

The Prevalence of Collarettes and *Demodex* Blepharitis in Ophthalmology and Optometry Practices (Titan study)

Ehsan Sadri, MD, FACS

Liz Yeu, MD

William Trattler, MD

Mark Holdbrook

Stephanie Baba, OD

Presented at ASCRS 2021 | SPS-107 Ocular Surface

24 July 2021

Author disclosures

- Ehsan Sadri, MD, FACS – Tarsus
- Liz Yeu, MD - Alcon, Allergan, Avedro, Bausch & Lomb, Beaver Visitec, BioTissue, BlephEX, Bruder, CorneaGen, Dompe, Expert Opinion, EyePoint Pharm., Glaukos, Guidepoint, J&J Vision, Kala Pharm., LENSAR, Melt, Merck, Mynosys, Novartis, Ocular Science, Ocular Therapeutix, Ocusoft, Omeros, Oyster Point Pharm., Science Based Health, Sight Sciences, Sun Pharm., Surface, Tarsus Pharm., TearLab Corp., Thea, TopCon, Visus Therapeutics, Zeiss
- William Trattler, MD - Alcon, Allergan, Arcscan, Avellino Labs, Azura, Bausch and Lomb, CXLO, Glaukos, Guardian Health, Johnson and Johnson, Kala, Lensar, Minosys, Novartis, Ocular Therapeutix, Oculus, Omeros, RxSight, Sight Sciences, Sun, Tissue Tech, Zeiss
- Mark Holdbrook and Stephanie Baba, OD are employees of Tarsus Pharmaceuticals, Inc.

Demodex blepharitis

Population epidemiology

20M patients have Blepharitis¹⁻⁴

- Causes red, irritated and itchy eyelids⁴
- May lead to fluctuating vision, missing/misdirected eyelashes, inflammation⁵
- 2.1M ICD-10 Blepharitis Dx/yr⁶

45% of them have *Demodex*⁵

- Estimated population epidemiology: 9M
- *Demodex* are present in ~69% of dry eye patients³ and 67% of cataract patients⁴

There are currently no prescription treatments for *Demodex* blepharitis even though 81% of patients are seeking treatment⁷

Demodex background

Demodex mites

- Most common ectoparasite on humans
- Associated with acne vulgaris, folliculitis, rosacea, peri-oral and scalp hair loss and basal cell carcinoma.
- Implicated in diseases of the lid and lid margin blepharitis and MGD

Two species affect the eye

- **Demodex folliculorum** ~0.3 to 0.4 mm in length, found in clusters around the lash root and lash follicle, where it feeds on sebum and follicular epithelial cells.
- **Demodex brevis** is shorter, more solitary, and prefers the meibomian glands.
- Both species are translucent, elongated microscopic mites with four pairs of short, clawed legs¹

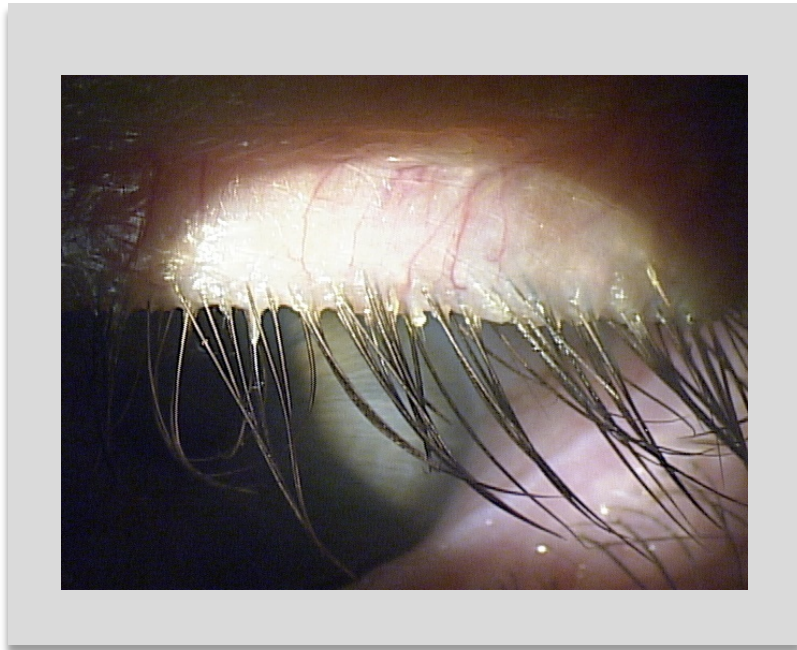


80% of patients with *Demodex* blepharitis report a negative impact on daily life²

1. Fromstein SR, Harthan JS, Patel J, Opitz DL. *Demodex* blepharitis: clinical perspectives. Clin Optim (Auckl). 2018 Jul 4;10:57-63.

