

# Behavioral and Clinical Characterization of Mice Presenting with Atypical Ulcerative Dermatitis

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## Background

Ulcerative dermatitis (UD) is one of the most prevalent conditions in laboratory mice. As we have previously reported, mice at our institution commonly present with two primary types of UD: typical UD (tUD) and atypical UD (aUD). tUD lesions are partial thickness lesions commonly confined to the neck or ears, whereas aUD lesions are full thickness skin lesions not confined to the neck or ears. aUD is refractory to first-line therapies for tUD, such as nail trims, and often necessitates removal from study. Mice with aUD are frequently observed during cage side evaluations performing excessive oral grooming at the site of the lesion rather than scratching which led us to refer to these cases as “lick-chews”.

## Methods

To further characterize aUD, electronic medical records were retrospectively evaluated from a 12-mo period to determine if aUD lesions were correlated with specific anatomic locations and if the number of aUD cases was affected by seasonality. In addition, representative animals with tUD or aUD were video recorded for behavioral assessment and a clinical scoring system was revised to assess aUD lesion severity.

## Results

The average mouse daily census was approximately 22,250 cages and there were 8,488 completed mouse health reports during this period. Forty-one percent of the health reports were classified by veterinary staff as UD. aUD accounted for 19% (644/3,453) of all UD cases. Lesions affecting the neck or ears accounted for only 7% (27/341) of aUD cases. In comparison, lesions affecting the neck or ears accounted for 69% (1,707/2,478) of tUD cases. There was no apparent seasonal pattern of aUD. Mice with aUD demonstrated higher frequencies of oral grooming at the site of the lesion whereas mice with tUD were more likely to exhibit higher frequencies of scratching at the site of the lesion.

## Discussion

This data demonstrates that mice with aUD engage in different injurious behaviors than mice with tUD and that aUD lesions are not confined to the neck or ears. Mice with aUD should be distinguished from mice with tUD when evaluating potential etiologies and novel treatments for UD. The aUD scoring system should be further evaluated for implementation as a cage side tool for initial assessment of aUD lesions in mice and their response to potentially efficacious therapies.

