "tumor" is an atypical mass of tissue whose growth outpaces and deviates from normal tissue growth, and whose growth continues in an uncontrollable way even after the stimuli causing the change have stopped.

Tumours are broadly classified as benign and malignant[1].

Skin tumors are generally divided into surface epidermal tumors and tumors of epidermal appendages.[2] Different cell types give rise to different types of tumors and differentiating them is very important.

Malignant skin tumours account for 1% to 2% of all cancer cases in India. The Indian Council of Medical Research's National Cancer Registry Programme's Consolidated Report on Population-Based Cancer Registries revealed a cumulative incidence of skin cancer ranging from 0.5 to 2 per 100,000 people.[3] Variations in skin types, geographic latitudes, occupational exposure, sun exposure and skin protection behaviour, and variations in disease knowledge and monitoring can all contribute to variations in skin cancer trends and rates.[4]

Dermoscopy is a non-invasive, in vivo technique used for examination of skin lesions. It is performed with a handheld instrument called "dermoscope," which allows to visualize subsurface skin structures in the epidermis, dermo-epidermal junction, and upper dermis that are mostly not visible to the naked eyes[6]

The histological examination is an invasive and time-consuming procedure that can aid in diagnosis establishment.[5] Dermoscopy establishes a direct clinical and histological association between the microscopic and macroscopic features of a skin tumour. Dermoscopic examination can be conducted with 10–20× magnification in conventional handheld dermoscopes and 10–200× magnification in videodermoscopes.[7]

While skin cancers are less common in India than they are in Western nation, studies have reported malignant skin tumors prevalence as high as 65.29%, which could be attributed to an increase in the number of referrals received in higher centres.[3,8]

The idea is to duplicate a specific dermoscopic pattern for a particular tumour to diagnose it before or without histopathological examination, although histopathology is still the gold standard.[8] However, this is an invasive technique and requires time for processing and reporting of results.

The study on the prevalence of skin tumours in Northern part of Karnataka is not well documented, and hence this study intends to document the same, along with dermoscopic and histopathological

features. The study will serve as an opportunity for conglomeration of inter-departmental compilation of all skin tumours under one roof.

Dermoscopic evaluation of skin tumors is an expanding area of research. Thus, any skin tumor can be diagnosed by correlating clinical features, dermoscopy and histopathological features, which in turn can be supported by histochemistry, immunohistochemistry and electron microscopy. Early diagnosis and treatment are necessary for a better cure.

AIMS & OBJECTIVES OF THE STUDY:

- To assess the prevalence of different types of skin tumours in Northern part of Karnataka.
- To study the dermoscopic features of skin tumours in skin of colour.
- To study the histopathological characteristics of different skin tumors.
- To correlate the clinical, dermoscopic and histopathological characteristics of various skin tumors.

REVIEW OF LITERATURE

The growth of one or more skin components can lead to the development of skin tumors. The benign tumors mostly are of mere cosmetic concern. Morphologically these present as smooth papules, nodules or keratotic lesions that grow slowly and are usually multiple. Malignant tumours are solitary, irregular, rapidly growing plaques or nodules that may ulcerate and metastasize.

PREVIOUS STUDIES::

- In a study by Rekha et al., conducted in 2021, it was inferred that benign appendageal tumors outnumbered malignant appendageal tumors and that pilomatrixoma was the commonest benign appendageal tumor and neurofibroma was the commonest neural tumor.
- A 2019 study by Pappala et al. found that, across a broad age range, skin cancers were comparatively more prevalent in females than in males. Squamous papilloma is the most frequent benign tumor, and keratocytic tumors were more common than other skin tumors.
- In a 2017 study, Bhuvan et al. came to the conclusion that histology is still the gold standard for the identification, treatment, and monitoring of patients with malignant skin cancers.
- According to a 2021 study by Behera et al., the patients' dark skin color contributed to the variability in the dermoscopic features found in this study when compared to previously published aspects.

- In 2018, Samanta et al. did a study which indicated that the standard technique for diagnosing tumors is still light microscopic inspection. However, in cases when it cannot be verified using hematoxylin and eosin, special stain and immunochemistry can be used.
- According to a 2019 study by Shrivatsava et al., the keratinocytic group is responsible for the majority of common malignant neoplasms, while the skin adnexal group accounts for the majority of benign neoplasms. Although skin adnexal tumors can occur anywhere on the body, they most frequently occur in the head and neck area. Since skin adnexal tumors are frequently misinterpreted clinically, histological investigation is still the gold standard for making the diagnosis and separating benign from malignant tumors.
- Goel et al.'s 2021 study found that skin cancers can impact individuals of all ages. Compared to malignant tumors, benign tumors are more common in younger age groups. The most common place is the face, and the most common skin tumors in both the benign and malignant categories are keratinocytic tumors.

DERMOSCOPE:

Dermatoscopy, sometimes referred to as dermoscopy, incident light microscopy, epiluminescence microscopy, or skin-surface microscopy, is a low-cost, non-invasive in vivo method that makes it possible to see morphologic characteristics that are invisible to the unaided eye.[9]

German dermatologist Johann Saphier (1920) introduced the term “dermatoscopy”. The term “dermoscopy” was later coined by Goldman. The first dermoscope was developed in 1989 by Stolz and Braun- Falco[10].

The dermoscope is a mobile, non-invasive diagnostic tool that enlarges some skin substratal structures that are unseen to the unaided eye or even a magnifying lens, as well as the tiny surface features of skin lesions..[11] It connects macroscopic clinical dermatology with microscopic dermatopathology.[12]

Pigmented and non-pigmented skin tumours can be diagnosed with a higher sensitivity and specificity by a dermoscope as compared to clinical examination. This obviates the need for unnecessary excision of benign skin tumours and early detection of malignant tumours.

Other added advantages of dermoscopy are:

- It is easy to use and is less time consuming.
- It is an office procedure that facilitates quick interpretation of skin lesions.
- Helps the observer to focus on the lesion and to isolate the suspicious foci within larger lesions.
- Precisely defines the border of some lesions for better pre-surgical margin mapping.
- Can be used for post-treatment follow-up as well as periodic monitoring of any changes in tumours.

- Provides facility for storage of images for future analysis and comparison.

This diagnostic aid must be used in conjunction with thorough clinical history and examination of skin lesions. Clinical examination with dermoscopy, depending on the type of skin lesion and the clinician's experience, can improve diagnostic accuracy by 5% to 30% as compared to clinical visual inspection alone[13]

Principle of dermoscope:

The basic method of dermoscopic visualisation involves using lenses to enlarge skin lesions and several types of light sources to illuminate them.[14] Depending on the type of skin, any light beam passing through it will usually be refracted, diffracted, reflected, or absorbed. (Figure 1).[15]

In dry scaly skin, the light gets reflected whereas in smooth oily skin the light reaches the deeper dermis and hence improves the visibility of the skin sub-surface. The latter principle is used in case of contact technique dermoscopy, which helps to visualize the skin lesions after the application of linkage fluids like oil (immersion oil, olive oil and mineral oil), water, an antiseptic solution, glycerin, gels[16].

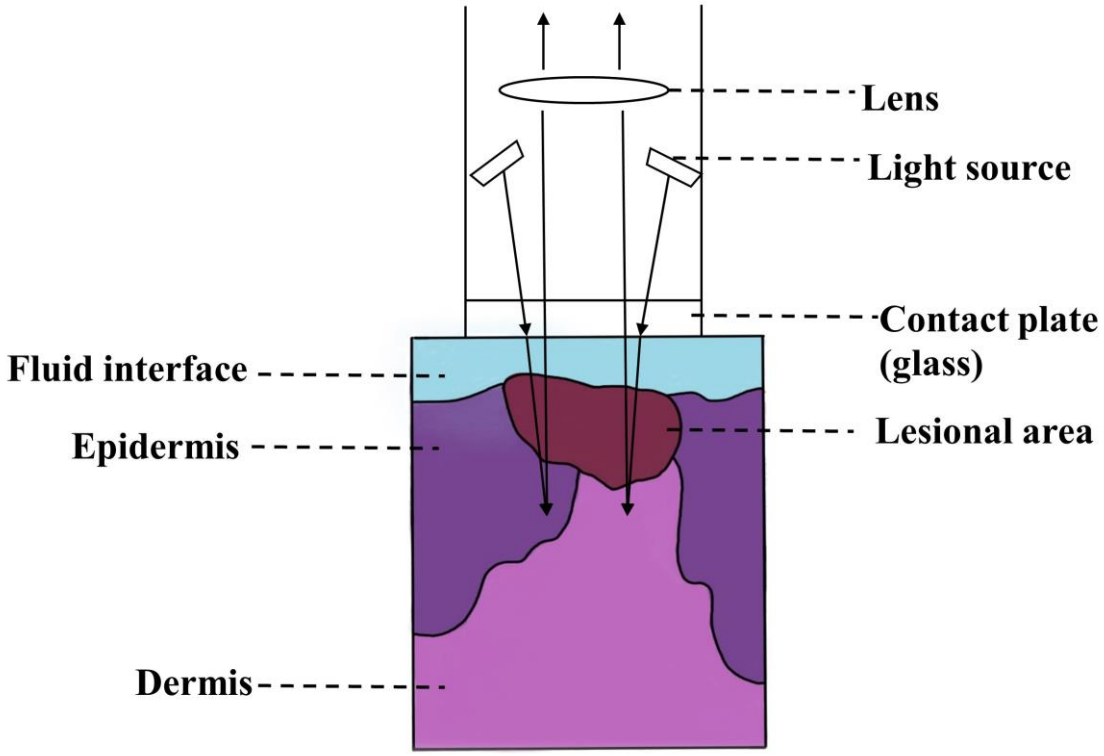


Figure 1: Optics of light in dermoscope

The skin lesion's surface and subsurface areas are illuminated by light from a source that is magnified by a lens. The fluid interface between the dermoscope and the skin surface improves light penetration into the lesion

Parts of dermoscope:[11,12]

A. *Achromatic lens*: Most dermoscopes have a 10X magnification. However, a video-dermoscope can attain magnifications of up to 1000X.

B. *In-built illumination system:* Compared to traditional halogen lights, which emit yellow light, light-emitting diodes (LEDs) are the standard sources for high-intensity white light utilising 70% less energy.

C. *Power supply:* This portable equipment is battery-powered or has rechargeable handles

D. *Contact plate*: The components of the contact technique dermoscopy are large contact plates (20 mm in diameter) and small contact plates (8 mm in diameter). 2% glutaraldehyde or methylated spirit can be used to sterilise the multi-located silicone glass used in the contact plates.

   The purpose can also be achieved by boiling or autoclaving for five minutes at 134^0 C. These plates come in both graded and non-graduated varieties, some of which have scales.

E. *Display system*: Unlike the video-dermoscope, which can be connected to a computer or other displays or even have its own screen, the hand-held dermoscope has a see-through viewing window.

F. *Inbuilt photography system*: Except for the hand-held dermoscope, these now constitute a vital part of a dermoscope. The camera could be an integrated video camera, an attachable conventional or digital camera, or both. In the former situations, supporting software is implemented for capturing images, storage, retrieval, analysis.

Technique of dermoscopy

The dermoscope can be used either by contact or non-contact techniques. In contact technique dermoscopy, using the non-polarized light (NPL), the glass plate or contact plate is applied to the surface of the lesion with an interface fluid. In non-contact technique, using the polarized light

(PL) there is no contact with the skin surface, which gives an added advantage of avoiding nosocomial infections[18]

While NPL provides greater imaging of tissues that are more superficial, polarized light provides better visualization of those that are placed deeper in the skin.

Given that the dermoscope makes it easier to see skin in a horizontal orientation, blood vessels that run parallel to the skin's surface are shown as lines, and those that run perpendicular to the skin's surface are shown as dots or loops. The non-contact approach does not squeeze the vascular architecture, making vessels easier to visualize[20]

IMMERSION FLUID

The literature provides reports on the use of several immersion liquids. Water-based gels, oils, disinfection solutions, and water comprise the four categories of immersion liquids.[11,21]

The characteristics of an optimal immersion liquid are:

- Obtainable with ease
- Allows the structural parameters of the lesion to be well seen
- Remaining color-neutral, inexpensive
- Fewer air bubbles and less volatility
- Suitable for use in specific areas such as the mucosa, around the eyes
- Not producing an overly bright or matte images

Immersion oil is a better choice for an immersion fluid in visualizing the pigment network. Ultrasound gel or immersion oil can be employed for structural elements other than pigment networks. Ultrasound gel is a preferable option to immersion oil for dermoscopic inspection of non-pigmented skin lesions. In inflammatory dermatoses, alcohol is more beneficial and may slow the spread of infections. Ultrasound gel can be used for dermoscopy of solid curving areas, particularly at the edge of the nail plate.[23] It is also appropriate for assessing the mucosa, nail bed, genitalia, and eyelids.

Limitations of dermoscopy:[24,25]

Since, dermoscopy is a non-invasive procedure, there are very few potential side effects. The sole drawback is the extremely slim chance of patient-to-patient cross-infection, particularly when using contact dermoscopy. There are numerous ways to avoid the chance of cross-infection:

1. Application of non-contact polarised dermoscopy
2. After each patient examination, use isopropyl alcohol to disinfect the USB video-dermatoscope's rim or lens

Usage of disposable transparent lens shielding material, such as cling film or soft plastic covers over the instrument; these caps are now included free of charge with most high-quality dermatoscopes and can be used with USB and handheld video dermatoscopes.

Minor issues worth consideration[24]

1. Dermoscopy artefacts that could be interpreted incorrectly should be avoided. Vermillion powder, colored powders, dust particles, hair dye, henna, hair fibers, minoxidil crystals, hair styling gel, etc. are common artifacts in trichoscopy; in onychoscopy, common artifacts include nail paint and varnish, as well as topical applications, especially sunscreen and makeup ingredients. Hence thorough prior cleaaning of the area is advised.
2. Colour disparity amongst devices: Images obtained with various dermatoscopes typically have a slightly different colour balance. That is something to be mindful of.
3. Differences between Fitzpatrick skin types: It is now clear that many characteristics that are easy to recognize in Fitzpatrick skin types I–II are either invisible or hard to spot in darker skin types. The colors (black, brown, grey, and blue) that originate at the histology level are hard to perceive and comprehend on people with dark skin. Given that ethnic skin conditions frequently exhibit post-inflammatory hyperpigmentation, brown pigmented structures on dermoscopy should be interpreted with caution.
4. Absence of "dermoscopic nomograms": To be an expert in histopathology interpretation, one needs to be well-versed in normal histology, accounting for expected physiological differences resulting from age, gender, and specific body parts. For instance, many vessels are visible in the buccal mucosa's normal mucoscopic images; this is not to be mistaken for a malignant characteristic. To reduce errors in the interpretation of dermoscopic structures,

an image library including such site-specific and skin type-specific dermoscopic monograms is desperately needed.

MAJOR CATEGORIES OF DERMOSCOPIC CRITERION:

Dermoscopically, each disease can be identified based on one or two distinguishing features. A "predominant" criteria is a structure that is more noticeable than other coexisting structures in the larger section of a lesion. When performing a dermoscopy, the following are the most important variables to consider:

Color:

It is the melanin in the skin, whether inside the melanocytes, nevic cells, or keratinocytes that determines the color in dermoscopy (Figure 2)[15]

The other important chromophore is the hemoglobin[26]

Figure 2. Colors in dermoscopy: different contrasts of the colors imparted by the three essential chromophores of the skin namely keratin, melanin and hemoglobin[27]

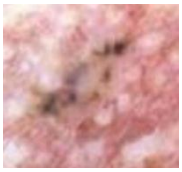
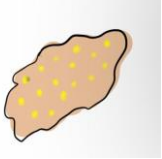
Dermoscopic structures:

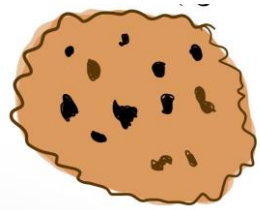
The appearance of melanin as clusters within different cells, in isolation, or concentrated around the edge of the lesion also helps to identify certain "structures." Similarly, haemoglobin distribution within the lesion dictates the vascularization patterns and structures (Table 1).[10,]

Table 1: Few dermoscopic structures and their histopathological correlation

Pigment network	- Honeycomb like network consisting of pigmented lines (rete ridges) and hypopigmented holes (dermal papillae).

Dots 	- Small round structures < 0.1mm in diameter representing focal melanin accumulation in upper part of epidermis.
Globules 	- Symmetrical round to oval well demarcated structures > 0.1mm in diameter. - Represent melanocytes, clumps of melanin and/or melanophages situated in lower epidermis, dermoepidermal junction, or in papillary dermis.
Branched streaks	- An altered pigment network - Represents remnants of pigmented rete ridges and bridging nests of melanocytic cells within epidermis and papillary dermis.
Radial streaming	- Fringe type structure at periphery of lesion. - Representing confluent pigmented junctional nests of pigmented melanocytes.
Pseudopods 	- Finger-like projections of dark pigment at periphery of lesion. They may have knobs at their tips. - Correspond to intra-epidermal or junctional confluent radial nests of melanocytes.

Streaks 	- Term used interchangeably with radial streaming or pseudopods. - Can be irregular or regular.
Structureless areas 	- Amorphous or homogenous areas devoid of any dermoscopic structures. - Usually hypopigmented.
Blotches 	- Large collection of melanin pigment localized throughout epidermis and/or dermis visually obscuring the underlying structures.
Regression pattern 	- White scar like depigmentation or peppering (speckled multiple blue-gray granules within a hypopigmented area). - Shows fibrosis.
Blue-white veil 	- Irregular, indistinct, confluent blue pigmentation with an overlying white, ground-glass haze. - Correspond to aggregation of heavily pigmented cells or melanin in dermis with compact orthokeratosis.
Milia like cysts 	- Round white or yellowish structures that shine brightly under NPL. - Correlate with intraepidermal keratin filled cysts.

Comedo-like openings (crypts, pseudofollicular openings) 	- Blackhead like follicular keratin plugs on surface of lesion. - Corresponds to keratin filled invagination of epidermis.
Fissures and ridges 	- Irregular, linear keratin filled depressions. -
Fingerprint-like structures 	- Tiny ridges running parallel.
Moth eaten border 	- Concave borders
Leaf-like areas (maple leaf like areas) 	- Brown to gray-blue discrete bulbous blobs forming a leaf like pattern.
Spoke wheel-like structures 	- Well circumscribed, brown to gray-blue-brown, radial projections meeting at darker brown central hub.

Blue-gray ovoid nests 	- Large, well circumscribed, confluent or near confluent pigmented ovoid areas, larger than globules.
Multiple blue-gray globules 	- Round, well circumscribed structures.
Chrysalis	- White shiny streaks due to increased dermal collagen.
Ulceration 	- Absence of epidermis, not associated with a history of trauma seen as large, irregular shaped, dull red or red-brown structureless areas.