2. Psychosocial Impact of Demodex Blepharitis, E. Yeu, Virginia Eye Consultants, M.J. Holdbrook, S.N. Baba, Tarsus Pharmaceuticals, Inc., P.J. Gomes, Ora Inc, ARVO 2021

Collarettes are a pathognomonic sign of *Demodex* blepharitis



Collarettes: Mite waste products + eggs¹

- Regurgitated undigested material combined with epithelial cells, keratin, and mite eggs
- Mites secrete digestive enzymes, which cause irritation

Easily and rapidly diagnosed with a slit lamp during a standard eye exam

- *Demodex* mites found on 100% of lashes with collarettes²

1.Fromstein 2018

2.Gao et al., Invest Ophthalm and Vis Sci, September 2005, Vol. 46, No. 3089-3094

Image courtesy of E. Yeu, MD, 1.0 mag, used with permission

Purpose and methods

To understand the prevalence of collarettes, a pathognomonic clinical sign of *Demodex* blepharitis, in U.S. eye care clinics today.

IRB-APPROVED RETROSPECTIVE CHART REVIEW

Examined for
presence
of collarettes and
other characteristics



Chart review included:

- presence of collarettes
- prior diagnosis of dry eye disease
- use of prescription dry eye anti-inflammatories
 - lifitegrast
 - cyclosporine

Participating clinical centers

DIVERSE ANTERIOR SEGMENT CLINICS

Geographically diverse (7 investigators at 6 sites) including both MD and OD clinics

Scott Schachter, OD
Advanced Eyecare

Ehsan Sadri, MD
Visionary Eye Institute

Paul Karpecki, OD
Kentucky Eye Institute

LARGE-SCALE ALL-COMERS (1,032 patients)

Consecutive patients with a wide variety of reasons for visit

Yuna Rapoport, MD
Manhattan Eye

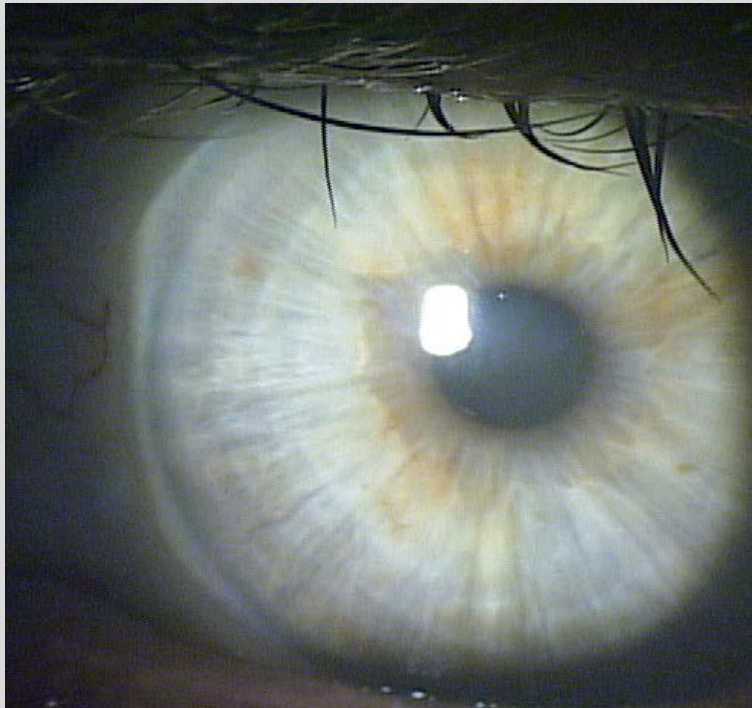
Walt Whitley, OD
Elizabeth Yeu, MD
Virginia Eye Consultants

