

Diaper Dermatitis

Dr. Jessica Foulds, MD, FRCPC
Annie Poon, U of A

AP: Thank you for joining us on our podcast on Diaper Dermatitis. My name is Annie Poon, I am a third-year medical student at the University of Alberta. I am joined by Dr. Jessica Foulds, a pediatrician here at the U of A.

Objectives

1. Distinguish the term diaper dermatitis from the underlying cause
2. Compare and contrast 3 common causes of diaper dermatitis
3. Identify key questions to ask on the history about a skin condition
4. Counsel caregivers on treatment of irritant dermatitis

JF: Hi everyone! Before we begin, let's outline some objectives of this podcast. By the end of this podcast listeners will be able to:

Distinguish the term diaper dermatitis from the underlying cause

Compare and contrast 3 common causes of diaper dermatitis

Identify key questions to ask on the history about a skin condition

Counsel caregivers on treatment of irritant dermatitis

This podcast will include descriptions of rashes. If you are less familiar with the terminology to describe rash morphology, there is a great PedsCases podcast on Approach to Pediatric Rashes which you might want to listen to first!

Case: Allie



ID: 6 month old girl

CC: "Diaper rash"

Let's start with a case here: You are in a community pediatrician's office and are seeing 6-month-old girl in follow-up named Allie with complaints of a "diaper rash." First of all – let's think about our approach to this issue: it's a common complaint! If the parents are concerned about a diaper rash, are we done? Do we have the diagnosis?

Diaper Dermatitis

Is a diagnosis?



AP: Well, diaper rash **or** *Diaper dermatitis* is just an all-encompassing term for rashes that appear in the diaper area. It is not a diagnosis, only an umbrella term for a sign.

Differential Diagnoses

1. Caused by the Diaper
2. Worsened by the diaper
3. Independent of the diaper

JF: Absolutely! So, thinking about the different types of diaper rashes you know or have read about, how would you distinguish them?

AP: I like to think of it as rashes caused by the diaper, rashes worsened by the diaper, and those completely independent of the diaper.

Starting with rashes caused by the diaper: The most common would be:

Differential Diagnoses: Caused by the diaper

Irritant Contact Dermatitis

- Soiled diapers
- Scented/harsh soaps
- Other chemicals/detergents

- Spares inguinal creases



JF: Absolutely! So, thinking about the different types of diaper rashes you know or have read about, how would you distinguish them?

Starting with rashes caused by the diaper: The most common would be:

1) **Irritant contact dermatitis:** The moist environment of the diaper and the prolonged contact and friction of soiled diapers irritates sensitive skin. Using scented or harsh soaps, chemicals or detergents can also irritate the skin. Irritant contact dermatitis presents as erythematous patches on convex surfaces, sparing inguinal creases. The fact that the rash spares the folds is key to differentiating it from other diaper rashes, and if you think about it, it makes sense. The skin in the folds is protected from direct contact with the diaper, and gets less irritation than the skin that is rubbing directly against the diaper.

Differential Diagnoses: Caused/worsened by the diaper

Candidiasis

- Worsened by diaper
- Discrete satellite pustules and papules
- Scaling along margins
- **Involves** inguinal creases



Diaper dermatitis with superimposed candida infection with satellite papules in periphery

2) **Candidiasis** is another common diaper rash either caused or worsened by the diaper – Candida can be distinguished from Irritant contact dermatitis by the locations it involves. To distinguish from Irritant Contact Dermatitis, Candida will usually involve inguinal creases, with discrete/separate satellite pustules and papules, and scaling along the margins. The rash can start out as a primary candidal infection or develop as a complication from irritant contact dermatitis.

Image source: <https://pedclerk.bsd.uchicago.edu/page/diaper-rash>

Differential Diagnoses: Caused/worsened by the diaper

Impetigo

- Bacterial infection
- Staphylococcus > Streptococcus
 - Non-bullous vs bullous
 - Worsened by the diaper
- Always consider HSV in neonates!



Figure 91.4 Flaccid bullae that rupture easily leaving round, crusted erosions occur in bullous impetigo.