VESSEL PATTERNS:

Table 2: Vessel morphologies

VASCULAR MORPHOLOGY	DESCRIPTION	DIAGRAM
Arborizing vessels or telangiectasias	Large primary vessels that divide into smaller secondary vessels	
Hairpin vessels	Vessels that curve back on themselves ,forming loops.	
Crown vessels	Peripheral vessels that rarely branch and do not cross the centre of the lesion.	
Comma	Thick linear curved lines with few branches and occasionally having one end thicker than the other.	
Dotted	Small red dots closely aligned to each other in a highly regular pattern.	
Glomerular	Tortuous capillaries often clustered together resembling the glomerular apparatus of the kidney	

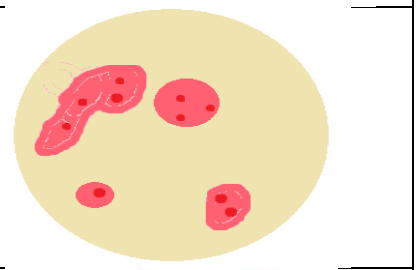
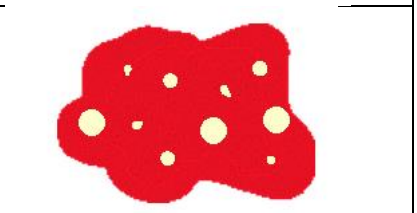
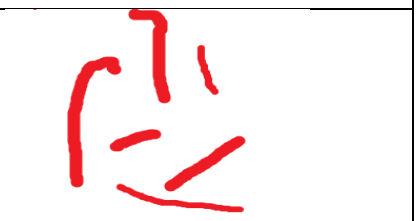
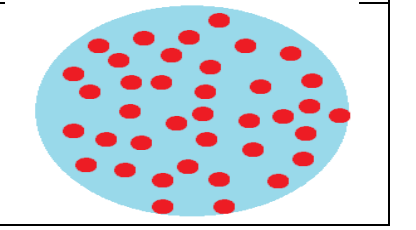
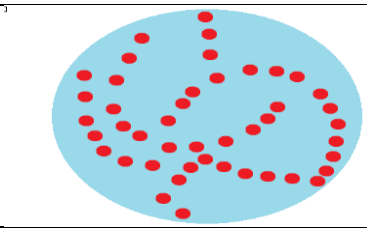
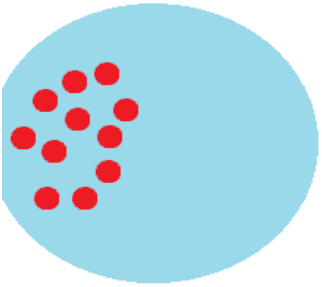
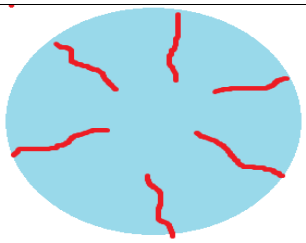
Corkscrew	Spiral vessels with irregular linear pattern.	
Milky-red areas/globules	Unfocused milky-red colour usually typically associated with elevated part of lesion	
Strawberry pattern	Structureless erythematous areas with whitish areas in between creating a type of pseudo network	
Linear irregular	Straight vessels that differs in shape and size	
Polymorphous	Various vascular patterns within the same lesion.	

Table 3: Vessel distributions

VESSEL PATTERN	DESCRIPTION	DIAGRAM
Regular	Vessels distributed equally all over the lesion	

String of pearls	Dotted vessels arranged linearly in a a string of pearl pattern.	
Clustered	Tendency to cluster together in a lesional area	
Radial	Vessels located at periphery of lesion which does not cross or occupy the centre.	
Branching	Large vessels branching into smaller ones.	
Irregular	Vascular polymorphism lacking a specific pattern	
Rope-ladder pattern	Short slightly dilated loops that arise from edges of scar and cross it completely.	

CLASSIFICATION OF SKIN TUMORS:[28]

1.	Neoplasms with epithelial differentiation a. Keratinocytic differentiation b. Appendageal differentiation i. Follicular differentiation ii. Eccrine or apocrine differentiation iii. Sebaceous differentiation
2.	Melanocytic neoplasms
3.	Soft tissue neoplasms a. Fibrous and fibro histiocytic tumors b. Vascular tumors c. Smooth muscle tumors d. Skeletal muscle tumors
4.	Neural tumors
5.	Tumors of subcutaneous tissue

- Merkel cells Melanocytes, Langerhans cells, and Merkel cells make up the remaining 10% of the epidermal layer, which is 90% composed of keratinocytes.[2]
- Most common epithelial tumors are keratinocytic tumors, which are derived from epidermal and adnexal keratinocytes. They can range from benign lesions that merely cause cosmetic concern to premalignant and aggressive lesions.[28]

Keratinocytic tumors are classified as:[28]

1.	Benign acanthomas a) Clear cell acanthoma b) Epidermolytic acanthoma c) Warty dyskeratoma d) Large cell acanthoma e) Seboacanthoma f) Basosquamous acanthoma g) Seborrheic keratosis h) Keratoacanthoma (KA)
2.	Actinic Keratosis
3.	Bowen's disease (BD) and bowenoid papulosis (BP)
4.	Basal cell carcinoma (BCC)
5.	Squamous cell carcinoma (SCC)

- Melanocytic tumors are tumors of melanocytic differentiation.

  Classified as –

  a. Benign tumors – i.e., nevi

  b. Malignant tumors – i.e., malignant melanoma

  Skin adnexa, or epidermal appendages, are specialized cells that extend from the epidermis to the dermis. These cells include follicular epithelial cells, sebaceous cells, and apocrine and eccrine gland cells.[29]

- The skin adnexal tumours are classified into sub-groups, depending on their differentiation.

  Appendageal tumours are classified as:[28]

1. Tumors with apocrine and eccrine differentiation	
Malignant -	Benign –
a) Tubular carcinoma b) Microcystic adnexal carcinoma c) Porocarcinoma d) Spiradenocarcinoma e) Malignant mixed tumor f) Hidradenocarcinoma g) Mucinous carcinoma	a) Hidrocystoma b) Syringoma c) Poroma d) Syringofibradenoma e) Hidradenoma f) Spiradenoma g) Cylindroma

2. Tumors with follicular differentiation	
Malignant –	Benign –
a) Pilomatrical carcinoma b) Proliferating tricholemmal tumor	a) Trichoblastoma b) Pilomatricoma c) Tricholemmoma d) Trichofolliculoma

3. Tumors with sebaceous differentiation
a) Sebaceous carcinoma b) Sebaceous adenoma c) Sebaceoma d) Cystic sebaceous tumor

Evaluation of pigmented lesions:

The Board of the Consensus Net meeting proposes a two-step process for the classification of skin pigmented lesions. (Figure 3)[36]

The algorithm's initial step separates the non-melanocytic lesions from the melanocytic lesions. A lesion must have one of the following features in order to be classified as melanocytic: pigment network, pseudonetwork, aggregated globules, branched streaks, or parallel pattern.

Look for particular features to diagnosis pigmented BCC, SK, or haemangioma if these are lacking. Treat the lesion as melanocytic if none of these lesions can be detected[33]

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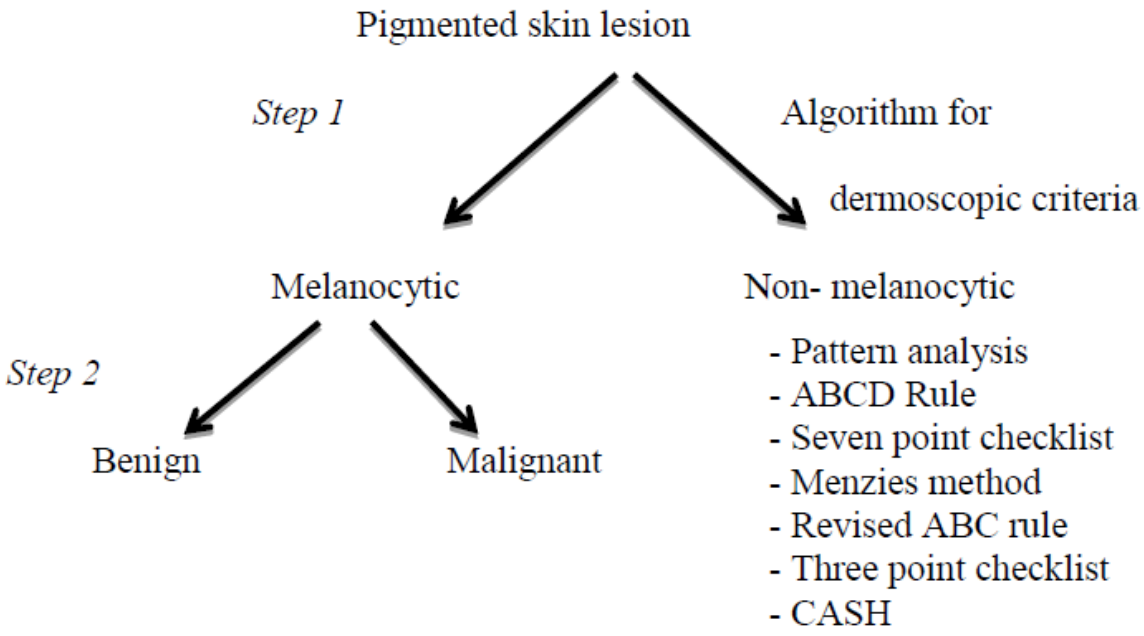


Figure 3: The Two step algorithm for pigmented skin lesions

The second step is to determine if the melanocytic lesion is benign or malignant, using one of the following approaches:[33–36]

- ***Pattern analysis*:** It was the first melanocytic algorithm developed by Pehamberger et al. This method is the most sensitive and specific amongst all but is quiet cumbersome and requires a detailed, qualitative assessment of multiple dermoscopic criteria. It is most often used by experienced dermoscopists[32]

- ***ABCD rule of dermoscopy(Figure 4)*:** It was described by Stolz et al in 1993[32] False positive results can occur in globular-patterned nevi, lentiginous, papillary, or congenital nevi, as well as spitz nevi. This rule is not applicable for pigmented lesions on face, palms and soles[37]

DERMOSCOPIC CRITERION DEFINITION SCORE WEIGHT FACTOR
Asymmetry in 0, 1, or 2 perpendicular axes; assess contour, colors and structures 0-2.
Border abrupt ending of pigment pattern at periphery in 0-8 segments 0-8.
Color presence of up to 6 colors (white, red, light-brown, dark-brown blue-gray, black) 1-6.
Dermoscopic structures presence of network, structureless(homogeneous) areas, branched streaks, dots, and globules 1-5.
Formula for calculating total dermatoscopy score (TDS) = (A score x 1.3) + (B score x 0.1) + (C score x 0.5) + (D score x 0.5)
Interpretation of total score: Benign melanocytic lesion <4.75; Suspect lesion (close follow-up or excision recommended): 4.75-5.45; Lesion highly suspect for melanoma >5.45.

Figure 4: ABCD rule of dermoscopy

- ***7- point checklist****:* An algorithm was created by Dal Pozzo et al. using three major and four minor criteria (Table 4).[37] Every minor criterion receives one point, while each major criterion is worth two points. The diagnosis of melanoma requires a minimum total score of three, which can be obtained by simply adding the individual scores.

- ***Menzies scoring method****:* Menzies et al in 1996 identified 11 features for their high specificity and low sensitivity (Table 5)[37] For the diagnosis of melanoma, both the negative features (which must be absent) and the positive features (one or more must be present) are taken into consideration.
- ***CASH method*****:** This is a new algorithm put forward by Kopf et al. (Table 6)[32,37] Four parameters were analyzed to give a total score of 2 to 17. If the score is seven or lower, it is probably benign; if it is eight or higher, melanoma may be suspected.

Table 4: The SEVEN point checklist

DERMOSCOPIC CRITERION SCORES
Major criteria:
1. Atypical pigment network
2. Blue-whitish veil
3. Atypical vascular pattern
Minor criteria:
1. Irregular streaks

2. . Irregular dots/globules

3. Irregular blotches

4. Regression structure

Table 5: **Menzies scoring method**

Dermoscopic criterion

Negative Features

- Symmetry of pattern

- Presence of single color

Positive Features

- Blue-veil

- Multiple brown dots

- Pseudopods (streaks)

- Radial streaming (streaks)

- Scar-like depigmentation

- Peripheral black dots/globules

- Multiple (5 or 6) colors

- Multiple blue/gray dots

- Broadened network

Table 6: The CASH algorithm

CASH		SUSPICION FOR MELANOMA	
Color	1-2	3-4	5-6
Architectural Disorder	No/Mild	Moderate	Marked
Symmetry	Biaxial	Monoaxial	None
Homogeneity/ Heterogeneity	1 Structure	2 Structures	3+ Structures

Algorithm for dermoscopic evaluation of the non-pigmented skin lesions:[34,38]

Step 1: Evaluation of the lesion number (single: tumour or multiple: inflammatory/ infectious disease).

Step 2: Assessment of the vascular pattern's morphologic type

Step 3: Assessing how the vascular patterns are arranged architecturally within the lesion

Step 4: Assessing extra dermoscopic standards.

Step 5: Making a diagnosis.

DERMOSCOPIC FINDINGS IN COMMON BENIGN AND MALIGNANT TUMOURS:

MELANOCYTIC NEVI:

Melanocytic nevi (MN), often known as common acquired MN or moles, are benign nevus cell proliferations that are commonly found in dermatology clinics as one of the most common neoplasms.[41]

Melanocytic nevi are classified into two categries: congenital and acquired. It can be challenging to distinguish between the two forms clinically. A more recent method categorizes all smaller nevi (less than 15 cm) regardless of when they first appeared based on dermoscopic results

In addition to the well defined groups, there are numerous more nevi kinds that are both clinically and microscopically unique. These include recurrent nevus, cockade nevus, Meyerson nevus, and halo nevus[55]

Based on the dermoscopic findings, the current dermoscopic categorization system distinguishes four patterns: homogenous blue type, globular, reticular, and star-burst pattern[55]

A globular pattern is frequently accompanied by a uniform brown coloured backgrund. Children frequently exhibit globular pattern, but adults typically exhibit reticular pattern[55]

BASAL CELL CARCINOMA:

BCC is a malignant epithelial skin tumor that grows slowly and primarily affects people with pale skin who are middle-aged or older. It is becoming more commonplace globally and is more

common in younger age groups. Menzies et al. devised the dermoscopic algorithm for the detection of BCC in 2000 (table 7). For a pigment BCC to be diagnosed using this approach, it must have both a negative feature and at least one positive feature.

Table 7: Dermoscopic features of pigmented BCC

Negative feature: Absence of pigment network.
Positive features: - Linear and arborizing telangiectasia - Leaf-like or structureless areas on the periphery of the lesion - Multiple blue-gray globules - Large blue-gray ovoid nests - Focal ulceration - Spoke wheel areas

Clinical types:

1. Nodular or nodulo- ulcerative (rodent ulcer)
2. Micronodular
3. Morpheaform
4. Pigmented BCC
5. Superficial BCC (sBCC)
6. Fibroepithelioma of Pinkus
7. Ulcerated

8. Metastatic

There are various histopathological variants of BCC, which include solid nodular, nodular, adamantinoid, baso-squamous, clear cell, cystic, giant cell, granular cell, keloidal cell, keratotic and trichilemmal types.

The common sites of occurrence of BCC are eyelids, inner canthus of eye and behind the ears. Typically, early BCCs have elevated telangiectatic borders, are translucent or pearly, and are tiny. A characteristic rodent ulcer with an ulcerated center and an indurated margin might appear as advanced lesions.[28,44] Increased palpability of the lesion indicate a chronic lesion and more likelihood that it belongs to a male as they are less likely to attend skin cancer clinics.[45] Compared to pigmented BCCs, non-pigmented BCCs are far more prevalent. The features that set non-pigmented BCC apart from other skin lesions during a dermatological examination are their asymmetric arborizing vessels, pink color, and localized ulceration. Areas of white regression are visible.

Pigmented BCC can be clinically indistinguishable from melanoma[46]

Arborizing vessels are a specific dermoscopic finding of nodular, cystic and morpheaform BCC. Superficial BCC can be diagnosed by fine micro-arborizing vessels, shiny red-white structure-less areas and multiple small erosions. Other features rarely seen are scattered global pattern of vessels, featureless areas, atypical red vessel, corkscrew vessels, comma vessels, brown globules and dots, telangiectasia, atypical red vessels, red dots, hemorrhage, ulceration, hypopigmented areas, blue-grey ovoid nests, spoke-wheel areas, maple leaf-like areas and red globules on dermoscopy.

SYRINGOMA:

A benign adnexal tumor; develops from the eccrine sweat glands' ducts.

Usually multiple in number and most commonly seen in females at puberty. The lesions are limited to the lower eyelids and cheeks. The individual lesions are yellowish colour, with a tendency to look transparent and cystic at times. The surface might have a flat top or a dome form, and the outline can occasionally be angular.[28,44] Dermoscopy shows homogenous light brown area and a partial delicate, light brown pigment network is seen at the periphery. Multifocal hypopigmentation may be seen in some lesions[47]

PYOGENIC GRANULOMA:

A skin and mucosal membrane benign acquired vascular lesion.

Begins as a single papular or polypoid lesion that bleeds and grows quickly in response to small trauma.[43]

Dermoscopy features:[48]

- Reddish homogenous areas
- White collarette
- Ulceration
- White rail lines intersecting the lesion.

Table 8: Clinical presentation and dermoscopic features of few other tumors involving the skin:

Skin tumour	Clinical presentation	Dermatoscopic features
SCC[12,49,57]	Characterized by the invasion of dermal tissue by keratinocytes proliferating in a neoplastic manner through a break in the basal layer. Variable presentations- erythematous patch, plaque, nodule which may show prominent or little scaling and pigmentation	• Polymorphous vascular pattern- hallmark • Irregularly shaped and distributed hairpin vessels, irregularly distributed dotted, glomerular and linear vessels. • White scales, white circles, white clods, white lines • Ulceration, keratin crust and surface scales, structureless areas may be present
Actinic cheilitis[50]	Caused by chronic exposure to ultraviolet radiation mainly involving the lower lip.	
Bowen's disease (BD)[12,57]	In-situ squamous cell carcinoma of epidermis Lesions are erythematous and velvety in form in areas lacking keratinization. Scaling lesions	Classic signs of Bowen disease include surface scales and glomerular (coiled) and dot vessels gathered in clusters with a white halo surrounding them, indicating keratinization.[12]

	overlying keratinized epithelium conceal this erythema.	
Seborrheic Keratosis[28,44,51]	Usually asymptomatic but may be itchy. Begin as multiple, well circumscribed, dull, flat, tan or brown patches. Follicular prominence- clinical hallmark. As SK grow, they become more papular or polypoidal with a waxy, verrucous or "stuck-on" appearance.	Hyperkeratosis/fissures/ridges; milia-like cysts; pseudofollicular (comedo-like) openings; light brown finger-like structures; hairpin blood vessels; cerebriform appearance (sulci and gyri)
Actinic keratosis[9,12,57]	Direct precursor of SCC that arises from prolonged exposure to UV radiation. Macules, papules, or hyperkeratotic plaques on photoexposed areas.	Vessels- linear, and branched with white globular structures that have a "strawberry pattern" Erythematous base White scales and keratotic plugs Pigmented AK: brown pseudo network.
Acral melanoma[52]	A histological subtype of cutaneous melanoma arising on the acral areas	Parallel ridge pattern, pigmentation on the surface ridges that resembles bands (dermatoglyphics).

Fibrokeratoma[56]	Benign lesion, is possibly a reaction to trauma, which occurs on the fingers and toes. Solitary dome-shaped lesion, with a collarette of slightly raised skin at its base.	Dotted or globular vessels; hyperkeratotic white scaly collarette; homogenous rosy white areas in the centre

METHODOLOGY

SOURCE OF DATA

Patients presented to Shri B.M. Patil Medical College Hospital and Research Centre, VIJAYAPURA.

Period of study:

The study was conducted during the period of September 2022 to May 2024

Study design:

A hospital based, prospective cross-sectional study.

Sample size:

Using JMP SAS 16 software for sample size calculation, the proportion of Keratinocytic tumors (most common type) is 31.4%, this study requires a sample size of 72. So to achieve a power of 90% for detecting a difference in Proportion (Exact - Proportion: Difference from constant (binomial test, one sample case)) with 5% level of significance.

