Plasminogen Deficiency, Type 1: For Dentists

Overview of Plasminogen Deficiency (PLGD)

- PLGD Type 1: a quantitative protein deficiency, with decreased plasminogen activity and decreased antigen
  - Due to a genetic mutation in the gene for plasminogen; > 50 different mutations have been identified; Autosomal Recessive inheritance
  - Most common presenting symptom is ligneous conjunctivitis, but multi-organ, systemic disease that can be life-threatening
- PLGD Type 2: reduced functional activity of plasminogen, but normal antigen levels, and patients are asymptomatic

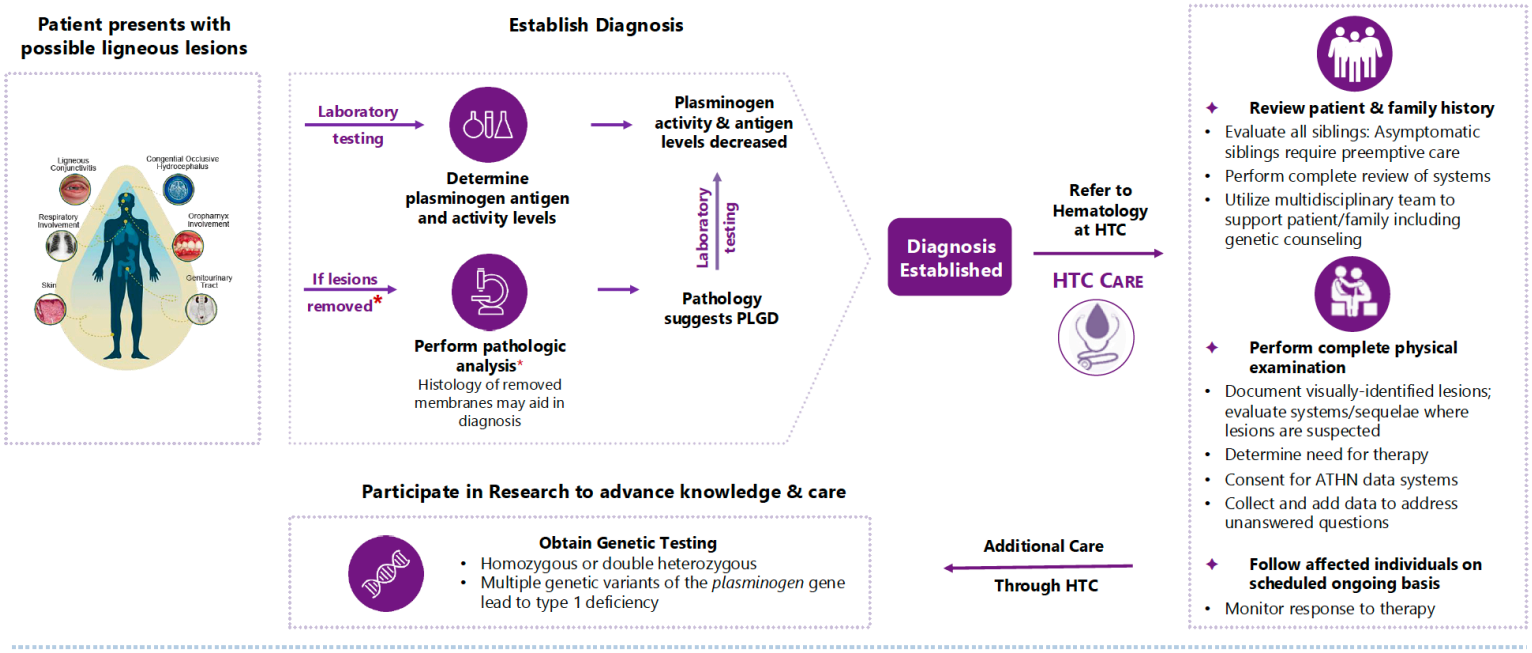
	Normal	PLGD Type 1	PLGD Type 2
Plasminogen Activity	70-130%	Decreased	Decreased
Plasminogen Antigen	6-25 mg/dL	Decreased	Normal
For Patients: My Plasminogen Activity			

Diagnosis

- Complicated by heterogeneous symptoms; symptoms can wax and wane
- Mucosal surfaces of the eyes, ears, nose, gums, airways, lungs, GI tract, kidneys, GU tract, CNS, and skin can all be affected
- Initial point of medical contact therefore includes many disciplines

Treatment

- Ryplazim (plasminogen, human-tvmh) given by IV infusion leads to resolution of lesions
- Surgical removal of lesions, though initially helpful, leads to accelerated regrowth
- Referral to a Hemophilia Treatment Center (HTC) to serve as medical home, and:
  - Educate on product use
  - Ongoing symptom monitoring, outcomes, safety
  - Administer doses, determine dosing schedule
  - Teach home infusion



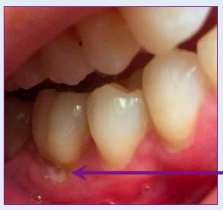
*Lesion removal prior to diagnosis not recommended

Nakar, et al. Plasminogen deficiency laboratory evaluation found on http://www.rarecoagulationdisorders.org/diseases/plasminogen-deficiency/%20laboratory-evaluation. Accessed 27 January 2023; Image on left from https://www.plgdeficiency.com/ Accessed 27 January 2023

Dental Specific Diagnostic Findings

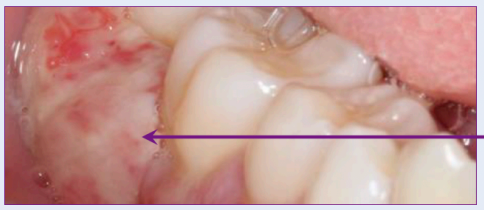
INITIAL PRESENTATION	ADVANCED DISEASE
✦ Gingivitis ✦ Gingival pain ✦ Gingival bleeding ✦ Ligneous lesions ✦ Non-tender plaques	✦ Ligneous lesions ✦ Periodontitis ✦ Gingival enlargement/hypertrophy ✦ Gingival recession ✦ Loose teeth ✦ Avulsed teeth ✦ Edentulism ✦ Exposed nerve with pain ✦ Alveolar bone loss ✦ Exophytic ulcerative soft tissue

Untreated



Ligneous plaques & gingivitis

Courtesy of IHTC



Exophytic ulcerative soft tissue mass

MacPherson et al. 2020. Ref. 2. Used with permission

Dental Specific Treatment Considerations

- Ligneous gingivitis / periodontitis is the second most common manifestation of PLGD, with 34-43% of patients exhibiting lesions
- New or suspected diagnosis:
  - Obtain diagnostic blood test (plasminogen activity level) or refer to hematologist to order
  - If confirmed, refer to HTC to establish care
- Confirmed diagnosis:
  - Coordinate clinical care with existing care team at HTC
  - Send clinical notes and photos
- Maintenance procedures:
  - Gentle dental cleaning with limited manipulation of the gum tissue (try to avoid deep cleaning or scaling)
  - Routine cleaning by dental hygienist coordinated with HTC
  - Gentle flossing and soft toothbrush
  - Non-alcoholic dental rinses
  - Always refer to the HTC before deep cleaning, extractions, restorations, crowns, or any procedures that require local anesthetic to coordinate administration of IV plasminogen, if recommended by the hematologist

PLASMINOGEN DEFICIENCY FOUNDATION