3) **Impetigo** is a bacterial infection of the skin most commonly due to Staphylococcus, and less commonly due to streptococcus. Non bullous impetigo presents initially as a superficial vesicle that ruptures easily to form a honey-crusted lesion. Bullous impetigo presents initially as a fluid of pus-filled bullae that ruptures to form an erythematous erosion with surrounding scaling. We think of these lesions as both caused and worsened by the diaper. When assessing a child with vesicles, especially in the neonatal period, be sure to consider herpes simplex virus (HSV). The lesions of HSV are distinct clinically, but neonatal HSV is not an infection you want to miss so look carefully!

Picture source: Mancini, A. J., & Krowchuk, D. P. (Eds.). (2016). *Pediatric dermatology: A quick reference guide*.

Differential Diagnoses: Not caused by the diaper

Seborrheic Dermatitis

- Salmon-pink patches with scale
- Face, scalp, axilla, back, posterior ear
 - Concave & convex areas
- Be careful of similarity to psoriasis!



JF: Next let's discuss the rashes that are not caused by the diaper:

4) **Seborrheic Dermatitis** is a common infant skin condition caused by sebaceous gland dysfunction. It presents with salmon-pink patches with yellow scales on the face, scalp, and intertriginous areas such as the axilla, neck, and behind the ears. It appears similarly in the diaper area as salmon-pink patches with a greasy scale involved both the convex and concave areas. It can be distinguished from Irritant contact dermatitis by involvement of creases, and its appearance in the other body parts as mentioned above. Compared to candidiasis, it does not usually present with satellite lesions or pustules. However, it can be tricky to distinguish from psoriasis so just remember to think about both when you see that kind of rash.

Image source:

<https://www.uptodate.com/contents/images/DERM/73813/Seborrdermdiaperarea.jpg>

Differential Diagnoses: Rare but important!

- Folliculitis
- Langerhans Cells Histiocytosis (LCH)
 - Psoriasis
 - Eczema
- Nutritional/Metabolic deficiencies

Others less common but important causes include: Folliculitis, Langerhans Cells Histiocytosis, psoriasis, eczema and nutritional or metabolic deficiencies.

Differential Diagnoses: Special note

- Folliculitis
- **Langerhans Cells Histiocytosis (LCH)**
- Psoriasis
- Eczema
- Nutritional/Metabolic deficiencies



I just want to take a brief moment to talk about Langerhans Cells Histiocytosis (LCH) because it is a life-threatening condition that may involve multiple organs. Skin involvement presents as red-brown papules often with erosions, crusting, and petechiae. They appear commonly in inguinal creases, abdomen, neck folds, axilla, posterior ear folds, palms and soles. Other signs may include lymphadenopathy, and hepatosplenomegaly. If the diaper rash does not improve with optimal treatment and you suspect LCH, remember to refer to a dermatologist for further investigations!

Picture source:

<https://www.uptodate.com/contents/images/DERM/57722/Langerhanshistioskin1.jpg>

g

History

HPI:

- Onset and progression
- Size
- Pain
- Bleeding
- Discharge
- Other affected areas
- Recent illness
- Other symptoms (i.e. fever)
- New foods, diapers, environments

Birth Hx & Development

- Past Med Hx
- Medications & Allergies
- Immunizations
- Social Hx

Family Hx:

- Autoimmune disorders
- Skin conditions (i.e. eczema, psoriasis)

ROS:

- Head to toe!



JF: So now that we have a working diagnosis in mind, let's talk about the history and examination. What would you want to ask the parents?

AP: I would ask about the onset and progression of the rash. For example:

When did they first notice it?

Has the rash gotten worse or bigger? Is it spreading? Is it painful? Is it bleeding or is there other discharge?

Have they noticed the rash anywhere else on the body?

What have they tried so far to alleviate the rash? Does anything seem to make it worse?

Has the patient been sick lately?

Has the patient been displaying any other symptoms, including fever.

Did the patient try any new foods, use a different brand of diapers, or go anywhere new prior to onset of the rash?

JF: Awesome! That's a great history of presenting illness. You still do need to take a complete pediatric history but other things to highlight specific for the rash would be: Social History – getting a history on what exposures the patient might have including: scented soaps and lotions, and clothing material. I would also ask who the patient lives with at home and who is the patient's primary caregiver.

