The Lichens in Vulvovaginal Disease

Hope K. Haefner, M.D.
Professor of Obstetrics and Gynecology
Co-Director, The University of Michigan Center for Vulvar Diseases
The University of Michigan Hospitals

Additional information on vulvovaginal diseases is available at

http://obgyn.med.umich.edu/patient-care/womens-health-library/vulvar-diseases

or go to Google and type in University of Michigan Center for Vulvar Diseases

click on Information on Vulvar Diseases

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Learning Objectives

At the end of this presentation, the participant will:

1. Understand the various conditions that cause vulvar pruritus
2. Identify and treat lichen sclerosus, lichen simplex chronicus, and lichen planus
3. Develop a plan for caring for patients with the itch scratch cycle

A variety of dermatologic conditions affect the vulva and the vagina. It is important to become familiar with the appearances and treatments of the numerous vulvovaginal conditions that you may see in your patients.

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Nonneoplastic Epithelial Disorders

<table>
<thead>
<tr>
<th>1975-1986</th>
<th>1987-present</th>
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</thead>
<tbody>
<tr>
<td>Lichen sclerosus et atrophicus</td>
<td>Lichen sclerosus</td>
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<tr>
<td>Hyperplastic dystrophy</td>
<td>Squamous cell hyperplasia/lichen simplex chronicus</td>
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<tr>
<td>Mixed dystrophy</td>
<td>Other dermatoses</td>
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Lichen sclerosus
Lichen Sclerosus – is chronic, autoimmune disease affecting the genital skin causing whiteness, tissue thinning and scarring. It is the most common chronic vulvar condition

Histology - blunting or loss of rete ridges, hyperkeratosis and loss of melanocytes are seen with a zone of pallor and often a dense interstitial lymphocytic infiltrate.

Pathophysiology: Unknown. Various genetic, autoimmune, infectious and local factors are implicated. The cause is probably multifactorial with a genetic, environmental and possibly infectious input. Often associated with other autoimmune diseases. Thyroid disease is the most common. Familial cases have been reported.

Age of onset - middle age (about 40 years) but range is from less than one year to > 80 years
Symptoms - Pruritus is most common and can be severe and intolerable
Scratching causes secondary changes and open areas that cause dysuria, burning and dyspareunia
Scarring leads to dyspareunia, even areapunia
May be asymptomatic - common cause of asymptomatic vulvar scarring.

Physical exam – Scattered or confluent papules forming plaques of ivory white with cellophane-like sheen on the surface. Found anywhere on the vulva from the clitoris and periclitorally to the gluteal cleft. The involvement may be patchy or generalized in various patterns, classically a “figure-of-eight” It can involve any cutaneous surface but most commonly is found on the vulva in women. Extragénital disease occurs in 10-20%. LS typically does not involve the vagina.

Secondary changes - excoriations, purpura, erosions, thickening (lichenification) crusting, and scarring, ranging from loss of labia or burying of the clitoris to loss of all normal vulvar structures.

Differential diagnosis - sexual abuse in children, vitiligo, lichen simplex chronicus, lichen planus, cicatricial pemphigoid.

Cancer risk - about 4% develop associated SCC

Treatment:
Biopsy to confirm diagnosis
Educate the patient
Stop irritants
Recommend cool, ventilated clothing
Topical superpotent steroids (various regimens exist)

Clobetasol propionate or halobetasol 0.05% ointment qd
for 12 weeks, then M-W-F or 1-2 times a week and follow up at 6-12 weeks then regularly at 6-12 month intervals

versus

Clobetasol propionate 0.05% bid x 1 month, then q d x 2 months. Decrease use of clobetasol to 3 times down to once a week. In some cases decrease to a class 4 steroid (see steroid table at the end of the handout), then gradually decrease frequency of application to once a week. (There is debate regarding whether or not long term steroids are required.)

Treat associated Candida or secondary bacterial infection
Stop scratching as this keeps LS active. Give 10 mg of hydroxyzine or doxepin at 6 to 7 PM to stop nightly scratching. (See Lichen Simplex Chronicus below)
For thick lichen sclerosus consider intralesional steroid (triamcinolone 3.3 to 10 mg/ml). The dose is dependent on the location and thickness of the skin that is being injected. This can be repeated monthly for 2-3 months. Do not inject high steroid doses into thin skin or in small areas because the tissue can slough.
If constantly scratching use IM triamcinolone 1 mg/kg up to 80 mg/dose. Never give over 80 mg of triamcinolone acetonide IM per month. This can be repeated once a month for 3 months with a maximum of 4 doses a year.
Tacrolimus 0.1% ointment and pimecrolimus 1% cream have been used for the treatment of vulvar lichen sclerosus. Burning may occur with these medications.

