
MAYO CLINIC
School of Continuous Professional Development
2ND ANNUAL MAYO CLINIC
SPECIALTY UPDATES FOR THE GENERALIST TEAM 2023
March 30 - April 1, 2023
Kissimmee, Florida

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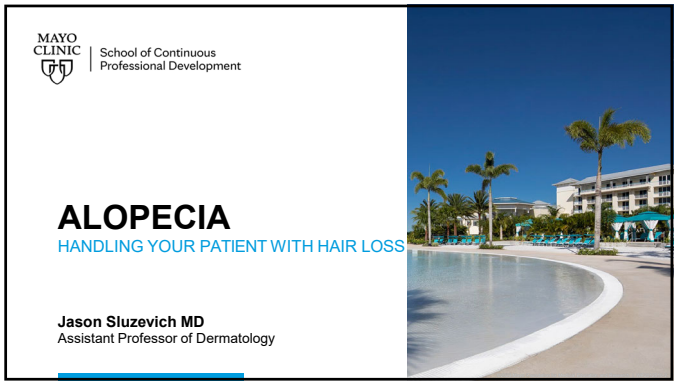
MAYO CLINIC
School of Continuous Professional Development
ALOPECIA
HANDLING YOUR PATIENT WITH HAIR LOSS
Jason Sluzevich MD
Assistant Professor of Dermatology

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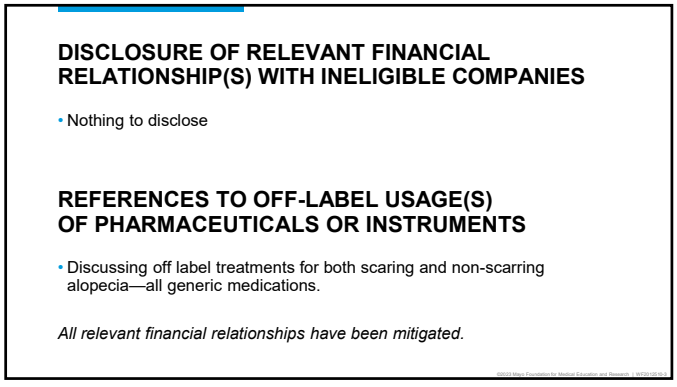
DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIP(S) WITH INELIGIBLE COMPANIES
• Nothing to disclose
REFERENCES TO OFF-LABEL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS
• Discussing off label treatments for both scaring and non-scarring alopecia—all generic medications.
All relevant financial relationships have been mitigated.

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LEARNING OBJECTIVES

01
Understand the hair cycle and how it relates to clinical presentations of alopecia

02
Discuss the diagnosis and management of common types of alopecia

03
Review the signs and symptoms of scarring alopecia that should prompt early referral

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1 BACKGROUND BASICS

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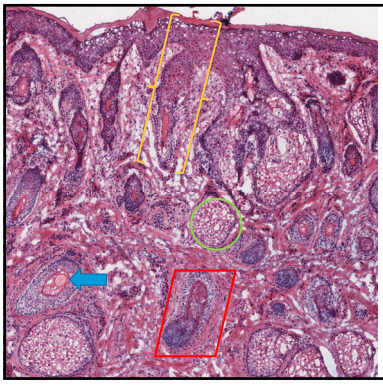

ALOPECIA

DISORDER OF HAIR FOLLICLES

A hair follicle is a tube-like structure that is continuous with the epidermis and associated with sebaceous glands

Hair is produced through successive keratinization in hair bulb
Average growth is 2-6 years
100 hairs shed normally
Metabolically inert

5 million hair follicles
Density varies by anatomic site
100,000 on the scalp
30,000 on the face
Remainder on the body

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ALOPECIA
THREE MAIN CAUSES

Disorders of hair size
- Normal hair diameter = **Terminal** hair (0.06 mm)
- Reduced hair diameter = Intermediate/**Vellus** hair (<0.05 mm)
- Many small diameter hairs = Alopecia

Androgenic Alopecia

Disorders of hair growth
- 80% growing (**Anagen**)
- 15% resting/sheding (**Telogen**/Catagen)
- Fewer growing hairs over time = Alopecia

Telogen Effluvium
Anagen Effluvium
Alopecia Aerata

Disorders of hair number
- Inflammatory process
- Destruction of hair bulb = No hair = **Scarring Alopecia**

Discoid Lupus
Lichen Planopilaris
Folliculitis Decalvans
Dissecting Cellulitis

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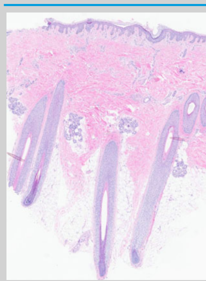
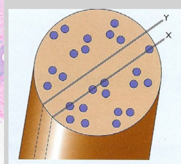
ALOPECIA
LIMITATIONS OF BIOPSY

