

Assessment of Dermoscopic Characteristics of Molluscum Contagiosum: A Cross-sectional Study

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ABSTRACT

Introduction: Molluscum Contagiosum (MC) is a cutaneous viral infection caused by *molluscipoxvirus*, affecting children, sexually active adults and immunosuppressed individual. Although it is easily diagnosed clinically, it can be confused with other clinical entities. In addition, the diagnosis becomes difficult when it has a single lesion or associated with inflammation. Thus, dermoscopy which is a non invasive and inexpensive tool helps to determine the diagnosis of MC.

Aim: To evaluate the dermoscopic characteristics of MC and compare them with clinical presentation.

Materials and Methods: The present cross-sectional observational study was conducted at the Outpatient Department (OPD) in the department of Dermatology, Venereology and Leprosy at a tertiary care center at a Grant Government Medical College, Mumbai, Maharashtra, India, for a period of 6 months from July 2025 to December 2025. Patients presenting with pearly white umbilicated papules and clinically suggestive of MC were included in the study. The patients' history was recorded and examination done thoroughly and data such as the gender and age of the patient, the size of the lesions, the presence or absence of an orifice, vessels, inflammation and/or excoriation and perilesional eczema were recorded. A total of 33 patients with 161 lesions were included in the study. Dermoscopy was performed in 161 lesions from 33 patients where non vascular and vascular structures were noted

in each lesion. Results were expressed in terms of frequency and percentage. Descriptive statistical analysis was done using IBM Statistical Package for the Social Sciences (SPSS) Statistics version 17.0.

Results: A total of 33 patients with 161 lesions were included in the study. Of the 33 patients, 20 were males and 13 were females with mean age of 14.45 ± 9.32 (range from 2 years to 32 years). The MC lesions were most frequently found on the face, trunk and upper extremities. The structures evaluated on dermoscopy included non vascular structures (whitish or yellowish structure) and vascular structures (crown, punctate, radial). On clinical and dermoscopy examination of 161 lesions, orifices were visualised in 100 and 161 of the lesions, and vessels in four and 72, respectively. The vascular patterns found in the 72 lesions on dermoscopy were the crown (23.60%), radial (11.18%) and punctiform patterns (9.93%).

Conclusion: The dermoscopic findings of MC were non vascular and vascular. Rounded structures were common (70.80%) in the non vascular structure. Crown vessels (23.60%) were the most common vascular pattern observed; however, no vascular structures were seen in 55.28% of the lesions. Dermoscopy in lesions of MC was found to be superior as compared to clinical examination and aids in diagnosis of unusual presentations of these lesions.

Keywords: Atypical, Clinical dermatology, Diagnosis, Diagnostic technique, *Poxviridae* infections, Viral infection

INTRODUCTION

The MC is a cutaneous viral infection caused by *molluscipoxvirus*, affecting children, sexually active adults and immunosuppressed individual [1]. It is characterised by flesh coloured, dome shaped, umbilicated papules filled with white waxy material [2]. It is often diagnosed clinically with the characteristic manifestations of pearly white umbilicated papules. At times, the lesions of MC may not be easily identified in case of lack of central umbilication, associations with other types of dermatological lesions, atypical lesions, small, single, initial lesions, inflammatory lesions and lesions with perilesional eczema [3]. The diagnosis becomes difficult in these instances, thus an invasive procedure such as biopsy needs to be done to reach a final and definitive diagnosis. The histopathology of MC shows characteristic Henderson-Paterson bodies representing intracytoplasmic assemblies of the virus. In such scenario, dermoscopy serves best as a diagnostic tool for its ease and rapid diagnosis and also confirms clinical diagnosis [4]. Dermoscopy is a non invasive imaging technique which refers to the examination of skin with a handheld device that is dermatoscope, to reveal surface and subsurface skin structures. It is a diagnostic method that is simple to perform, fast and relatively inexpensive, can be used in daily practice. The known dermoscopic features seen in MC lesions are vascular (crown, radial, punctate and mixed)

and non vascular (white structure or yellow structure) [5,6]. In spite of various dermoscopic findings in MC, there is limited clinical correlation, scanty studies on atypical lesions and also differential diagnosis of MC [7,8].

For the above reasons, the present study helps bridge an important gap in knowledge by measuring diagnostic yield of dermoscopy as compared to clinical examination and enhancing diagnostic confidence in non invasive assessment for typical and atypical cases bypassing biopsy and histopathology. The novel aspects of the present study include comprehensive dermoscopic assessment, clinical comparison and relevance to a resource-poor setting where availability of biopsy and histopathology may be limited. The aim of the study was to evaluate the dermoscopic characteristics of MC and compare them with clinical presentation.

