Original Research Article

Journal of College of Medical Sciences-Nepal, Vol-22, No.1, Jan-Mar 2026

ISSN: 2091-0657 (Print); 2091-0673 (Online) Open Access
DOI: 10.3126/jcmsn.v22i1.86333

# Histopathological Profile of Lichen Planus and Its Variants in a Tertiary Care Hospital of Chitwan, Nepal

**Binita Goyal**[1], **Akshunna Rup Shrestha**[1], **Rija Singh Karki**[1], **Neema Pun**[1]

[1]Department of Pathology, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal.

## ABSTRACT

### Background

Lichen planus (LP) is a subacute or chronic inflammatory dermatoses that can involve skin, mucous membranes, hair follicles and nails. Though, classical LP has characteristic presentation, variations exist which are rare and may have atypical presentation, rendering their diagnosis difficult and delay in management. Hence, biopsy of the lesion and histological examination remains important. This study was undertaken to study the histopathological profile of LP and its variants and describe their histological features.

### Methods

This cross-sectional study was conducted in Department of Pathology, College of Medical Sciences-Teaching Hospital on 70 cases of LP and its variants in a study duration of 2 years from August 2023 to July 2025. The statistical analysis was performed using SPSS 16. For the categorical variables, percentages and frequencies were computed.

### Results

Of the total 70 cases, age ranged from 9 to 79 years with mean 44.5 years. Female male ratio was 1.5:1. Most common lesions were cutaneous comprising, 51 (72.9%) cases followed by 16 (22.9%) mucosal cases. Most common histological diagnosis was classical LP in 38 (54.3%) cases followed by Oral lichen planus in 14 (20.0%) cases, Lichen planus pigmentosus (LPP) in 7 (10.0%) cases, Lichen planopilaris in 5 (7.1%) cases, Hypertrophic LP in 4 (5.7%) cases and Bullous LP and LP pemphigoides in 1 (1.4%) case each. Most common histological feature was band shaped dermal lymphocytic infiltrate observed in 64 (91.4%) cases.

### Conclusions

Variants of LP need to be kept in mind while evaluating lesions of skin. Histopathological examination in suspected cases of LP help in finding the correct diagnosis.

**Keywords:** Histopathology; Lichen; Variants; Lichen planus; Nepal

**Correspondence:** Dr. Binita Goyal, Department of Pathology, College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal. Email: binitagoyal@yahoo.com, Phone: +977-986016774. **Article received**: 2025-09-25. **Article accepted**: 2025-12-12. **Article published**: 2026-03-31.

## INTRODUCTION

Lichen planus (LP) is a subacute or chronic inflammatory dermatoses that can involve skin, mucous membranes, hair follicles and nails.[1] Histopathologically, it shows brisk interface lymphocytic infiltration. Causes may be infectious, immune, genetic and metabolic with cell mediated immunity playing a major role.[2] Exogenous agents like viruses, drugs or contact allergens modify epidermal self-antigens which are targeted by CD8+ T cells.[3] Goal of management include reducing the duration till resolution and manage pruritus.[4-6] Though, classical LP is characteristic, variation in its morphology and location exist. Variants are rare and may have atypical clinical presentation, rendering diagnosis difficult and delay in management. Moreover, there are various entities appearing similar to LP clinically. But, histopathology in LP and its variants are similar aiding in proper diagnosis. Hence, biopsy of the lesion and histological examination remains important.[5,7] This study was undertaken to study histopathological profile of LP and its variants.

## METHODS

This cross-sectional study was conducted in Department of Pathology, College of Medical Sciences-Teaching Hospital (COMSTH), Bharatpur, Chtwan, Nepal. Ethical clearance was taken from Institutional Review Committee (IRC) (Ref. No. COMSTH-IRC/2024-028). This study included 70 clinically suspected and histopathologically confirmed cases of lichen planus (LP) and its variants. The study was conducted over a period of two years, from August 2023 to July 2025. Recurrent cases and suboptimal biopsies were excluded. Age, gender and clinical diagnosis were noted from histopathology requisition forms. Slides were retrieved, histopathological diagnosis was reviewed and histological findings were noted in a predesigned proforma. Statistical analysis was done by SPSS 16. Age, gender, site distribution, histological diagnosis, and histopathological findings were expressed as frequencies and percentages.