4mm punch is standard

Limited information on follicle number and growth phase if processed standard

Vertical vs Horizontal Sectioning





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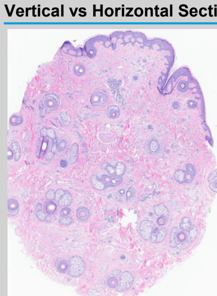
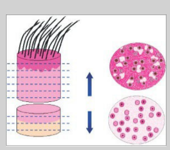
ALOPECIA
LIMITATIONS OF BIOPSY

Horizontal sectioning requires special processing protocol

Necessary in many cases for proper diagnosis

Vertical vs Horizontal Sectioning





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2 NON-SCARRING ALOPECIA

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ANDROGENIC ALOPECIA
MALE PATTERN

Distribution:
Involvement of Crown
Temporal Regression
Occipital Scalp Spared
Near Complete Alopecia Possible

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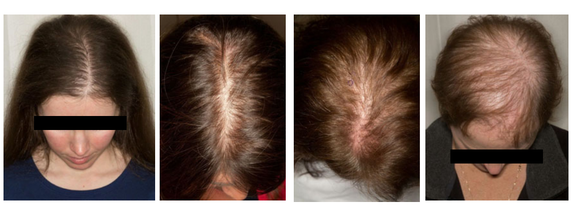
ANDROGENIC ALOPECIA
FEMALE PATTERN



Distribution:
Initially Hair Part Widening
Then Progressive Involvement of Crown
Frontal Hair Line Preserved
Absence of Complete Alopecia

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ANDROGENIC ALOPECIA

"MINITUARIZATION"

- Hair diameter influenced by
  - Anatomical location
    - Mesenchyme imprinting is the basis of hair transplantation
  - Androgens
    - In men on the face, promotes vellus to terminal hairs ("**virilization**") yielding a beard
    - On scalp with permissive genetics, promotes terminal to vellus ("**miniaturization**") hairs producing alopecia

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ANDROGENIC ALOPECIA

TREATMENT

PROLONG HAIR GROWTH

Minoxidil – mechanism unknown

Topical

- 5% foam daily OTC
- Irritant and contact dermatitis not uncommon

Oral

- Females : 1.25 mg to 2.5 daily
- Males: 2.5 mg to 5 mg daily
- Titrate higher after 12 wks based on response
- LE edema possible in some

MINIMIZE ANDROGEN SENSITVITY

Finasteride – 5-alpha reductase inhibitor

Oral

- 1 mg daily
- Sexual dysfunction rare
- Implications on PSA screening
- Differential impact/import
  - Males : "Freeze effect"; more important
  - Females : less benefit given lower baseline androgen levels; post-menopausal severe only. Consider spironolactone 100 mg daily as alternative.

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A 63-year-old African American female with progressive scalp alopecia for over a decade. No improvement with Nizoral shampoo. Denies erythema or scaling.

Which diagnostic study would you obtain?

A) Serum testosterone & DHEA-S
B) VDRL and RPR
C) Hair Trichogram
D) Serum TIBC and Ferritin
E) Scalp Biopsy

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A) Serum testosterone and DHEA-S → Androgenic alopecia reflects ↑ sensitivity not ↑ levels; helpful if other signs of virilization.

B) VDRL and RPR → Syphilic alopecia is patchy & focal ("moth-eaten")

C) Hair Trichogram → Hair shaft disorders or to exclude Tinea Capitis with KOH prep

D) Serum TIBC and ferritin → history, extent and pattern not consistent with TE

E) Scalp biopsy → rule out scarring alopecia which will change treatment; suspect in any female patient of color w/ "extreme" or early onset male distribution androgenic pattern.

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CENTRAL CENTRIGUICAL CICATRIAL ALOPECIA

A MIMIC OF SEVERE ANDROGENIC ALOPECIA

African Americans Females

Alopecia Begins at Vertex and Expands

Scarring but usually does not appear inflammatory

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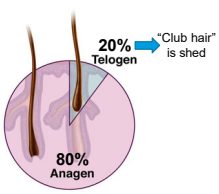
TELOGEN EFFLUVIUM

Diagnosis is mainly historical

"More hair on the pillow, with combing or with washing"

Extensive or discrete alopecic patches are rare

No involvement outside the scalp



Alternations to the normal ratio of anagen to telogen hairs produces alopecia

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TELOGEN EFFLUVIUM

TRIGGERS
Febrile illness
Chronic systemic illness
Medication changes involving hormones
Extreme dieting
Pregnancy

WORKUP
Biopsy frequently not diagnostic
Ferritin, Vitamin D, Zinc, TSH – less may be more

OUTCOMES
Self limited in three to six months
– Rare chronic variant in elderly

TREATMENT
Reassure
– Will not go bald

Minoxidil – short term
- 5% foam x 12 weeks
- 1.25 mg PO x 12 weeks

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43-year-old female presents with visible areas of hair loss first noticed 3 months ago. She also reports increased hair shedding, but her scalp is otherwise asymptomatic.

