

Introducing Diabetes-Associated Limb Disease (DAL-D) as a new classification for diabetic lower extremity wounds

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Background: If surgical wounds fail to close after minor amputations of diabetic foot ulcers (DFU) and result in non-healing wounds, do patients still have diabetic foot ulcers? Because the Wagner DFU classification fails to include non-healing surgical wounds, many post-operative cases are excluded from the DFU category. To better reflect diabetic limb salvage as a continuum of the different phases described below, we devised a new system of classifying diabetes-associated limb disease, called DAL-D.

DAL-D's three phases are:

- (i) Hyper-acute DAL-D, which includes necrotizing fasciitis and gas gangrene, both of which require immediate intervention;
- (ii) Acute DAL-D, which includes conventional Wagner grade wounds that remain unhealed for up to 30 days, and post-operative wounds (such as flap failure, wound dehiscence, or non-healing wounds) that remain unhealed for up to 30 days from the date of the operation; and
- (iii) Chronic DAL-D, which are unhealed acute wounds that remain unhealed for more than 30 days.

Material and Method: To exam the applicability of the DAL-D system, we reviewed all diabetic lower extremity wound cases treated at the Good Samaritan Hospital hyperbaric medicine department in 2013 that we re-categorized under the DAL-D system.

Result: A total of 20 patients in 25 separate accounts were treated for DAL-D in 2013. Hyper-acute DAL-D (16% of total, n=4) were all necrotizing fasciitis. Acute DAL-D (44% of total, n=11) included 8 flap failures, 2 secondary-intention wound closures and 1 delayed flap failure. Chronic DAL-D (40% of total, n=10) included 4 Wagner grade 3 DFUs, 2 Wagner 4 DFUs, 2 delayed flap failures, 1 post-operative flap failure and 1 chronic osteomyelitis.

Hyper-acute DAL-D



Necrotizing Fasciitis of foot Necrotizing Fasciitis of foot Necrotizing fasciitis of foot Surgical Debridement of left patient

Acute DAL-D



Secondary intention wound closure, post debridement Compromised flap, 5th ray amputation Delayed flap failure presented to clinic Compromised flap of mid-foot amputation, post OP

Chronic DAL-D



Delayed flap failure, 6weeks after presentation Wagner grade 3 diabetic foot ulcer Toe amputation site flap necrosis, 12 weeks post-op Delayed flap failure, 48 weeks post-op

Conclusion: The DAL-D classification more accurately reflects modern diabetic limb salvage protocols because it includes not only conventional diabetic foot ulcers (as in the Wagner classification), but also all pre-operative and post-operative surgical cases.



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