## RESULTS

A total of 70 cases were studied. Age of the patients ranged from 9 to 79 years with mean ± SD of 44.5 ± 19.5 years and maximum 15 (21.4%) cases in 31 – 40 years age group. There were 42 (60.0%) females and 28 (40.0%) males with female male ratio of 1.5:1 (Figure 1).

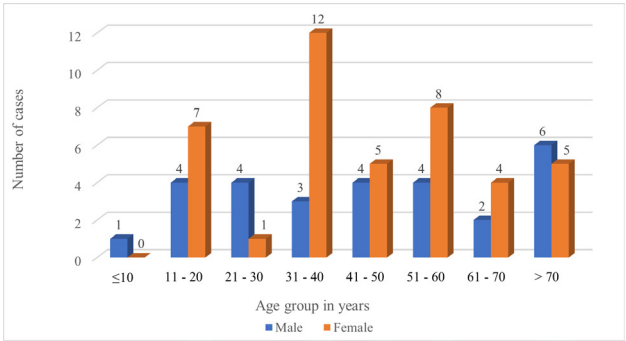


**Figure 1. Age and gender distribution of cases.**

Most common lesions were cutaneous comprising 51 (72.9%) cases followed by 16 (22.9%) mucosal and 3 (4.3%) cases in scalp. Most common site was limbs comprising 32 (45.7%) cases (Table 2, Figure 2).

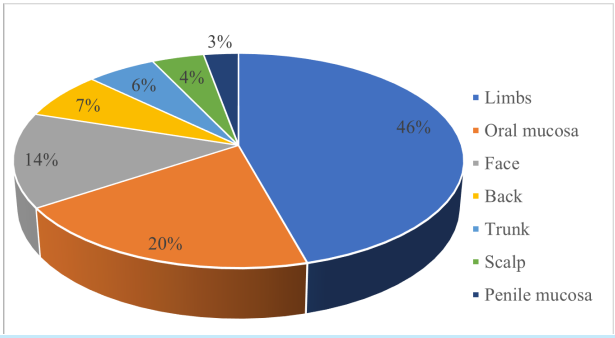


**Figure 2. Site distribution of cases.**

Most common histological diagnosis was classical LP in 38 (54.3%) cases (Figure 3) followed by Oral lichen planus in 14 (20.0%) cases (Figure 4, Table 1).

Most common histological feature observed was band shaped dermal lymphocytic infiltrate observed in 64 (91.4%) cases followed by orthokeratosis in 58 (82.9%) cases (Tables 3).

Other histological features noted were follicular plugging in 14 (20.0%) cases, perivascular inflammation in 13 (18.6%) cases, interstitial dermal inflammation in 6 (8.6%) cases, basilar squamatization in 9 (12.6%) cases and Civatte bodies in 5 (7.1%) cases. In addition to the common

**Table 1. Histological diagnoses of LP and its variants (n=70).**

| Histological diagnosis | Frequency (%) |
|---|---|
| Classical lichen planus | 38 (54.3) |
| Oral LP | 14 (20.0) |
| Lichen planus pigmentosus (LPP) | 7 (10.0) |
| Lichen planopilaris | 5 (7.1) |
| Hypertrophic LP | 4 (5.7) |
| Bullous LP | 1 (1.4) |
| LP pemphigoides | 1 (1.4) |

histological features described above, Oral LP had parakeratosis in 13/14 (92.5%) cases, ulceration in 3/14 (21.4%) cases and mild dysplasia in 1/14 (7.1%) case. Similarly, all 7 cases of LPP showed melanophages in dermis (Figure 6). All 5 cases of Lichen planopilaris showed perifollicular inflammation (Figure 7). All 4 cases of Hypertrophic LP showed broad bulbous rete ridges with dermal lymphocytic infiltrate more pronounced at the base of rete ridges (Figure 8). 1/4 (25.0%) case of Hypertrophic LP showed pseudoepitheliomatous hyperplasia. Bullous LP displayed subepidermal bullae and LP pemphigoides displayed intraepidermal vesicle with neutrophils, dermoepidermal clefts with dermal papillary projections.

