Top 10 Pediatric Skin Bumps – Urgent Care Edition

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BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 10 SPECIALTIES 2016-17

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- I have no relevant financial or non-financial disclosures to make
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Learning Objectives

- Learners will be able to describe at least three common soft tissue masses seen in the pediatric population
- Learners will identify basic management and reasons to refer children for surgical intervention for these soft tissue masses

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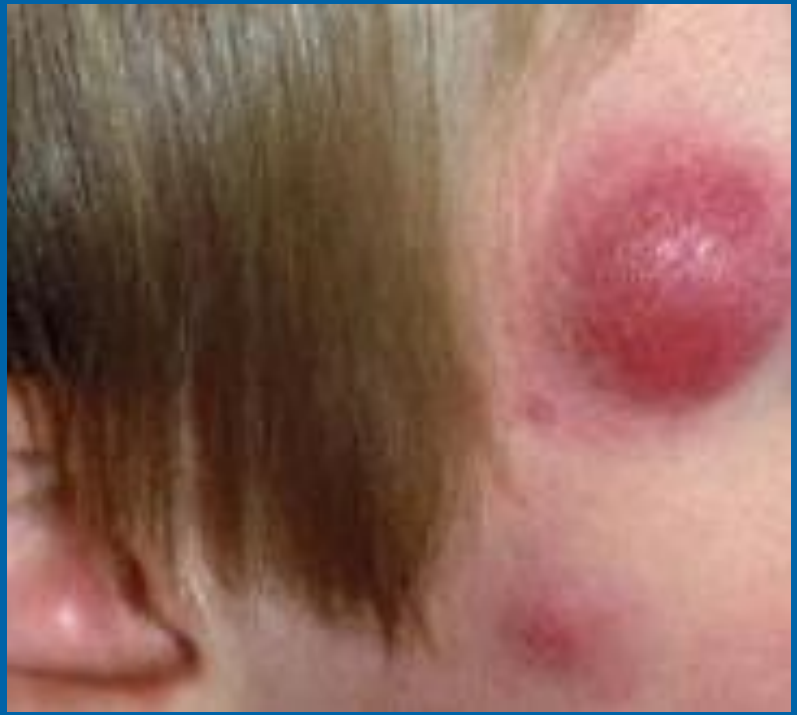
Case Study #1

A 4 year old male presents with an area of erythematous swelling on the face. This area is raised and tender. Parents report it has been getting worse over the last 3 days. The child otherwise appears well.

What is the most likely diagnosis?



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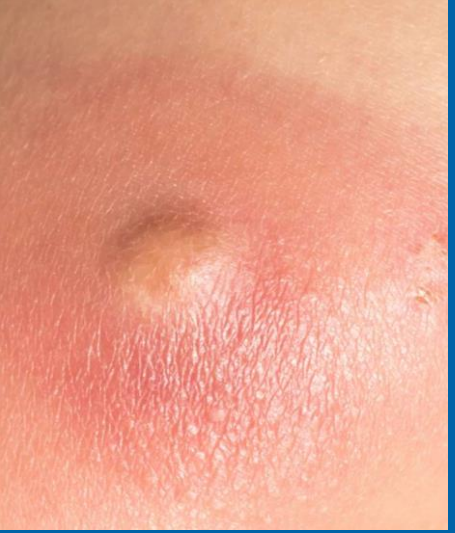
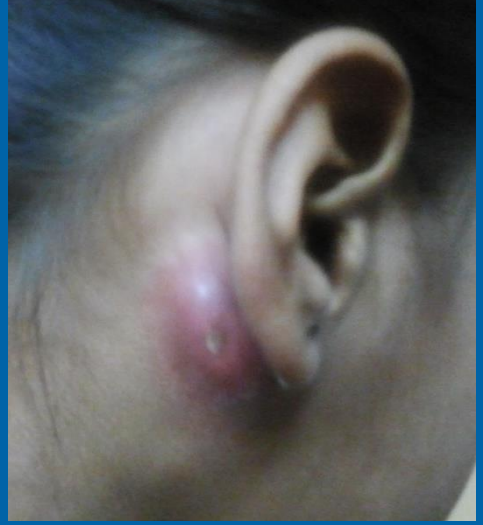
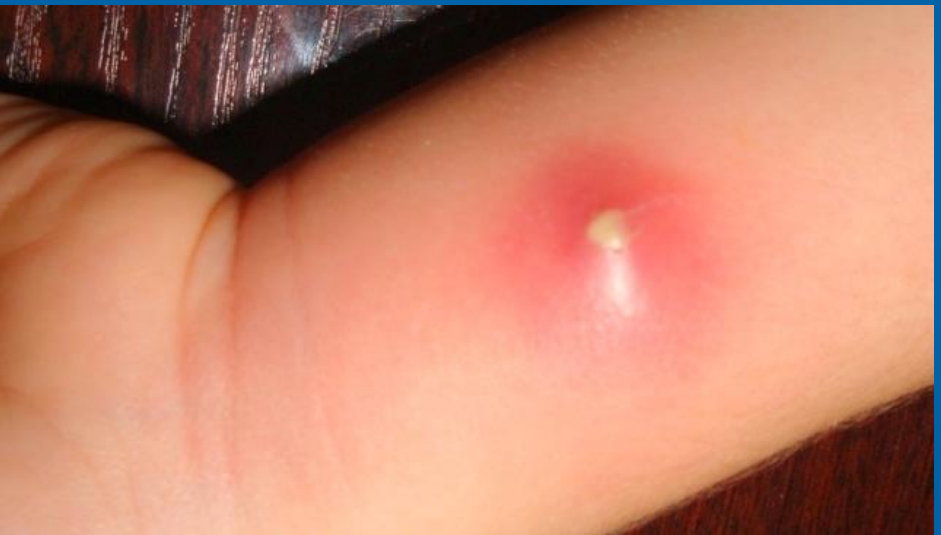






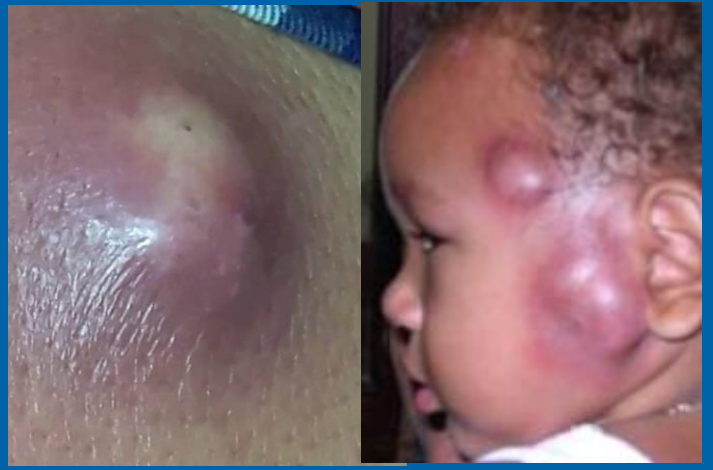
The most likely diagnosis is a **cutaneous abscess**

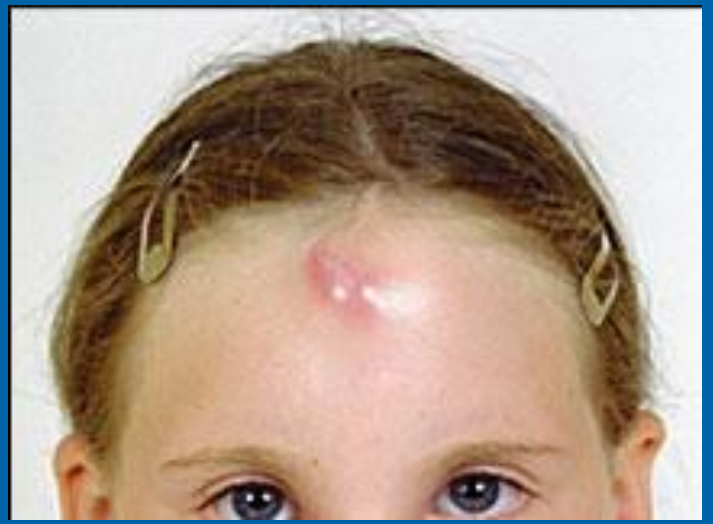
What is it?

- A cutaneous abscess is a localized collection of pus in the skin and may occur on any skin surface.
- Risk factors for cutaneous abscesses include the following: Bacterial overgrowth, Antecedent trauma, Immunosuppression, Impaired circulation
- Bacteria causing cutaneous abscesses are typically indigenous to the skin of the involved area
- Abscesses on the trunk, extremities, axillae, or head and neck most commonly involve S*taphylococcus aureus* and streptococci
- Abscesses in the perineal region commonly contain anaerobes or a combination of aerobes and anaerobes

How do they present?

- Cutaneous abscesses are painful, tender, indurated, and usually erythematous
- They vary in size, typically 1 to 3 cm in size, but are sometimes much larger. Initially the swelling is firm; later, as the abscess points, the overlying skin becomes thin and feels fluctuant.
- Local cellulitis, lymphangitis, regional lymphadenopathy, fever, and leukocytosis are variable accompanying features
- Diagnosis of cutaneous abscess is usually obvious by examination
- Culture is recommended, primarily to identify MRSA
- Conditions resembling simple cutaneous abscesses include hidradenitis suppurativa and ruptured epidermal cysts





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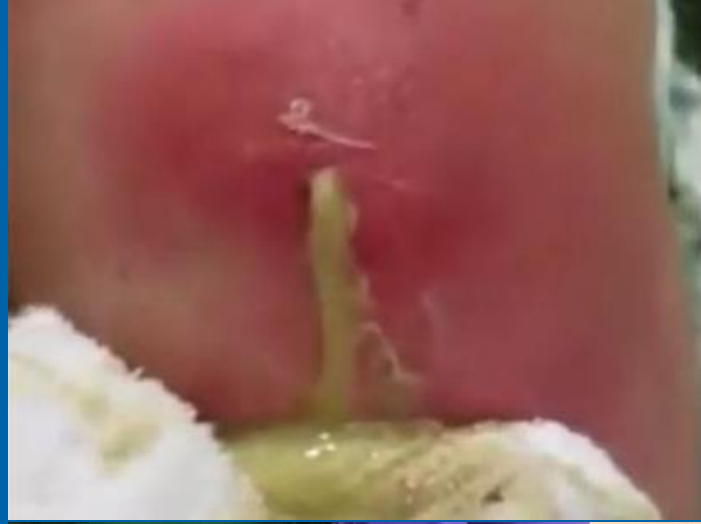
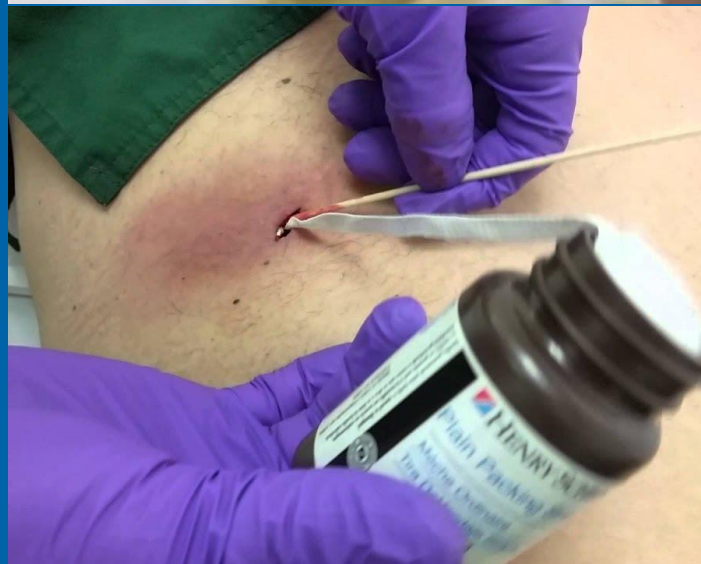
Risks and Concerns

- Bacteremia, orbital involvement, meningeal involvement
- Chronic status, scarring

Work-up and Management

- Some abscesses resolve without treatment by coming to a point and draining; warm compresses can help accelerate the process
- **Incision and drainage** are indicated when significant pain, tenderness, and swelling are present
- A single puncture with the tip of a scalpel is often sufficient. After drainage, the cavity should be bluntly probed to clear any loculations
- If uncertain an ultrasound can help confirm presence of fluid collection rather than simple induration/cellulitis; repeat imaging may be necessary if symptoms evolve
- Irrigation? Packing? Antibiotics?