Bill Trattler, MD
Center for Eye Care

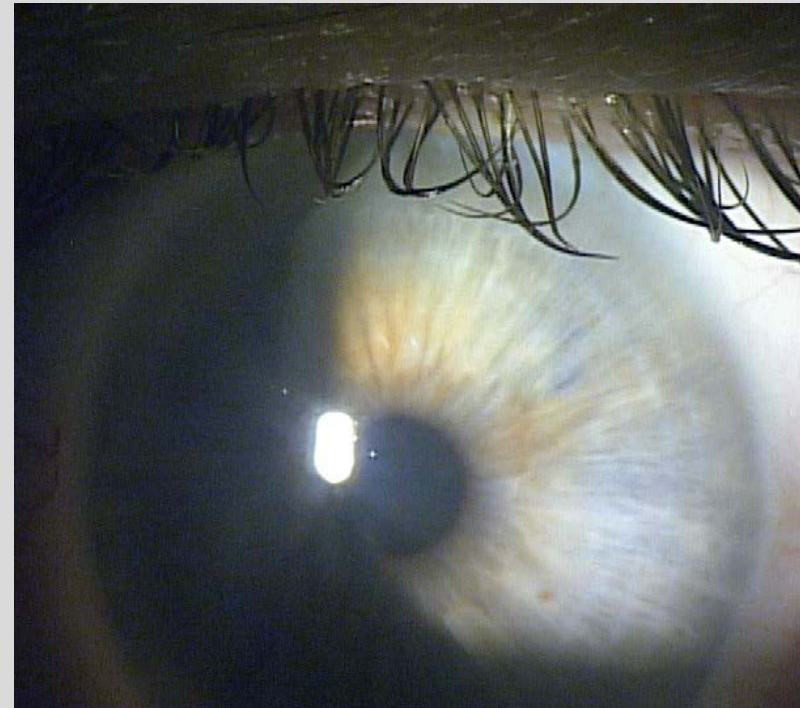


Try this when you get back to clinic: Typical slit lamp examination

Patient looking straight ahead

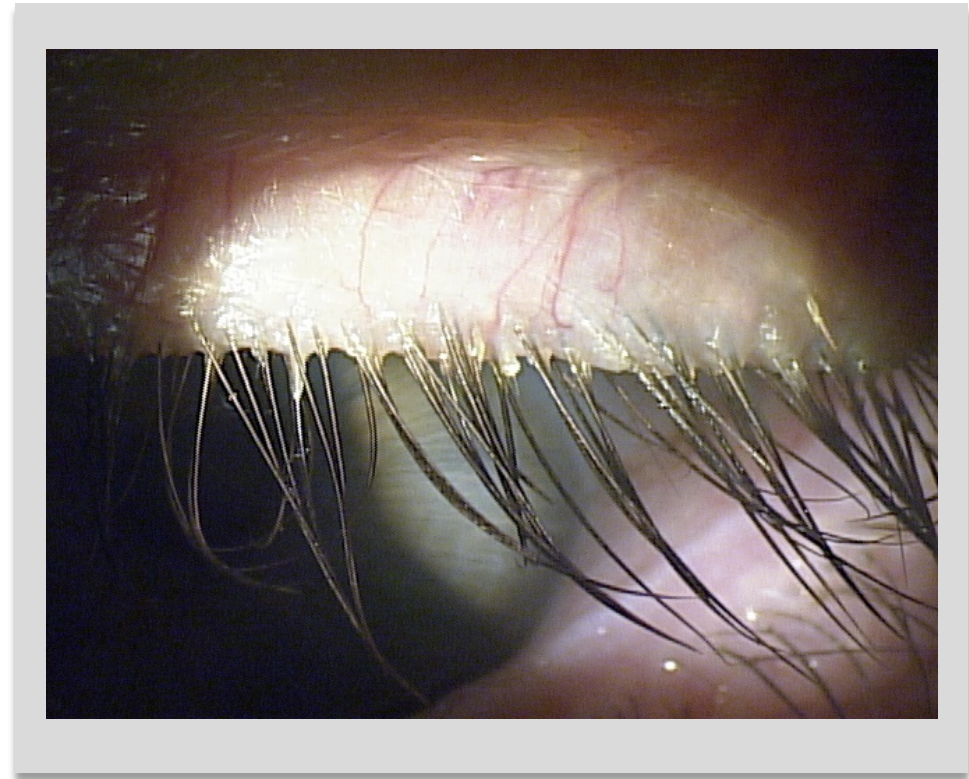
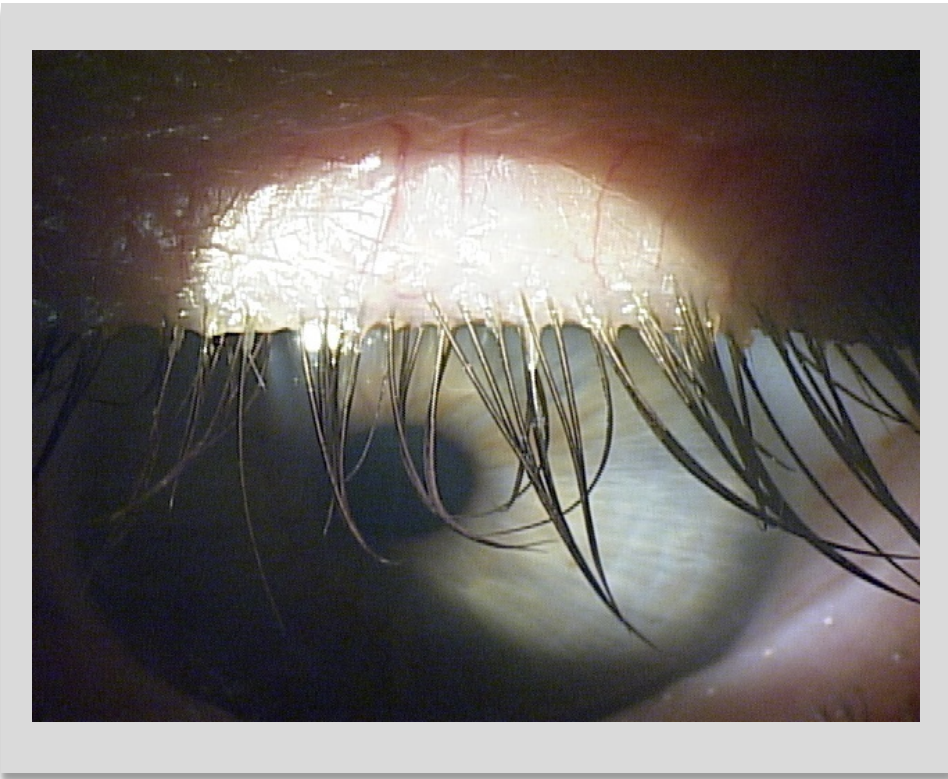