Review of systems – just any other symptoms that you might have missed in HPI
Family history – especially any autoimmune disorders, and skin conditions such as eczema and psoriasis.

Back to the Allie

HPI:

- Started 1 month ago
- Red, patches in diaper area
- No bleeding/discharge
- Petroleum jelly of little relief
- Cries with diaper changes
- Parents change only on full diapers to avoid waking a difficult sleeper
- Bubble baths nightly

Birth Hx & Development: unremarkable, meeting all milestones, introduced solid foods recently with no problems

Past Med Hx: unremarkable

Medications & Allergies: none

Immunizations: UTD

Social Hx: lives at home with mom and dad, mom is primary caregiver

Family Hx: Mom – asthma; Dad- Eczema

ROS: unremarkable



AP: We've got quite the comprehensive list of things to ask! Let's review this by going back to our case:

Allie's rash just started about a month ago. Her parents noticed red, raw patches on her diaper area, with no bleeding or discharge. They haven't noticed skin breakdown anywhere else. They have tried using petroleum jelly which has helped a little bit but Allie still seems to cry a lot when being wiped during diaper changes. Allie is a difficult sleeper and her parents will often avoid changing her diaper while she's asleep for fear of waking her. Her diapers are also often quite full when they change her. They use disposable diapers and she has baths every night, using bubble bath. Allie has seemed more uncomfortable with her baths recently.

Allie was born at term after an uncomplicated pregnancy, and has healthy since, tracking on the 75th percentile for weight and height. She is on no medications, has no allergies, and her immunizations are up to date. She has been meeting all her milestones and is eating appropriately with regular bowel movements and voids. They haven't changed anything about her routine besides introducing solid foods which she has been tolerating well, and they have been using the same brand of diapers and lotion since her birth. Mom had asthma as a child, and dad has eczema. They haven't noticed any other new signs or symptoms.

Risk factors for developing diaper rashes

- Infrequent diaper changes
 - Soaps during baths
- Discomfort with diaper changes and baths
 - Full diapers on changes

JF: What part of the history really jumps out to you?

AP: The infrequent diaper changes, use of soaps during baths, Allie's discomfort with diaper changes and baths, and the fact that they're waiting until the diaper is very full to change it. It sounds like there is a lot of skin irritation and moisture contact for extended periods of time.

JF: Right! She is an overall very healthy infant and the story sounds like irritant or contact but we should do a physical exam to confirm. What would support this diagnosis on physical examination?

Physical Exam

1. Basic head to toe inspection
2. Weight, height/length, head circumference for growth charts
3. Vitals
4. Perineum examination
 - a. Creases/inguinal folds
 - b. Perianal and buttocks
 - c. Check other body parts (i.e. scalp, nails, mucous membranes)

Physical Exam

AP: I'd do the basic head to toe examination for all infants including weight, height and head circumference to confirm good growth but would then focus my examination to the perineum. Looking at the rash, I'd want to see if it extends to the creases/inguinal folds. I would be more suspicious of a candida infection or seborrheic dermatitis if it did. I would also look for any pustules, breaks in the skin, or crusting which would be suspicious for impetigo. It's also important to look at the perianal and buttocks. I would also make sure to check the hair (if the baby has it!), nails and mucous membranes for completeness of any skin exam!

Allie's rash



SCALD:

Size

Color

Arrangement

Lesion morphology

Distribution

+ **Secondary changes:** crusting, scaling
atrophy, lichenification, scarring

JF: Awesome! So let's take a look at Allie's rash here on the screen Do you have an approach when it comes to describing lesions?

AP: I've heard people use the SCALD mnemonic for describing lesions.

Size

Color

Arrangement

Lesion morphology

Distribution

Secondary changes and crusting, scaling, atrophy, lichenification, scarring

Picture source:

https://www.dermnetnz.org/assets/Uploads/dermatitis/_resampled/ProtectW10/FitWzY0NSw0ODVd/WatermarkedWyIzNDcyMCJd/napkin-dermatitis03-sm.jpg

Allie's rash



SCALD:

Size: 3-10 cm

Color: pinkish-red

Arrangement and shape: irregular

Lesion morphology: patches

Distribution: over perineum, sparing inguinal folds

+ Secondary changes: crusting, scaling atrophy, lichenification, scarring: none

In Allie's case, we examined her and found extensive 3-10 cm pinkish-red patches that are irregular in shape and restricted to the perineum and sparing the inguinal folds. There were no pustules, crusting, scaling, or petechiae. She did not present with a fever or lymphadenopathy, and no rashes were noted anywhere else on her body. This is in keeping with a presentation of irritant diaper dermatitis and the history from her parents supports this as well.