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Case Study #2

A 6 year old female presents with a 2 month history of a “pimple” lesion on the left cheek. Her parents report it started very small and has been steadily enlarging. It now is reddish in color and very hard to the touch. They have tried to express it by squeezing, but nothing has come out. She has been otherwise well and is sleeping and eating normally.

What is the most likely diagnosis?

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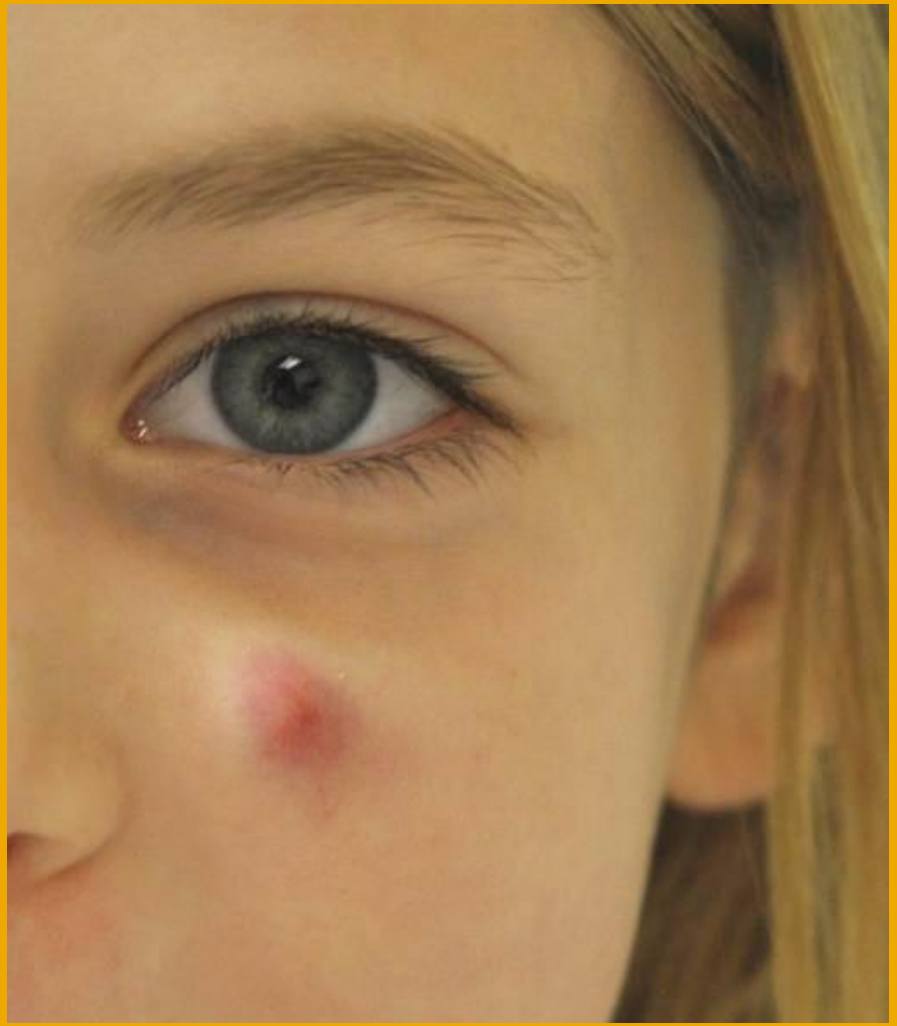

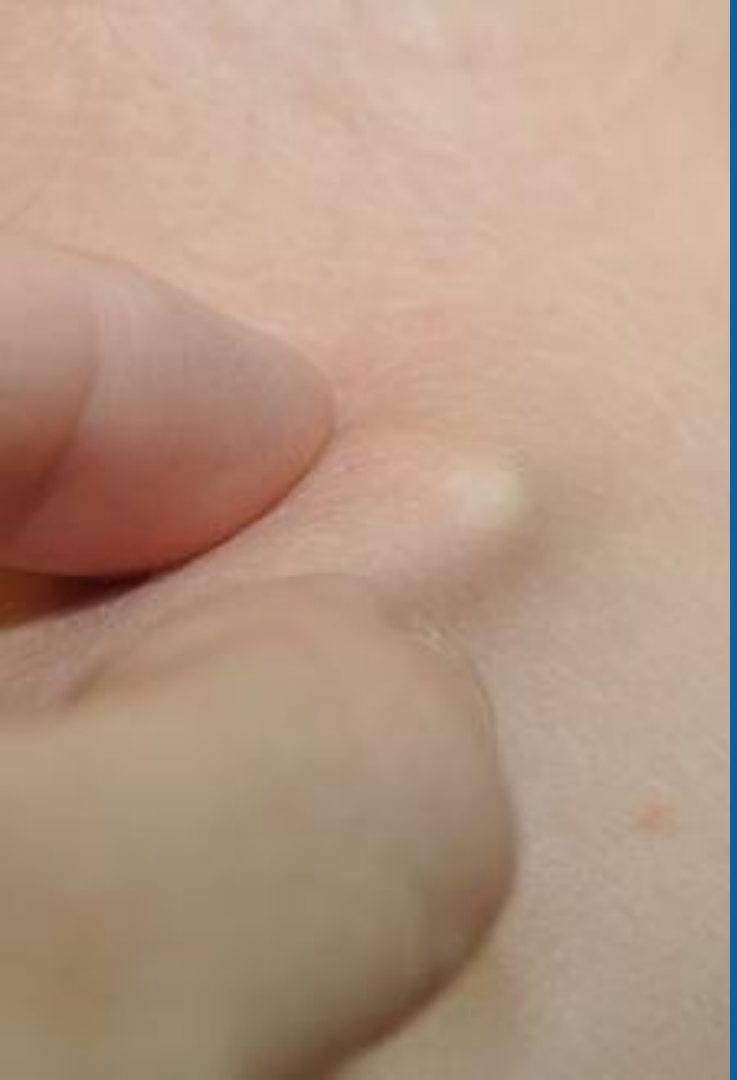

The most likely diagnosis is a **pilomatrixoma**.

What are they?

- Pilomatrixomas are benign calcified growths of the hair follicle
- Calcium-filled cells form a mass beneath the skin
- Slow-growing and firm to palpation
- Pilomatrixomas usually first appear in infancy or early childhood and account for about 10% of all skin nodules seen in children
- Occur more commonly in girls than boys
- Pilomatrixoma may also be called pilomatricoma or calcifying epithelioma of Malherbe

How do they present?

- They develop as a small, firm mass beneath the skin
- Most commonly found on the face and neck, but can found in other areas
- Pilomatrixomas are usually solitary and painless
- It may feel oblong in shape and be relatively superficial or attached to the overlying skin
- Mass is usually < 3 cm in diameter and the skin covering the mass may appear normal, or have a bluish, purplish, or reddish discoloration
- Very superficial lesions may initially appear like a white head, but are not easily expressed with squeezing
- Purplish lesions may initially be mistaken for a bruise until the underlying mass is palpated

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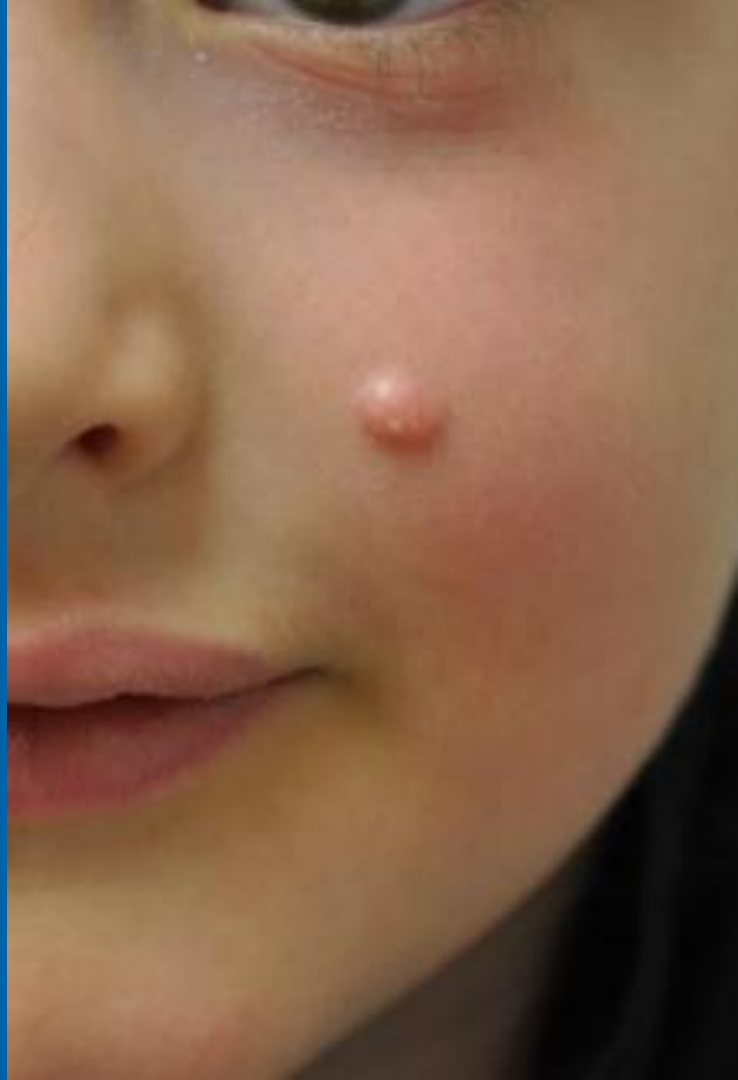

Risks and Concerns

- Pilomatrixomas pose little to no risk for malignancy
- The overwhelming majority of pilomatrixomas are singular with no other associations
- Pilomatrixomas may enlarge and rupture through the skin with a thick chalky or granular white discharge
- Rupture can release cyst material into the dermis, causing an exuberant inflammatory reaction sometimes clinically resembling infection; Culture of these ruptured cysts seldom reveals any pathogens
- It is not known why this happens in some children, but there may be a genetic predisposition for some families
- A few cases of multiple lesions have been reported in association with myotonic dystrophy

Work-up and Management

- Pilomatrixomas are typically diagnosed by history and physical examination
- Ultrasound can aid in the diagnosis, but is rarely necessary
- Some pilomatrixomas have resolved spontaneously after many months or years of conservative observation
- Treatment may include surgery to remove the mass since they can enlarge, rupture, or become infected
- Once completely removed pilomatrixomas usually do not regrow

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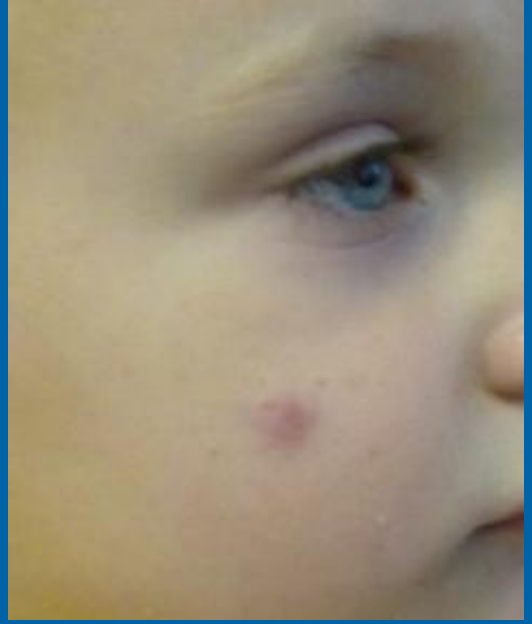

Case Study #3

A 4 year old male presents with a 3 week history of a “hemangioma” on the right cheek. His parents report it started as a “red dot” and has enlarged. It has bled bright red blood an two occasions. They thought it was going away, and is now clearly growing again. They put a bandaid on it to help prevent further bleeding. He has been otherwise well and is sleeping and eating normally.