What is the most likely diagnosis?

A) Telogen Effluvium
B) Alopecia Areata
C) Female Pattern Alopecia
D) Mixed Non-Scarring Alopecia
E) Scarring Alopecia

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Mixed Non-Scarring Alopecia
Subclinical/mild female pattern alopecia "unmasked" by acute (chronic) telogen effluvium

A) Telogen Effluvium → inconsistent with patterned loss; alopecia extent unusual

B) Alopecia Areata → female pattern distribution excludes

C) Accelerated Onset Female Pattern Alopecia → follicular minimization is gradual and slow (years)

E) Scarring Alopecia → unlikely given an acute to subacute hair loss hx with no scale

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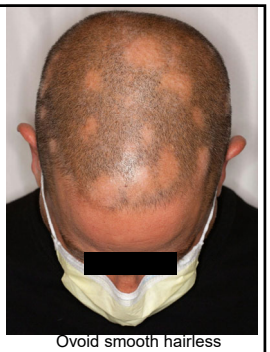
ALOPECIA AREATA

- The most prevalent autoimmune disorder
  - 2% of the global population
  - Increasing incidence
- Adults > Children
- Females > Males
- Asian > Black >Hispanic > White
- Darker hair types, sedating anesthesia
- Other associated conditions:
  - Vitiligo
  - Thyroid disease
  - Anxiety/Depression



Ovoid smooth hairless patches on scalp

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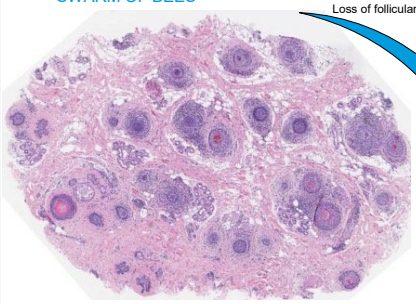
ALOPECIA AERATA

"SWARM OF BEES"



Loss of follicular immune privilege

Lymphocytic inflammation around anagen hair bulb

Conversion into catagen and telogen hairs

Hair sheading w/o regrowth

Alopecia

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ALOPECIA AERATA

CONVENTIONAL - LIMITED

Grey hairs seen in early disease or in the recovery phase

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ALOPECIA AERATA
CONVENTIONAL - EXTENSIVE

Uniform hair length helps to exclude severe cases for trichotillomania

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ALOPECIA AERATA
OPHIASIS

Preferential involvement of temporal and occipital scalp. Rx resistant

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ALOPECIA AERATA
DIFFUSE

Frequently confused with androgenic alopecia

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ALOPECIA AERATA
TOTALIS TO UNIVERSALIS SPECTRUM

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ALOPECIA AREATA
OUTCOMES & TREATMENT

LOCALIZED, LIMITED – treatment responsive, remission common in 1 year
- IL Kenalog (5-10 mg/cc) q 4-6 weeks for up to 6 months
- Topical high potency corticosteroids daily
- Immunotherapy

EXTENSIVE, PROGRESSIVE – treatment resistant, full recovery rare
- Prednisone – high response rate; rapid relapse with discontinuation
- Pulsed weekly prednisone + MTX, mycophenolate mofetil, azathioprine – low efficacy (33% partial response); poor steroid sparing effect

- ***JAK Kinase inhibitors – new therapeutic class***
  - Remission of alopecia totalis in patient with rheumatoid arthritis treated with tofacitinib
  - Baricitinib – selective JAK1 and JAK2 inhibitor; FDA approved for AA

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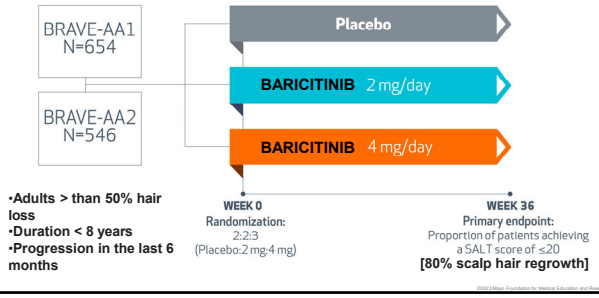
ALOPECIA AREATA
TREATMENT WITH BARICITINIB



- **Adults > than 50% hair loss**
- **Duration < 8 years**
- **Progression in the last 6 months**

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ALOPECIA AREATA
TREATMENT WITH BARICITINIB

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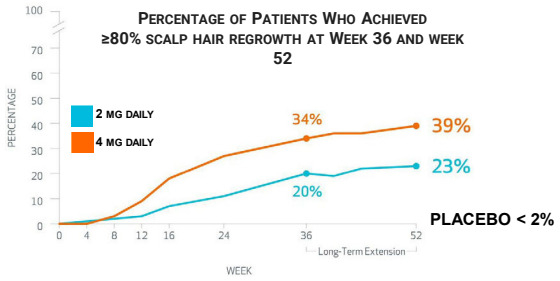
ALOPECIA AREATA
TREATMENT WITH BARICITINIB



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ALOPECIA AREATA
TREATMENT WITH BARICITINIB

> Br J Dermatol. 2023 Feb 10;188(2):218-227. doi: 10.1093/bjd/ljac059.