MATERIALS AND METHODS

The present study was a cross-sectional observational study that was performed at the OPD in the Department of Dermatology, Venereology and Leprosy at a tertiary care center at Grant Government Medical College, Mumbai, Maharashtra, India. This study was conducted between July 2025 to December 2025. Convenience sampling method was used to calculate the sample size. Demographic details and relevant clinical history of the patients

were recorded. A total of 33 patients with 161 lesions were included in the study.

Inclusion criteria: Patients presenting with pearly white umbilicated papules and clinically suggestive of MC were included in the present study.

Exclusion criteria: Those who did not consent for the study were excluded.

Study Procedure

The patient's history and examination were done thoroughly and data such as the gender and age of the patient, the size of the lesions, the presence or absence of an orifice, vessels, inflammation and/or excoriation and perilesional eczema were recorded. Then dermoscopy was performed for each lesion with the help of video dermoscope (10x) and features like the presence or absence of an orifice and vessels and, if vessels were present, the vascular pattern was noted. Clinical photographs of each lesion were taken. The comparison of clinical and dermoscopic examination data was done and analysed.

STATISTICAL ANALYSIS

Descriptive statistical methods were used. Results were expressed in terms of frequency and percentage. Data were entered and analysed with the latest Microsoft Excel version. Dermoscopic findings were analysed lesion-wise and summarised descriptively. Statistical analysis was performed using IBM SPSS Statistics version 17.0.

RESULTS

A total of 161 lesions from 33 patients were analysed. Of the 33 patients, 20 were males and 13 were females with mean age of 14.45 ± 9.32 (range from 2 years to 32 years). The size of the lesions varied from 3 mm to 14 mm. Of the 161 lesions, only 100 lesions showed umbilication clinically [Table/Fig-1a], five were giant MC [Table/Fig-1b], two were inflamed [Table/Fig-1c], two had perilesional eczema [Table/Fig-1d] and five were excoriated.



[Table/Fig-1]: a) Classical Molluscum Contagiosum (MC) lesion with pearly white papule and central umbilication in a six-year-old male child; b) Giant MC; c) MC with inflammation; d) MC with perilesional dermatitis.

The various vascular and non vascular structures on clinical and dermoscopy are given in [Table/Fig-2]. Clinical examination showed

the presence of orifice/umbilication in 100 lesions (62.11%) while dermoscopy was able to detect in all 161 lesions (100%). Of all the white structure, round white structures (70.80%) were the most common, followed by polylobular structures (19.25%) as shown in [Table/Fig-3].

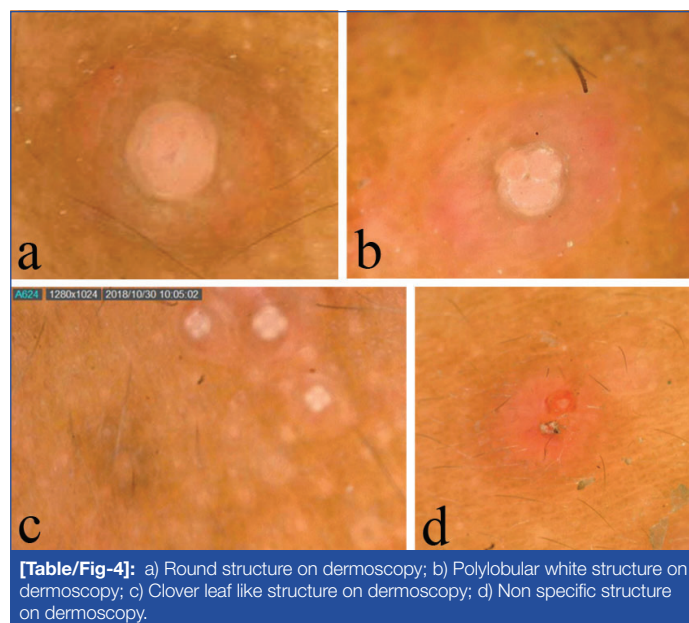
Structures	Clinical	Dermoscopy
	n (%)	n (%)
Non vascular structure (white structure)	100/161 (62.11%)	161/161 (100%)
Vascular structures	04/161 (2.48%)	72/161 (44.72%)

[Table/Fig-2]: Clinical examination vs Dermoscopic examination findings in 33 patients N=161.

Type of white structure	n (%)
Round	114/161 (70.80%)
Polylobular	31/161 (19.25%)
Clover-like	07/161 (4.35%)
Nonspecific	09/161 (5.59%)

[Table/Fig-3]: White structure visualised on dermoscopy N=161.

On clinical examination, the presence of vessels was seen in four lesions (2.48%) while dermoscopy visualised vessels in 72 lesions (44.72%). But no vessels were found in 55.28% lesions. The white structures found on dermoscopy are shown in [Table/Fig-3,4a-d].