What is the most likely diagnosis?

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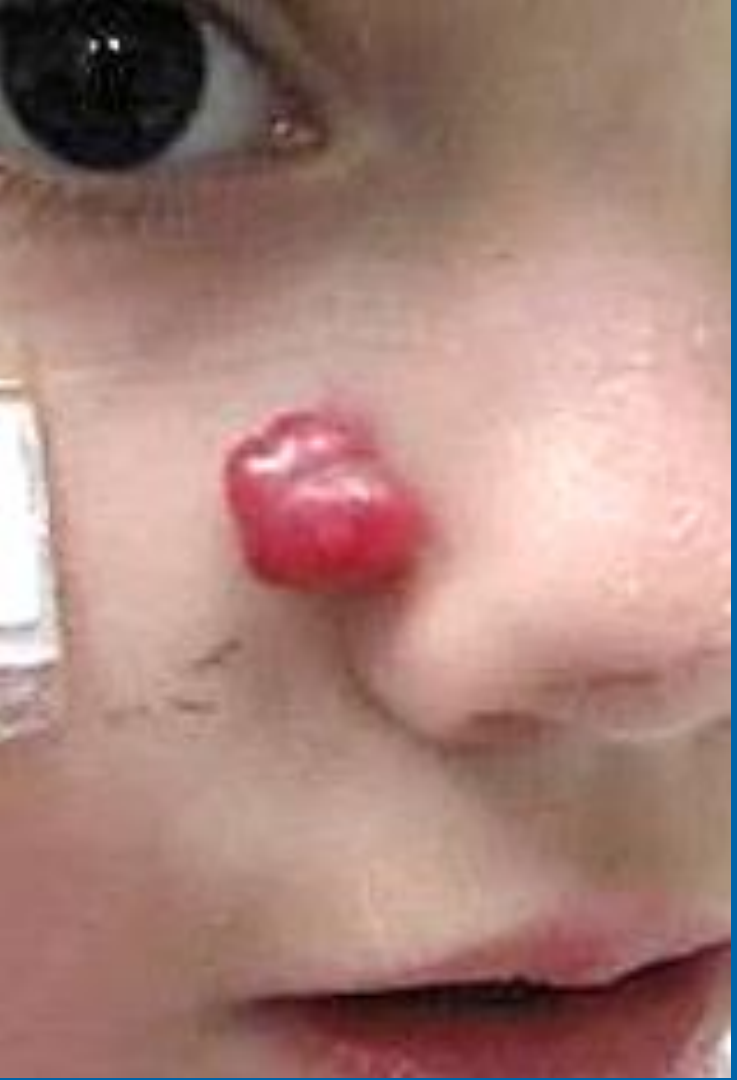

The most likely diagnosis is a **pyogenic granuloma**.

What are they?

- Pyogenic granulomas are fast-growing, benign lesions made of abnormal capillaries
- Pyogenic granulomas may arise in skin that has suffered previous minor trauma
- Most patients, however, cannot remember a specific injury at the site of the pyogenic granuloma
- They can affect a child on any part of the skin
- The specific biologic cause of pyogenic granulation is unknown
- They may also be called a lobular capillary hemangioma

How do they present?

- May start as a small, flat red spot that grows rapidly into a raised, pedunculated red or purple lesion over days to weeks
- Pyogenic granulomas can frequently bleed with minimal trauma to the lesion
- Lesion may continue to enlarge, or disappear spontaneously and then recur
- Affects both genders equally and can appear at any age
- Pyogenic granulomas are usually solitary
- They are not true infantile hemangiomas which have a completely different natural history

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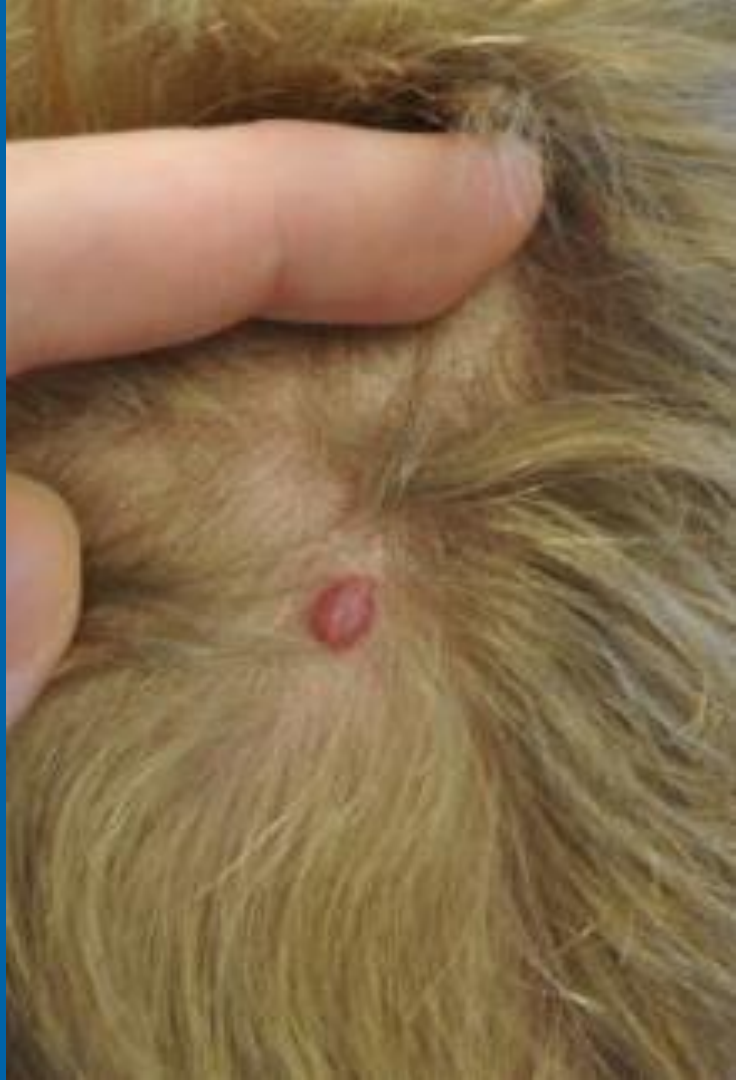

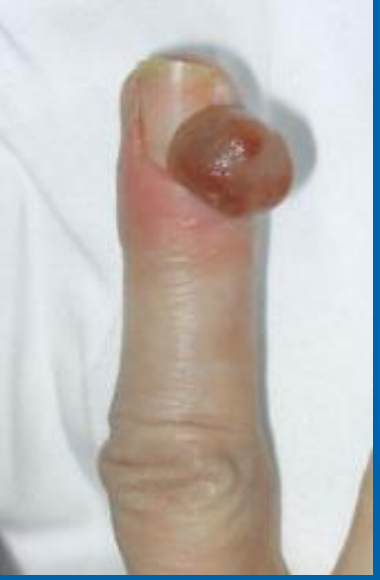

Risks and concerns

- A bleeding pyogenic granuloma may prompt a trip to the emergency room
- Pyogenic granulomas will not cause the child to lose a dangerous amount of blood, but it can be visually significant
- A bleeding lesion requires firm, direct pressure applied over the lesion for 15-30 minutes without stopping to look

Work-up and Management

- Pyogenic granuloma is most frequently diagnosed by history and physical examination
- Treatment involves surgery to remove the mass
- Silver nitrate or a laser may also used
- Pyogenic granulomas can occasionally regrow and require additional treatment

Case Study #4

A 12 year old African American female presents with a 5 month history of an enlarging mass of the right earlobe. She had her ears pierced for her birthday. Shortly after she noted persistent itching and pain of the right earlobe. A small bump developed and has enlarged over the last few months. She reports tenderness and is embarrassed about the way it looks. She can no longer wear an earring in the right ear. The patient has otherwise been well and is sleeping and eating normally.

What is the most likely diagnosis?

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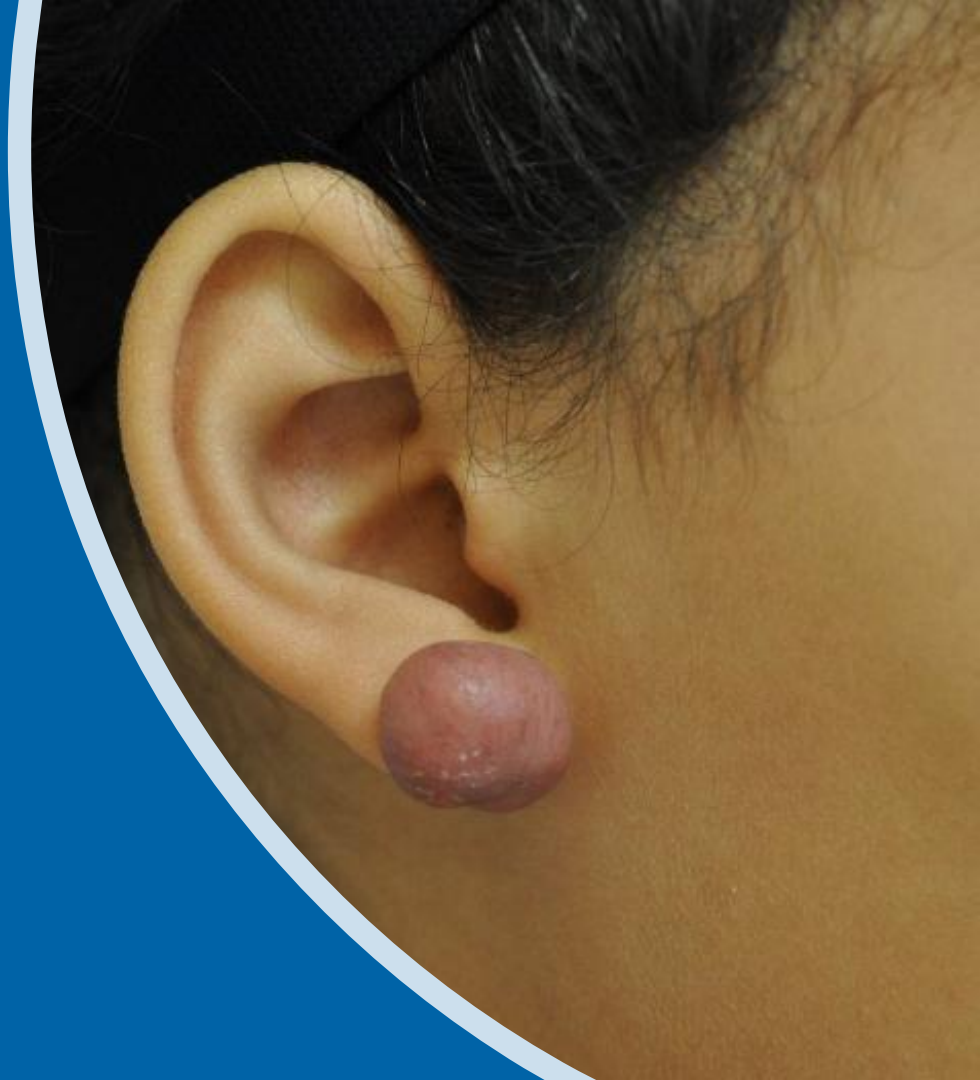
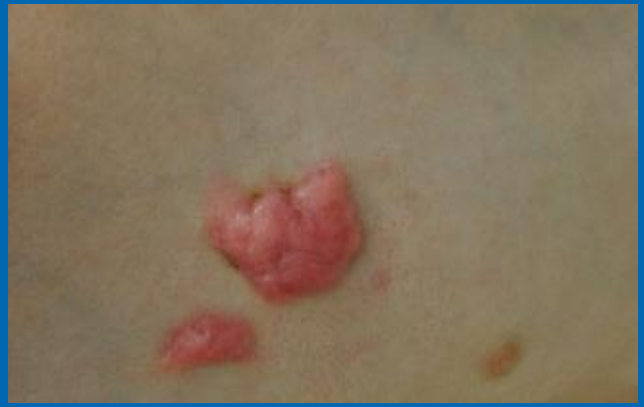
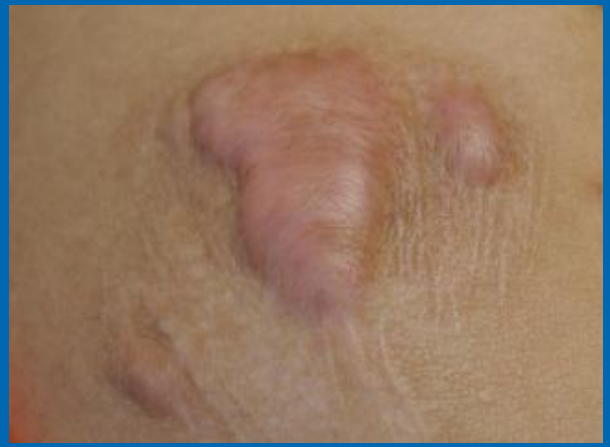