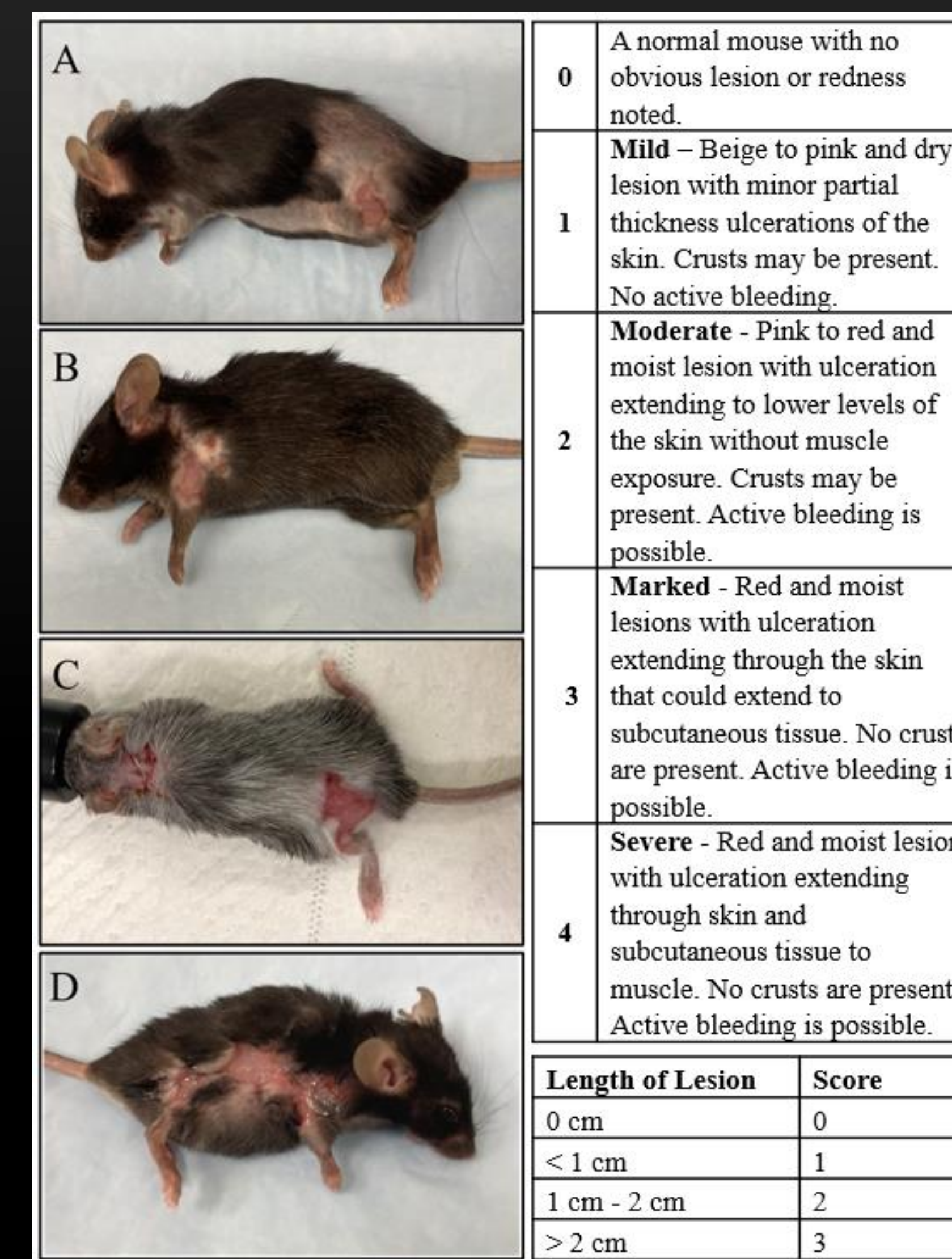


Fig 1: Atypical Ulcerative Dermatitis Scoring System:

aUD lesions are characterized separately by severity and length of lesion in one dimension during cage side evaluation.

- (A) 1,1: mild aUD lesion less than 1 cm in length affecting left lateral pelvic limb
- (B) 2,1: moderate aUD lesion less than 1 cm in length affecting left lateral thoracic limb
- (C) 3,2: marked aUD lesion measuring 1 to 2 cm in length affecting left lateral pelvic limb and tail base with concurrent tUD lesion affecting dorsal neck
- (D) 4,3: severe aUD lesion measuring greater than 2 cm in length affecting the right lateral pelvic limb, abdomen, thorax and extending to the right lateral thoracic limb

Note: Animal pictured in panel D had recently been treated with topical triple antibiotic ointment