Statistical Analysis: The data obtained was entered in a Microsoft Excel sheet, and statistical analyses was performed using a statistical package for the social sciences (SPSS) (Version 20). Results are presented as Mean, SD, counts and percentages, and diagrams. For normally distributed continuous variables between the two groups was compared using an independent sample t-test. For not normally distributed variables, the Mann-Whitney U test was used. For Categorical

variables between the two groups are compared using the Chi-square test exact test. If p value < 0.05 was considered statistically significant. All statistical analysis were performed two-tailed.

METHOD OF COLLECTION OF DATA:

Inclusion criteria:

1. Patients presenting with any growth over skin and mucous membrane, irrespective of age and gender were enrolled in the study after informed written consent.

Exclusion criteria:

1. Patients refusing biopsy

Methodology:

Methods:

Detailed history with respect to the onset, course, duration and symptomatology of skin tumors along with clinical photographs, dermoscopic images was recorded. Biopsy samples was collected for histopathological assessment.

Methodology:

All patients willing to enroll for the study were subjected to detailed clinical assessment in which history regarding the onset, duration and symptomology of the disease was recorded following which dermoscopy was performed.

For dermoscopy, a hand held dermoscope (DermLite DL3, 3Gen Inc., San Juan Capistrano, CA, USA) was used. Technique employed was polarized dermoscopy with interface fluid. Dermoscopic images were recorded using a digital camera attached to the dermoscope. Dermoscopic observations were recorded as per the descriptive analytical terminologies for pattern analysis.[2]

After clinical and dermoscopic evaluation, a provisional diagnosis was made and biopsy (wedge or excisional as applicable) was performed for histopathological confirmation.

For histopathology, skin biopsies and resected specimens was included. The tissues were fixed in 10% formalin and sections were taken. Then they were processed and embedded in paraffin wax. Thin sections of 3-5 microns were made and stained with hematoxylin and eosin after which histopathological examination was done and final diagnosis was established. Special stains and/or immunohistochemistry was performed in cases as required.

Compiled data was analysed statistically.

ETHICAL CLEARANCE:

Institutional ethical commitee clearance was undertaken for the study

RESULTS

A hospital based cross-sectional study was conducted from September 2022 to May 2024 Among 37589 patients attending dermatology OPD at Shri BM Patil medical college during this period, 116 patients had skin tumors; with a prevalence of 0.30

DISTRIBUTION OF CASES

Based on dermoscopy and histopathological examination, distribution of cases was as follows:

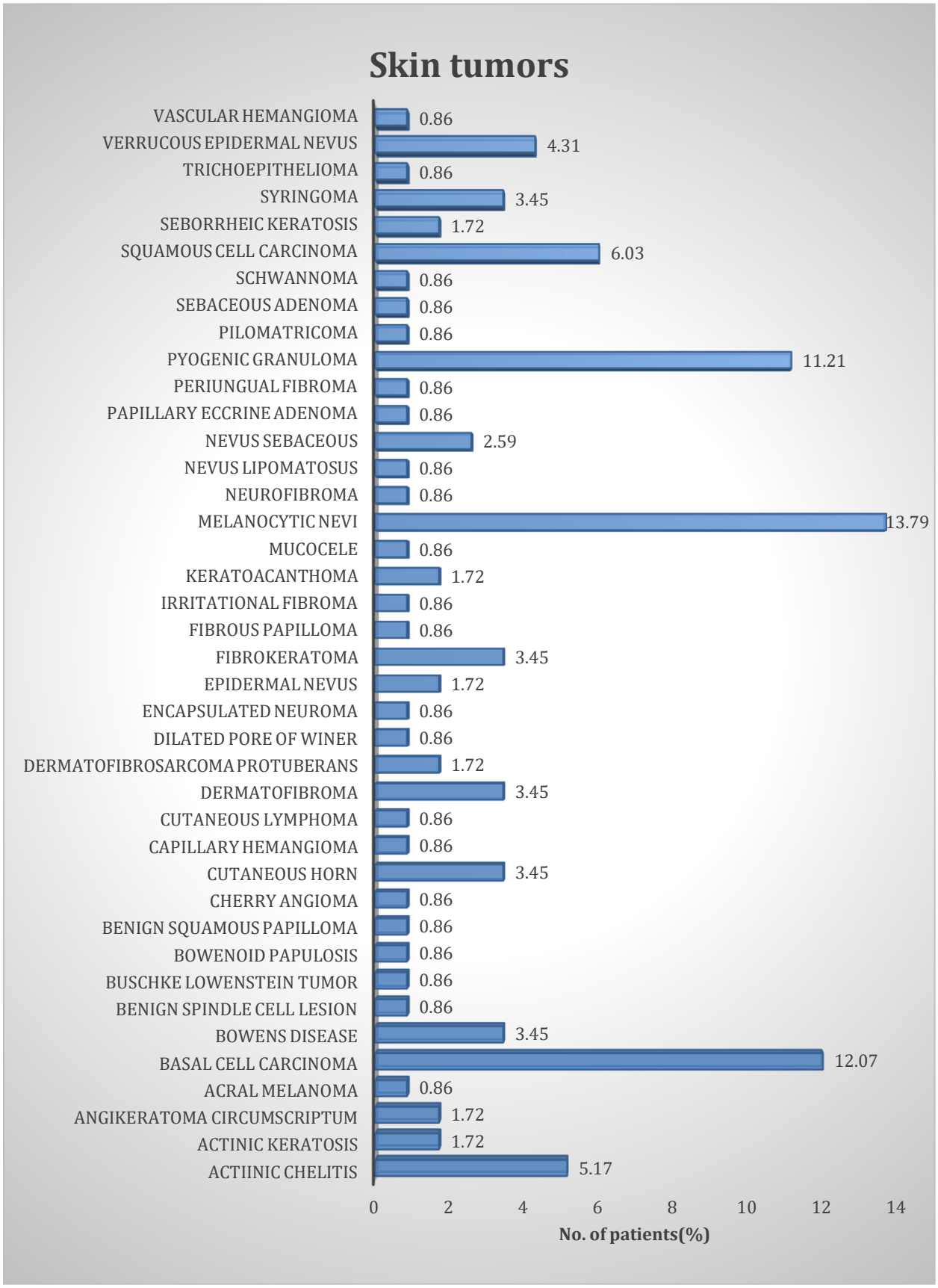
Table 9: Distribution of cases in our study

Skin tumors	No. of patients	Percentage
Actiinic chelitis	6	5.17
Actinic keratosis	2	1.72
Angikeratoma circumscriptum	2	1.72
Acral melanoma	1	0.86
Basal cell carcinoma	14	12.07
Bowens disease	4	3.45
Benign spindle cell lesion	1	0.86
Bowenoid papulosis	1	0.86
Buschke Lowenstein tumor	1	0.86
Cherry angioma	1	0.86
Cutaneous horn	3	3.45
Capillary hemangioma	1	0.86
Cutaneous lymphoma	1	0.86
Dermatofibroma	4	3.45

Dermatofibrosarcoma protuberans	2	1.72
Dilated pore of winer	1	0.86
Encapsulated neuroma	1	0.86
Epidermal nevus	2	1.72
Fibrokeratoma	4	3.45
Fibrous papule of nose	1	0.86
Irritational fibroma	1	0.86
Keratoacanthoma	2	1.72
Mucocele	1	0.86
Melanocytic nevi	16	13.79
Neurofibroma	1	0.86
Nevus lipomatosus	1	0.86
Nevus sebaceous	3	2.59
Papillary eccrine adenoma	1	0.86
Periungual fibroma	1	0.86
Pyogenic granuloma	13	11.21
Pilomatricoma	1	0.86
Sebaceous adenoma	1	0.86
Schwannoma	1	0.86
Squamous cell carcinoma	7	6.03
Seborrheic keratosis	2	1.72
Syringoma	4	3.45
Trichoepithelioma	1	0.86
Verrucous epidermal nevus	4	4.31

Vascular hemangioma	1	0.86
Total	116	

Figure 5: Graphical representation of distribution of cases



AGE DISTRIBUTION:

Population in the age group between 11- 20 years constituted the majority of the study population with a maximum of 23 (19.83%) patients followed by 20 (17.24%) in the age group 21-30 years.

Table 10: Age distribution among various skin tumors

Age(Years)	No.of patients	Percentage
<= 10	8	6.90
11 - 20	23	19.83
21 - 30	20	17.24
31 - 40	19	16.38
41 - 50	11	9.48
51 - 60	13	11.21
61 - 70	16	13.79
71+	6	5.17
Total	116	100

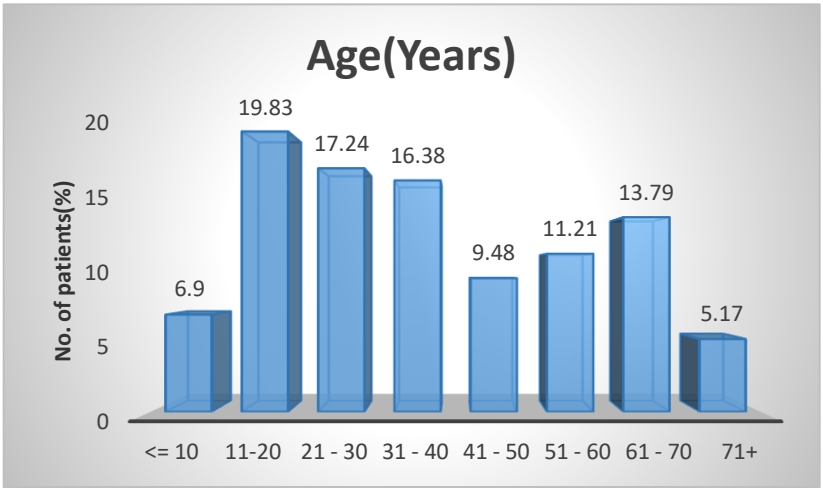


Figure 6: Graphical representation of age distribution

GENDER DISTRIBUTION:

Among 116 patients, 61 (52.29%) were females and 55 (47.41%) were males.

Table 11: Gender distribution among various skin tumors

Gender	No. of patients	Percentage
Female	61	52.59
Male	55	47.41
Total	116	100

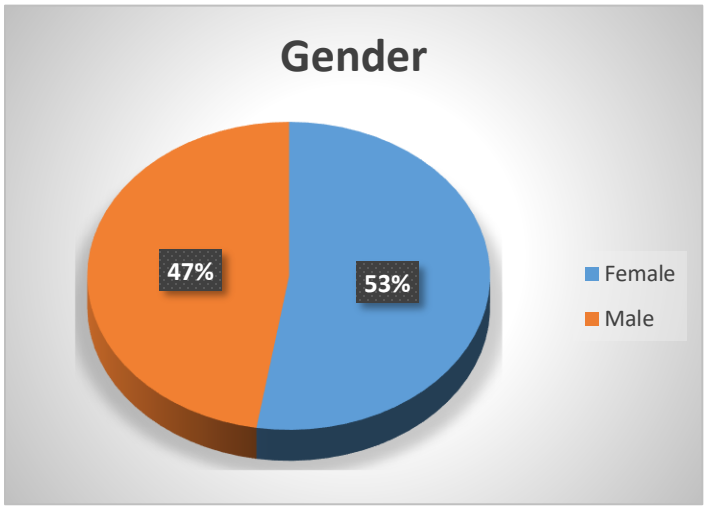


Figure 7: Graphical representation of gender distribution

Comparing dermoscopy diagnosis versus histopathology diagnosis:

Out of 116 cases, 105 (90.52%) histopathological examination diagnosis correlated to the dermoscopic examination, where as in 11 cases(9.48%) it was discrepancy.

Table 12: Similarity of dermoscopy and histopathology diagnosis

Similar Diagnosis	No. of patients	Percentage
Yes	105	90.52
No	11	9.48
Total	116	100.0

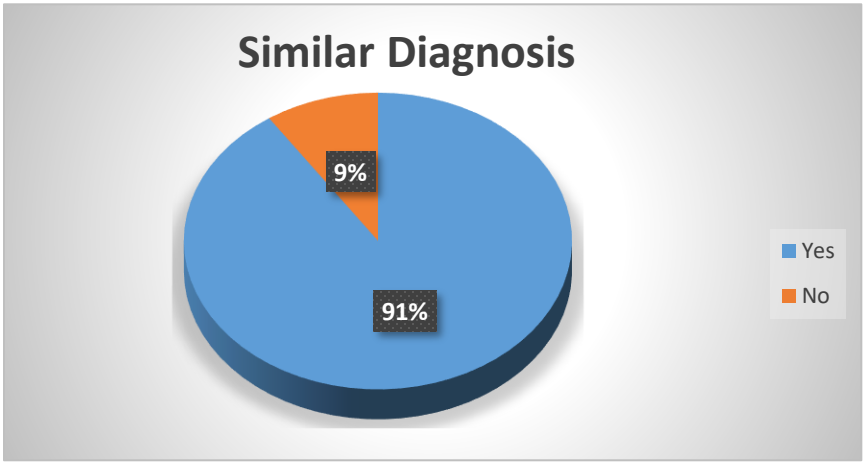


Figure 8: Graphical representation of similarity of dermoscopy and histopathology diagnosis

Tumor category distribution:

Out of 116 cases, predominantly the tumors were benign- 75 (64.66%) , followed by pre malignant 25(21.55%) and malignant tumors 16(13.79%)

Table 13: Distribution of cases based on tumor catergory

Tumor category	**No. of patients**	**Percentage**
Benign	75	64.66
Malignant	25	21.55
Pre Malignant	16	13.79
Total	116	100

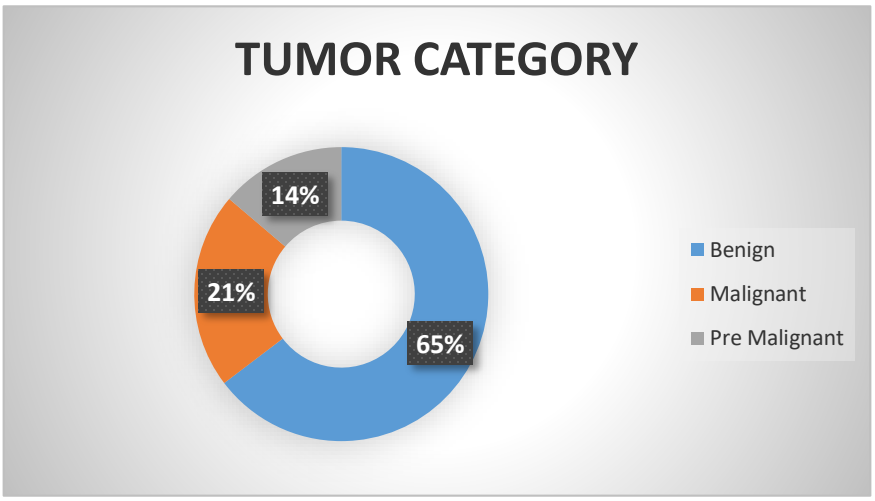


Figure 9: Graphical representation of distribution of cases based on tumor catergory

Classification of tumors:

Out of 116 cases, predominantly the tumors were keratinocytic- 52 (44.83%), followed by Soft tissue tumors 34 (28.31%), Melanocytic tumors 16 (13.79%), Appendageal tumors 12 (10.34%), Others 4 (3.45%)

Table 14: Distribution of tumors based on classification

Tumor classification	No. of patients	Percentage
Keratinocytic	52	44.83
Melanocytic	16	13.79
Soft tissue tumors	34	28.31
Appendageal	12	10.34
Others	04	3.45
Total	116	100

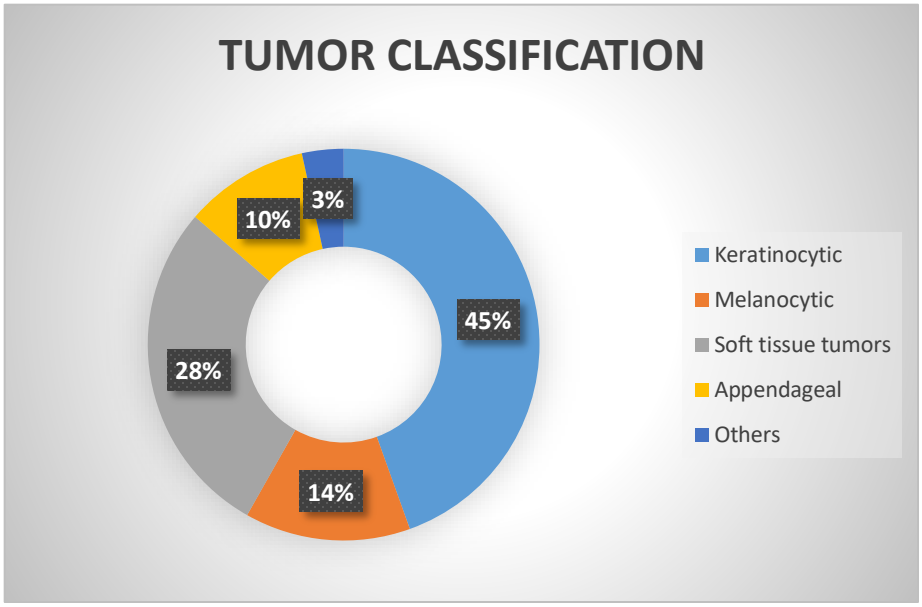


Figure 10: Graphical representation of distribution of tumors based on classification

Sub-classification of tumors:

Table 15: Distribution of tumors based on sub-classification

Tumor sub-classification	No. of patients	Percentage
Keratinocytic	**52**	44.83
Benign	16	13.79
Pre malignant	15	12.93
Malignant	21	18.10
Melanocytic	**16**	13.79
Benign	15	12.93
Pre malignant	0	0.00
Malignant	1	0.86
Soft tissue tumors	**34**	29.31
Benign	32	27.59
Pre malignant	0	0.00
Malignant	02	1.72

Appendageal	**12**	10.34
Benign	12	10.34
Pre malignant	0	0.00
Malignant	0	0.00
Others	**4**	3.45
Benign	2	1.72
Pre malignant	1	0.86
Malignant	1	0.86
Total	116	100

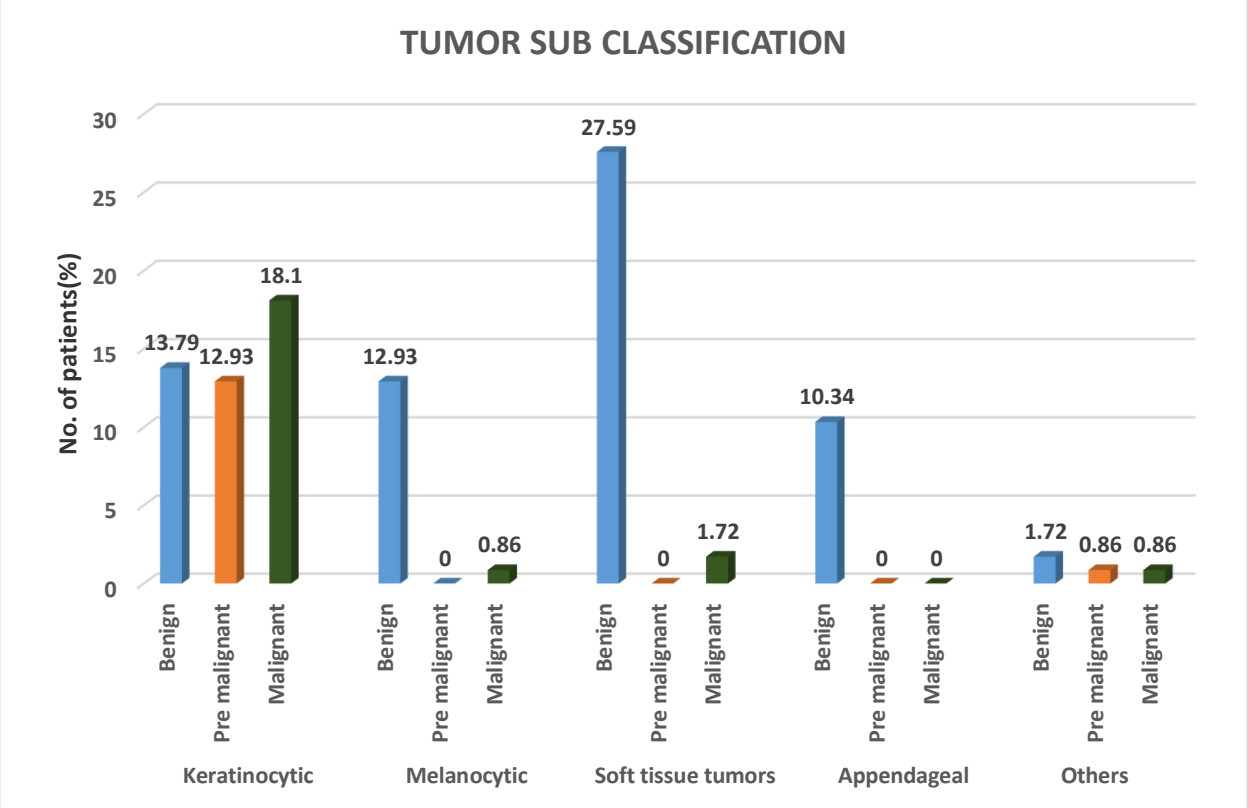


Figure 11: Graphical representation of distribution of tumors based on sub-classification

Following are the findings among the most commonly encountered skin tumors:

BASAL CELL CARCINOMA:

Distribution of cases of Basal cell carcinoma and their dermoscopic features:

A total of 14 patients were diagnosed clinically and histopathologically as BCC, of which 10 were superficial and 4 nodular or ulceronodular BCC. There was a significant female preponderance (F=8, M=6). Most of the patients were in the age group of 56-65 years (n=7) followed by patients above 66 years (n=4).