**Table 2. Site distribution in various histological diagnoses (n=70).**

| Histological diagnosis | Site of lesion | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Face | Trunk | Limb | Back | Oral mucosa | Penile mucosa | Scalp | Total |
| Classical LP | 5 (7.1) | - | 29 (41.4) | 2 (2.9) | - | 2 (2.9) | - | 38 (54.3) |
| Oral LP | - | - | - | - | 14 (20.0) | - | - | 14 (20.0) |
| LPP | 3 (4.3) | 3 (4.3) | - | 1 (1.4) | - | - | - | 7 (10.0) |
| Lichen planopilaris | 2 (2.9) | - | - | - | - | - | 3(4.3) | 5 (7.1) |
| Hypertrophic LP | - | - | 3 (4.3) | 1 (1.4) | - | - | - | 4 (5.7) |
| Bullous LP | - | 1 (1.4) | - | - | - | - | - | 1 (1.4) |
| LP pemphigoides | - | - | - | 1(1.4) | - | - | - | 1 (1.4) |
| Total | 10 (14.3) | 4 (5.7) | 32 (45.7) | 5 (7.1) | 14 (20.0) | 2 (2.9) | 3 (4.3) | 70 (100) |

**Table 3. Common histological findings in cases of LP and its variants (n=70).**

| Histological feature | Histological diagnoses | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Classical LP | Oral LP | LPP | Lichen planopilaris | Hypertrophic LP | Bullous LP | LP pemphigoides | Total |
| Band shaped dermal lymphocytic infiltrate | 38 | 14 | 6 | 1 | 4 | 1 | 0 | 64 (91.4) |
| Orthokeratosis | 37 | 5 | 5 | 5 | 4 | 1 | 1 | 58 (82.9) |
| Vacuolization of basilar keratinocytes | 28 | 9 | 4 | 3 | 3 | 1 | 0 | 48 (68.6) |
| Acanthosis | 25 | 8 | 2 | 2 | 4 | 0 | 0 | 41 (58.6) |
| Hypergranulosis | 28 | 2 | 3 | 4 | 2 | 0 | 0 | 39 (55.7) |
| Melanin incontinence | 19 | 7 | 7 | 5 | 1 | 1 | 1 | 34 (48.6) |
| Irregular rete ridges | 15 | 6 | 1 | 2 | 4 | 0 | 0 | 28 (40.0) |
| Max Joseph space | 14 | 4 | 1 | 1 | 1 | 0 | 0 | 21 (30.0) |

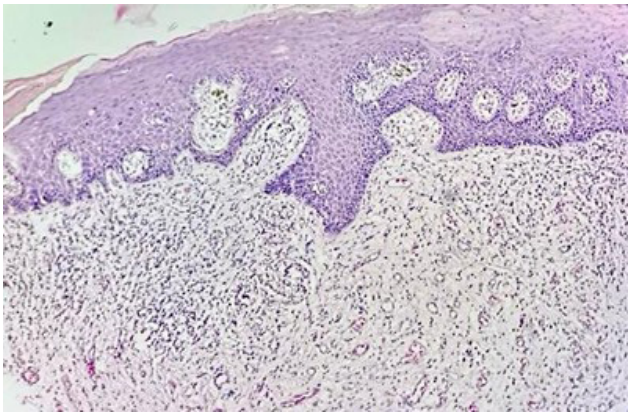

**Figure 3. Classic LP showing hyperkeratosis, irregular acanthosis, hypergranulosis and band shaped brisk dermal inflammatory infiltrate (H and E x100).**