The most likely diagnosis is a **keloid scar**.

What are they?

- Often unsightly, raised scars that are darker than the surrounding skin at a site of previous injury/surgery
- Occurrence is often unpredictable and it is not understood exactly why keloids form in certain people or situations and not in others
- The signal that down-regulates scar cell formation during the wound healing process is disrupted and the scar continues to grow unrestrained
- Factors that promote keloid formation include infection, chronic inflammation, burn injury, and piercings
- In some cases the tendency to form keloids has a genetic component





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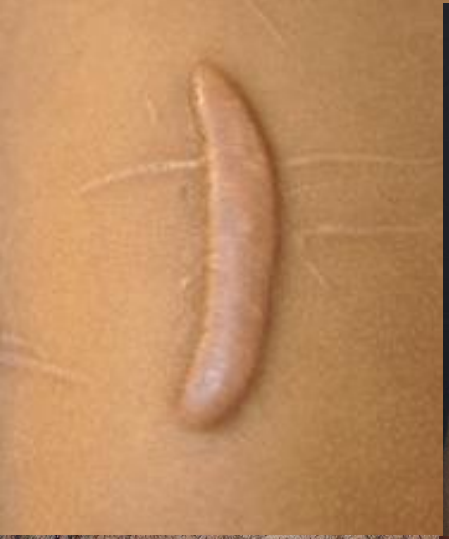

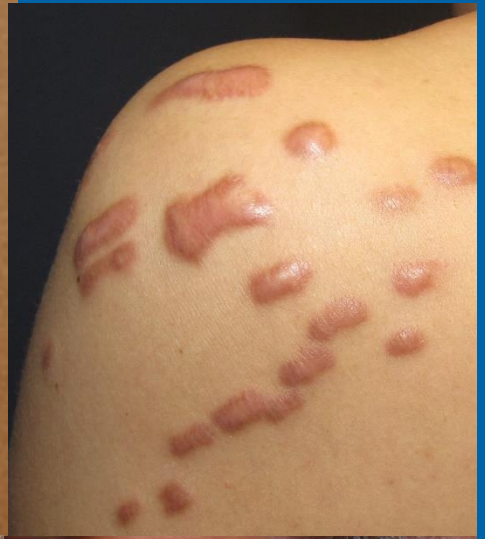

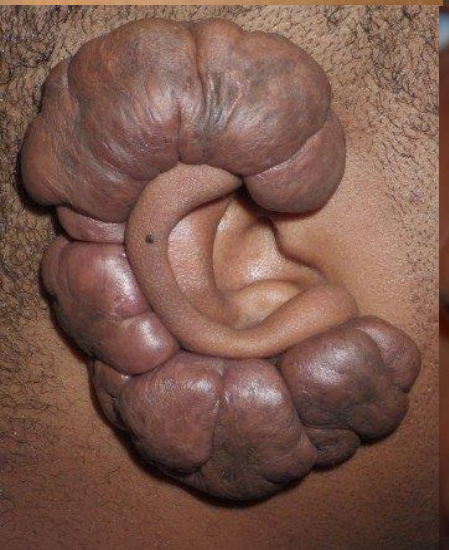

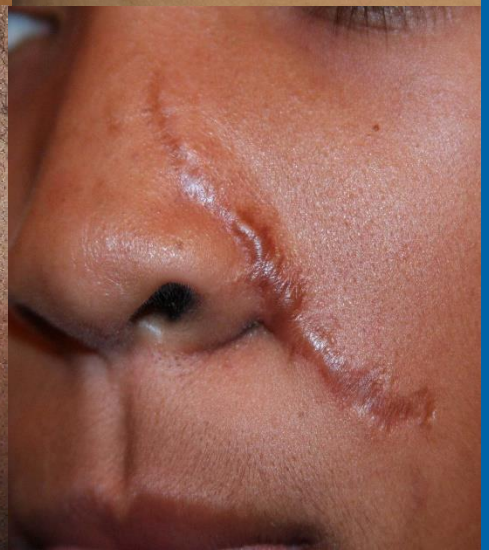

How do they present?

- Raised scars above the surface of the skin that look shiny, rough, and/or irregular in shape
- Can become quite large, extending beyond the original borders of the wound
- May develop soon after an injury or in a delayed fashion and grow for a prolonged period
- Keloids occur equally in males and females
- Tend to be itchy, slightly tender, or even frankly painful to the touch while growing
- Symptoms subside after they stop growing and the scar softens and color fades slightly

Risks and Concerns

- Keloids do not have a malignant potential
- People with darker skin are more likely to develop them, but they can occur in all skin types

Work-up and Management

- Keloid scarring is usually easy to diagnose based on history and physical examination
- Deciding between a diagnosis of keloid or hypertrophic scar may be less definitive, although in reality the treatment will likely be similar
- Decision to treat a keloid depends on location and the associated symptoms
- Larger keloids are, in general, more difficult to treat
- Hypertrophic scars are often more responsive to treatment

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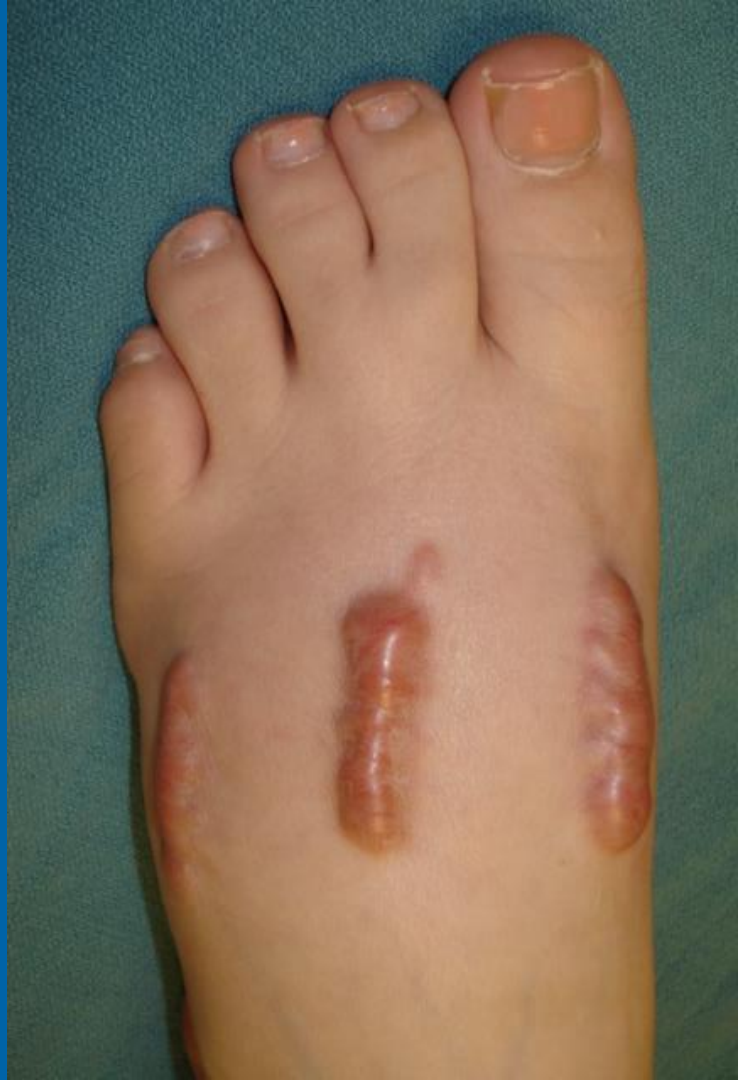

Many Management Options:

Silicone Sheets/Pressure Therapy: Patients wear silicone sheets or other bandage on the scar for several hours a day for weeks or months. Firm pressure applied by rubbing is also of benefit. Pressure therapy is a low cost option with minimal discomfort. May help prevent a future keloid in a patient with a new wound or scar.

Steroid injection: Intralesional steroids can help down-regulate the scar forming process and encourage the scar to mature more normally. These injections are quick, but can be painful. Injections are usually given several weeks apart as needed.

Surgery: Can often be the best, most direct option for large and pedunculated keloids. Surgery is not a guarantee for cure because cutting the skin can trigger the formation of a similar abnormal scar.

Laser: The pulse-dye laser can help decrease redness of the keloid and occasionally can make them flatter. Treatment may require several sessions and can be costly.

Moisturizing oils or scar creams: Most scientific evidence suggests that benefits stem primarily from the rubbing or massage required to apply them, essentially a form of pressure therapy that is simply more expensive than rubbing alone. Some patients find the creams and oils feel or smell good and makes performing massage easier to remember.

Radiation Therapy: Radiation has been shown to have very good results in preventing keloid recurrence after surgical excision. Typically treatment must start immediately after surgery and continue daily. This is not a frequently used treatment because of the time required and the concern for side effects of radiation. For refractory cases of very large or symptomatic keloids it is a treatment option worth considering.

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Case Study #5

A 3 month old female presents with a firm, rubbery bump near the lateral end of the right eyebrow. Her parents report noticing it a few days ago and thought perhaps she “bumped” her eye, but it is not getting better. They deny any known trauma, redness, or other irritation. She has otherwise been well and is sleeping and eating normally.

What is the most likely diagnosis?

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The most likely diagnosis is a **dermoid cyst**.

What are they?