Patient looking straight ahead, with lid lift



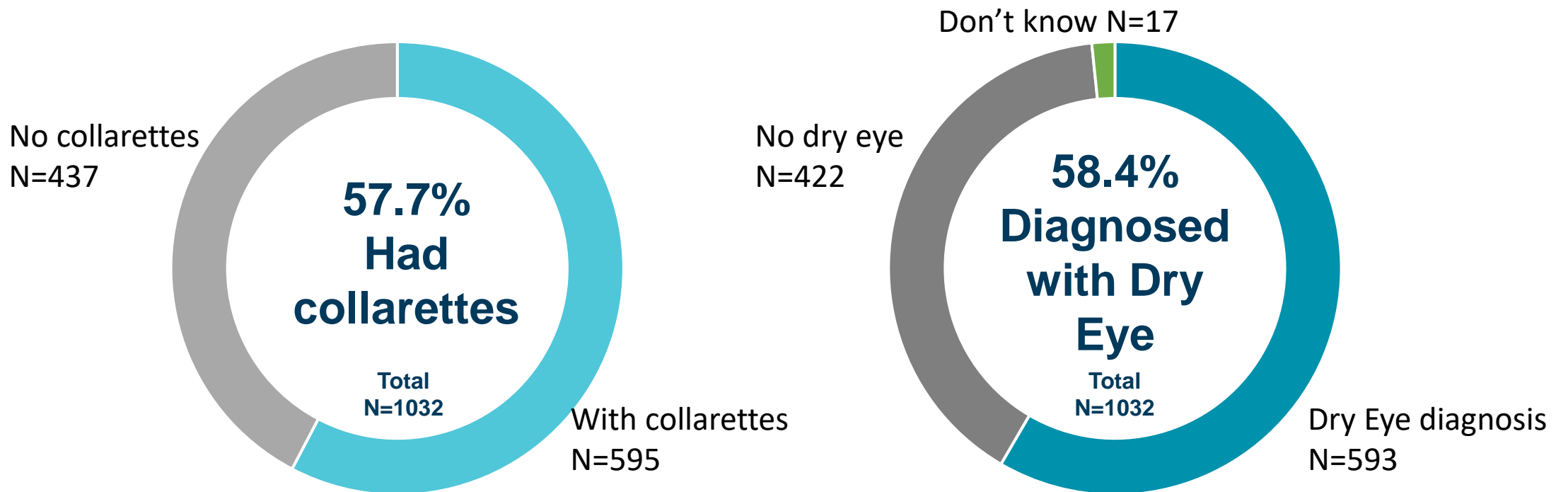
Try this when you get back to clinic: Ask your patients to look down