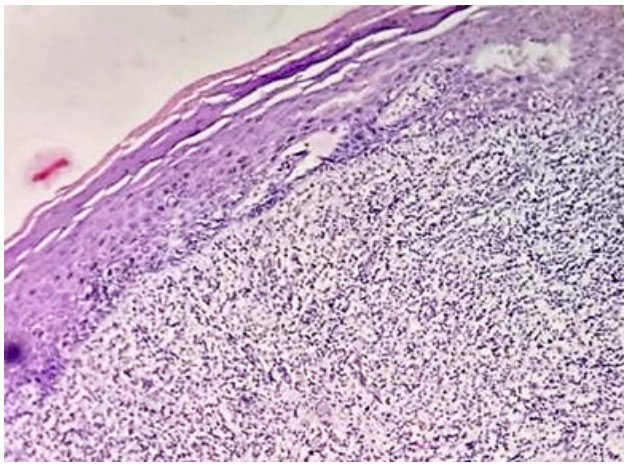

**Figure 4. Oral LP showing parakeratosis and brisk interface inflammatory infiltrate (H and E x100).**

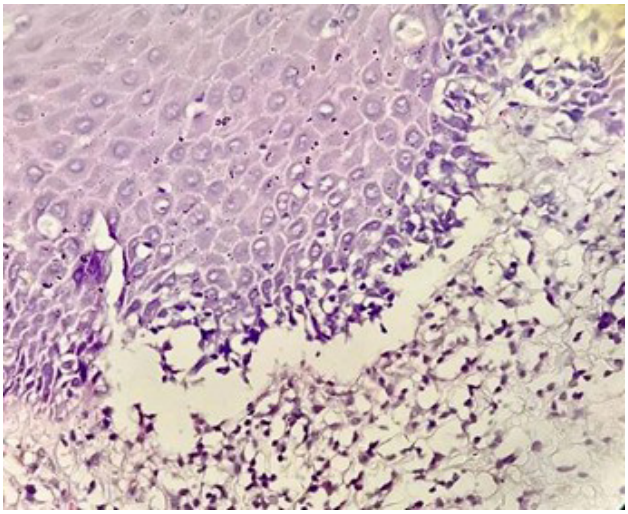

**Figure 5. Vacuolization of basilar keratinocytes and Max Joseph space in Classic LP (H and E x400).**

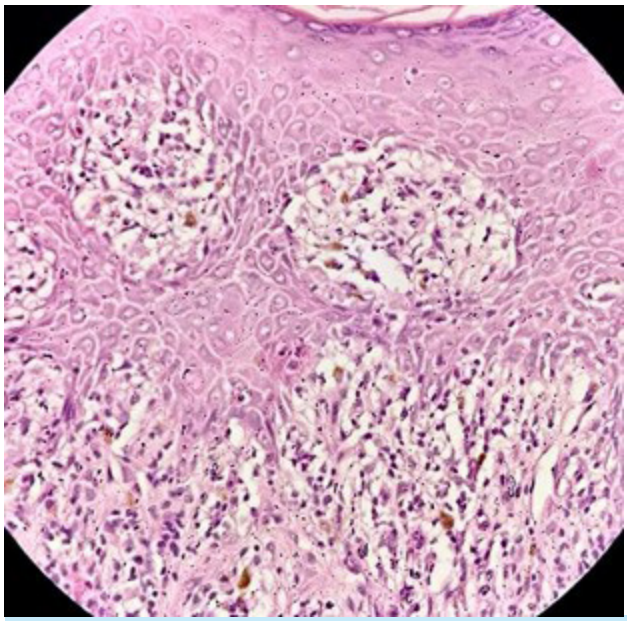

**Figure 6. Papillary dermal melanophages and pigment incontinence in LPP (H and E x100)**

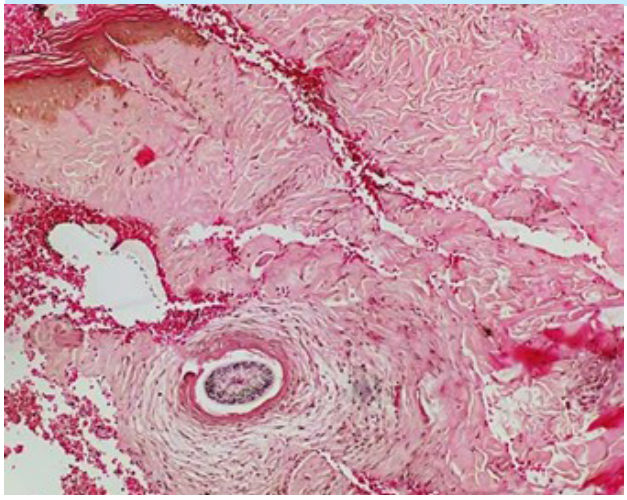

**Figure 7. Perifollicular lymphocytic infiltration and mucinous fibroplasia in Lichen planopilaris (H and E x100)**

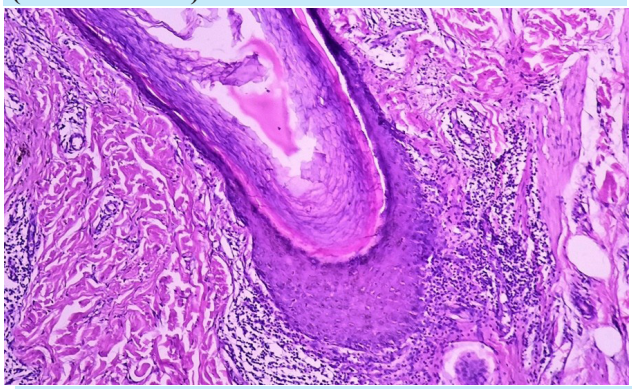

**Figure 8. Follicular plugging and lymphocytic infiltrate pronounced more at the base of broad bulbous rete peg in Hypertrophic LP (H and E x100)**

## DISCUSSION

Lichen planus (LP) is a chronic inflammatory dermatosis with varied clinical presentations and histopathological features. In this study, 70 histopathologically confirmed cases of LP and its variants were analyzed over a 2-year period to elucidate their histological spectrum and distribution. Age of the patient ranged from 9 to 79 years with a mean of 44.5 years, maximum cases in 31-40 years age group and female predominance with female male ratio of 1.5:1. This was similar to study conducted by Jwalanta Poudel, in which maximum cases were seen in 31-40 years age group and female male ratio was 1.4:1.[8] This was also similar to study conducted by Fathima and Lilly where age distribution was varied and maximum cases were in 31 – 50 years, mean age in males was 44 and females in 38 years and females were more affected.[9] In a study conducted by *Parihar et al.*, age ranged from 5 to 76 years, maximum cases were seen in 20-40 years age group and females were more affected with male female ratio 0.8:1.[10] Mean age of 44.5 years was in alignment of study conducted by Boyd and Neldner where it was more common in middle aged adults.[11] However, median age was 66 years in a study done by *Toro et al.,*[12]

