



Figure 5 Lamellar Wedge

In this interesting cross-section of a chronic Superficial laminitic (laminitic) hoof, the forward streaming toe wall reveals its aberrant stratifications. The thin layer at top is the periople or stratum externum (SE); next the true wall or stratum medium (SM); then the inner hoof wall or stratum internum (SI); and at bottom, supporting everything above, the sole. The highly disorganized inner hoof wall is known as the *lamellar wedge* in

this state. It is produced by surviving epidermal germinal cells still attached to the basement membrane following acute Superficial laminitis. Normal interdigitation with the primary epidermal lamina is obstructed by the presence of certain enzymes which erode the dermal-epidermal attachment mechanism. Natural trimming and horsekeeping practices help to reverse this condition.

During laminitis [See Bulletin #102], cornification is disrupted by the massive proliferation of these enzymes which overwhelm normal desmosome capacity.<sup>1</sup> The epidermal lamina then elongate and separate from their dermal counterparts. The void between them fills with gas and disorganized epidermis (produced by surviving keratinocytes still attached to the basement membrane), called the “lamellar wedge” (Figure 5). A stretched white line, visible at or near ground level, is the result.

Near the sole, the bottom (distal) edge of each dermal leaf projects hair-like *terminal papilla* that resemble the coronary and periopic papilla (See color plate, page 6). These papilla also insert into epidermal sockets where they produce and nurture horn tubules surrounded by intertubular horn. This horn

intermeshes with tubular-interbular horn produced by the solar corium. The descending primary lamina are embedded in this confluence of epidermis and are thence directed by it to the ground, where, notwithstanding neglect, the entire mass, which forms the “white line”, is worn (or trimmed) away.

I think it is worth describing a much overlooked part of the inner hoof wall and outer hoof wall junction. This concerns the *water line* (Figure 6, page 14).<sup>1</sup> I believe its significance is completely overlooked by the general hoof care community, where it is normally abraded flat into the bearing surface of the hoof, and subsequently shod. The water line has its origin in the highly vascular dermal leaves of the Superficial lamina. This moisture apparently permeates the adjacent stratum medium (outer wall) to a certain

<sup>1</sup>C.C. Pollit, “Equine Laminitis: A Revised Pathophysiology”. Farrier and Hoofcare Resource Center ([www.horseshoes.com](http://www.horseshoes.com))

<sup>1</sup>So named by L. Emery, J. Miller, N. Van Hoosen, *Horseshoeing Theory and Hoof Care*, p. 27-28, 74-75