Half of the patients (n=7) had scales on dermoscopic examination, which were white in colour. Background colour was noted to be blue gray (n=9) for most of the study patients. Polymorphic vessel morphology (n=5), distributed peripherally (n=7) were seen most commonly.

Predominant dermoscopic features were blue grey globules & dots (n=9), white lines (n=6) and maple leaf structures (n=6)

Table 16: Demographic details of patients with BCC

Sex	**No. of cases (14)**	**% (out of total 14 cases)**
Male	6	42.86
Female	8	57.14
Age (Years)		
0-35	1	7.14
36-55	2	14.29
56-65	7	50.00
≥66	4	28.57

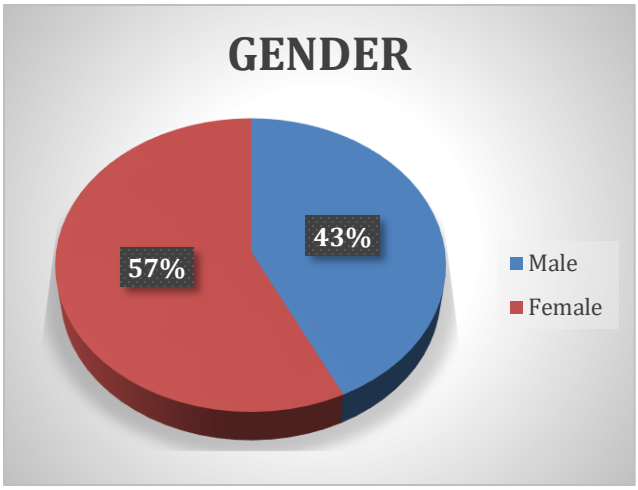


Figure 12: Graphical representation of gender distribution among BCC cases

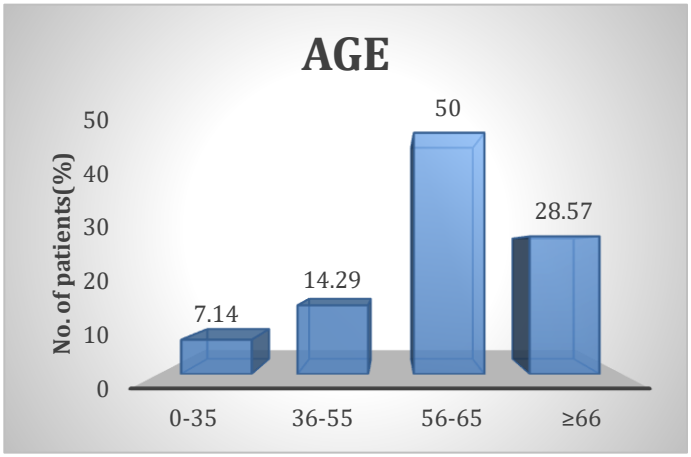


Figure 13: Graphical representation of age distribution among BCC cases

Table 17: Dermoscopic features of BCC:

	No. of cases (14)	**% (out of total 14 cases)**
Scales color		
Absent	7	50.00
White	7	50.00
Scale distribution		
Absent	7	50.00
Central	2	14.29
Diffuse	3	21.43

Peripheral	2	14.29
Background Colour		
Pink	4	28.57
Blue Gray	9	64.29
Dark Brown	1	7.14
Vessel Type		
Absent	2	14.29
Telangiectasias	3	21.43
Arborizing	2	14.29
Linear	2	14.29
Polymorphic vessels	5	35.71
Vessel Distribution		
Absent	2	14.29
Peripheral	7	50.00
Diffuse	6	42.86
Other Features		
Maple leaf structures	6	42.86
Spoke wheel structures	1	7.14
White lines	6	42.86
White structureless areas	2	14.29
Pink homogenous areas	1	7.14
Keratin plugs	4	28.57
Cerebriform pattern	2	14.29
Fingerprint like structures	2	14.29
Ulceration	3	21.43
Brown globules	2	14.29
Blue gray globules	9	64.29
Concentric structures	2	14.29
Brown dots	2	14.29

MELANOCYTIC NEVI:

Distribution of cases of Melanocytic nevi and their dermoscopic features:

Out of 116 cases, 16 patients were diagnosed with melanocytic nevi, with a notable predominance of females (11 females, 5 males). The majority of patients belonged to the 21–30 year age group (n=6), followed by 11–20-year age group (n=5).

Scales were predominantly absent (n=14), although white scales were observed in a minority of cases (n=2). Most nevi exhibited an absent scale distribution (n=12), with patchy and diffuse distributions observed in isolated cases (each n=1).

The background colour of the nevi was primarily dark brown (n=13), while pink and light brown backgrounds were observed in a small number of cases (n=2 and n=1, respectively).

Vessel types were generally absent (n=14), although dotted and linear vessels were noted in isolated cases (each n=1). Vessel distribution was mostly absent (n=14), with diffuse distribution noted in a few cases (n=2).

Principal dermoscopic features included brown globules (n=9), pigment lines (n=4), and milia-like cysts and white structureless areas (each n=3). Additional features such as comedo- like openings, white globular structures, white dots, blue-grey globules, and brown dots were observed in a limited number of cases (each n=1-2).

Table 18: Demographic details of patients with Melanocytic nevi

Sex	**No. of cases (16)**	**% (out of total 16 cases)**
Male	5	31.25
Female	11	68.75
Age (Years)		
0-10	1	6.25
11-20	5	31.25
21-30	6	37.5
31-40	3	18.75

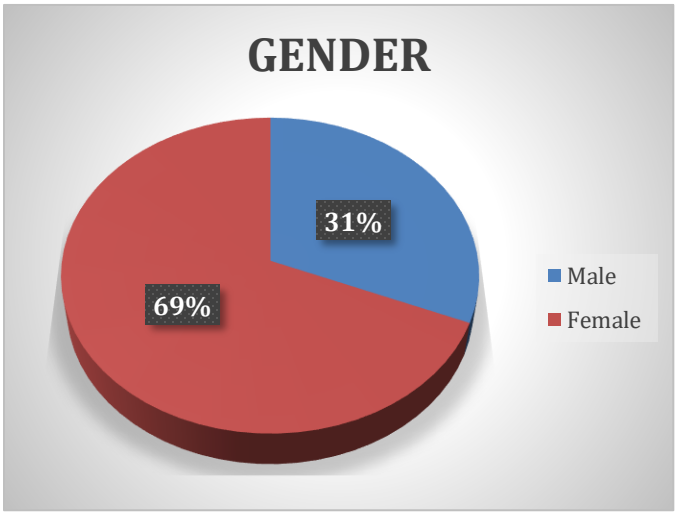


Figure 14: Graphical representation of gender distribution among Melanocytic nevi cases

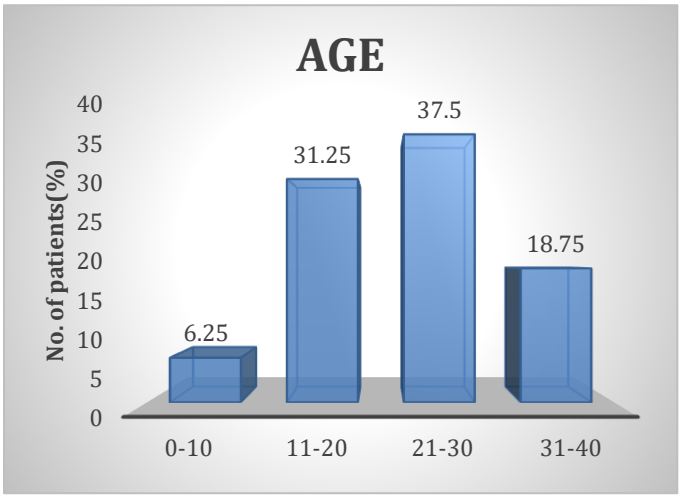


Figure 15: Graphical representation of age distribution among Melanocytic nevi cases

Table 19: Dermoscopic features of Melanocytic nevi:

	No. of cases (16)	**% (out of total 16 cases)**
Scales color		
Absent	14	87.5
White	2	12.5
Scale distribution		
Absent	12	75
Patchy	1	6.25
Diffuse	1	6.25
Background Colour		
Pink	2	12.5
Light brown	1	6.25
Dark Brown	13	81.25
Vessel Type		
Absent	14	87.5
Dotted	1	6.25
Linear	1	6.25
Vessel Distribution		
Absent	14	87.5
Diffuse	2	12.5
Other Features		
Milia like cysts	3	18.75
Comedo like openings	1	6.25
White globular structures	1	6.25
White structureless areas	3	18.75
White dots	1	6.25
Pigment lines	4	25
Brown globules	9	56.25
Blue gray globules	1	6.25
Brown dots	2	12.5

PYOGENIC GRANULOMA:

Distribution of cases of Pyogenic granuloma and their dermoscopic features:

Out of 116 cases, 13 patients were diagnosed with pyogenic granuloma, showing a slight female predominance (7 females, 6 males). The majority of patients fell within the 21–30-year age range (n=4), followed by those aged 11-20 years (n=3).

Scales were absent in all instances (n=16), with no cases exhibiting scales. The granulomas consistently displayed a pink background colour (n=16).

There were no observed vessel types or distributions in any of the cases (n=16).

Notable dermoscopic features included white lines (n=12), pink homogenous areas (n=5), and occurrences of white collarette and white structureless areas (each n=2), as well as red homogenous areas (n=1).

Table 20: Demographic details of patients with Pyogenic granuloma

Sex	**No. of cases (13)**	**% (out of total 13 cases)**
Male	6	46.15
Female	7	53.85
Age (Years)		
0-10	2	15.38
11-20	3	23.08
21-30	4	30.77
31-40	2	15.38
41-50	2	15.38

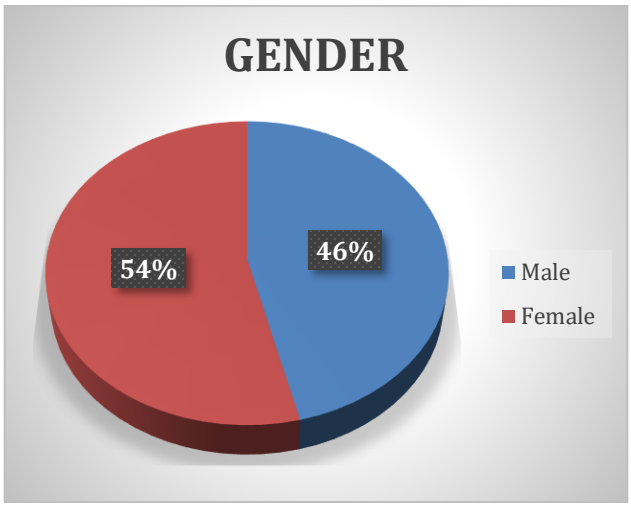


Figure 16: Graphical representation of gender distribution among Pyogenic granuloma cases

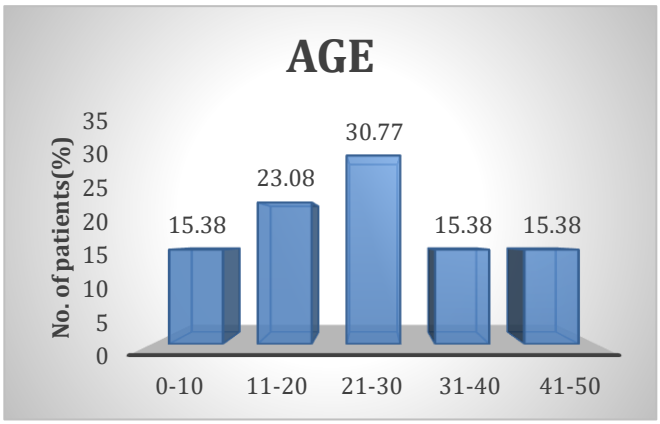


Figure 17: Graphical representation of age distribution among Pyogenic granuloma cases

Table 21: Dermoscopic features of Pyogenic granuloma

	No. of cases (13)	**% (out of total 13 cases)**
Scales color		
Absent	16	100
Scale distribution		
Absent	16	100
Present	0	0.00

Background Colour		
Pink	16	100
Vessel Type		
Absent	16	100
Present	0	0.00
Vessel Distribution		
Absent	16	100
Present	0	0.00
Other Features		
Pink homogenous areas	5	38.46
Red homogenous areas	1	7.69
White colarette	2	15.38
White structureless areas	2	15.38
White lines	12	92.31

SYRINGOMA:

Distribution of cases of Syringoma and their dermoscopic features:

Out of 116 cases, 4 patients were diagnosed with syringoma. There was an equal distribution of males and females (2 males, 2 females). The patients were mostly in the age groups of 0-30 years (n=2) and 31-60 years (n=2).

In all cases (n=4), scales were absent. The lesions consistently exhibited a light brown background colour (n=4).

Both vessel types and distributions were absent in all cases (n=4).

Key dermoscopic features observed included pigment lines (n=4), white dots (n=2), and single occurrences of brown homogenous areas, white globules, and comedo-like openings (each n=1).

Table 22: Demographic details of patients with Syringoma

Sex	**No. of cases (4)**	**% (out of total 4 cases)**
Male	2	50
Female	2	50
Age (Years)		
0-30	2	50
31-60	2	50

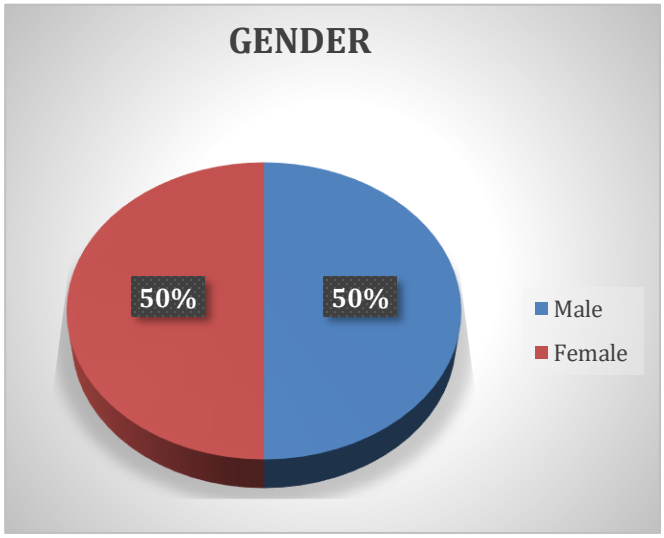


Figure 18: Graphical representation of gender distribution among Syringoma cases

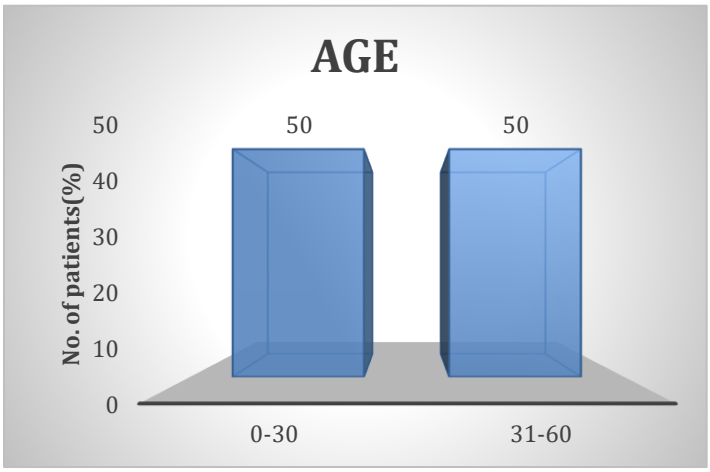


Figure 19: Graphical representation of age distribution among Syringoma cases

Table 23: Dermoscopic features of Syringoma

	No. of cases (4)	**% (out of total 4 cases)**
Scales color		
Absent	4	100
Scale distribution		
Absent	4	100
Present	0	0
Background Colour		
Light brown	4	100
Vessel Type		
Absent	4	100
Present	0	0
Vessel Distribution		
Absent	4	100
Present	0	0
Other Features		
Pigment lines	4	100
Brown homogenous areas	1	25
White dots	2	50
White globules	1	25
Comedo like openings	1	25

SQUAMOUS CELL CARINOMA:

Distribution of cases of SCC and their dermoscopic features:

A total of 7 patients were diagnosed squamous cell carcinoma out of 116 cases. There was a male preponderance (M=5, F=2). Most patients were in the age groups of 51-60 years (n=3) and 41-50 years (n=2).

Scales were absent in all cases (n=4). The background colour of the lesions was predominantly pink (n=5) and red (n=2).

Vessel types varied with linear vessels (n=4), dotted vessels (n=3), arborizing vessels (n=2), glomerular vessels (n=2), hairpin vessels (n=1), and polymorphic vessels (n=5). Vessel distribution was mainly diffuse (n=6) with one case showing a lobular pattern (n=1).

Key dermoscopic features included white structureless areas (n=6), white lines (n=4), white circles (n=3), red clods (n=2), and single cases of yellow structureless areas and red homogenous areas (each n=1).