Tazorac 0.1% gel (can also use 0.05% or 0.1% cream for lower strength) may be used for lichen sclerosus when the skin is very thick or unresponsive to topical steroids. Apply to skin qhs with gradual decrease to two to three times a week. Acitretin (Soriatane) is a retinoid that may be used for lichen sclerosus unresponsive to topical steroids (and in some cases lichen planus). It is most beneficial for thickened skin. Take 10 mg every 1-2 days for a dose of 30-70 mg per week. It must be taken with fatty food. The patients must not become pregnant as it is teratogenic like isotretinoin. (expensive, but less costly in Canada).

Surgery is done on occasion to improve function or for scarring

In all patients with lichen sclerosus:
Arrange follow-up always – indefinitely.
Regular follow-up is needed because there is an increased risk of developing squamous cell carcinoma (SCC) (<5 % in women). If not responding to treatment
Look for concurrent conditions and biopsy and rebiopsy, as needed.

Note – LS involves the vulva not the vagina unless prolapse. Scarring is not reversible by any medical therapy.

**LICHEN SIMPLEX CHRONICUS (LSC)**

Synonyms: Squamous cell hyperplasia, neurodermatitis, pruritus vulvae, hyperplastic dystrophy

“LSC” – The end stage of the itch–scratch–itch cycle. It is usually part of the atopic dermatitis (eczema) spectrum. It can be associated with underlying, secondarily scratched and thickened psoriasis or contact dermatitis or the end stage of several itchy vulvar conditions (e.g. LS). Scratching “feels good” especially for patients with atopic dermatitis (patients with a background of allergies, eczema, hay fever or asthma). Stress makes all of this worse.

Causes of LSC:

**Infection:** Candida and dermatophytosis

**Dermatoses:** Atopic dermatitis  Psoriasis
Lichen Sclerosus  Contact Dermatitis
Lichen Planus

**Metabolic:** Diabetes and iron deficiency anemia

**Neoplasia:** Vulvar intraepithelial neoplasia

The most important causes are atopic dermatitis, contact dermatitis or both. Less common causes – psoriasis, LS
Pathophysiology – in this condition there is an altered skin barrier with varying combination of allergens, irritants and skin pathogens that result in a changed immunoregulatory process. Stress further alters the skin barrier function, making all of this worse. This condition is defined by relentless pruritus. These patients scratch in their sleep ruining the effectiveness of their daytime treatments. The chronic scratching causes the skin to thicken and feel firm.

Clinical Presentation:
- Relentless pruritus
- Chronic – years of “chronic itch”
- Worse with heat, stress, menstruation
- “Nothing helps”
- Marked lichenification

Pigmentation changes
- Unilateral or bilateral
- Hair loss from scratching
- Excoriations + crusts
- Diagnosis – clinical biopsy may be needed

Note: Scratching makes erosions with serosanguineous crusts; repeated rubbing causes skin thickening (lichenification). In LSC, you can see both erosions and lichenification.