JF: That was a great description Annie! Now that we are quite certain this is diaper dermatitis after our history and physical – we should come up with a management plan and do some teaching with the parents for how we can prevent this from recurring. How would you go about doing this?

Diagnosis?



**Irritant Contact Dermatitis of the
diaper region**

JF: That was a great description Annie! Now that we are quite certain this is diaper dermatitis after our history and physical – we should come up with a management plan and do some teaching with the parents for how we can prevent this from recurring. How would you go about doing this?

Management

Patient Education!

- Babies have sensitive skin
- Frequent diaper changes
- Minimize contact with soiled diapers
- Minimal wiping
- Thick barrier creams (ex. Zinc oxide based, glaxal based, petroleum jelly)
- Unscented soaps and wipes
- Absorbent diapers
- Good bathing techniques: water first, soap last

Come back for reassessment if rash is not improving

AP: I think this is a great example of how patient education can actually become the treatment plan! I would explain it in the following way: After going through Allie's history and examining the rash, we believe this is Irritant diaper dermatitis. Babies have sensitive skin and exposure to wet diapers, and irritants in the diaper like urine, stool, and baby wipes can cause skin irritation. Babies spend a lot of time in diapers! I would suggest changing the diaper more frequently, even if the diaper doesn't feel very full to you, to minimize the amount of time the skin spends in contact with irritants! When changing a soiled diaper they can use water soaked cloths rather than wipes and dab rather than rubbing, to help it heal. Once the area has dried a thick barrier cream should be put on to help protect the skin when putting the diaper back on. Examples of good barrier creams include Zinc oxide-based creams, Glaxal base, or petroleum jelly. Don't be shy to slather it on! This helps create a barrier between the dirty diaper and your baby's sensitive skin. Use unscented wipes and moisturizers to minimize irritation. You can also try switching to a more absorbent diaper choice. As a tip, usually the overnight diapers are the most absorbent if you're using disposable ones!

Key Points

1. Diaper dermatitis is just an overarching term; remember to consider all your common and uncommon but life-threatening causes to ensure you are treating the rash appropriately
2. Many rashes look similar, but a thorough history and physical exam can help you distinguish between them. When in doubt, refer to a dermatologist!
3. Be familiar with descriptions of skin lesions; despite it's wordy language, it will help you document more accurately and helps other health care professionals visualize the lesion before even seeing it
4. Patient education is one of a pediatrician's most important toolbox; parents may not know the preventative measures they can take to alleviate diaper rashes

AP: Great! Before we finish, here are some key points to remember from this case: Diaper dermatitis is just an overarching term; remember to consider all your common and uncommon but life-threatening causes to ensure you are treating the rash appropriately

Many rashes look similar, but a thorough history and physical exam can help you distinguish between them. When in doubt, refer to a dermatologist!

Be familiar with descriptions of skin lesions; despite it's wordy language, it will help you document more accurately and helps other health care professionals visualize the lesion before even seeing it

Patient education is one of a pediatrician's most important toolbox; parents may not know the preventative measures they can take to alleviate diaper rashes

This brings us to the end of our diaper dermatitis podcast .Thank you everyone for listening, I hope you found this informative! And thank you Dr. Foulds and the Pedscases team for helping me write, edit, and record this podcast!

For the full script as well as a picture of the diaper rash mentioned in the podcast, please refer to the PDF file attached to this recording.

References

We would like to acknowledge the following sources from which we drew the pictures for this PedsCases video. These visual references were used solely for education purposes.

www.dermnetz.org

www.uptodate.com

Mancini, A. J., & Krowchuk, D. P. (Eds.). (2016). *Pediatric dermatology: A quick reference guide*.