The majority of lesions were cutaneous (72.9%), with the limbs being the most commonly involved site (45.7%). Similar to our study, extremities were most commonly involved in cutaneous cases in study conducted by Jwalanta Poudel.[8] In study conducted by *Parihar et al.*, extremities were most commonly affected particularly for classical LP.[10]

In the present study, classical LP comprised 54.3% cases, oral LP 20.0% cases, LPP 10.0%, Lichen planopilaris 7.1%, Hypertrophic LP 5.7%, Bullous LP 1.4% and LP pemphigoides comprised 1.4% cases. In study conducted by Jwalanta Poudel, classical LP comprised 27.3% cases, oral LP 27.3%, Erythema dyschromicum perstans comprised 25.0%, Lichen planopilaris comprised 13.6% cases, Hypertrophic LP 4.3% cases and LPP comprised 2.3% cases.[8] In study conducted by Fathima and Lilly, classical LP comprised 88.5% cases, Hypertrophic LP 4.2%, Linear LP 2.0%, Ulcerative LP 2.0%, Follicular LP 1.0% and Bullous LP comprised 1.0% cases.[9] In study conducted by Parihar et al., classical LP comprised 61.0% cases, LPP 27.5%, and lichen planopilaris comprised 11.5% cases.[10] In a study conducted by *Rampal et al.*, Classical LP comprised 35.0% cases, Oral LP comprised 35.0%, Hypertrophic LP 10.0%, Lichen Planopilaris 1.7%, and LPP comprised 1.7% cases.[13] This emphasized varied histopathological presentation of LP. Clinical presentation of the variant forms may be dissimilar to classic LP. However, histopathology of LP and its variants reveal similar features aiding in proper diagnosis.[5] In the present study, 20.0% cases were Oral LP. In majority of cases of oral LP, there are no cutaneous lesions or other mucosal lesions. Oral LP is considered a potentially premalignant disorder necessitating periodic follow ups.[14]