Table 24: Demographic details of patients with SCC:

Sex	**No. of cases (7)**	**% (out of total 116 cases)**
Male	5	71.43
Female	2	28.57
Age (Years)		
<40	0	0.00
41-50	2	28.57
51-60	3	42.86
61-70	1	14.29
71-80	1	14.29

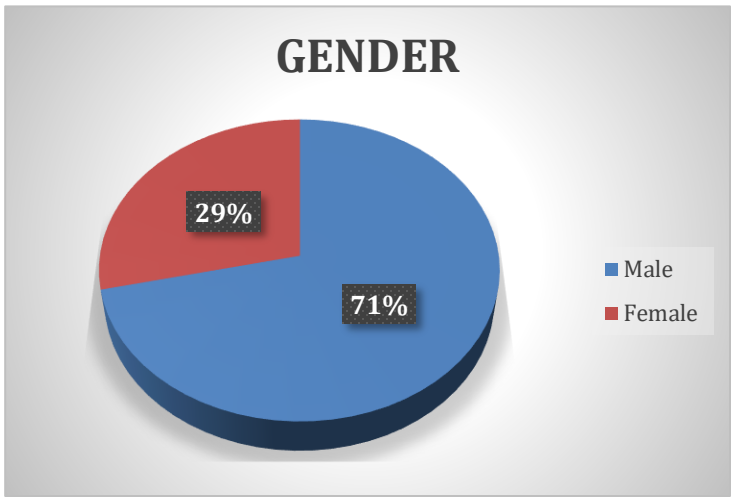


Figure 20: Graphical representation of gender distribution among SCC cases

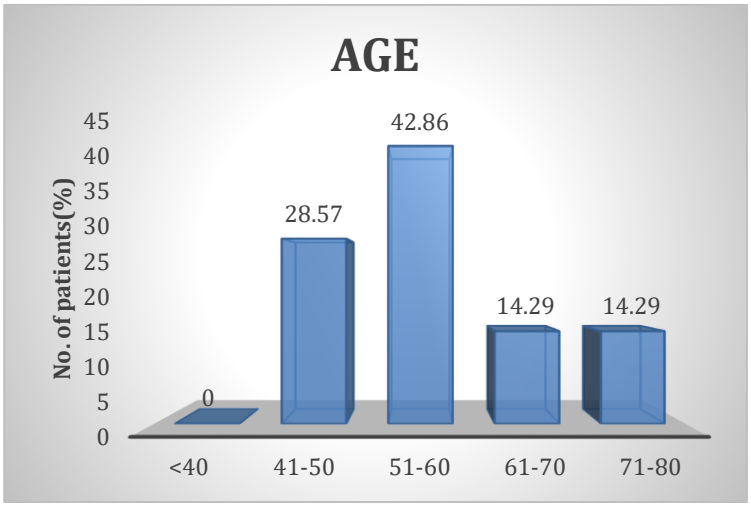


Figure 21: Graphical representation of age distribution among SCC cases

Table 25: Dermoscopic features of SCC

	No. of cases (7)	**% (out of total 116 cases)**
Scales color		
Absent	4	57.14
Scale distribution		
Absent	4	57.14
Present	0	00
Background Colour		
Pink	5	71.43
Red	2	28.57
Vessel Type		
Absent	0	0.00
Linear vessels	4	57.14
Dotted vessels	3	42.86
Arborizing vessels	2	28.57
Glomerular vessels	2	28.57
Hairpin vessels	1	14.29
Polymorphic vessels	5	71.43
Vessel Distribution		
Absent	0	0.00
Diffuse	6	85.71
Lobules	1	14.29
Other Features		
White circles	3	42.86
White structureless areas	6	85.71
White lines	4	57.14
Yellow structureless areas	1	14.29
Red clods	2	28.57
Red homogenous areas	1	14.29

ACTINIC CHELITIS:

Distribution of cases of Actinic chelitis and their dermoscopic features:

A total of 6 patients were diagnosed with actinic cheilitis out of 116 cases. The distribution was equal between males and females (3 males, 3 females). The majority of patients were in the 21–40-year age group (n=3), with fewer cases in the 41–60-year age group (n=2) and the 61-80 year age group (n=1).

On dermoscopy, all patients exhibited scales, with white scales being the most common (n=4) and yellow scales present in the remaining cases (n=2). The scales were primarily distributed in a patchy pattern (n=4), with a few cases showing a diffuse pattern (n=2). The lesions consistently had a white-red background colour (n=6).

The types of vessels varied, including linear vessels (n=3), dotted vessels (n=3), hairpin vessels (n=1), and polymorphic vessels (n=5). The vessel distribution was mostly diffuse (n=5), with one case showing a peripheral pattern (n=1).

Significant dermoscopic features included ulceration (n=4), white structureless areas (n=4), white lines (n=2), and individual cases of white dots and white globules (each n=1).

Table 26: Demographic details of patients with Actinic chelitis

Sex	**No. of cases (6)**	**% (out of total 116 cases)**
Male	3	50.00
Female	3	50.00
Age (Years)		
<20	0	0.00
21-40	3	50.00
41-60	2	33.33
61-80	1	16.67

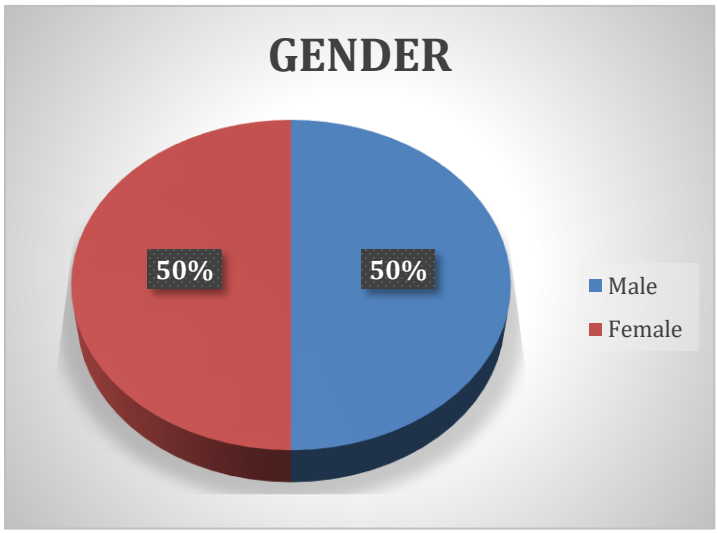


Figure 22: Graphical representation of gender distribution among Actinic chelitis cases

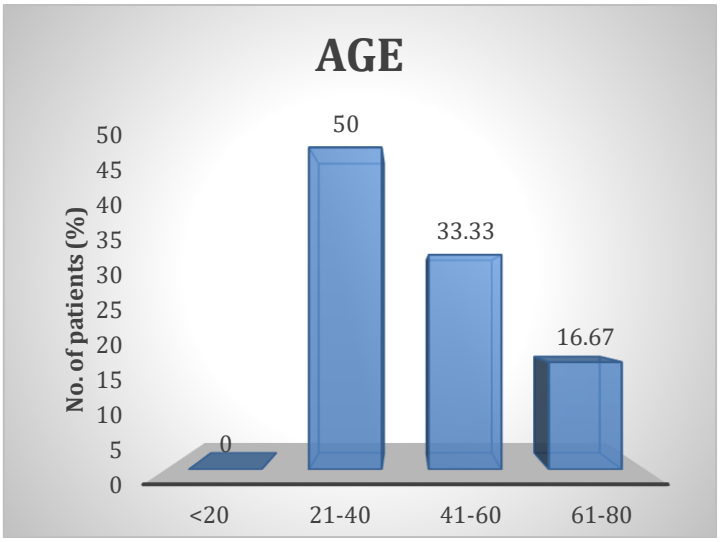


Figure 23: Graphical representation of age distribution among Actinic chelitis cases

Table 27: Dermoscopic features of Actinic chelitis

	No. of cases (6)	% (out of total 116 cases)
Scales color		
Absent	0	0.00
White	4	66.67
Yellow	2	33.33
Scale distribution		
Absent	0	0.00
Diffuse	2	33.33
Patchy	4	66.67
Background Colour		
White-red	6	100.00
Vessel Type		
Absent	0	0.00
Linear vessels	3	50.00
Dotted vessels	3	50.00
Hairpin vessels	1	16.67
Polymorphic vessels	4	16.67
Vessel Distribution		
Absent	0	0.00
Diffuse	5	83.33
Periphery	1	16.67
Other Features		
White dots	1	16.67
White structureless areas	4	66.67
White lines	2	33.33
White globules	1	16.67
Ulceration	5	83.33

Table 28: Dermoscopic features of few other skin tumors:

Skin tumor	Prevalence	M/c background colour	M/c vessel morphology & distribution	M/c scales colour & distribution	Other features
Cutaneous Lymphoma	0.86% (N=1)	Red	Polymorphic, Diffuse	Absent	Red homogenous areas
Aktinic Keratosis	1.27% (N=2)	Pink	Polymorphic, Diffuse	White; Diffuse	White Structureless Areas, Keratin Plugs, White Rosettes
Cherry Angioma	0.86% (N=1)	Pink	Dotted Vessels; Diffuse	Absent	White Dots
Angiokeratoma Circumscriptum	1.27% (N=2)	Pink	Polymorphic, Diffuse	Absent	Red-Purple Lagoons, White Veil
Acral Melanoma	0.86% (N=1)	Pink	Absent	Absent	White Structureless Areas With Surrounding Keratin, Parallel Ridging Pattern
Keratoacanthoma	1.27% (N=2)	Dark Brown, Pink	Arborizing Vessels; Periphery	White; Patchy	Yellow Structureless Areas, Keratin Plugs
Benign Spindle Cell Lesion	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Network
Buschke Lowenstein Tumor	0.86% (N=1)	Pink	Polymorphic, Lobules	White, Brown; Patchy	White Structureless Areas
Bowens Disease	3.45% (N=4)	Pink	Polymorphic & Glomerular; Clusters	White; Diffuse	Brown Dots, Brown Globules, White Structureless Areas
Bowenoid Papulosis	0.86% (N=1)	Pink	Polymorphic, Diffuse	Absent	White Lines
Benign Squamous Papilloma	0.86% (N=1)	Pink	Glomerular; Clusters	Absent	White Structureless Areas, White Lines
Cutaneous Horn	3.45% (N=4)	White	Absent	Absent	White Collarette, White Structureless Areas

Capillary Hemangioma	0.86% (N=1)	Pink	Linear, Diffuse	Absent	White Lines, White Structureless Areas
Dermatofibroma	3.45% (N=4)	Light Brown	Absent	Absent	White Dots, White Structureless Areas
Fibrokeratoma	3.45% (N=4)	Light Brown	Absent	White; Central	Homogenous White Areas
Dermatofibrosarcoma Protuberans	1.27% (N=2)	Pink	Linear; Periphery	Absent	Pigment Network, White Structureless Areas
Dilated Pore Of Winer	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Network, White Dots
Encapsulated Neuroma	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Network(Periphery), Reduced Skin Markings (Centre), White Structureless Areas
Epidermal Nevus	0.86% (N=1)	Light Brown	Absent	White; Diffuse	Brown Globules(Cerebriform Pattern), Milia Like Cysts
Verrucous Epidermal Nevus	3.45% (N=4)	Light Brown	Absent	Absent	Brown Globules, Comedo Like Openings
Fibrous Papilloma Of Nose	0.86% (N=1)	Light Brown	Absent	Absent	Brown Dots, White Dots, White Lines
Irritational Fibroma Of Oral Cavity	0.86% (N=1)	Pink	Dotted; Diffuse	Absent	Homogenous Pink Areas
Mucocele	0.86% (N=1)	Pink	Polymorphic; Periphery	Absent	White Structureless Areas
Neurofibroma	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Lines, White Structureless Areas
Nevus Lipomatosus	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Lines, Yellow Structureless Areas
Nevus Sebaceous	3.45% (N=4)	Light Brown	Absent	Absent	Brown Globules, Comedo Like Openings, Milia Like Cysts

Papillary Eccrine Adenoma	0.86% (N=1)	Light Brown	Polymorphic; Diffuse	White; Patchy	Pigment Lines(Periphery), Yellow Structureless Areas
Periungual Fibrokeratoma	0.86% (N=1)	Light Brown	Absent	White; Diffuse	White Structureless Areas, Hyperkeratotic Tip
Pilomatricoma	0.86% (N=1)	Pink	Arborizing; Diffuse	Absent	Yellow Structureless Areas
Sebaceous Adenoma	0.86% (N=1)	Light Brown	Linear; Diffuse	Absent	Pigment Lines, Brown Globules(Groups), Mammilated Surface
Schwannoma	0.86% (N=1)	Pink	Polymorphic; Diffuse	Absent	Yellow Structureless Areas, White Structureless Areas
Seborrheic Keratosis	1.27% (N=2)	Dark Brown	Absent	White; Diffuse	Brown Globules, Pigment Lines, Comedo Like Openings, finger print like structures
Trichoepithelioma	0.86% (N=1)	Light Brown	Absent	Absent	Pigment Network, White Dots
Vascular Hemangioma	0.86% (N=1)	Pink	Absent	Absent	White Lines

IMAGES OF DERMOSCOPY FEATURES OF FEW TUMORS FROM THE STUDY:

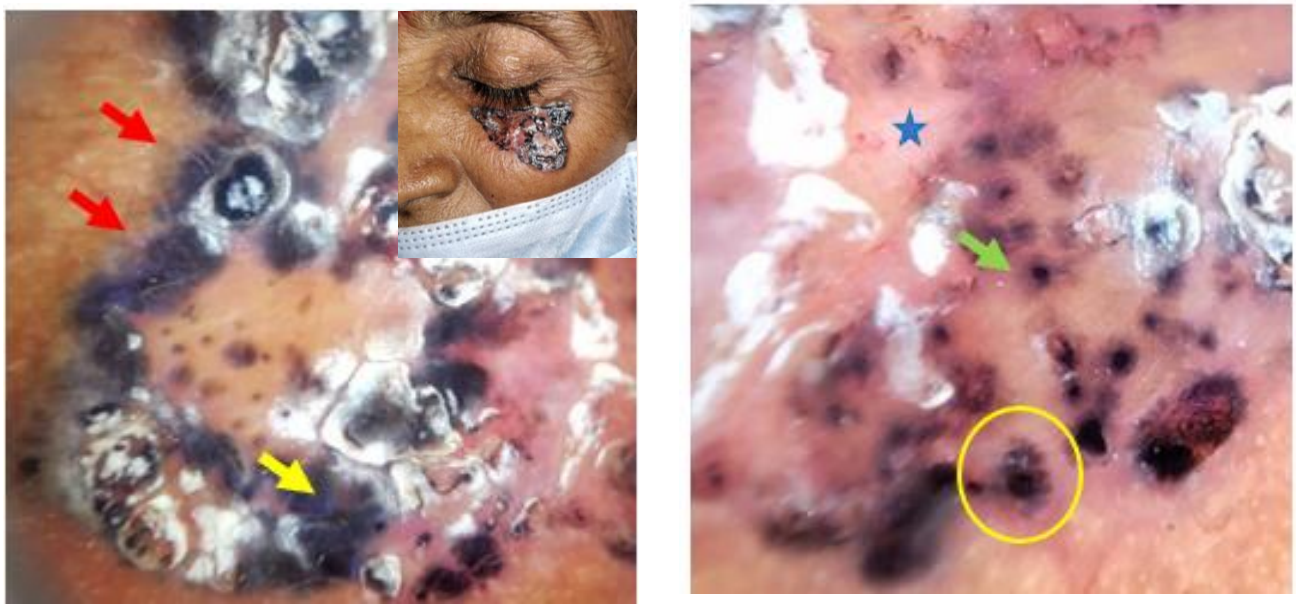


Figure 24 a & b: Dermoscopy of BCC: Yellow arrow-Blue grey ovoid nests; Red arrow- Maple leaf like areas; Green circle- Concentric structures; Yellow circle- Spoke like areas; Blue star- White-pink structureless areas

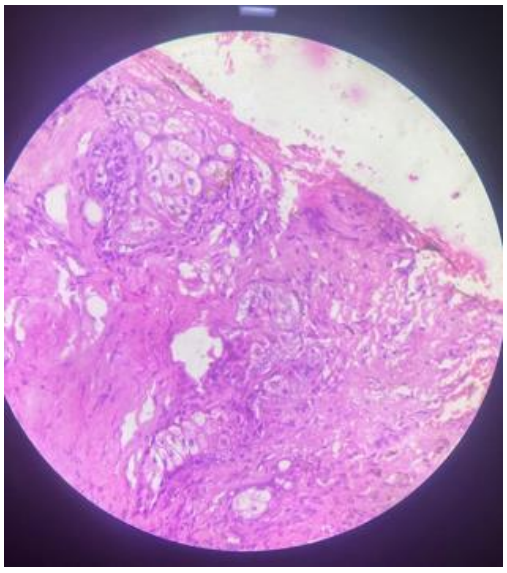


Figure 25: **Histopathology of BCC**

Dermis- tumor cells arising from basal layer arranged in nests and lobules. Tumor cells- round to oval with hyperchromatic nucleus and scanty basophilic cytoplasm. Interveining fibrocollagenous tissue +

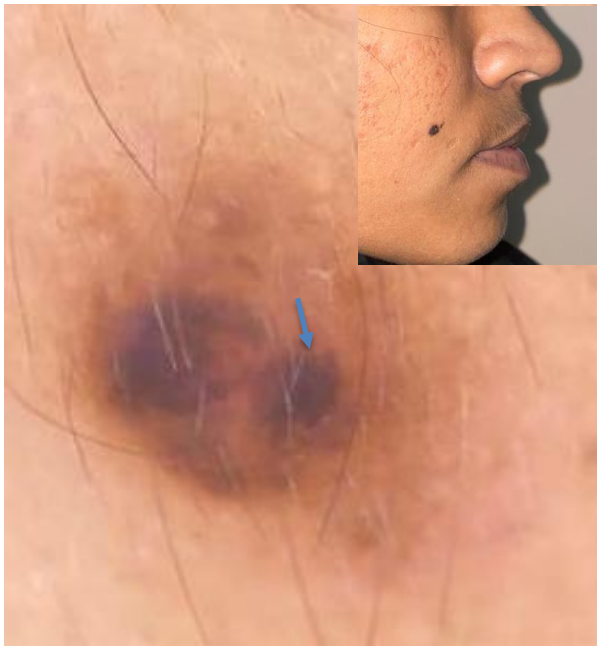


Figure 26: Dermoscopy of melanocytic nevi; Blue arrow- brown globules

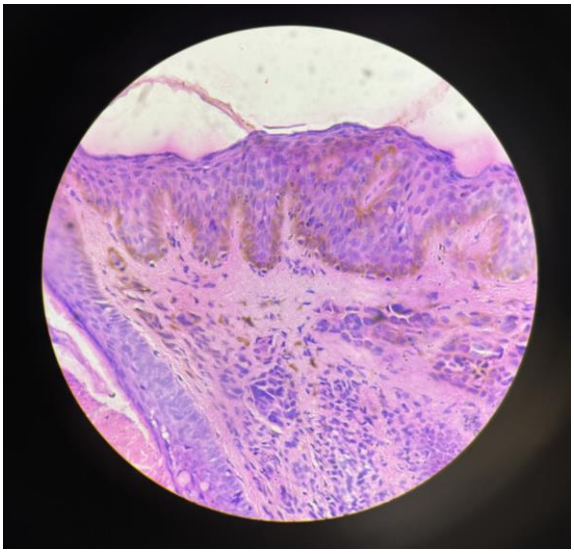


Figure 27: Histopathology of melanocytic nevi

Epidermis- junctional activity and areas of melanin deposition also noted. Dermis shows nests of naevoid cells. Individual cells are monomorphic round to oval having round to oval nucleus vesicular chromatin and scant amount of cytoplasm. Few cells show cytoplasmic melanin deposition.

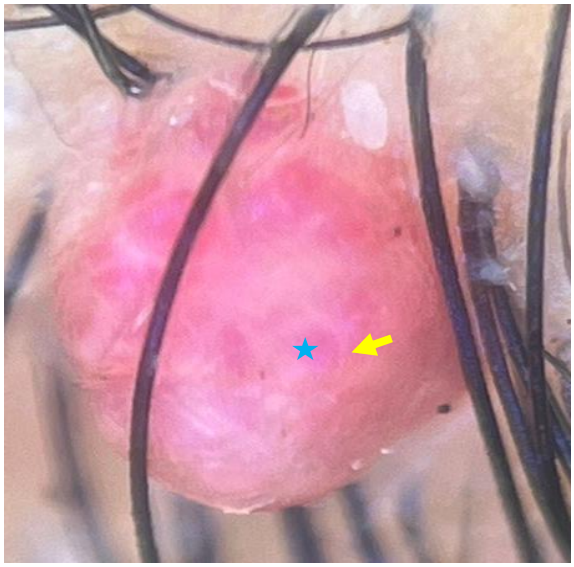


Figure 28: Dermoscopy of Pyogenic granuloma: Blue star- Pinkish homogenous areas; Yellow arrow- Surrounding white rail lines.