Treatment:
- Rule out other conditions
- Stop all irritants
- Consider Patch testing looking for a allergen
- Stop itch/scratch/itch cycles
- Topical superpotent steroids, halobetasol or clobetasol 0.05% ointment, bid for two weeks, qhs for two weeks, then M-W-F for two weeks.
  (For severe disease, a longer duration of a mid dose topical steroid may be required.)
- Oral steroids may be required for a short duration (dose varies dependent on disease severity; consider prednisone 40 mg po q am x 5, then 20 mg po q am x 10, however a longer taper may be required)
- IM triamcinolone 1 mg/kg (up to 80 mg total) can be used instead of prednisone for severe, itchy or extensive LSC. Repeat is seldom necessary. If repeat is necessary, it can be repeated monthly x 3 total doses.
- Intralesional triamcinolone can be used to thin the thick / lichenified skin as for LS above.
- Treat infections, bacterial and yeast
  - Cefadroxil 500 mg bid for 7 days
  - Fluconazole 150 mg po q week x 2
- Sedate
  - Doxepin or hydroxyzine 10 to 75 mg qhs for nighttime itching
  - Citalopram or fluoxetine or sertraline in the morning for daytime itching
  - Amitriptyline is also used at times for sedation (25 mg po qhs; can increase to 50 mg po qhs) in patients with severe itch scratch cycle. It puts the patient in a deeper sleep cycle than the other sedation agents listed above. Do not combine amitriptyline with the other sedation agents above. Give early in evening so not sleepy in morning (6-8PM). Caution for use in the elderly population. Check for other drug interactions.
- Sitz baths or cold soaks
- White cotton gloves at night
Note: If skin is very raw the topical steroids will burn. Start with plain Vaseline, oral antibiotics, anti-yeast medication and nighttime sedation for 2-3 days, then start the topicals.

LSC reoccurs due to sensitive skin in the area so it will need repeated management.

LOOK FOR MORE THAN ONE CAUSE OR A COMBINATION OF CAUSES as it is not uncommon to have psoriasis, contact dermatitis and lichen simplex chronicus in the same patient.

**LICHEN PLANUS (LP)**

Lichen planus is an autoimmune, mucocutaneous disorder of altered cell mediated immunity in older women affecting the skin and mucous membranes.

**Etiology:** It is a disorder of altered cell mediated immunity with exogenous antigens targeting the epidermis.

The diagnosis is often missed on the vulva and in the vagina.

It tends to occur in menopausal women (age 40-60 years).

It affects skin and mucous membrane – mouth, vulva, vagina, nails, scalp, esophagus, nose, conjunctiva of the eye, ears and bladder.

Painful LP is usually erosive; patient can have LP plus chronic vulvar pain.

**Clinical Presentation:**

1. **Papulosquamous** – typical papules and plaques with white lacy pattern on the vulvar trigone and periclitoral area. It may be part of generalized LP. This can be itchy. It tends to respond to topical steroids.

2. **Hypertrophic** – least common with extensive white scarring and destruction (looks like LS) – can be very itchy. Treatment tends to be resistant.

3. **Erosive (vulvovaginal gingival syndrome)** – destructive, scarred lichen planus on the mucous membranes and vulva with a desquamative vaginitis, variable erosions plus atrophy, usually pain, burning and irritation rather than itch. The skin of the vulva often has a glazed erythema. Treatment tends to be resistant.

Note – LP involves the vulva and vagina, It may only be in the vagina.

**Erosive LP (vulvovaginal gingival syndrome)**

**Symptoms:**

- Severe pain and burning
- Depression + anger
- Dysuria
- Dyspareunia / apareunia

**Signs** – painful, glossy red erosions (glazed erythema) and scarring are seen around the labia minora and vestibule. The borders may be white to smudgy or smoky gray. The scarring causes flattening of the vulva and loss of the labia minora.

- May see desquamative inflammatory vaginitis

Vaginitis with vaginal erosions, atrophy, purulent malodorous discharge, vaginal synechiae and scarring. The vagina may be obliterated.
Note: up to 70% of women with vulvar LP have vaginal involvement.

This can be a chronic, destructive, debilitating and difficult condition. The vagina may be involved alone.

Diagnosis:
- Look at mouth and skin for evidence of LP
- Consider biopsy for H&E and immunofluorescence
- Biopsies may be nonspecific

Differential diagnosis:
- Lichen sclerosus, drug eruption, cicatricial pemphigoid, graft vs. host disease

Treatment:
- Stop irritants
- Pain control
- Bland therapy for ulcers
- Sedation
- Superpotent steroid ointment (clobetasol) topically once to twice a day.
- Intralesional steroid – triamcinolone 3.3 up to 10 mg/ml q 3-4 wks x 3 (do not give high dose in small area-erosions and ulcers may occur)

Intravaginal steroid – hydrocortisone acetate foam 40-80 mg qhs
- or 25 to 200 mg compounded suppository qhs (if using high dose steroids, use for short term use, then gradually decrease the dose).
- If severe – hydrocortisone acetate 10% compounded in a Replens like base –3 to 5 grams (300 mg to 500mg/dose) nightly for 14 days then 3 nights a week and continue to decrease dose as per response. (Some prefer to use every other night initially, and then gradually decrease the dose)
- Note: adrenal suppression and risk of candidiasis