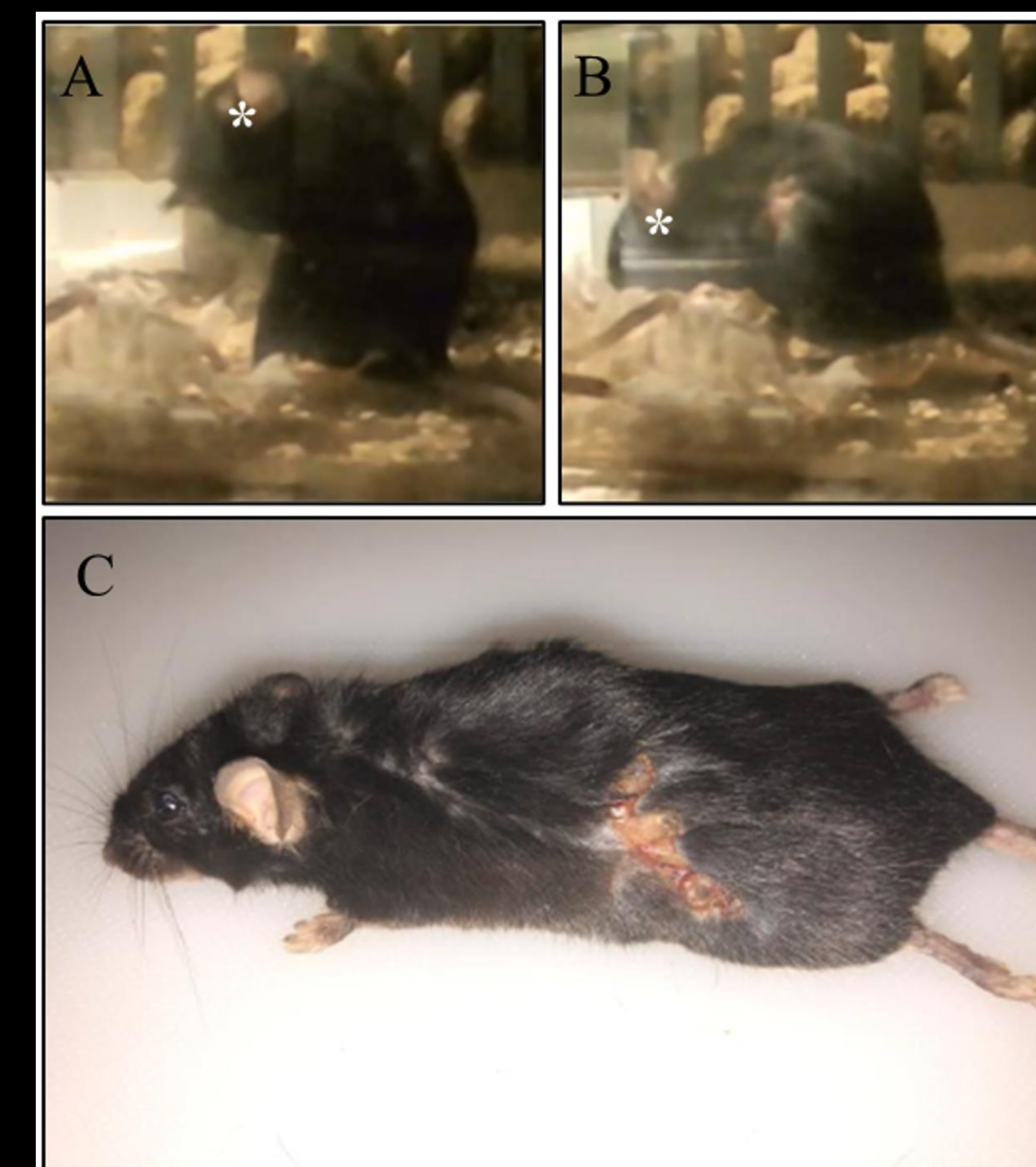


Fig 2: Behavioral Assessment of Atypical Ulcerative Dermatitis:

aUD is more associated with aberrant oral grooming behavior at the site of the lesion rather than excessive scratching.

- (A) Mouse exhibiting excessive oral grooming behavior at the site of the aUD lesion affecting the left lateral abdomen
- (B) Mouse with aUD lesion affecting the left lateral abdomen
- (C) Mouse with 2, 2: moderate aUD lesion measuring 1 to 2 cm in length affecting the left lateral abdomen