Integrated safety analysis of baricitinib in adults with severe alopecia areata from two randomized clinical trials

Brett King [1], Arash Mostaghimi [2], Yutaka Shimomura [3], Abraham Zlotogorski [4], Gwang-Seong Choi [5], Ulrike Blume-Peytavi [6], Thierry Passeron [7], Katrin Holzwarth [8], Yves Dutronc [8], Jill McCollam [8], Fan Emily Yang [8], Sarah Stanley [8], Wen-Shuo Wu [8], Rodney Sinclair [9]

- N=1303; median 532 days of exposure
  - No deaths
- Drug related treated events vs placebo
  - Acne
  - Elevated CPK
- Immune related events vs placebo
  - Herpes Zoster (N=34)
  - MI (N=1), PE (N=1)

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3 SCARRING ALOPECIA

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SCARRING ALOPECIA
NATURAL HISTORY AND CLASSIFICATION

Inflammatory process destroys the hair follicle producing a scar
- Hair loss is permanent and irreversible
- Chronic slow progressive time course with spontaneous "remission"
- Difficult to treatment
- Early intervention has large impact on outcome

LYMPHOCYTIC GROUP	NEUTROPHILIC GROUP
Discoid Lupus	Folliculitis Decalvans
Lichen Planopilaris	Dissecting Cellulitis of the Scalp
Frontal Fibrosing Alopecia	Acne Keloidalis Nuchae
Central Centrifugal Cicatricle Alopecia	

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DISCOID LUPUS
MOST COMMON SCARRING ALOPECIA

Skin limited (ANA-) and in association with SLE (ANA+)
Produces skin scarring and permanent alopecia in hair bearing areas

ACTIVE DLE
Scaling red partially alopecic plaque

INACTIVE DLE
Smooth scared nearly completely alopecic patch

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LICHEN PLANOPILARIS

- Vertex involvement usually
- Multi-focal with variable confluence
- Erythema, *perifollicular scaling*
- Pruritus, pain

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FRONTAL FIBROSING ALOPECIA

A CLINICAL VARIANT OF LICHEN PLANOPILARIS

Post-menopausal females almost exclusively

LLP changes limited to frontal hairline

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FOLLICULITIS DECALVANS

- Rare
- White males
- Hypersensitivity to Staph Aureus antigens
- Pustules with crusted and tufted folliculitis admixed into patches of scarring alopecia

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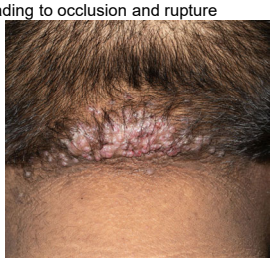
OTHER NEUTROPHILIC SCARRING ALOPECIAS

Predominate in patients of color

Postulated follicular keratinization defect leading to occlusion and rupture

Dissecting Cellulitis of the Scalp - boggy nodules with alopecia and draining sinuses



Acne Keloidalis Nuchae – pustules with firm papules and plaques on occipital scalp

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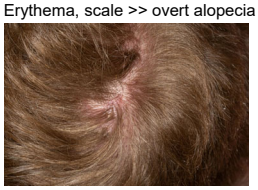
CLUES TO EARLY SCARRING ALOPECIA

WHEN TO REFER

Erythema, scale >> overt alopecia in early disease



"Seborrheic dermatitis"-appearing process that fails to respond to topical steroids or OTC anti-dandruff shampoos

- 1/3 – early scarring alopecia
- 2/3 – scalp psoriasis

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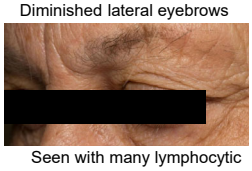
CLUES TO EARLY SCARRING ALOPECIA

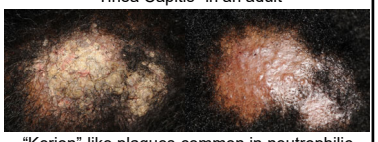
WHEN TO REFER

Diminished lateral eyebrows



Seen with many lymphocytic scarring alopecias

"Tinea Capitis" in an adult



"Kerion"-like plaques common in neutrophilic scarring alopecias

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THANK YOU
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