IM Triamcinolone (Kenalog 40) 1 mg/kg every 4 weeks for 3 doses. (Dose up to a maximum of 80 mg total per dose) Repeat monthly for up to 3 months. Max 4 doses per year
- Prednisone 30-60 mg a day with taper
- Methotrexate 7.5-15 mg po or subcutaneously in abdomen or thigh, once a week with folate 1 mg daily
- Mycophenolate mofetil 250 mg/day building up to 3gm/day (pregnancy must be prevented)
- Acitretin 10 mg 3-7 days a week with fatty food for erosive disease. Counsel on no pregnancy as this is a teratogen. (see above for lichen sclerosus)
- Cyclosporine 3-4 mg / kg per day

Patient education and support needed
- Dilators
- Surgery for scarring followed by intravaginal treatment

Other Treatments:
- Clobetasol propionate 0.05% ointment virginally using 1-2 grams nightly via a “Premarin type applicator”
- Clobetasol propionate 0.05% ointment/Nystatin 100,000 units/gram/3% oxy-tetracycline in cream base
- Pimecrolimus (Elidel) 1% cream bid for mild LP
- Topical tacrolimus (Protopic) 0.03 or 0.1% ointment (burns) as a steroid sparer
- Hydroxychloroquine, etanercept (see below)

Course: uncertain - often very chronic-10% resolve, 50% asymptomatic and 15% do poorly
What are the various treatments for Lichen Planus?

Papular lichen planus tends to respond to topical corticosteroids. Triamcinolone acetonide 0.1% ointment for mild disease and clobetasol propionate 0.05% ointment for severe disease.