\* Denotes base of left pinna

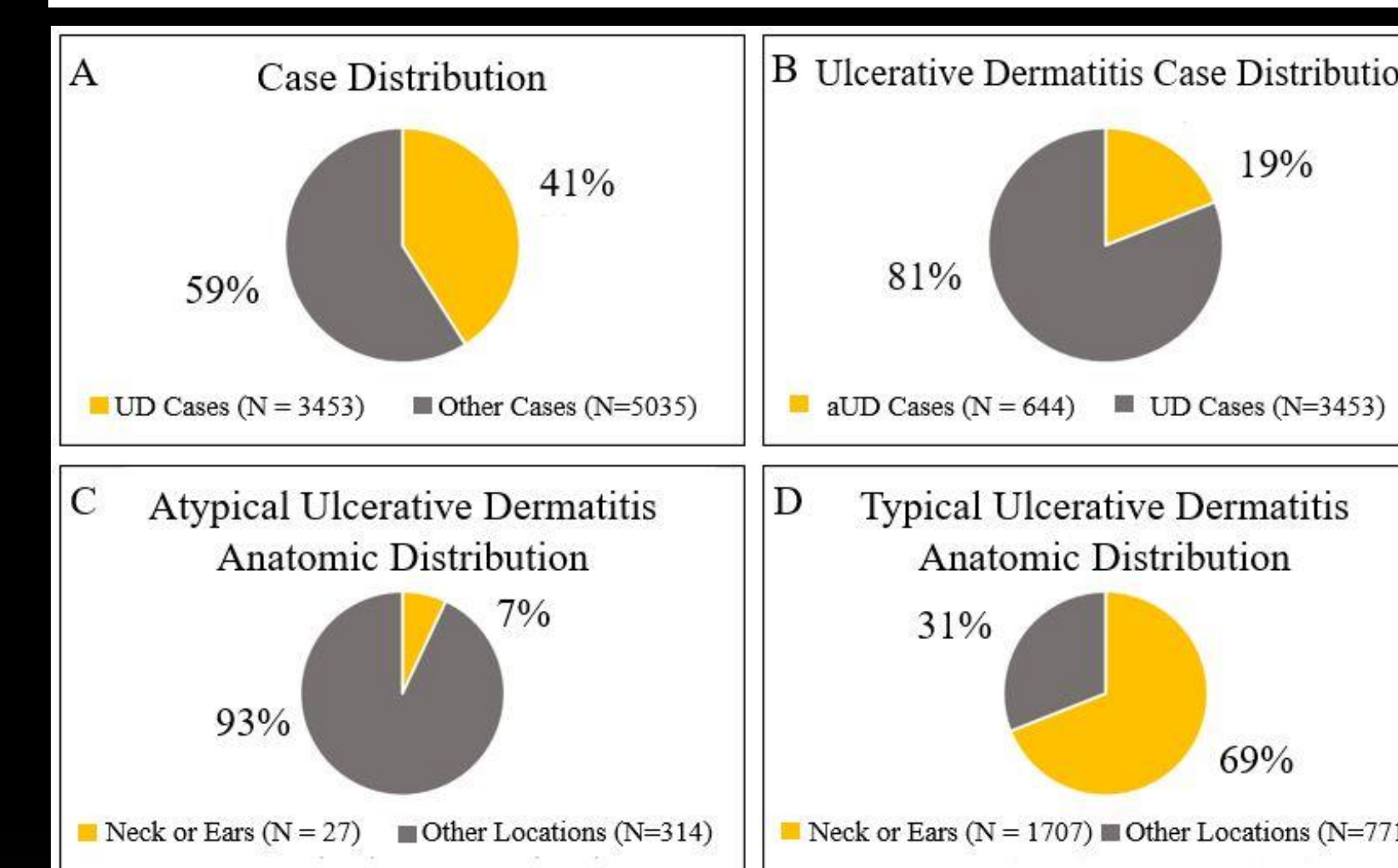


Fig 3: Clinical Prevalence and Anatomic Distribution of Atypical Ulcerative Dermatitis:

- (A) UD cases comprise a large percentage of total clinical cases at our institution
- (B) aUD cases represent a notable percentage of UD cases
- (C) aUD cases infrequently involve the neck or ears
- (D) tUD cases routinely involve the neck or ears



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