[Table/Fig-4]: a) Round structure on dermoscopy; b) Polylobular white structure on dermoscopy; c) Clover leaf like structure on dermoscopy; d) Non specific structure on dermoscopy.

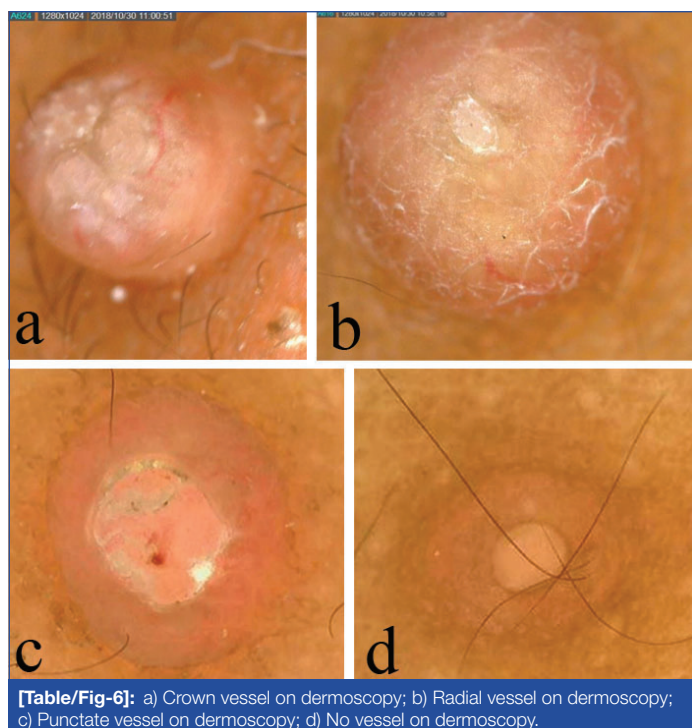
Of all the vascular structures found on dermoscopy, crown vessel (23.60%) was the commonest vascular pattern. Out of the 16 lesions which had punctiform vessels on dermoscopy, 5 lesions (31.25%) were excoriated. The various vascular patterns visualised on dermoscopy are shown in [Table/Fig-5,6].

Vascular pattern	n (%)
Crown	38/161 (23.60%)
Radial	18/161 (11.18%)
Punctate	16/161 (9.93%)
No vessels	89/161 (55.28%)

[Table/Fig-5]: Vascular patterns seen on dermoscopy.

DISCUSSION

The diagnosis of MC is often clinical but in atypical cases, single lesion, non umbilicated papule, associated perilesional eczema and in immunocompromised patients, it becomes difficult to diagnose. The present study highlights the dermoscopic features of MC and their correlation with clinical finding. The present study analysed 161



lesions of MC both clinically and dermoscopically at a tertiary care center in Mumbai.

White structure is the most common dermoscopy finding in MC. It is histologically correlated with inverted lobules of acanthotic epidermis, and the dermoscopic features depended on the distribution pattern of the lobules [6]. The various white structures on dermoscopy are: a) round which is described as a solitary homogeneous whitish discoid area located in the center of a lesion; b) polylobular structure which is a white structures of variable size and shape clustered in the centre of the lesions; c) four-leaved clover-like structure or rosette which is a white structure arranged in a four-way shape, similar to a four-leaved clover; and d) structureless white areas. In the present study, white structures were found in 100% of lesions; in decreasing order of frequency, these were roundish, polylobular, non specific and four-leaved clover-like. This is similar to a study from Korea by Ku SH et al., in 2015 where white structures were found in 98.3% of lesions [9]. While round and polylobular white structures are specific for MC, four leaved clover-like structure also called as rosette were first believed to be specific for actinic keratoses and squamous cell carcinoma but have been described in other conditions like basal cell carcinoma, discoid lupus erythematosus, scars etc., [10,11]. The exact aetiology of rosette is unknown, however Haspeslagh M et al., stated that rosettes are an optical effect of crossed polarisation by concentric fibrosis or horny material at the infundibular level, and hence are not lesion-specific [12]. Some have also suggested that these could represent an early stage of disease where the central crater formation has not established yet [13,14]. In light of the many conditions that can manifest as rosettes like melanoma, basal cell carcinoma, dermatofibroma, actinic keratoses and squamous cell carcinoma, it is crucial to seek further clinical and dermoscopic evidence before making a diagnosis or opting for a skin biopsy [13,15].