For erosive disease the following table contains many medications that have been tried for LP treatment. It is important to note that many of these medications are formulated for off label use.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Discussion</th>
</tr>
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<tbody>
<tr>
<td><strong>Long term Anti-inflammatory antibiotics</strong></td>
<td>This treatment works best for early erosive lichen planus</td>
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<tr>
<td></td>
<td>Doxycycline or clindamycin used long-term. Consider adding weekly fluconazole to prevent yeast infection.</td>
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<tr>
<td><strong>Steroids are often used for lichen planus</strong></td>
<td>Vaginal LP</td>
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<td>Anusol HC 25 mg vaginal suppositories are used in the following manner:</td>
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<td>1/2 of a Anusol HC suppository per vagina twice daily for 2 months, then daily for 2 months, then maintenance treatment at 1 to 3 times per week. However, many patients do not experience significant long-term response to intravaginal steroids. The vaginal vault tends to continue to scar. To keep the vault open and prevent adhesions it often will be necessary to use vaginal dilators. The dilator may be lubricated with a hydrocortisone cream.</td>
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<td></td>
<td>At times a stronger steroid may be required for vulvar LP (see text).</td>
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<td></td>
<td>Topical- Clobetasol propionate (Temovate®) 0.05% ointment</td>
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<tr>
<td></td>
<td>Intralesional- triamcinolone acetonide 5-10 mg/ml</td>
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<tr>
<td></td>
<td>As above, for stronger treatment:</td>
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<tr>
<td></td>
<td>– hydrocortisone acetate foam 40-80 mg qhs</td>
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<tr>
<td></td>
<td>or 25 to 200 mg suppository qhs (if using high dose steroids, use for short term use, then gradually decrease the dose).</td>
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<td></td>
<td>If severe – hydrocortisone acetate 10% compounded in a Replens like base –3 to 5 grams (300 mg to 500mg/dose) nightly for 14 days then 3 nights a week and continue to decrease dose as per response. (Some prefer to use every other night initially, then gradually decrease the dose)</td>
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<td></td>
<td>Oral- Oral prednisone may be required until healing has occurred. 30-40 mg qam with food for 3 weeks then slowly taper. As the skin heals, topical corticosteroids may be added as the prednisone is tapered.</td>
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<td></td>
<td>IM steroids (place into muscle in anterior thigh). Used for moderate disease. Dose 1 mg/kg (not to exceed 80 mg) every 4 weeks to every 8 weeks for up to 3 or 4 months.</td>
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<td></td>
<td>For Oral LP- Apply Clobetasol propionate (Temovate®) gel or ointment 0.05% to affected area up to qid Apply on a cotton ball in mouth for 5 min. Best to use in a dental tray for 15-30 min bid for gums. Some providers use dental molds to hold in medications in patients with gingival LP</td>
</tr>
</tbody>
</table>
| Tacrolimus and Pimecrolimus | Tacrolimus (Protopic) 0.1% ointment bid to qid.  
Apply on a cotton ball in mouth for 5 min  
Vaginal medication (made by compounding pharmacy)  
tacrolimus vaginal suppositories  
Insert one suppository per vagina (2 mg tacrolimus per 2 gram supp) qhs  
Disp 50  
Or  
0.1% vaginal cream (compounded in a vaginal cream / Replens like base) 2-5 g = 2 - 5 mg/dose for 2 weeks then Mon-Wed-Fri for 2 weeks and slowly decrease Disp 100 grams  
Vulvar medication  Apply to skin bid  Tacrolimus 0.1% ointment Available in 30 or 60 gram tubes  
Calcineurin inhibitors (steroid sparing)  
pimecrolimus (Elidel) 1% cream bid for mild LP  
Topical tacrolimus (Protopic) 0.03%, 0.1% oint  
Note – can burn especially on raw areas  
Long term safety unknown |
<table>
<thead>
<tr>
<th>Less frequently used medications</th>
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<tbody>
<tr>
<td>Hydroxychloroquine (Plaquenil)</td>
<td>Occasionally used. Dose is 200 mg po bid.</td>
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<tr>
<td>Retinoids</td>
<td>There is no documented successful use of retinoids for vulvovaginal lichen planus. There is only personal experience with Acitretin (Soriatane). It can work well in low dose 30-70 mg/week. (Isotretinoin has been used to treat oral lichen planus; however, discontinuation of the medication results in recurrence of the oral lesions.) Long-term use of retinoids may result in liver dysfunction but not in the small doses recommended here. Liver function tests, cholesterol, triglycerides and complete blood cell counts should be monitored since laboratory changes are associated with the use of oral retinoids. Patients should be counseled concerning teratogenicity and need for optimal contraception. Acitretin is a strong teratogen that remains in the body for at least three months after the last dose. Topical retinoids (Tazarotene (tazarac) are often too irritating for this vulvar condition but have been used.</td>
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<tr>
<td>Cyclosporine</td>
<td>Used topically and systemically. Topical cyclosporine provides a safe and often effective but very expensive alternative for mucous membrane disease. Pelisse et al. described the use of the oral or injectable form of the medication in 100 mg amounts directly to the affected skin four times a day initially. If several mucous membranes were affected for example, 100 mg was applied to the vulva, 100 mg inserted into the vagina, and 100 mg held in the mouth for as long as tolerated before spitting. As disease is controlled, the frequency of application can be tapered. Systemically it is dosed at 4-5 mg/kg/day for 3 months (used in severe disease). Occasionally, in patients with debilitating and painful disease not adequately treated by therapies discussed above, oral cyclosporine may be used. This medication should be used only by health care providers experienced in its use.</td>
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<tr>
<td>Cyclophosphamide</td>
<td>Systemic antimetabolite</td>
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<tr>
<td>Azathioprine</td>
<td>Systemic antimetabolite</td>
</tr>
<tr>
<td>Etanercept (Enbrel)</td>
<td>This is used SQ (50 mg sq 2x/week until symptoms improve, then 25 mg sq 2x/week).</td>
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<tr>
<td>Mycophenolate mofetil (CellCept)</td>
<td>Oral use 250mg -3 g/d in divided dose</td>
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<tr>
<td>Methotrexate</td>
<td>Oral or subcutaneous injection weekly. 7.5 to 15 mg oral or subcutaneously weekly using a 27 or 30 gauge needle. Need to give folate with this medication- 1 mg/d</td>
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</tbody>
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Lichen Planus and Surgery

For scarred LP of the vagina - post surgery information

I. For dilation:

Dilation is vital to keep the vagina open in patients with vaginal lichen planus. Patients need specific instructions on size of dilator and how to use dilators. They may need a set of dilators and can to buy the dilator set from [www.vaginismus.com](http://www.vaginismus.com). Start with the largest size that will fit, determined by surgery. Leave the dilator in once or twice a day for 15-20 minutes. For lubricating the dilator use either Vaseline or mineral oil. Hydrocortisone acetate cream or Estrace 0.01% vaginal cream can be used later.