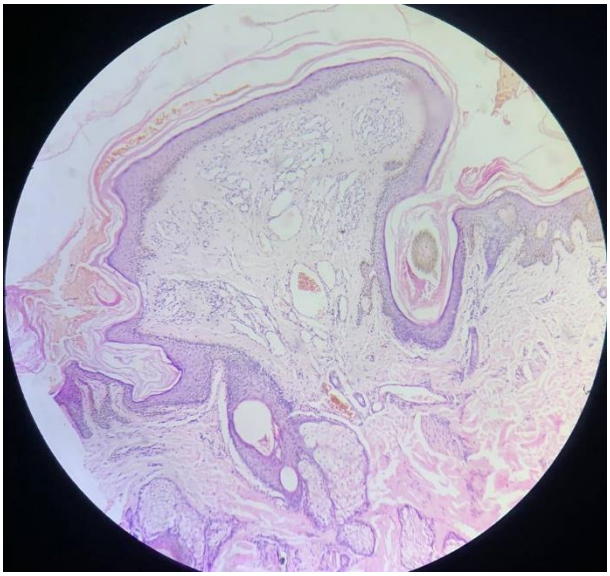


Figure 29: **Histopathology of pyogenic granuloma**

Dermis shows lobules comprised of thin-walled dilated capillaries lined by plump endothelial cells

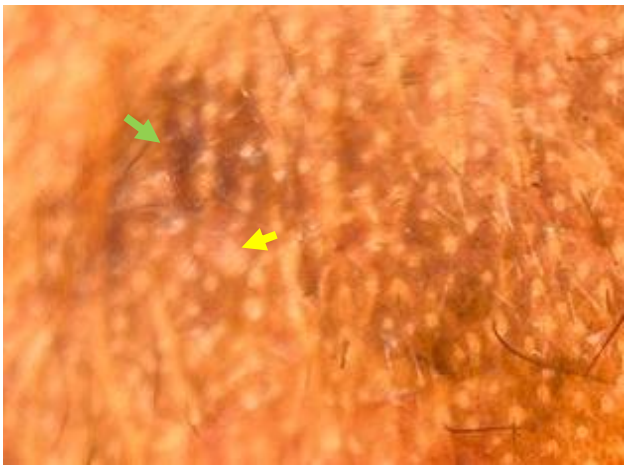


Figure 30: Dermoscopy of Syringoma

Green arrow- Distorted brown pigment; Yellow arrow- White globular stuctures

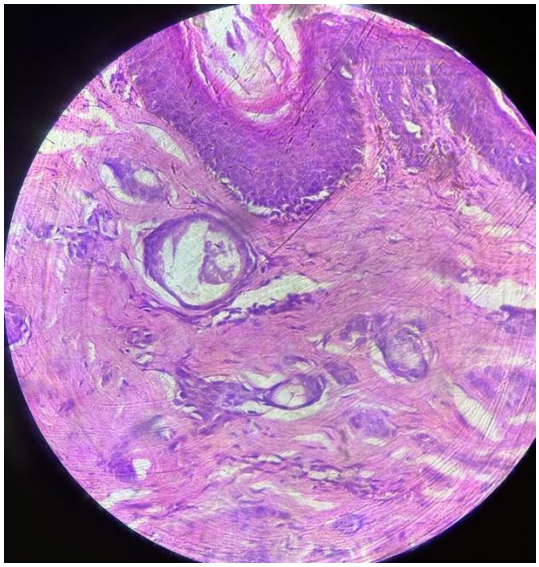


Figure 31: **Histopathology of Syringoma**

Epidermis shows horn cyst. Superficial dermis- tumor tissue comprised of ducts lined by two layered epithelium. Tadpole cells in fibrous stroma present

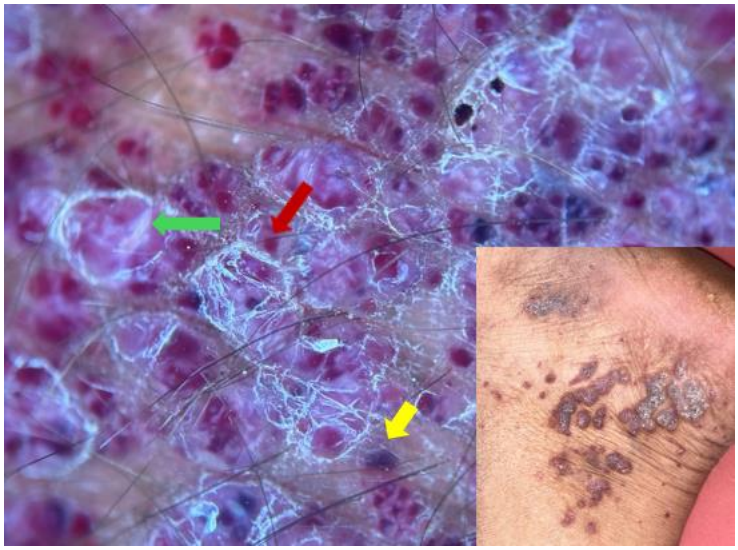


Figure 32: Dermoscopy of Agiokeratoma circumscriptum: Yellow arrow-Purple lagoons; Red arrow- red lagoons; Green arrow- white veil.

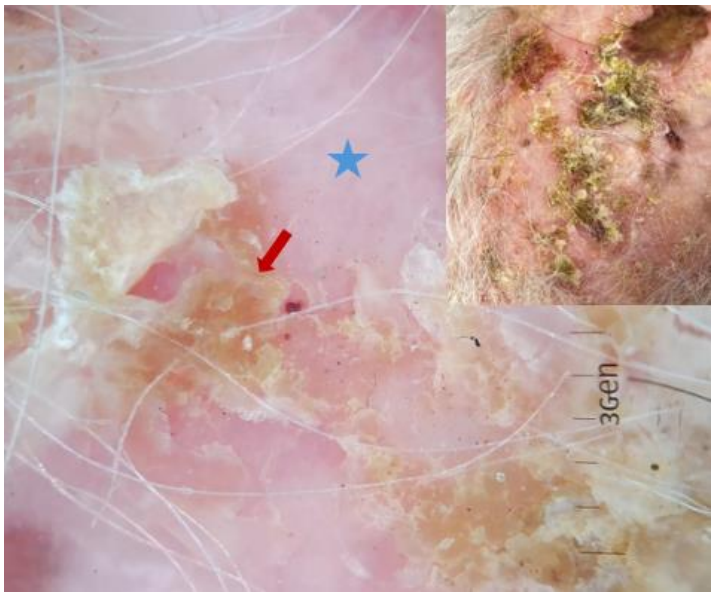


Figure 33: Dermoscopy of actinic keratosis: Red arrow- Keratin plugs; Blue star- white structureless areas

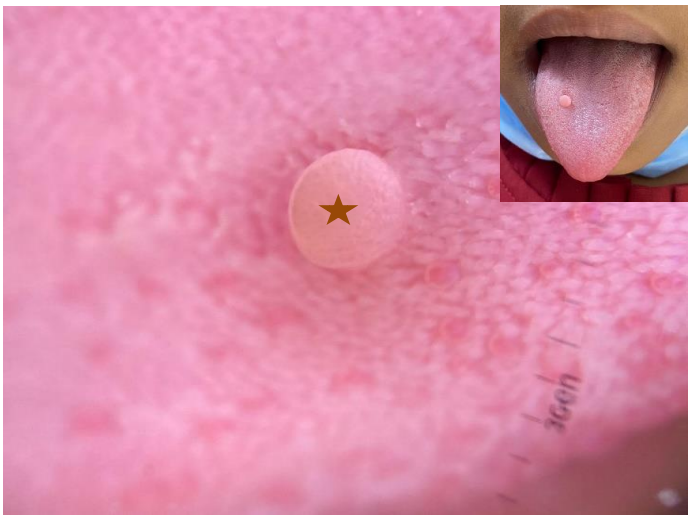


Figure 34: Dermoscopy of irritational fibroma: Green star- Homogenous pink areas.

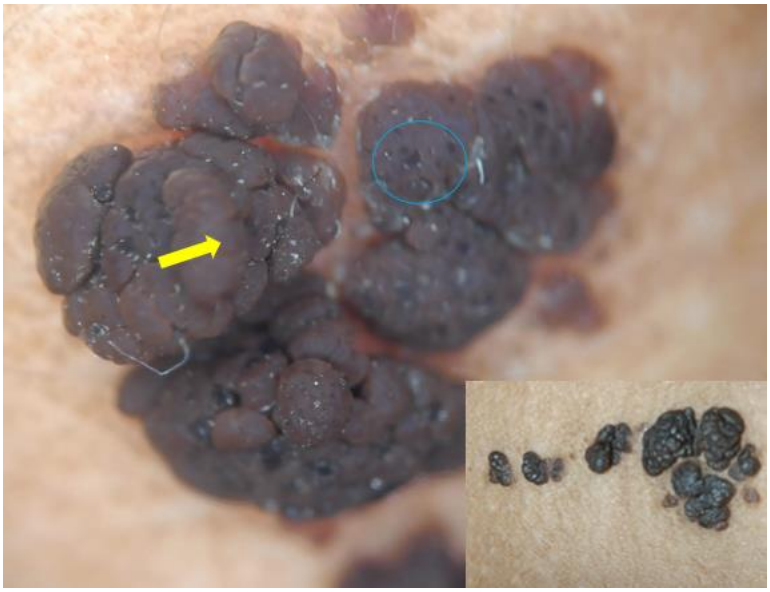


Figure 35: Dermoscopy of ILVEN: Blue circle- comedone like openings; Yellow arrow- Brown globules in cerebriform pattern.

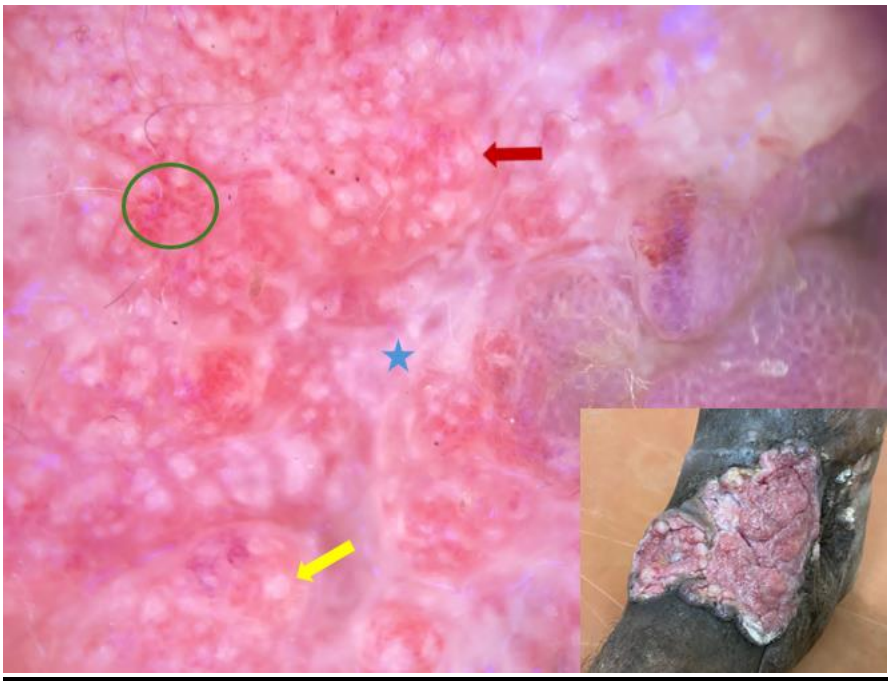


Figure 36: Dermoscopy of SCC: Yellow arrow- Clods; Green circle- Dotted blood vessels; Red arrow- White circle; Blue star- White structureless areas

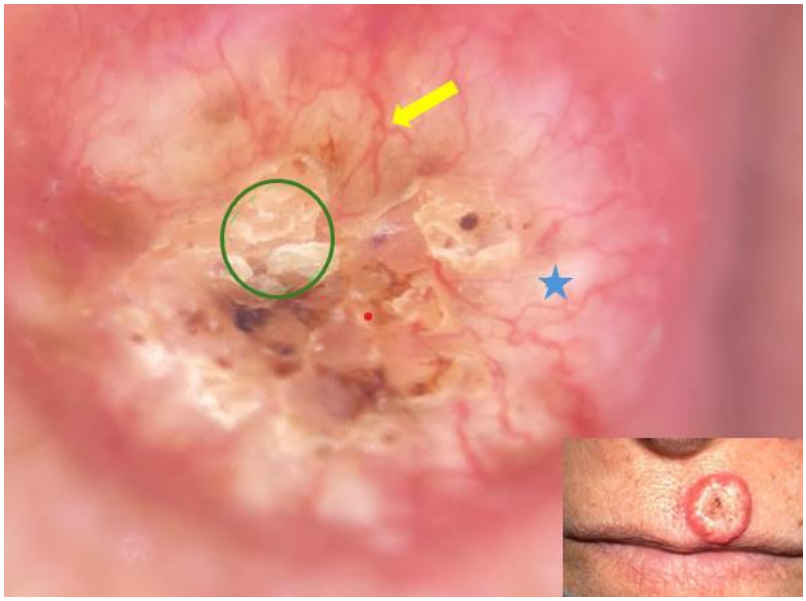


Figure 37: Dermoscopy of Keratatoacantoma: Yellow arrow- Arborizing blood vessels at the periphery; Green circle- Keratin plugs; Blue star- White structureless areas.

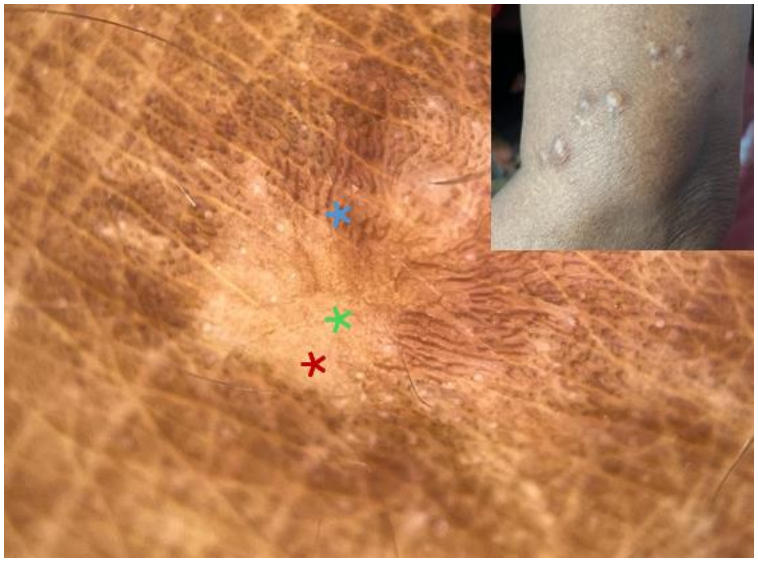


Figure 38: Dermoscopy of Encapsulated neuroma: White structureless areas (Red star) with reduced skin markings (Green star) in the centre surrounded by pigmented lined arranged in linear and reticular patterns in the periphery (Blue star).

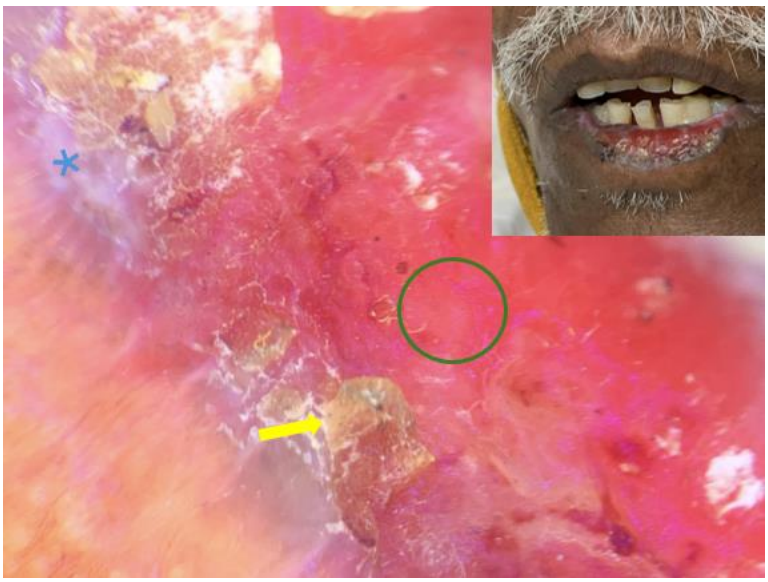


Figure 39: Dermoscopy of Actinic chelitis: Yellow arrow- Keratin plugs; Green circle- Red homogenous area; Blue star- White structureless areas.

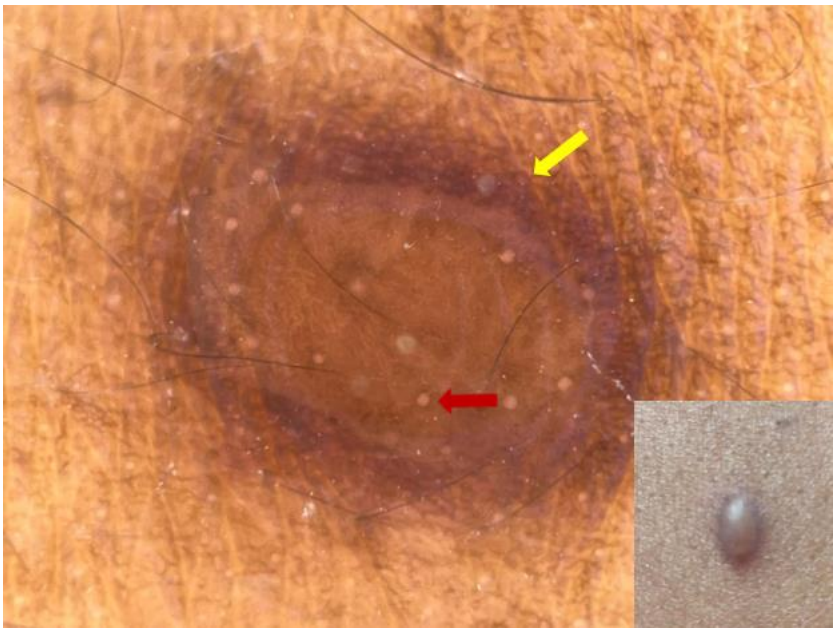


Figure 40: Dermoscopy of Dermatofibroma: Brown background with peripheral dark brown pigment (Yellow arrow) and central eccrine glands (Red arrow).

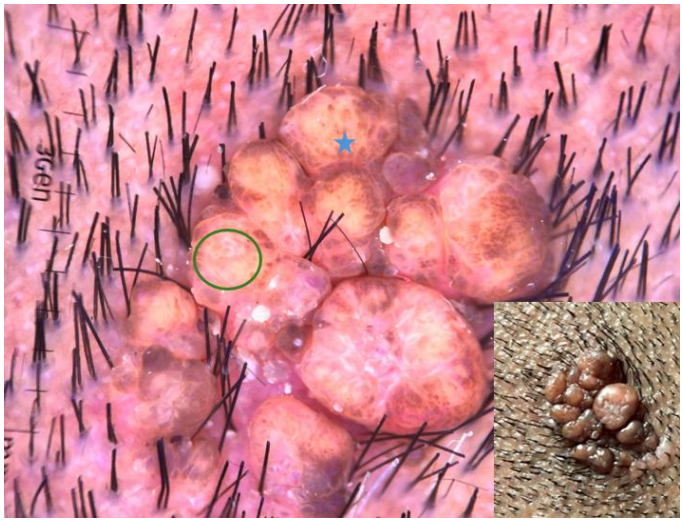


Figure 41: Dermoscopy of nevus lipomatosis: Green circle- Yellow structure less area; Blue star- Brown globules.