- Dermoid and epidermoid cysts are common soft tissue tumors of the face and head that are present at birth
- Cyst is filled with fluid and skin or hair cells
- Occurs when normal skin cells and other adnexal structures like hair, sweat glands, or oil glands get trapped during fetal cell migration
- Appear along lines of embryonic fusion
- Very common in children
- Rarely, they may have a deeper connection below the bone

How do they present?

- Dermoid cysts are small, slowly enlarging bumps under the skin, near the eyebrow, nose, or on the scalp
- Most commonly they are located just above or below the lateral end of the eyebrow followed by the scalp, medial brow, and lastly the nose
- They are always present at birth, but may not be noticed for several weeks or months as they slowly grow larger
- They occur equally in males and females and in all races

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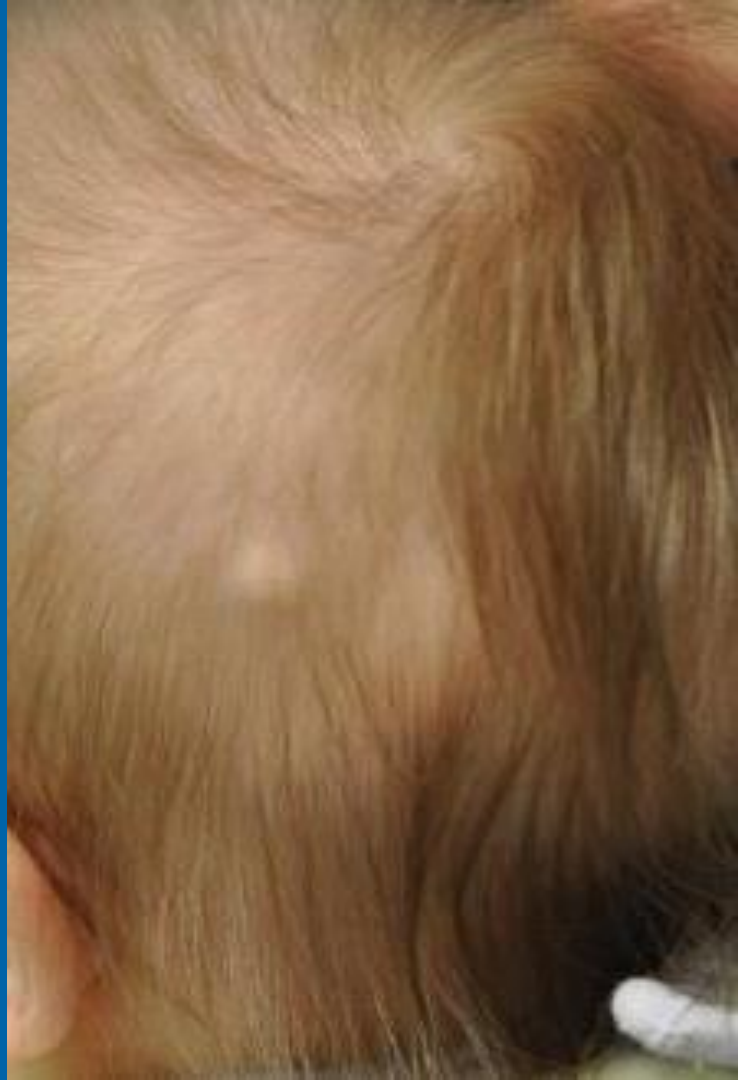

Risks and Concerns

- Dermoid cysts pose little to no risk for malignancy
- Rupture of cyst beneath the skin can cause significant inflammation mimicking an abscess
- Rarely will a dermoid cyst be large enough to interfere with vision by pressing on the upper eyelid or interfering with ocular muscles

Work-up and Management

- Dermoid cysts are frequently diagnosed by history and physical examination alone
- Skull plain films are not particularly helpful, but an ultrasound or limited view CT scan may be recommended to help determine if deeper connections are present
- These lesions do not resolve spontaneously and slowly enlarge so surgery is usually recommended
- Dermoid cyst excision is an outpatient procedure performed in the operating room
- Dermoid cysts should not recur once they are completely removed

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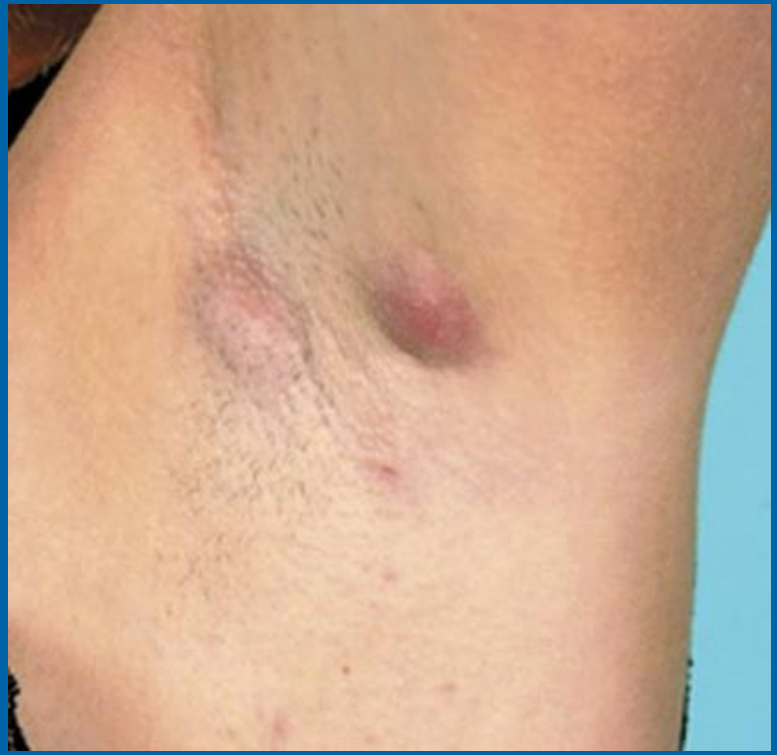
Case Study #6

An overweight 14 year old female presents with a very painful raised red bump in the left axilla. She reports the area has been painful for about a week, but the bump has gotten worse over the last 2 days. This is her third visit this year for similar symptoms. She has been on multiple antibiotics. Each time this occurs there is eventual drainage of some purulent material and it take a long time for them to get better despite drainage and antibiotics.

What is the most likely diagnosis?



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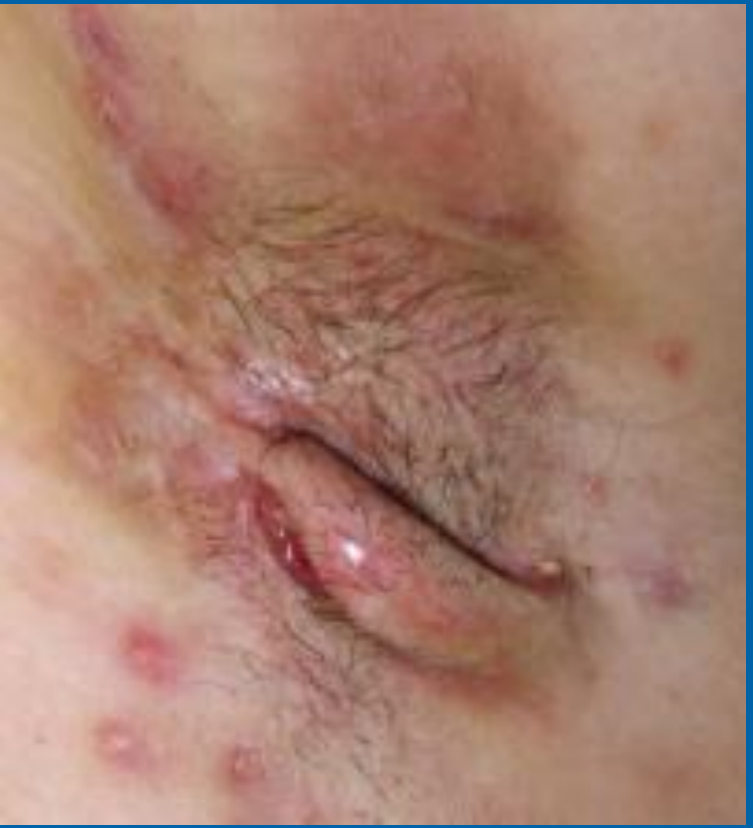

The most likely diagnosis is a **Hidradenitis Suppurativa (HA)**.

- Hidradenitis suppurativa is an inflammatory skin disease that affects apocrine gland-bearing skin
- Characterized by recurrent nodules and abscesses that culminate in purulent discharge, difficult-to-heal open wounds, sinus tracts, and scarring
- Long term hidradenitis can have significant psychological impact, and many patients suffer from impairment of body image, depression and anxiety
- Hidradenitis often starts at puberty and is three times more common in females than in males
- Risk factors include family history of hidradenitis suppurativa, obesity and insulin resistance, cigarette smoking, acne conglobata, Inflammatory bowel disease, Rare autoinflammatory syndromes associated with abnormalities of *PSTPIP1* gene

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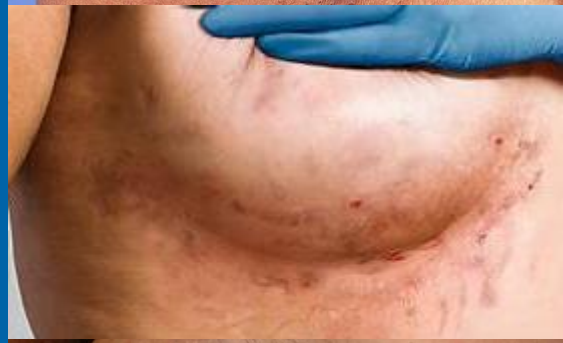
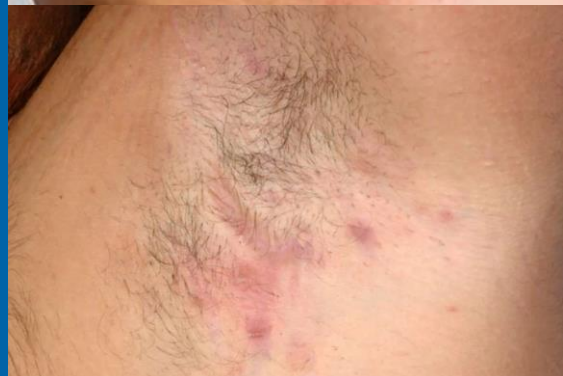
How does hidradenitis present?