Most common histological feature observed was band shaped dermal lymphocytic infiltrate observed in 91.4% cases followed by orthokeratosis in 82.9%, vacuolization of basilar keratinocytes in 68.6%, acanthosis in 58.6%, hypergranulosis in 55.7%, melanin incontinence in 48.6%, irregular rete ridges in 40.0%, Max Joseph space in 30.0%, follicular plugging in 20.0%, perivascular inflammation in 18.6%, interstitial dermal inflammation in 8.6%, basilar squamatization in 12.6% and Civatte bodies in 7.1% cases. In study conducted by Rampal et al., most common histopathological findings observed were sawtooth rete ridges/irregular acanthosis in 85%, vacuolar degeneration of basal layer in 81.7%, band shaped infiltrate in 71.7%, orthokeratosis in 63.3%, hypergranulosis in 61.7% of cases, Civatte bodies in 45%, melanophages in upper dermis in 43.3%, pigment incontinence in 41.7%, perivascular infiltrate in 28.3% and Max-Joseph spaces in 16.7% of cases.[13] However, in study conducted by Jwalanta Poudel, vacuolar degeneration of basal layer was observed in 100% cases and other histological features were variably present like band like dermal inflammatory infiltrate in 75.0%, orthokeratosis in 58.1%, hypergranulosis in 75.0%, Civatte bodies in 58.1%, acanthosis in 65.9%, pigment incontinence in

52.3%, perivascular inflammatory infiltrate in 22.7% and follicular plugging in 4.5% cases.[8] In study conducted by Parihar et al., vacuolar degeneration of basal layer and orthokeratosis were observed in 100% of cases and other histological features were variably present like acanthosis in 94.0%, irregular rete ridges in 76.0%, hypergranulosis in 96.5%, band shaped dermal inflammatory infiltrate in 94.0%, Civatte bodies in 82.0%, pigment incontinence in 99.0% cases and Max Joseph space in 29.5% cases.[10] Key histopathological features are consistent across the variants and include acanthosis and hyperkeratosis, wedge shaped hypergranulosis, vacuolar degeneration of the basal layer, alteration or loss of rete ridges resulting in saw tooth appearance and a dense band like inflammatory infiltrate in the upper dermis along the dermal-epidermal junction. Apoptotic keratinocytes near the basal layer termed Civatte or colloid bodies may be seen often.[15]

## CONCLUSIONS

Histopathological variants of LP need to be kept as differential diagnosis while evaluating lesions of skin. Histopathological examination in suspected cases of LP help in finding the correct diagnosis and hence, help in management of patients.

## Limitations

This study includes cases submitted for biopsy. Findings may not be generalized to entire population.

**Conflict of interest:** The authors declare that they have no conflict of interest.

**Funding:** No funding was received from any agency to conduct this study.

**Availability of data and materials:** All data analysed during this study will be made available upon reasonable request from the corresponding author.

## Authors' contributions

**Conceptualization:** Dr. Binita Goyal.
**Data curation:** Dr. Binita Goyal, Dr. Akshunna Rup Shrestha, Dr. Rija Singh Karki, Dr. Neema Pun.
**Formal analysis:** Dr. Binita Goyal.
**Investigation:** Dr. Binita Goyal, Dr. Akshunna Rup Shrestha.
**Methodology:** Dr. Binita Goyal.
**Supervision:** Dr. Binita Goyal.
**Writing-original draft:** Dr. Binita Goyal.
**Writing-review & editing:** Dr. Akshunna Rup Shrestha, Dr. Rija Singh Karki, Dr. Neema Pun.

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**Citation:** Goyal B, Shrestha AR, Karki R S, Pun N. Histopathological Profile of Lichen Planus and Its Variants in a Tertiary Care Hospital of Chitwan, Nepal. JCMS Nepal. 2026;22(1): 8-14.