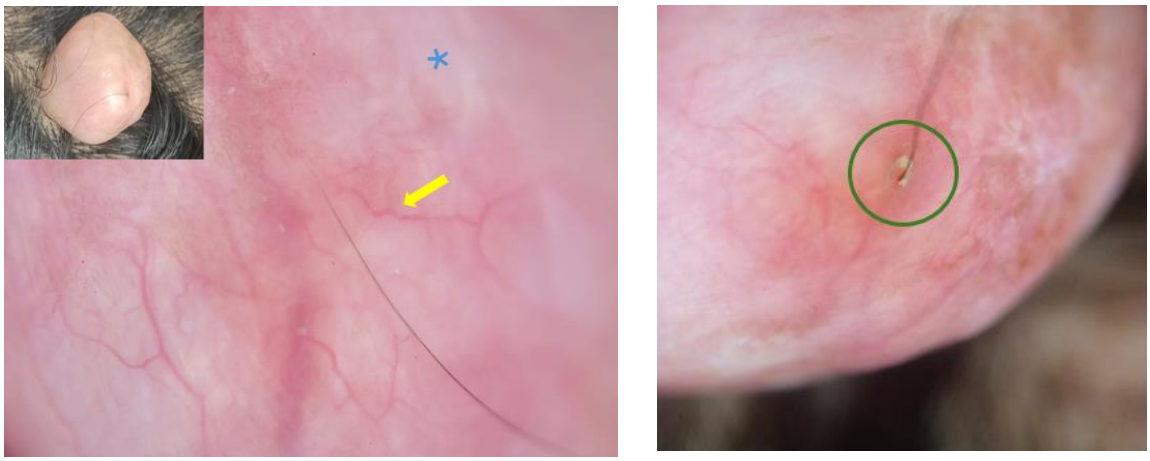


Figure 42 a & b: Dermoscopy of Schwannoma: Green circle- Perifollicular scaling surrounding solitary hair strand; Blue star- White structureless area, Yellow arrow- Arborizing blood vessels.

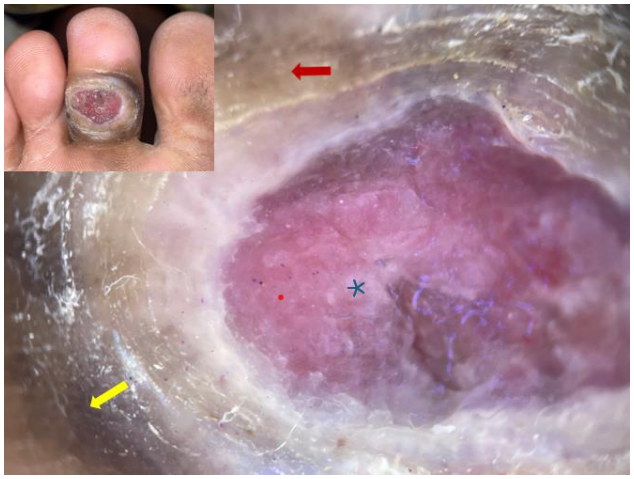


Figure 43: Dermoscopy of Acral melanoma: Yellow arrow- Parallel ridging pattern with surrounding keratin (Red arrow); Blue star- white structureless area.

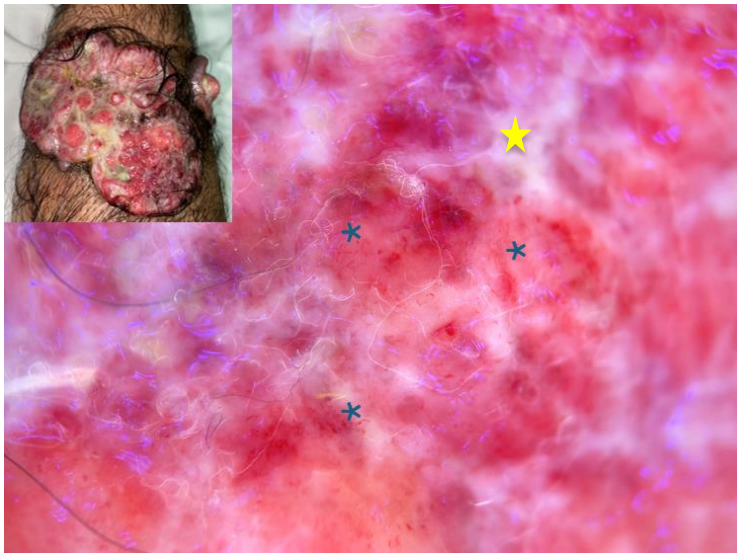


Figure 44: Dermoscopy of cutaneous lymphoma: Blue star- Polymorphic blood vessels, Yellow star- white structureless areas

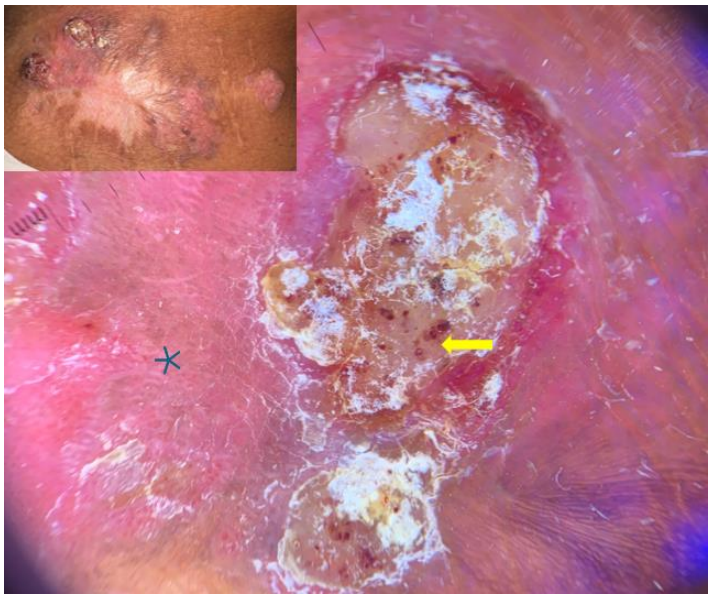


Figure 45: Dermoscopy of Bowens disease: Blue star- Dotted blood vessels within hyperpigmented lobules; Yellow arrow- Erosions multiple glomerular vessels.

DISCUSSION

Dermoscopy is a skin surface microscopy technique that rapidly grew during the past years enhancing the non-invasive dermatological diagnostic techniques effectively; although histopathology remains the gold standard. The prevalence of different skin tumors with their dermoscopic and histopathological features have not been well documented in the Northern part of Karnataka. Our study suggests various specific dermoscopic clues for diagnosis of skin tumours in Fitzpatrick type IV skin in this region.

In our study the most commonly seen were the benign tumors, followed by malignant and then the pre malignant tumors. The dermoscopic features of skin tumors were consistent with few other previous studies. The most prevalent skin tumors have been discussed below in detail.

BASAL CELL CARCINOMA:

Basal cell carcinoma is the most common human cancer. It has a slow progressive course of peripheral extension. There are various clinical and histopathological types known as described earlier.

In the present study, 10 superficial and 4 nodular or nodulo-ulcerative clinical variants of BCC were seen, all were of pigmented variety. The diagnosis was confirmed histopathologically in all cases. There was a significant female preponderance noted. Most of the patients were above the age of 55 years.

Half of the patients had scales on dermoscopic examination, most of them distributed diffusely. Background colour was noted to be blue gray for majority of the study patients.

On comparing the demographic and dermoscopic studies by Suppa et al.[45] and Trigoni et al.[47] with the present study (Table 16), it was observed that BCC was found to be more common in males in previous two studies compared to the present study where there was a significant female preponderance. Age of the patients presenting with BCC was above 50 years in all three studies.

The most common dermoscopic features in our study was blue gray globules (64.2%), maple leaf structures(42.8%), white lines (42.8), keratin plugs (28.5%), ulceration (21.4%). Most common background colour was blue gray and vessel type was telengectasia and linear vessels distributed peripherally.

Table 28: Comparison of demographic and dermoscopic findings of BCC in the present study to that by Suppa et al.[45] and Trigoni et al.[47]

BCC	**Suppa et al Rome**	**Trigoni et al Greece**	**Present study**
Number of patients	153	138	14
Age of patients (years)	64	> 50	> 56
M : F	1.1: 1	1.7:1	0.75:1
Predominant site of lesions	Trunk	Trunk	Face
Arborizing telangiectasia	72.6	63	21.4
White shiny area	35.3	26	NC
White-red structureless area	NC	61	NC
White lines	NC	NC	42.8
Erosion	12.6	26	NC
Ulceration	43.8	26	21.4
Mapple leaf like areas	13.7	6	42.8
Blue grey globules	23.5	21	64.2

Spoke wheel areas	3.9	6	7.14
Blue-white veil-like structures	12.4	NC	NC
Pigment network	2	NC	NC
Featureless area	NC	78	7.14
Keratin plugs	NC	NC	28.5
Concentric structures	NC	NC	14.2

MELANOCYTIC NEVI (MN):

There are two categories for MN: acquired and congenital. Congenital melanocytic nevi can be classified as tiny (less than 1.5 cm), medium (between 1.5 and 20 cm), or large (more than 20 cm) based on their presence from birth. The most prevalent kind, known as acquired melanocytic nevus (AMN), usually manifests in adolescence or early adulthood.

They present as dark macule, smooth surfaced papule or skin colored nodule depending upon the depth of melanocytes[27]

In the present study a total of 16 cases were included, 5 were male and 11 were female, with age group varying from 11-40 years. The most common dermoscopic features seen were brown globules (56.25%), pigment lines(25%), white structureless areas (18.75), milia like cysts (18.75%), brown dots (12.5%)

In a study by Piazza et al.[53] totally 38 cases were evaluated, 19 were male and 19 were female. The ages varied from one to 16 years. Dots (72.6%) were the most common dermoscopic structure

found in the lesions, followed by globules (28.4%), pigment networks (40.8%), and structureless areas (47.8%).

PYOGENIC GRANULOMA:

The lobular capillary hemangioma, or pyrogenic granuloma, is a frequent benign vascular tumor that affects children and infants[58] They appear as a single, smooth, red papule or polyp that grows rapidly at first, stabilizes, and then may get smaller.

They are extremely friable, frequently ulcerate, and may bleed profusely with minor trauma[58]

In our study, the most common dermoscopic features were Pink homogenous areas(38.46%), White structureless areas(15.38%), white lines(92.30%) and white collarette(15.38%). Background colour was pink in all cases with no vessels or scaling seen.

In a study by zaballos et al.48, reddish homogenous region (92%), white collarette (85%), white rail lines that cross the lesion (31%), and ulceration (46%), were found to be the most commonly occurring dermoscopic features.

SYRINGOMA:

Syringoma is a benign skin tumour composed of sweat ducts that is usually multiple, vary in size from 1 to 5 mm. They manifest as bilaterally symmetrical flat topped skin coloured cysts.[28] Four patients with syringoma were evaluated in our study. It was observed that female and male were

equally affected. Age group was 1-60 years. Dermoscopic examination showed absence of scales and vessels. All of them had light brown background colour. Brown pigment network at periphery were seen in all patients. Other dermoscopy features seen were brown homogenous areas(25%), white dots (50%) and white globules(25%). These findings were consistent with a study by Hayashi et al.[42] in Japanese females.

CONCLUSION

Skin tumours develop as a result of proliferation of single or multiple components of the skin. They include aggressive tumors and premalignant lesions, as well as benign lesions that are only cosmetically bothersome. Dermoscopy is a non-invasive method for the in vivo monitoring and diagnosis of pigmented and non-pigmented skin lesions that combines digital photography and light microscopy. But the gold standard for diagnosing skin tumors has traditionally been histolopathological investigation.

- In our study, prevalence of skin tumors was 0.30
- A total of 116 skin tumors were studied. Out of which benign tumors were most prevalent (most prevalent- melanocytic nevi; most common dermoscopic feature- brown globules), followed by were malignant (most prevalent- basal cell carcinoma; most common dermoscopic feature- blue gray globules) and then the pre-malignant tumors (most prevalent- Actinic chelitis; most common dermoscopic feature- vascular polymorphism).
- Among the different groups of skin tumors, most prevalent was keratinocytic tumors, followed by soft tissue tumors, then the melanocytic tumors, appendageal tumors

- There was a 91% agreement between clinic-dermoscopic diagnosis and histopathological confirmation. Hence it appears that the use of dermoscopy improves the clinical diagnostic protocol.

Further studies are needed to evaluate specificity and sensitivity of the dermoscopic features and to conclude that dermoscop could be a substitute for the invasive and time-consuming skin biopsy and histopathological examination.

SUMMARY:

A hospital based, cross-sectional study to determine the dermoscopic and histopathological findings in common benign and malignant tumours was conducted during the period of September 2022 to May 2024. Patients presenting with clinically suspicious skin tumours irrespective of the age were included in the study. All patients were subjected to detailed history, clinical and dermoscopic evaluation followed by skin biopsy for histopathological confirmation. Clinical and dermoscopic images were recorded for each patient. The skin lesion was biopsied and sent for the histopathological examination.

Following are the salient findings of the study:

The salient fetaures of this study are as follows:

- Prevalence of skin tumors was 0.30
- The age group with highest prevalence was between 11- 20 years; followed by the age group 21-30 years.
- There was a slight female preponderance compared to male
- Most commonly seen were benign tumors, followed by malignant and then the pre malignant tumors.
- Most prevalent benign tumor was Melanocytic nevi, pre malignant tumor was Actinic chelitis and malignant tumor was Basal cell carcinoma
- Most common dermoscopy features seen in the most prevalent tumors were:

a. Melanocytic nevi- Brown background, brown globules
b. Actinic chelitis- White red background, White scales, Polymorphic vessels, Ulceration, White structureless areas
c. Basal Cell Carcinoma- Blue gray background, Polymorphic vessels, Blue gray globules, Maple leaf structures, White lines

Many new dermoscopic findings were reported for the first time in this study which require further studies with larger number of patients.

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ETHICAL CLEARANCE CERTIFICATE

BLDE
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Declared as Deemed to be University u/s 3 of UGC Act, 1956
Accredited with 'A' Grade by NAAC (Cycle-2)
The Constituent College
SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA

BLDE (DU)/IEC/ 700/2022-23 30/8/2022

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this University met on **Friday, 26th August, 2022 at 3.30 p.m. in the Department of Pharmacology** scrutinizes the Synopsis of Post Graduate Student of BLDE (DU)'s Shri B.M.Patil Medical College Hospital & Research Centre from ethical clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded ethical clearance.

TITLE: "CLINICAL, DERMOSCOPIC AND HISTOPATHOLOGICAL STUDY OF SKIN TUMORS: A PROSPECTIVE CROSS-SECTIONAL STUDY".

NAME OF THE STUDENT/PRINCIPAL INVESTIGATOR: Dr. Namratha Shivaraj

NAME OF THE GUIDE: Dr. Keshavmurthy A. Adya, Associate, Dept. of Dermatology.

Dr. Santoshkumar Jeevangi
Chairperson
IEC, BLDE (DU),
VIJAYAPURA
Chairman,
Institutional Ethical Committee,
BLDE (Deemed to be University)
Vijayapura

Dr.Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA
MEMBER SECRETARY
Institutional Ethics Committee
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka

Following documents were placed before Ethical Committee for Scrutinization:

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

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CONSENT FORM

B.L.D.E (Deemed to be university) SHRI B.M PATIL MEDICAL COLLEGE

HOSPITAL AND RESEARCH CENTRE, VIJAYAPURA-586 103

RESEARCH INFORMED CONSENT FOR:

TITLE OF THE PROJECT: CLINICAL, DERMOSCOPIC AND HISTOPATHOLOGICAL STUDY OF SKIN TUMORS: A PROSPECTIVE CROSS-SECTIONAL STUDY

PG GUIDE: DR. KESHAVMURTHY ADYA

PG STUDENT: DR. NAMRATHA SHIVARAJ

PURPOSE OF RESEARCH: To know the prevalence of skin tumors in Northern part of Karnataka and correlating clinical, dermoscopic and histopathological features of the same.

BENEFITS: Knowledge about the prevalence of skin tumors will provide the epidemiological data pertaining to this geographical area and will assist the health care providers in decision making for the appropriate care and management of skin tumors.

PROCEDURE:

I understand that relevant history will be taken, clinical examination, dermoscopic evaluation will be done and skin biopsy will be taken for histopathological examination.

CONFIDENTIALITY:

I understand that medical information produced by this study will become a part of my hospital records and will be subjected to the confidentiality and privacy regulation of the said hospital. Information of a sensitive personal nature will not be a part of the medical records, but will be stored in the investigator's research file.

If the data are used for publication in the medical literature or for teaching purposes no names will be used and other identifiers such as photographs and audio or videotapes will be used only with my special written permission. I understand I may see the photographs, videotapes and hear the audiotapes before giving this permission.

REQUEST FOR MORE INFORMATION:

I understand that I may ask more questions about the study at any time concerned. Dr. NAMRATHA SHIVARAJ is available to answer my questions or concerns. I understand that I will be informed of any significant new findings discovered during the course of this study, which may influence my continued participation.

REFUSAL OR WITHDRAWAL OF PARTICIPATION:

I understand that my participation is voluntary and I may refuse to participate or may withdraw consent and discontinue participation in this study at any time without prejudice. I also understand that Dr. NAMRATHA SHIVARAJ may terminate my participation in this study at any time after he has explained the reasons for doing so and has helped arrange for my continued care by my own physician, if this is appropriate.

INJURY STATEMENT:

I understand that in the unlikely event of injury to me resulting directly from my participation in this

study and if such injury were reported promptly, then medical treatment will be available to me, but no further compensation will be provided. I understand that by my agreement for my participation in this study, I am not waiving any of my legal rights.

I have explained to (patient's / relevant guardian's name) the purpose of the research, the procedures required, and the possible risks and benefits to the best of my ability in patient's own language.

_____ _____

Investigator / P. G. Guide Date

I confirm that DR. KESHAVMURTHY ADYA (Name of the PG guide / chief researcher) has explained to me the research, the study procedures that I undergo and the possible risks and discomforts as well as benefits that I may experience. I have read and I understand this consent form. Therefore, I agree to give my consent for my participation as a subject in this research project.