- Hidradenitis can affect single or multiple areas in the armpits, neck, submammary area, and inner thighs
- Anogenital involvement most commonly affects the groin, mons pubis, vulva (in females), sides of the scrotum (in males), perineum, buttocks and perianal folds
- Signs include: Open and closed comedones, painful firm papules, larger nodules and pleated ridges, pustules, fluctuant pseudocysts and abscesses
- There may be draining sinuses linking inflammatory lesions, hypertrophic, and atrophic scars
- Patients with hidradenitis suppurativa may also suffer from other skin disorders including acne, hirsutism and psoriasis





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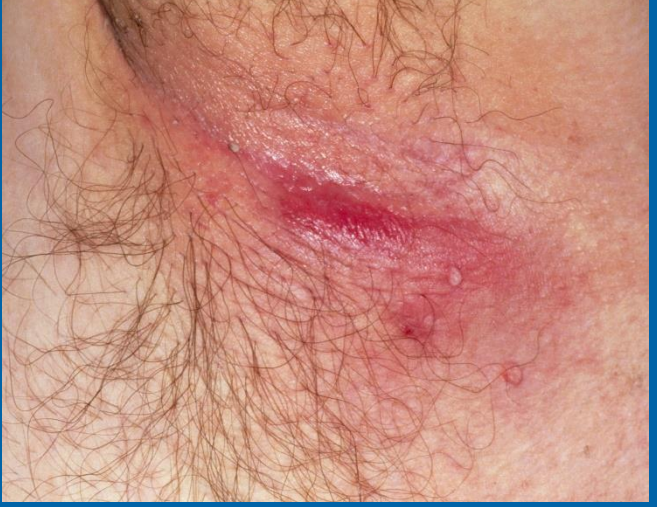

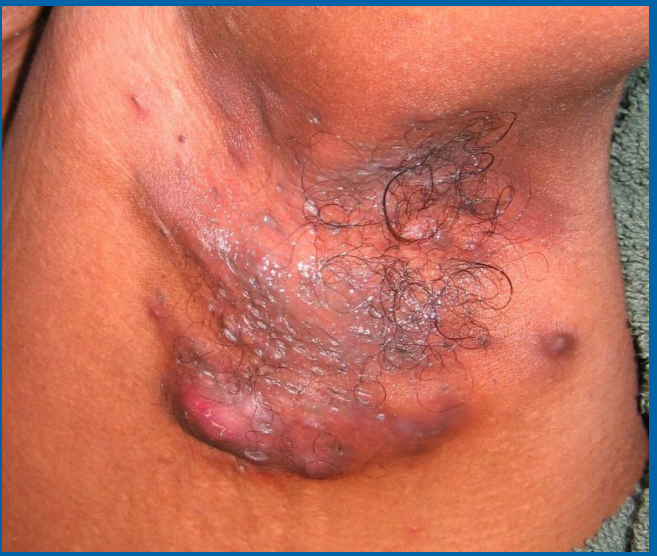

Risks and Concerns

- Medical management of hidradenitis suppurativa is difficult. Treatment is required long term.
- Patients with poorly managed disease may become chronic ER attendees, have resistant bacteria, or develop drug dependence

Work-up and Management

- Suspect HA in any adolescent patient presenting with axillary abscess or evidence of recurrent abscess in axilla, groin, or under breasts
- Clinical appearance of multiple stages of infected and healing wounds, scarring, and sinus tracts is good evidence
- Surgery including I&D, wide local excision, laser hair removal, radical excision of entire affected area
- Topical antibiotics, short term oral antibiotics, and long-term oral antibiotics all have roles
- Antiandrogens, immunomodulators, and metformin are also used

Case Study #7

A 3 year old male presents with a raised pink lesion on his right cheek. This was first noted 2 months ago as a pink-colored macule. It has grown quickly becoming darker pink and more raised. There is no associated subcutaneous mass. His parents report he scratches it occasionally. They deny any bleeding or crusting. He has otherwise been healthy.

What is the most likely diagnosis?

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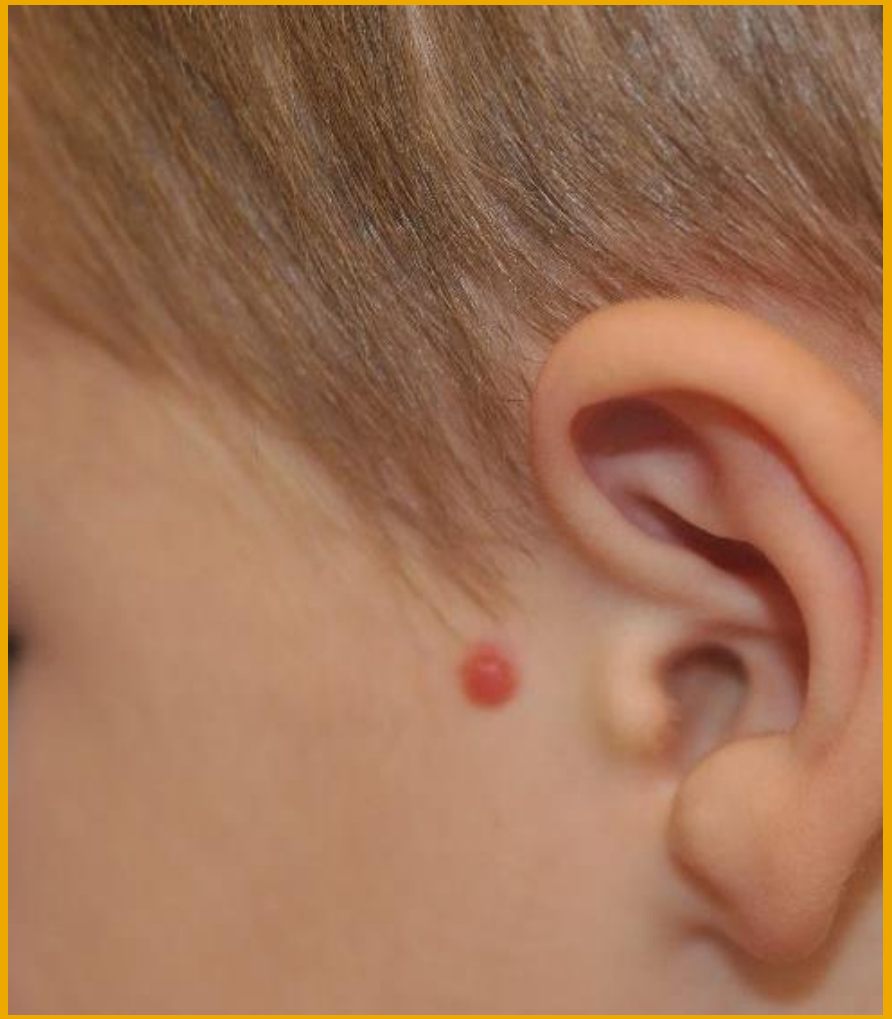
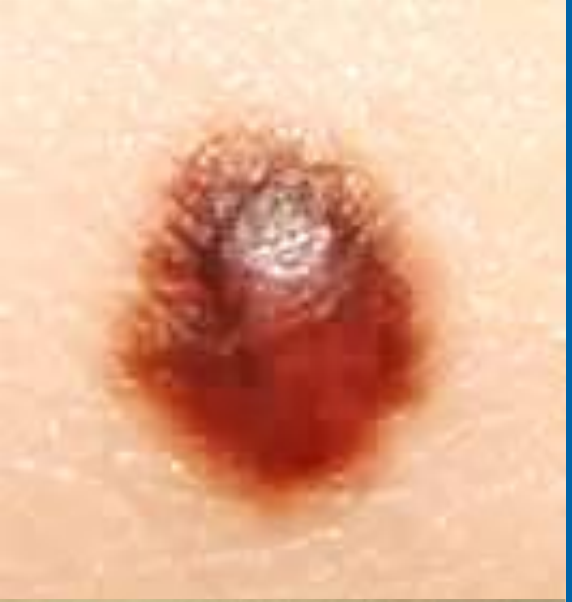
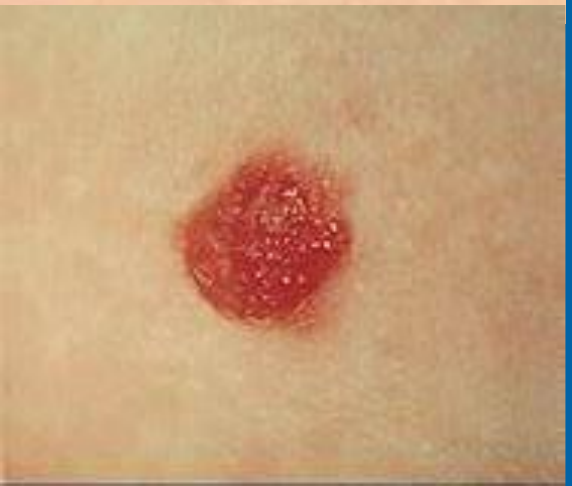






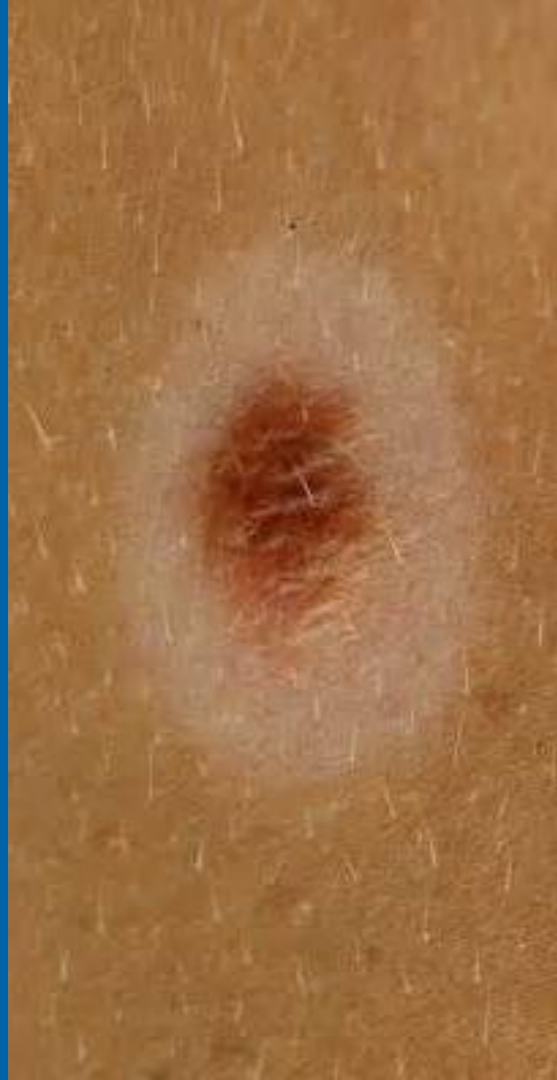
The most likely diagnosis is a **Spitz nevus.**

What are they?

- A Spitz nevus is an uncommon type of benign melanocytic nevus
- Most Spitz nevi develop before 20 years of age and are more commonly found in fair-skinned individuals
- Microscopically the cells from a Spitz nevus may look similar to the cells seen in melanoma
- It is not known why Spitz nevi occur

How do they present?

- A Spitz nevus typically appears as a dome-shaped mole with rapid growth
- May be accompanied by a halo of discoloration around the lesion
- Often the lesion is pink in color and asymptomatic
- Occasionally patients report itching or irritation
- Spitz nevi usually appear on the face or limbs of a child and can grow rapidly for a few months and then remain stable for an extended period of time
- Occasionally Spitz nevi disappear spontaneously



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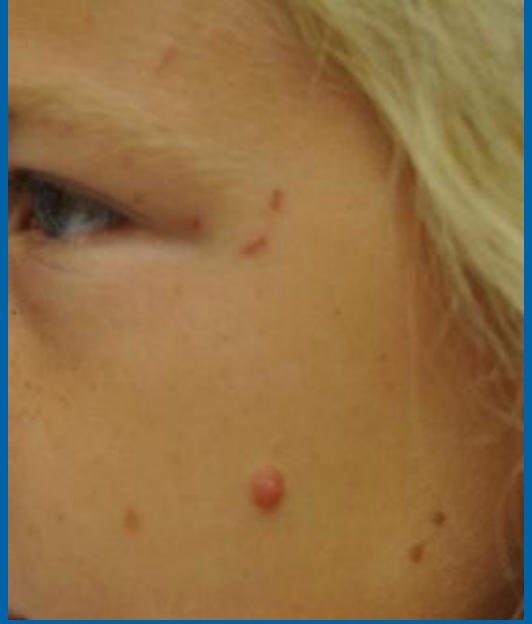
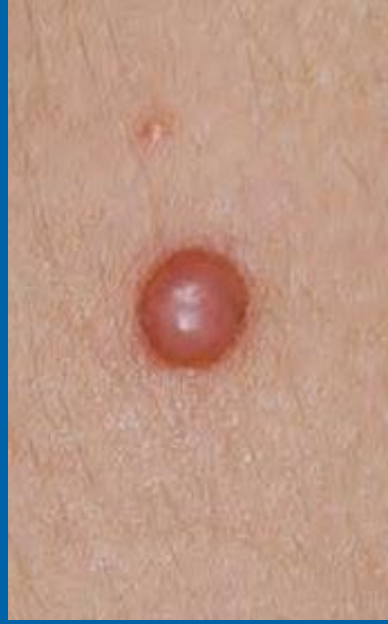
Risks and Concerns