II. To stop inflammation:

If not too severe 2-3 days preoperatively use prednisone 15-30 mg/d AM, with food, plus topical steroid. Keep on prednisone for 1 week post operatively then taper slowly at 5 mg/week. Use with the topical steroid (see below).

For more severe disease consider using a dose of intramuscular triamcinolone 1mg/kg up to a total of 80mg/dose to be given two days after surgery and repeat this monthly for up to three months. Follow and assess her to see if she is going to need other long-term systemic medication, cyclosporine, mycophenolate, methotrexate, etc. Once she is healed she may need a systemic anti-inflammatory. The medication will depend on the case. These medications can be used with intermittent doses of IM triamcinolone, also depending on the case.

A. For the vagina

Two days after surgery, when the stent is removed, the patient needs to start dilating with Vaseline on the dilator twice a day. Dilators must be used nightly. In 1 to 2 weeks if healing then consider 10% hydrocortisone acetate in a vaginal cream 300mg (3g) to 500 mg (5gms) nightly for a week then gradually decrease weekly to 1-3gram Mon-Wed-Fri depending on response. (The compounded prescription is 10% hydrocortisone acetate in vaginal cream base 100 g with 2 refills). As a steroid sparer consider tacrolimus 2 mg compounded suppository nightly, or 0.1% tacrolimus compounded vaginal cream 2 grams/dose. Note – tacrolimus can cause a burning sensation. Use fluconazole 150 mg weekly to prevent yeast as needed.

B. For the vulva - to start two days after surgery, if not very eroded, topical clobetasol 0.05% ointment in a thin film PM, If eroded use plain Vaseline for 2 weeks and then restart clobetasol. If tolerated consider using tacrolimus 0.1% ointment twice a day as a steroid sparer note - as above, it can cause a burning sensation.

III Follow up- patient needs to be seen often for support and to adjust treatment. Avoid sexual intercourse until well healed with adequate size.
TOPICAL CORTICOSTEROIDS
Learn three to four ointments of different strengths, making appropriate selections as needed
- ointments are stronger than creams
- ointments stay on longer than creams (creams are diluted and washed away with body fluids)
- ointments are less irritating and have fewer allergens than other bases
Patients may find one base more irritating than another. Be flexible.
Do not use steroids for dysesthetic vulvodynia - steroids work by reducing inflammation, not pain
Note: **Topical steroids are not a cure.** Use the steroid potency that will do the job in the quickest period of time and then decrease to a lower potency. Either stop or maintain with the lowest potency or use intermittently as necessary.

Tips: When considering topical corticosteroids, especially the superpotent types, consider:
- There are more available than you need
- Use them in an educated way
- Limit the amount prescribed to 15g to 30 grams for high dose topical steroids
- Show the patient exactly how to use it – a tiny dab spread in a thin film just to the involved area is all that is necessary
- Vulvar mucous membrane (vulvar trigone and inner labia minora) is remarkably steroid resistant. The outside of the labia minora and the labiocurral fold and the thighs will thin easily and develop striae.
- When the patient improves, decrease the frequency of topical steroid or manage with a low potency product.
- Use under close supervision.
- At any suggestion of secondary yeast infection, add a topical or oral anti-fungal.

For example, for thick itchy dermatoses like lichen simplex chronicus – use name brand clobetasol or halobetasol 0.05% ointment bid for 1-2 weeks, once a week for 1-2 weeks and then M-W-F for 1-2 weeks and for long term maintenance either infrequent and intermittent usage each week of the same or switch to intermittent use of a mild ointment such as 1% hydrocortisone in petrolatum or a 1% hydrocortisone / 1% pramoxine cream mix.