When MC papules were first analysed under dermoscopy by Vázquez-López F et al., in 2004, they presented with a yellowish white central orifice circumscribed by vessels termed as “red corona” or red crown [16]. They have described red corona as the only vascular pattern while later Morales A et al., and Zaballos P et al., reported other vascular pattern in which vessels extending through the amorphous structure of the lesions towards their core, without crossing it, may have been referring it as radial vessels [6,17]. Apart from crown pattern, radial, punctiform and mixed vessels have been described in a study by Ianhez M et al., [18]. In the present study, only about 44.72% patients had vascular

structures on dermoscopy. This is contrary to study by Ku SH et al., where the vascular structures were found in 91.1% of lesions [9]. This could be attributed to smaller or early lesions of MC or variations in skin prototype. In a study by Nayak SS et al., conducted in an Indian population involving 15 cases of MC reported central white amorphous structures corresponding to umbilication as the characteristic dermoscopic finding, they did not observe branching vascular patterns that have been described in previous literature [19]. Out of the vascular structures identified in our study, crown pattern was the most common as seen in most of the studies [5,6,17,18]. Other vascular structures found in our study was radial and punctiform vessels, however we did not encounter any mixed vascular pattern on dermoscopy as described in a study by Ianhez M et al., [18]. Punctiform vessels which are small reddish dot inside the lesion were seen in around 9.93% of lesions in the present study. However, these have been described in various disorders like melanoma [20], clear cell acanthoma, lichen planus and basal cell carcinoma [21]. It was observed that out of the 16 lesions with punctiform vessels in our study, five lesions (31.25%) were excoriated which was also seen in the study by Ianhez M et al., where lesions with perilesional eczema and inflammation/excoriation were associated with punctiform pattern [18].

The various differential diagnoses of MC on dermoscopy are sebaceous hyperplasia, naevus sebaceous and sebaceous adenoma owing to the presence of crown vessels and yellowish white structure. The classical dermoscopy findings described in MC include yellowish-white structures and vessels in various patterns. While the dermoscopic findings of sebaceous hyperplasia typically include a white-yellowish lobulated structure corresponding to hyperplastic sebaceous gland lobules, umbilication corresponding to the dilated sebaceous gland duct and the follicular orifice, and vascular patterns corresponding to dilated dermal vessels which often present as crown vessels, irregular vessels, or arborising vessels [22-24]. Dermoscopy of Nevus Sebaceous (NS) characteristically shows yellow globules, white, grey lobules arranged in clusters in a yellow background in a NS during childhood [25] while in adulthood with verrucous plaque to nodular lesions, brown globules in cerebriform pattern with fissures and ridges to crateriform pattern with peripheral striations to whitish yellow lobular or yellow-greyish papillary structures, in verrucous plaque and homogenous yellow appearance in nodular lesions with linear irregular and arborescent vessels have been described [26]. Two dermoscopic patterns are described for sebaceous adenoma depending on the presence of central crater in the tumour. Tumours with a central crater shows crown vessels surrounding an opaque structureless ovoid white-yellow center on dermoscopy while tumours without crater shows branching but unfocused arborising vessels over a white-to-yellow background, with a few loosely arranged yellow comedo-like globules. These yellow ovoid structures correspond histopathologically to dermal conglomerations of enlarged sebaceous glands, a feature shared by all sebaceous lesions [27]. Both MC and sebaceous tumours exhibit similar dermoscopic features. White structures were found in 100% lesions while vascular structures were found in only 44.72% lesions of MC on dermoscopy in the current study. Thus the typical white structure may be more helpful for differential diagnosis compared with the vascular features as reported earlier. We would like to highlight in this study that dermoscopy provides valuable insights into the characteristic features of MC, aiding in accurate diagnosis in case of atypical lesion and differentiation from other skin conditions.

Limitation(s)

The present study was an observational study with limitations being small sample size, lack of histopathology correlation which would have helped in better diagnosis and lack of inclusion of lesions similar to MC for better comparison.

CONCLUSION(S)

In conclusion, the present study underscores the hallmark dermoscopic features of MC, including central white amorphous structures and unique peripheral vascular patterns. In the present study, dermoscopy could identify the maximum number of white structures and vascular structures as compared to clinical examination. The most common white structure found on dermoscopy in this study was round structure while crown pattern was the commonest pattern found in vascular structure. Thus dermoscopy enhanced diagnostic accuracy and helped in differentiating MC, especially in atypical presentations. The strong link between clinical and dermoscopic observations affirm the role of dermoscopy as a reliable, non invasive diagnostic tool. Integrating it into everyday practice could enable earlier detection and minimise unnecessary invasive tests.

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PLAGIARISM CHECKING METHODS:

- Plagiarism X-checker: Feb 02, 2026
- Manual Googling: May 13, 2026
- iThenticate Software: May 16, 2026 (12%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? No
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: Dec 24, 2025

Date of Peer Review: Feb 12, 2026

Date of Acceptance: May 19, 2026

Date of Publishing: Aug 01, 2026