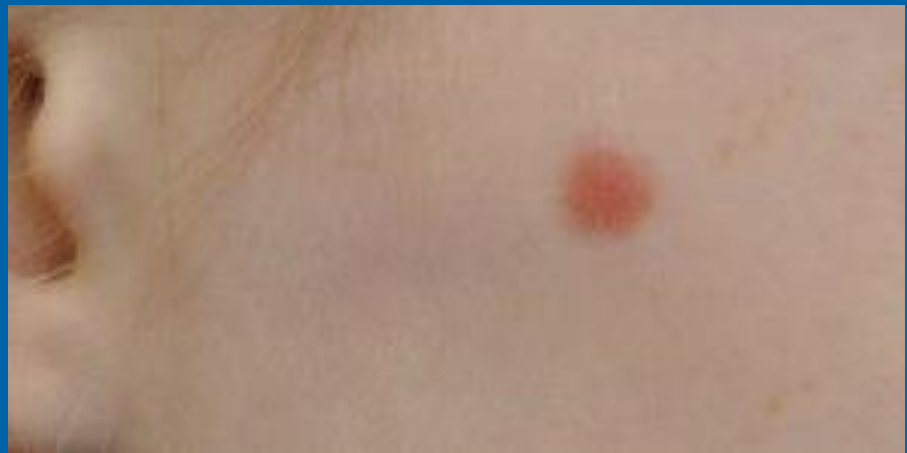
- Because of the physical resemblance to melanoma cells under the microscope, some Spitz nevi may be difficult to diagnose as completely harmless

Work-up and Management

- Spitz nevus may be suspected based on history and physical examination
- Diagnosis is usually confirmed with a biopsy
- The difficulties in predicting future behavior or benign status of a Spitz nevus means these lesions are often recommended for complete removal with outpatient surgery
- Complete removal with clear margins will eliminate any future risk of malignancy that might be associated with the lesion
- A Spitz nevus does not regrow once it is completely removed







Case Study #8

A 2 month old male born at 33 weeks gestation presents with a raised red lesion of the scalp. His parents report there was a tiny red mark on the scalp at birth and over the last 6 weeks has grown to its current size. The lesion appears to get firmer and darker when the baby cries. There is no report of bleeding or irritation. They do not think it causes him any pain. He has otherwise been well and is sleeping and eating normally.

What is the most likely diagnosis?

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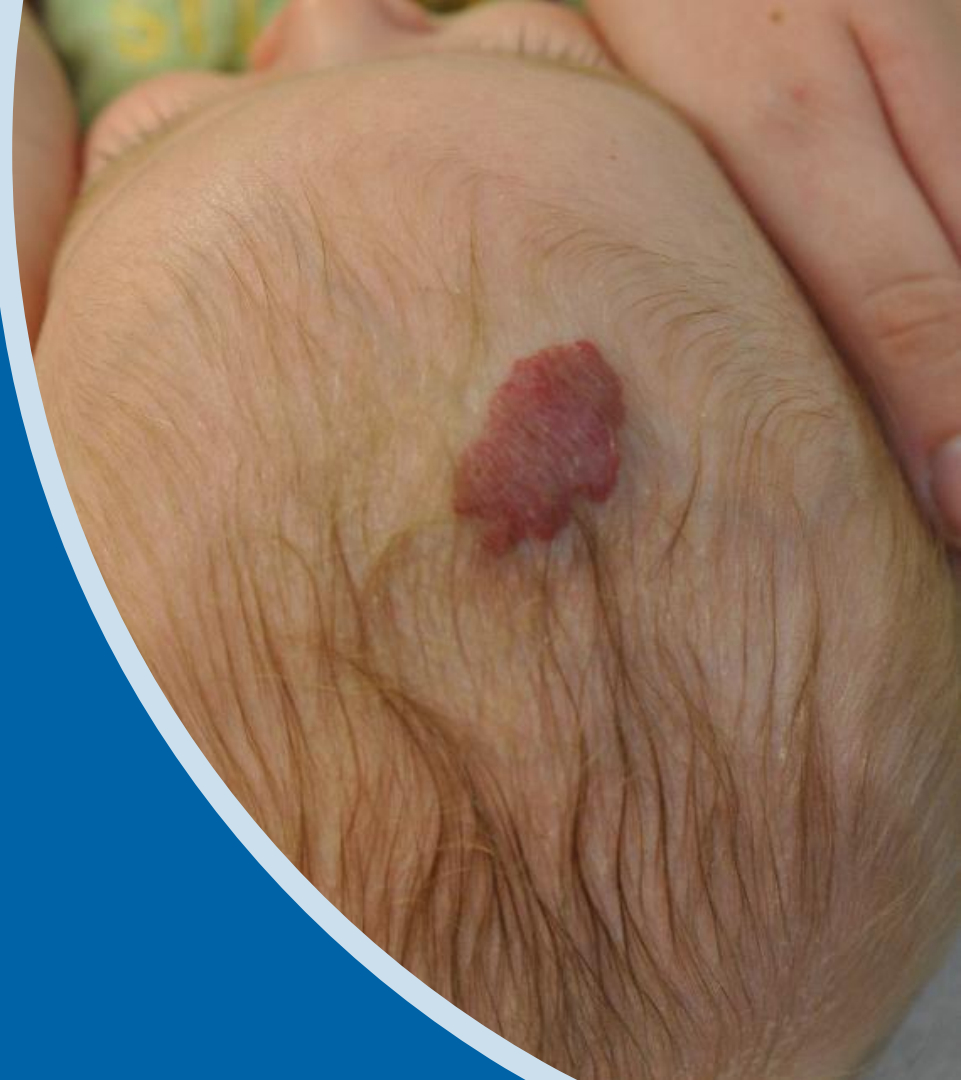

The most likely diagnosis is an **infantile hemangioma**.

What are they?

- Infantile Hemangioma (IH) is a benign vascular lesion that histologically show an unencapsulated aggregate of closely packed, thin-walled capillaries, usually with endothelial lining
- Stain positive for GLUT-1, making differentiation from other vascular lesions easier
- IH occur in 10% of babies and are more frequent in premature babies and multiple births; 10% of affected children will have more than one
- IH occurrence may be related to floating placental cells attaching to the baby and then growing at that site
- The term “hemangioma” is often used generically to describe many other vascular lesions which can make diagnosis and discussion confusing

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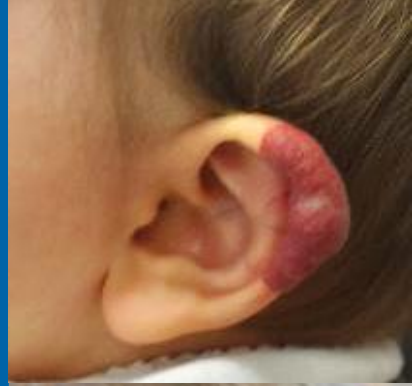
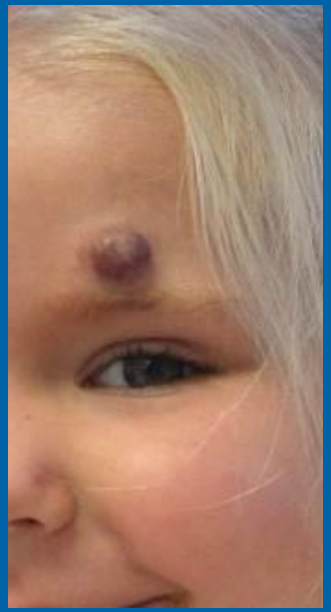
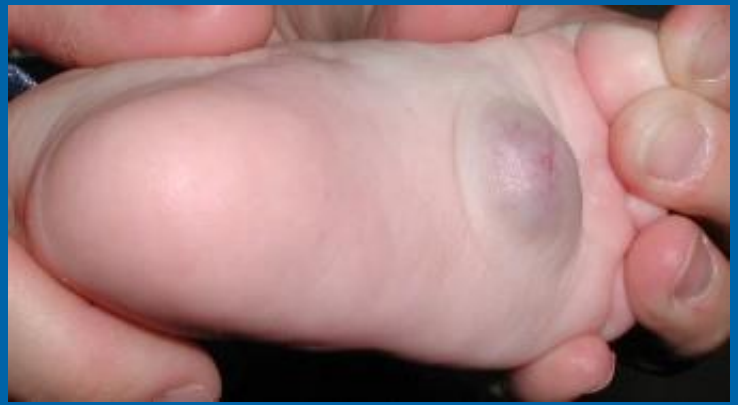


How do they present?

- IH typically presents as a small red or imperceptible “dot” that grows shortly after birth and may quickly swell into a mass above the skin
- Predictable natural history, growing rapidly over the first 5-9 months of life, cessation within the first year, followed by slow involution over 5-10 years
- Most are found on the head or neck
- Classified as superficial, deep, or mixed lesions and can be localized or spread out over a large area
- Deep hemangiomas usually appear blue or purple while mixed lesions have both red and blue parts
- Generally asymptomatic, but may be slightly firm and then start to soften with involution





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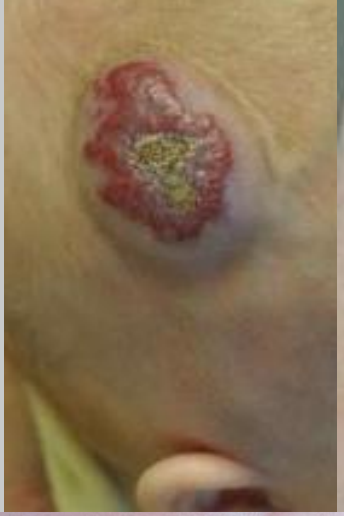
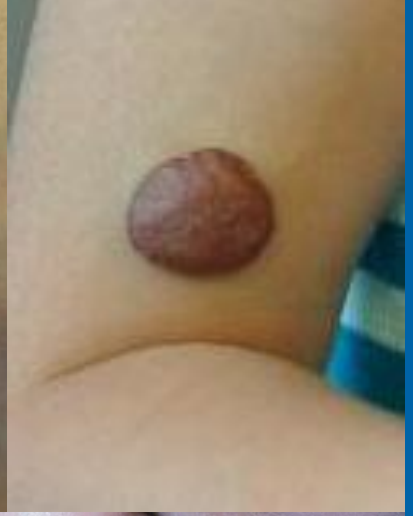
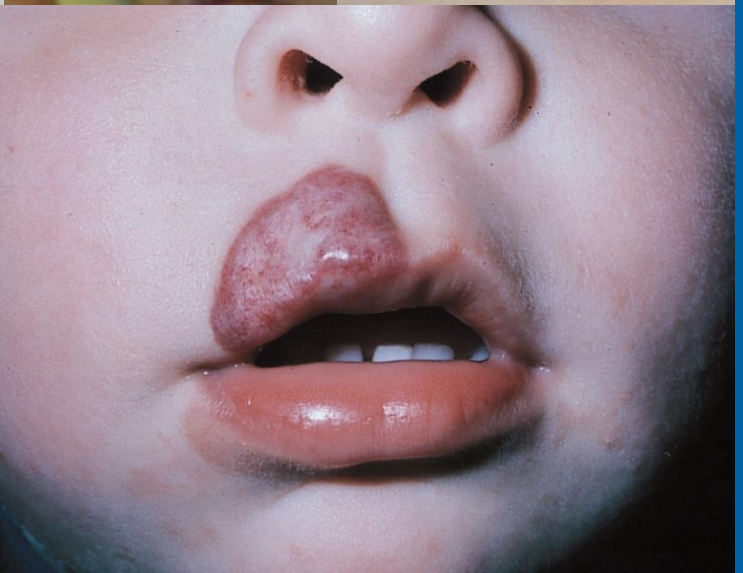