Patient with diffuse collarettes, misdirected and missing lashes



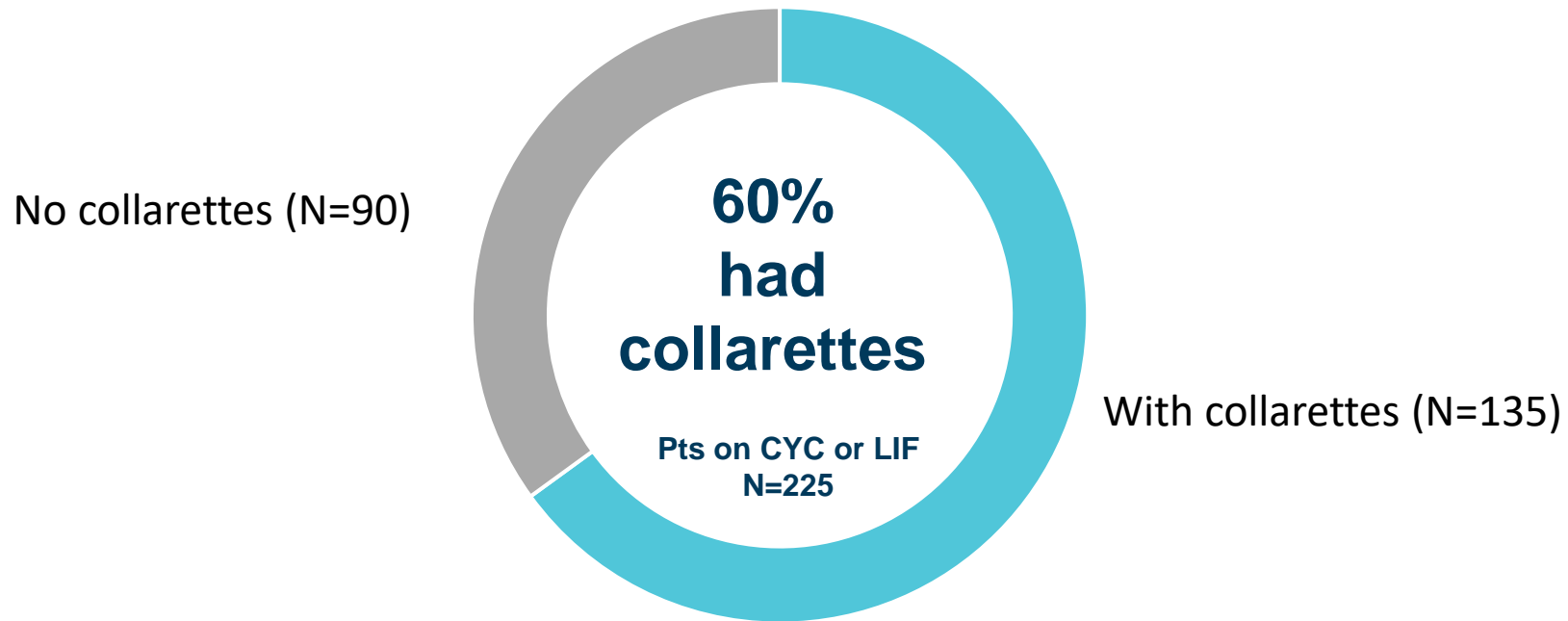
Over half of all patients had collarettes

The prevalence of collarettes is similar to the prevalence of Dry Eye Disease



60% of patients who were on cyclosporine or lifitegrast still had collarettes

Prescription topical anti-inflammatory drops (CSA 0.05% or 0.09% or LIF 5%) do not reduce collarettes



Conclusions

Collarettes, the pathognomonic sign of *Demodex* blepharitis, are commonly seen among patients visiting eye care practitioners.

45M annual eye exams¹,
58% have collarettes

Up to 25M may have
Demodex Blepharitis

Collarettes are commonly seen
in patients who are using a
topical dry eye prescription
anti-inflammatory drop

Current DED Rx
treatment regimen may
not be treating
Demodex blepharitis

- In a separate study presented at ARVO 2021, Teo *et al.* reported demodicosis was newly diagnosed in 55.3% of patients, with 61.8% and 68.3% noted to have blepharitis and dry eye.²
- A prospective study is needed to better understand the true prevalence of *Demodex* blepharitis and collarettes in U.S. eye care clinics.

1. Wilson J Ophthalmology 2015, 435606, 2014

2. Teo, Jacobson, Rosenberg, Prevalence of Demodex Colonization in Patients Presenting to an Outpatient Clinic, poster presentation ARVO 2021

Thank you