Effects of corticosteroids:
- Vasoconstriction – decrease erythema and swelling
- Decreasing fibroblastic proliferation thins out thickened dermal lesions
- Decreasing rapidly turning over keratinocytes thins out thickened epidermal lesions

Corticosteroid responsive vulvar dermatoses include:
- Thick and scaly (lichen sclerosus, lichen simplex chronicus, psoriasis, contact dermatitis)
- Blistering erosive disease
- Bullous diseases

Corticosteroid potency depends on:
- Cortisone molecule
- Partition co-efficient of steroid vehicle system
- Concentration of steroid in vehicle
- Application frequency and length of time used

**Caution:** steroids can be associated with irregular menses, increased BP, worsening of diabetes control, infection and glaucoma.
<table>
<thead>
<tr>
<th>Class</th>
<th>U.S. Brand Name</th>
<th>Generic name</th>
</tr>
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<tbody>
<tr>
<td>Super-high Potency</td>
<td>Temovate® Cream, 0.05%</td>
<td>clobetasol propionate</td>
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<tr>
<td></td>
<td>Temovate® Ointment, 0.05%</td>
<td>clobetasol propionate</td>
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<td></td>
<td>Temovate® E, 0.05%</td>
<td>clobetasol propionate</td>
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<tr>
<td></td>
<td>Diprolene® Cream, 0.05%</td>
<td>betamethasone dipropionate</td>
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<tr>
<td></td>
<td>Diprolene® Ointment, 0.05%</td>
<td>betamethasone dipropionate</td>
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<td></td>
<td>Diprolene® AF Cream, 0.05%</td>
<td>betamethasone dipropionate</td>
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<td>Psorcon® Ointment, 0.05%</td>
<td>diflorsone diacetate</td>
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<td></td>
<td>Ultravate® Cream, 0.05%</td>
<td>halobetasol propionate</td>
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<td></td>
<td>Ultravate® Ointment, 0.05%</td>
<td>halobetasol propionate</td>
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<tr>
<td>II</td>
<td>Cyclocort® Cream, 0.1%</td>
<td>Amcinonide</td>
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<td></td>
<td>Cyclocort® Ointment, 0.1%</td>
<td>amcinonide</td>
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<td></td>
<td>Diprosone® Ointment, 0.05%</td>
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<td>Florone® Ointment, 0.05%</td>
<td>diflorsone diacetate</td>
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<td></td>
<td>Lidex® Cream, 0.05%</td>
<td>flucinonide</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>Lidex-E® Cream, 0.05%</td>
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</tr>
<tr>
<td></td>
<td>Maxiflor® Ointment, 0.05%</td>
<td>diflorsone diacetate</td>
</tr>
<tr>
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<td>Maxivate® Ointment, 0.05%</td>
<td>betamethasone dipropionate</td>
</tr>
<tr>
<td></td>
<td>Topicort® Cream, 0.25%</td>
<td>desoximetasone</td>
</tr>
<tr>
<td></td>
<td>Topicort® Ointment, 0.25%</td>
<td>desoximetasone</td>
</tr>
<tr>
<td>III</td>
<td>Aristocort A® Cream 0.5%</td>
<td>triamcinolone acetonide</td>
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<tr>
<td></td>
<td>Cutivate® Ointment, 0.05%</td>
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<tr>
<td></td>
<td>Elocon® Ointment, 0.1%</td>
<td>mometasone furoate</td>
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<tr>
<td></td>
<td>Florone® Cream, 0.05%</td>
<td>diflorsone diacetate</td>
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<td>Maxiflor® Cream, 0.05%</td>
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<tr>
<td></td>
<td>Maxivate® Cream, 0.05%</td>
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<tr>
<td></td>
<td>Valisone® Ointment, 0.1%</td>
<td>betamethasone valerate</td>
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<tr>
<td>IV</td>
<td>Aristocort® Ointment, 0.1%</td>
<td>triamcinolone acetonide</td>
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<td>Cordran® Ointment, 0.05%</td>
<td>flurandrenolide</td>
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<tr>
<td></td>
<td>Elocon® Cream, 0.1%</td>
<td>mometasone furoate</td>
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<tr>
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<td>Kenalog® Ointment, 0.1%</td>
<td>triamcinolone acetonide</td>
</tr>
<tr>
<td></td>
<td>Synalar® Ointment, 0.025%</td>
<td>flucinolone acetonide</td>
</tr>
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<td></td>
<td>Topicort LP® Cream, 0.05%</td>
<td>desoximetasone</td>
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<tr>
<td>V</td>
<td>Aristocort® Cream, 0.1%</td>
<td>triamcinolone acetonide</td>
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<td></td>
<td>Cordran® Cream, 0.05%</td>
<td>flurandrenolide</td>
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<tr>
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<td>Cutivate® Cream, 0.05%</td>
<td>flucinolone acetonide</td>
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<tr>
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<td>Dermatop® Emollient cream, 0.05%</td>
<td>prednicarbate</td>
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<td>Kenalog® Cream, 0.1%</td>
<td>triamcinolone acetonide</td>
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<td>Kenalog ointment, 0.025%</td>
<td>triamcinolone acetonide</td>
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<tr>
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<td>Locoid® Cream, 0.1%</td>
<td>hydrocortisone butyrate</td>
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<td>Synalar® Cream, 0.025%</td>
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<td></td>
<td>Valisone® Cream, 0.1%</td>
<td>betamethasone valerate</td>
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<td></td>
<td>Uticort® Cream 0.025%</td>
<td>betamethasone benzoate</td>
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<td>Westcort® Cream, 0.2%</td>
<td>hydrocortisone valerate</td>
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<tr>
<td>Westcort® Ointment, 0.2%</td>
<td>hydrocortisone valerate</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Aclovate® Cream, 0.05%</td>
<td>alclometasone dipropionate</td>
</tr>
<tr>
<td></td>
<td>Aclovate® Ointment, 0.05%</td>
<td>alclometasone dipropionate</td>
</tr>
<tr>
<td></td>
<td>Tridesilon® Cream, 0.05%</td>
<td>desonide</td>
</tr>
<tr>
<td>VII Low Potency</td>
<td>Numerous preparations exist</td>
<td>Dexamethasone, flumethalone, hydrocortisone Methylprednisolone, prednisolone</td>
</tr>
</tbody>
</table>
ALTERNATIVES TO CORTICOSTEROIDS
Alternative topicals to corticosteroids are the Calcineurin inhibitors
Calcineurin inhibitors:
  - Pimecrolimus 1% cream (Elidel)
  - Tacrolimus 0.03 and 0.1% ointment (Protopic) or compounded 0.1% vaginal cream
    or a 2g suppository.
These are non-steroidal
Does not cause atrophy
May sting or burn initially when used topically
Equivalent to mild to moderate topical steroids –Pimecrolimus to a mild
topical steroid and tacrolimus equivalent to a moderate to strong
topical steroid.
These are topical immunosuppressants usually for maintenance of
steroid responsive dermatoses
Note: there is a black box warning on these medications. This is because of reports of skin cancers and
lymphoma with systemic Calcineurin inhibitors used in organ transplant patients. This warning was also
imposed because of one manufacturer’s failure to conduct safety studies.
Note: Skin application results in minimal systemic exposure.
  Vaginal use can result in systemic absorption.