Risks and Concerns

- Occasionally it is difficult to tell if the lesion is a true IH or another type of vascular malformation which would alter therapy
- Difficult to predict how large a lesion may grow based on its initial appearance
- IHs that can impair vision, hearing, breathing, or feeding are treated early and aggressively
- Ulcerates can cause significant bleed and pain

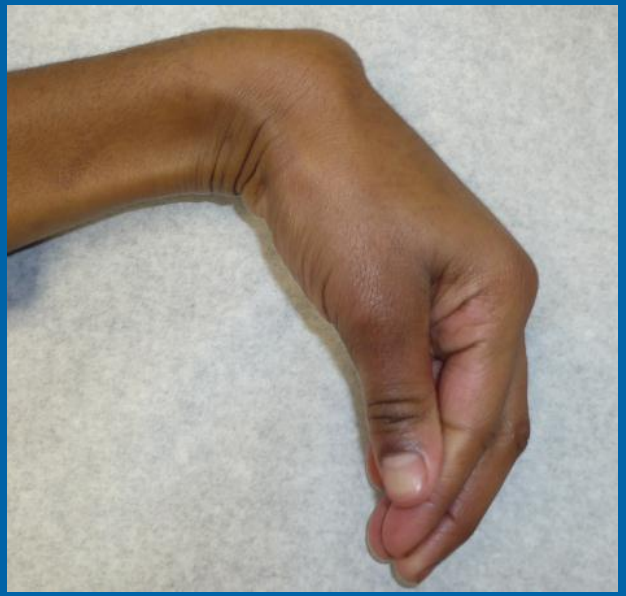
Work-up and Management

- IH are diagnosed primarily by history and physical examination.
- Because IH can change dramatically over time repeated observation is recommended for these lesions; Early referral is recommended in order to start treatment if needed
- Early intervention with oral steroids, intralesional steroids, or propranolol therapy can limit growth considerably
- Lesions that are bleeding or ulcerated may also require medication, laser treatments, or excisional surgery
- Small or stable lesions that are no longer changing can be monitored as they shrink and, once shrinking stops, any residual lesion that is visible can be surgically removed

Case Study #9

A 10 year old male presents with a firm, rubbery mass on the dorsum of the left wrist. He reports “spraining” his wrist last year. The mass appeared 2 weeks ago. It is slightly tender if he presses on it or flexes his wrist fully. He is still able to participate in sports. He denies redness or pain in the surrounding area. There is no pulsatile quality to the mass. He has no numbness or tingling in his fingers distally. He is otherwise healthy.

What is the most likely diagnosis?



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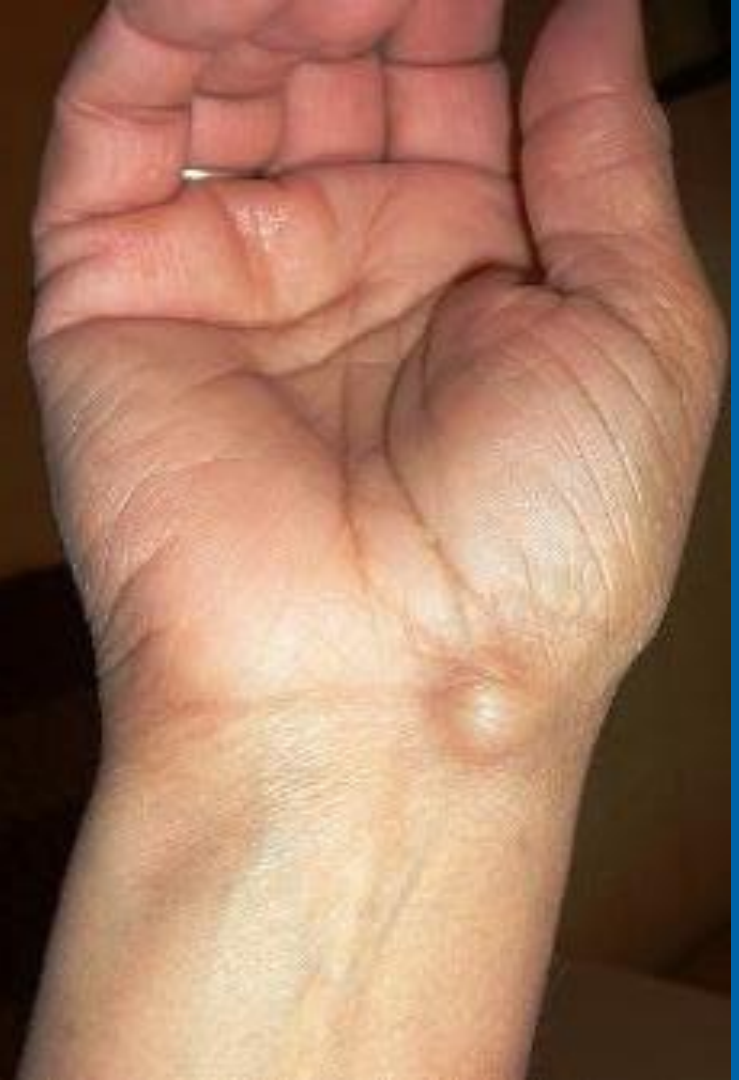

The most likely diagnosis is a **ganglion cyst**.

What are they?

- Ganglion cysts are benign fluid-filled cysts that originate from a nearby joint or tendon
- Most common soft tissue tumor of the hand and wrist
- Thin-walled sacs filled with synovial fluid
- Believed that injury or weakening of the joint capsule allows the fluid to push into a sac outside the joint space
- Occur at predictable locations where joint ligaments maybe injured from repetitive use or injury
- Anyone can be affected by ganglion cysts, but they are more common in active teenagers and young adults
- Other names for ganglion cyst include “bible bump” or “bible cyst” and although the name ‘ganglion’ suggests that nerve tissue is involved this is not the case

How do they present?

- Ganglion cysts are typically slightly mobile, round rubbery masses
- Most commonly on dorsum of wrist overlying the scaphoid-lunate ligament, accounting for 80% of ganglions
- May be lobulated and often appear larger and firmer if the wrist is flexed
- May slowly enlarge or change rapidly in size, but the overlying skin usually appears normal
- May remain asymptomatic for a long period of time, but if large enough can cause dull, achy pain or limit joint motion
- Occasionally the mass can compress nearby nerves and cause symptoms of numbness or tingling

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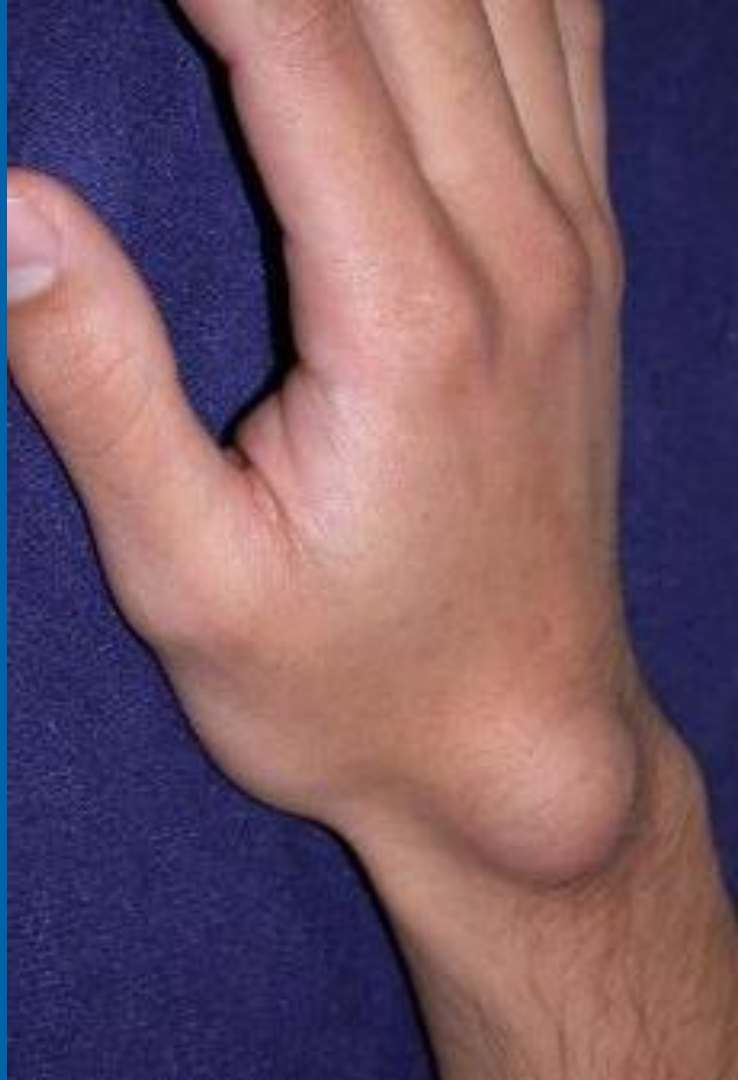

Risks and concerns

- Asymptomatic ganglion cysts can be safely watched
- They can be markers of underlying ligamentous injury and potential joint instability

Work-up and Management

- Ganglion cysts are most frequently diagnosed by history and physical examination
- These lesions will trans-illuminate with a penlight
- Aspiration of cyst fluid can verify the diagnosis and help make the ganglion smaller, but recurrence risk is high
- Hitting the bump with a heavy book (like a bible) to rupture the fluid filled sac is not recommended
- Surgery may be recommended if there is pain or limited motion
- Ganglions can occasionally recur even after surgery

Case Study #10

A 6 year old male presents with

What is the most likely diagnosis?

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The most likely diagnosis is a **hematoma**

What are they?

- A hematoma is a
- Also called a
- The lesions are composed of
- Sometimes attributed to

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How do they present?

- A hematoma usually presents as
- Hematoma varies in size from
- A hematoma is localized to
- Overlying skin of a hematoma
- Colour may be
- Hematomas may be symptom-free, but they are sometimes

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Risks and Concerns

- **Hematoma**

Work-up and Management

- Hematoma are typically diagnosed by history and physical examination
- A biopsy can
- Most need specific treatment
- Reasons for surgical intervention:
- Other treatments:

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Top 10 Soft Tissue Bumps

1) Abscess
2) Pilomatrixoma
3) Pyogenic granuloma
4) Keloid
5) Dermoid cyst
6) Hidradenitis suppurativa
7) Spitz nevus
8) Infantile hemangioma
9) Ganglion cyst
10) Hematoma

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Thank You!

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Multiple Choice Questions

1) Which of the following represents a *congenital* soft tissue lesion that is frequently referred for surgical management?

   A. *Dermoid cyst*
   B. Abscess
   C. Ganglion cyst
   D. Pyogenic granuloma
   E. All of the above

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Multiple Choice Questions

2) Which of the following represent an *acquired* soft tissue lesion that is frequently referred for surgical management?

A. Pilomatrixoma

B. Pyogenic granuloma

C. Keloid

D. Ganglion cyst

E. All of the above

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Multiple Choice Questions

3) Which one of the following represents the most common recommended treatment for a localized cutaneous abscess?

A. Oral antibiotics only

B. Conservative observation

C. Incision and drainage

D. Steroid injection

E. Pain control only

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