_____	_____
Participant / guardian	Date
_____	_____
Witness to signature	Date

PROFORMA

Department of Dermatology, Venerology and Leprosy

SCHEME OF CASE TAKING

CLINICAL, DERMOSCOPIC AND HISTOPATHOLOGICAL STUDY OF SKIN TUMORS: A PROSPECTIVE CROSS-SECTIONAL STUDY

S. No: **Date:**

Name: **Age / Sex:**

Address and Contact Details: **Hospital no.:**

Presenting Complaints & duration:

History of Present Illness:

Personal History:

Diet: Bowel & Bladder: Habits:

Appetite: Sleep: Occupation:

Past history:

Family History:

Clinical Examination:

Dermoscopic findings:

Provisional diagnosis:

Histopathology:

Final Diagnosis:

KEY TO MASTER CHART

ALCC- ANAPLASTIC LARGE CELL CARCINOMA

SCC- SQUAMOUS CELL CARCINOMA

BCC- BASAL CELL CARCINOMA

CBN- CELLULAR BLUE NEVUS

ECN- ENCAPSULATED NEUROMA

PG- PYOGENIC GRANULOMA

BD- BOWENS DISEASE

NL- NEVUS LIPOMATOSUS

NS- NEVUS SEBACEOUS

IF- IRRITATIONAL FIBROMA

VEN- VERRUCOUS EPIDERMAL NEVUS

NBCC- NODULAR BCC

AMN- ACQUIRED MELANOCYTIC NEVUS

CH- CUTANEOUS HORN

PF- PERIUNGUAL FIBROMA

BFHCN- BASILOID FOLLICULAR HAMARTOMA OF

COMPOUND NEVUS

PBCC- PIGMENTED BCC

DFK- DIGITAL FIBROKERATOMA

DN- DERMAL NEVUS

CS- CHONDROIS SYRINGOMA

MCT- MIXED CUTANEOUS TUMOR

MC- MUCOCELE

SY- SYRINGOMA

DFSP- DERMATOFIBROSARCOMA PROTRUBERANS

AC- ACTINIC CHELITIS

TB- TRICHOBLASTOMA

PM- PILOMATRICOMA

FK- FIBROKERATOMA

BLT- BUSCHKE LOWENSTEIN TUMOR

TA- TUFTED ANGIOMA

TE- TRICHOEPITHELIOMA

ILVEN- INFLAMMATORY LINEAR VEN

BP- BOWENOID PAPULOSIS

CA- CHERRY ANGIOMA

KA- KERATOACANTHOMA

FHT- FIBROHISTIOCYTIC TUMOR

AF- ANGIOFIBROMA

FP- FIBROUS PAPILLOMA

SK- SEBORRHEIC KERATOSIS

AK- ACTINIC KERATOSIS

PN- PLEXIFORM NEUROFIBROMA

DF- DERMATOFIBROMA

LAC- LYMPHANGIOMA CIRCUMSCRIPTUM

AKC- ANGIOKERATOMA CIRCUMSCRIPTUM

AM- ACRAL MELANOMA

CM- CUTANEOUS METASTASIS

FL- FIBROLIPOMA

CY- CYLINDROMA

CL- CUTANEOUS LYMPHOMA

EN- EPIDERMAL NEVUS

IFK- INVERTED FOLLICULAR KERATOSIS

SA- SEBACEOUS ADENOMA

PEA- PAPILLARY ECCRINE ADENOMA

DIFF- DIFFERENTIATED

SPL- SPINDLE CELL LESION

HG- HEMANGIOMA

VH- VASCULAR HAMARTOMA

CHG- CAPILLARY HEMANGIOMA

NF- NEUROFIBROMA

BSP- BENIGN SQUAMOUS PAPILLOMA

SC- SCHWANNOMA

WSA- WHITE STRUCTURELESS AREAS

WL- WHITE LINES

BLG- BLUE GLOBULES

DBR- DARK BROWN

PL- PIGMENTED LINES

RE- RETICULATE

RHA- RED HOMOGENOUS ARAES

GV- GLOMERULAR VESSELS

DV- DOTTED VESSELS

BRPA- BROWN PIGMENT AREAS

DBL- DARK BLUE

LBR- LIGHT BROWN

YSA- YELLOW STRUCTURELESS AREAS

BRG- BROWN GLOBULES

MS- MAMMILLATED SURFACE

RCL- RED CLODS

HPA- HOMOGENOUS PINK AREAS

BRL- BROWN LINES

PY- PATCHY

PA- PARALLEL

DBRSA- DARK BROWN STRUCTURELESS AREAS

PE- PERIPHERY

DRHA- DARK RED HEMORRHAGIC AREA

PFL- PERIFOLLICULAR

BLG- BLUE GREY

BLGRG- BLUE GREY GLOBULES

MLS- MAPLE LEAF STRUCTURE

CS- CONCENTRIC STRUCTURES

ST- SUPERFICIAL TELENGECTASIA

WGS- WHITE GLOBULAR STRUCTURES

CLO- COMEDO LIKE OPENINGS

BRD- BROWN DOTS

HBRA- HOMOGENOUS BROWN AREAS

MLC- MILIA LIKE CYSTS

WC- WHITE CIRCLES

HWA- HOMOGENOUS WHITE AREA

CL- CLUSTERS

FPLS- FINGER PRINT LIKE STRUCTURES

TEL- TELENGECTASIA

PHA- PINK HOMOGENOUS AREA

BGC- BLUE GREY CLODS

WCO- WHITE COLARETTE

WD- WHITE DOTS

CP- CEREBRIFORM PATTERN

WRL- WHITE RETICULAR LINES

LO- LOBULES

RPL- RED-PURPLE LAGOONS

WV- WHITE VEIL

PEE- PERIPHERAL ERYTHEMA

HPV- HAIR PIN VESSELS

BA- BASE

WH- WHITE HALO

CSV- CORK SCREW VESSELS

CEP- CEREBRIFORM PATTERN

GRBG- GREY BROWN GLOBULES

KP- KERATIN PLUGS CEREBRIFORM PATTERN

SER- SERPIGINOUS

DIS- DISTORTED

ULC- ULCERATION

RSA- RED STRUCTURELESS AREAS

PRP- PARALLEL RIDGING PATTERN

KER- KERATIN

HV- HAIRPIN VESSELS

WR- WHITE ROSETTES

HK- HYPERKERATOTIC

BLGON- BLUE GRAY OVOID NESTS

SL NO	NAME	AGE	SEX	CLINICAL DIAGNOSIS	HPE DIAGNOSIS	DERMOSCOPY FEATURES						
						BACKGROUND COLOUR	VESSEL MORPHOLOGY	VESSEL DISTRIBUTION	SCALES COLOUR	SCALES DISTRIBUTION	PIGMENT STRUCTURES	OTHER FEATURES
1	BASAPPA	73	M	ALCC	CL	R	LV,BV	D	0	0	0	WSA
2	KOLLALAPPA GADIGEPPA	63	M	SCC	MODERATELY DIFF SCC	R	LV,AV	D	0	0	0	WSA,WL
3	SHIVANAND MALESHAPPA	65	M	CBN	EN	BL	0	0	0	0	BLG	0
4	RATNABAI KOTYAL	68	F	NF/SC/ECN	ECN	LBR	0	0	0	0	PL (L&RE)	WSA, RSM (CENTRE)
5	FATHIMA RAZAQ TALIKOTI	12	F	PG	PG	P	0	0	0	0	0	RHA, WL
6	YALLAPPA KUDARI	65	M	BD	BD	P	GV,DV IN LOBULES	D	W	D	BRPA	0
7	RAMESH BADIGER	37	M	NL	NL	LBR	0	0	0	0	PL(RE)	YSA
8	KAVERI NAYAK	12	F	NS	SA	LBR	LV	D	0	0	PL(L), BRG(GROUPS)	MS
9	MODANABI	60	F	BD	WELL DIFF SCC	R	GV, AV	D	0	0	0	YSA, WSA, WL, RCL
10	ZOYA	7	F	IF	IF	P	DV	D	0	0	0	HPA
11	SOURABH D SHINDAGI	13	M	VEN	VEN	BR	0	0	W	PY	BRG, BRL	0
12	HANAMANTH LAXMAN	60	M	NBCC WITH ULCERATION	BCC	BLG	0	0	W	C	BRG, BLGON	0
13	SHREYA	13	F	AMN	DN	P	DV(LOBULES)	D	W	D	0	0
14	ANUSHREE KARIGAR	7	F	CH/PF	PF	LBR	0	0	W	D	0	HK TIP, WSA
15	PRASHANTH	32	M	BFHCN	DN	P	0	0	W	PY	BLGRG	0
16	SHANTA BAI	68	F	SUPERFICIAL PBCC	SUPERFICIAL PBCC	P	TE	PE	W	PE	MLS, BLGRG, CS, SWS	0
17	SUNIL DEVU PAWAR	28	M	DFK	DFK	LBR	0	0	W	C	0	DRHA
18	POOJA HIPPARAGI	24	F	DN	DN	DBR	0	0	0	0	BRG	DBRSA
19	SANGAWWA BASAPPA	55	F	CS/MCT	PEA	LBR	LV,BV	D	W	PY	PL(L&PE)	YSA
20	NIKHIL KOKARE	30	M	PG	PG	P	0	0	0	0	0	PHA, WL
21	RAFE HASHMI	19	M	AMN	DN	DBR	0	0	0	0	PL(RE)	0
22	VARSHA R B ASTI	22	F	MC	MC	P	LV, BV	PE	0	0	0	WSA
23	MALAN MANIYAR	38	F	SY	SY	LBR	0	0	0	0	PL(RE)	WGS
24	SANTOSH PATIL	22	M	AMN	BENIGN SPL	LBR	0	0	0	0	PL(RE)	0
25	ARUN SHINDE	27	M	VEN	VEN	DBR	0	0	0	0	BRG	CLO
26	SHANTABAI	65	F	PBCC	BCC	BLG	AV	PE	0	0	MLS, BLGRG, FPS	WL
27	IMAMBOO AGARAKED	46	M	DFSP	DFSP	P	LV	PE	0	0	PL(RE)	WSA
28	NAZREEN MASOOD MULLA	50	F	BCC	BCC	BLG	LV	PE	0	0	BRD, BRG, BLGON	WSA, KP
29	SHARADA METRI	32	F	AC	AC	WR	LV, DV	D	W	PY	0	ULC, WSA
30	VIJAYKUMAR K KAMBAR	24	M	SY	SY	LBR	0	0	0	0	PL(RE)	HBRA, CLO
31	SREELAKSHMI	28	F	TB/TE	DN	DBR	LV	D	0	0	PL	WGS, MLC, WSA
32	TUKARAM RAJAPUT	60	M	AC	AC	WR	DV	PE	W	D	0	WSA, ULC
33	SHIVARAJ HALLUR	19	M	CMN	DN	DBR	0	0	0	0	BRG	WSA
34	MEHBOOB SAB	71	M	SCC	WELL DIFF SCC	P	DV,LV	D	0	0	0	WSA, WC
35	SAKKU BAI	28	F	AC	AC	WR	LV	D	Y	PY	BRD	WD, WL, ULC
36	ABHAY KULKARNI	40	M	FK/DF	FK	LBR	0	0	W	D, PE	0	HWA
37	RAJAKUMAR N BALAGAR	42	M	PM	PM	P	AV	D	0	0	0	YSA
38	KAVERI CHATTER	18	F	CH/FK	FK	P	0	0	0	0	0	HWA
39	ABUKAKAR NADAF	15	M	NS	NS	DBR	0	0	0	0	BRG	MLC, CLO
40	SHUBHAM	19	M	DF	DF	LBR	0	0	0	0	PL(RE)	WSA
41	LAXMI PADASALI	37	F	?PIGMENTED BD	BD	P	DV	CL	0	0	BRD	WSA, RHA
42	KALAVVA MADAR	35	F	BLT	BLT	P	AV, HV	LO	W, BR	PY	0	WL, WSA
43	SHRISHAIL	52	M	SCC	SCC	P	DV,LV	D	0	0	0	WL, WSA
44	ROOPA BADADAL	23	F	SK	SK	DBR	0	0	W	D	BRG	CLO, FPLS
45	GOVINDRAO	73	M	FK	FK	LBR	0	0	W	C	0	HWA
46	VINALABAI	70	F	PBCC	BCC	BLG	TEL, LV	D	W	D	BLGRG, MLS	WL, KP
47	IMALABAI BORAGAVARKAR	52	F	SCC	SCC	P	DV, HV	D	0	0	0	WL, WC, WSA
48	UMA VINAY PATIL	30	F	PG	PG	P	0	0	0	0	0	WL, PHA
49	VITTAL TONASHYAL	56	M	AK	AK	P	0	0	W,Y	PY	BRG	WSA, KP
50	GANESH SHRISHAIL	12	M	PG	PG	P	0	0	0	0	0	WL, PHA
51	ADIVEPPA KUMBKAR	74	M	AC	AC	WR	HV	D	W	PY	0	WG, ULC
52	RENUKA SHINDE	36	F	PG	PG	P	0	0	0	0	0	WCO, WL
53	NEELAMMA KORWAR	38	F	AC	AC	WR	LV	D	Y	D	0	WSA, ULC
54	MALLAPPA S METI	60	M	AC	AC	WR	DV	D	W	PY	0	WL, WSA
55	SAGAR PAWAR	18	M	TE	TE	LBR	0	0	0	0	PL(RE)	WD
56	MULIMAYYA S H	44	M	PG	PG	P	0	0	0	0	0	WL, PHA
57	MAHANANDA SHRIMANTH	45	F	DFSP	DFSP	P	LV	D	0	0	PL(L)	WSA
58	POONAM MUTTAGIKAR	25	F	PG	VH	P	0	0	0	0	0	WL
59	NIHARIKA GOUDAR	23	F	AMN	AMN	DBR	0	0	0	0	PL(RE), BRG	WSA
60	SNEHA LENDI	24	F	AMN	AMN	DBR	0	0	0	0	BRG	0

61	VARASHA PATIL	24	F	PG	PG	P	0	0	0	0	0	WL, WCO
62	SHAVU AMRESH	10	F	ILVEN	ILVEN	DBR	DV	D	0	0	BRG IN CP, BRL	MLC, CLO
63	MUTTAPPA BASAPPA	48	M	BP/SCC	SCC	P	GV	LO	0	0	0	WRL, RCL
64	NIRANJAN HANAMANTH	9	M	PG	PG	P	0	0	0	0	0	WL
65	SOFIYA ASFAQ MULLA	24	F	AMN	AMN	DBR	0	0	0	0	BRD	MLC
66	SUMMAYYA	33	F	AMN	AMN	DBR	0	0	0	0	PL(RE)	0
67	PAVAN CHAWAN	11	M	TA	AKC	P	0	0	0	0	0	RPL, WV, PEE
68	NEHA BEPARI	22	F	AMN	DN	DBR	0	0	0	0	BRG	WD
69	SIDDAPPA MALLAPPA	60	M	BCC	PBCC	BLG	TE, L	D, PE	0	0	BLGRG, MLS	WL
70	SHRISHAIL BIRADAR	24	M	CH	CH	W	HPV, LV	BA	W	D	0	WSA
71	RAJABEE PENDARI	60	F	BCC/ BD	BD	P	GV	CL	W	D	BRG, BRD	0
72	RATHNAWWA	65	F	BCC	SUPERFICIAL BCC	P	TE	PE	W	PE	BLGR CS, MLS	PHA
73	ASHWITA B	14	F	CH	CH	LBR	0	0	W	C	PL(L)	0
74	VANI MAHESH	20	F	PG	PG	P	0	0	0	0	0	WL, WSA
75	GOPAL HARIJAN	43	M	A- CA	A- CA	P	DV	D	0	0	0	WD
				B- PG	B- PG	P	0	0	0	0	0	WL
76	LALITABAI	54	F	KA	KA	P	AV	PE	W	C	0	YSA
77	RAHUL DHONI	17	M	VEN	VEN	LBR	0	0	0	0	BRG	0
78	MALLAMMA BIRADAR	35	F	FHT	NF	LBR	0	0	0	0	PL(RE)	WSA
79	DHULAPPAGOUD N BIRADAR	61	M	LSeA PROGRESSING TO BD	BSP	P	GV(CLUSTERS), CSV	D	0	0	0	WL, WSA
80	TAHER TOPIWALA	20	M	AF/TE/FP OF NOSE	FP	LBR	0	0	0	0	BRD	WD, WL
81	DAYAWWA BEERAPPA	70	F	BD/PBCC	BD	P	LV, AV	D	W	D	BRG	WSA
82	PRAKASH RUDRAGOUD	38	M	TE	DILATED PORE OF WINER	LBR	0	0	0	0	PL(PE)	WD
83	MALLIKARJUN	14	M	SK	SK	DBR	0	0	W	D	PL(RE)	CLO, MLC
84	PRANAVI IJERI	9	F	DN	DN	DBR	0	0	0	0	BRG(CP)	0
85	SHRISHAIL	62	M	BCC	BCC	DBR	TE	PE	0	0	BLGRG	WL
86	SHIVABAI TELI	72	F	A- AK	A- AK	P	LV, GV	D	W	D	0	WG, WR, KP
				B- KA/SCC	B- KA	DBR	0	0	W	PY	0	KP
87	MAHESH TUKARAM	36	M	DF/ PN/ DFSP	CHG	P	LV	D	0	0	0	WSA, WL
88	SHIVANAGOUD	69	M	DF	DF	LBR	0	0	0	0	PL(PE)	WD, WGS
89	SUPREET PATIL	10	M	PG	PG	P	0	0	0	0	0	WSA
90	SHRAVANI POL	38	F	PG	PG	P	0	0	0	0	0	WL
91	SAHEBGOUDA PATIL	49	M	SCC	MODERATELY DIFF SCC	P	LV	D	0	0	0	WC, WSA, RSA
92	PANKAJ KAVALARGI	17	M	DN	DN	DBR	0	0	0	0	BRG	0
93	LAXMI GUTTEDAR	35	F	SCC/AM	AM	P	0	0	0	0	0	PRP, WSA, KER(SURROUNDING)
94	KAMALA BAI	70	F	BCC	BCC	BLG	TE, LV	PE	W	C	BLGRG, BLGON	WL, KP
95	SONUBAI JAGATAP	80	F	NODULO ULCERATIVE BCC	BCC	BLG	AV	D	0	0	BLGRG	WL, ULC
96	DALAWWA	35	F	BP	BP	R	CV, DV	D	0	0	0	WL
97	SHIVANAGOUDA	69	M	DF	DF	LBR	0	0	0	0	0	WSA, WL
98	SAGAR RATHOD	25	M	SY	SY	LBR	0	0	0	0	PL	WD
99	SHRISHAIL S	62	M	BCC	BCC	BLG	LV, TE	D	0	0	BLGRG, FPS, BLGON	0
100	PRANAVI IJERI	9	F	DN	DN	DBR	0	0	0	0	BRG	CLO
101	SHIVANGAWWA K	38	F	DN	DN	LBR	0	0	0	0	BRD	0
102	VILAS JOSHI	69	M	CH	CH	P	0	0	W	D	0	0
103	SANDEEP	9	M	VEN/SB	NS	LBR	0	0	0	0	BRD, BRG	0
104	NITIN IMCHAGERI	17	M	AMN	DN	DBR	0	0	0	0	BRG	MLC
105	RUKUMBI SHINDAGIKAR	39	F	SY/TE	SY	LBR	0	0	0	0	PL(DIS)	WD
106	LAXMIBAI S P	22	F	PG	PG	P	0	0	0	0	0	PHA, WL
107	SUKANYA JADHAV	13	F	ILVEN	VEN	LBR	0	0	0	0	BRD(SER), BRG	0
108	KASTURI	50	F	CH	CH	W	0	0	W	D	0	WCO
109	SAHANA B B	16	F	ILVEN	EN	LBR	0	0	W	D	BRG	CEP, MLC
110	SARDAR DOLLI	55	M	BCC/KA	BCC	P	0	0	W	D	BRD, CP	WSA, KP
111	BASAMMA MALI PATIL	20	F	AKC/ LAC	AKC	P	0	0	0	0	0	RPL, WV
112	BHAGYASHREE	46	F	FL/CY	SC	P	LV,AV	D	W	PFL	0	WSA, YSA
113	AFREEN AKBAR	16	F	NS/VEN	NS	LBR	0	0	0	0	GRBG	0
114	SHARANAMMA	56	F	NBCC	BCC	BLG	LV	D	0	0	MLS, CP	ULC
115	MALLAPPA PUJARI	34	M	BCC/IFK	BCC	P	AV, LV	D	W	D	BLGRG, PL	ULC
116	VEENA PATIL	50	F	DF	DF	LBR	0	0	0	0	PL(PE)	#NAME?