Side effects of Calcineurin inhibitors:
  Burn, sting
  Infection – worsening of HSV, HPV, tinea, molluscum contagiosum
Safety with regard to lichen sclerosus and squamous cell carcinoma? There are a
number of studies showing good results with this medication in
lichen sclerosus in adults and children. There are three reports of genital
squamous cell carcinoma
  with patients who have used tacrolimus and one with squamous cell
carcinoma on pimecrolimus.
  Treatment of choice for lichen sclerosus is still superpotent topical steroids
For lichen plans that is difficult to treat with only partial control of topical steroids consider using
tacrolimus and pimecrolimus. The response reported is between 55 and 94%.

Summary of Calcineurin inhibitors:
  For lichen planus start with topical steroids and consider alternating with Calcineurin inhibitors.
  For lichen sclerosus with atrophy or reaction to topical steroids, consider usage, discuss the risks and
follow carefully. No refills without follow-up vulvar exams.
  Consider for use in the following: vulvar dermatoses, psoriasis, Crohn’s, pemphigoid, etc.

Systemic corticosteroids can be useful at times. A full discussion is beyond this lecture.
IM triamcinolone acetonide (Kenalog 40) 1 mg per kg for an acute dermatosis (e.g. contact dermatitis or
severe lichen simplex chronicus). This can be repeated in 3-4 weeks once or twice to get a severe condition
under control. See appropriate monograph for all side effects of all corticosteroids and calcineurin
inhibitors.
  Caution in patients with diabetes- high dose steroids can interfere with their glucose control.
References

Nonneoplastic epithelial disorders overview


Lichen sclerosus


**Lichen Simplex Chronicus**


**Lichen Planus**


