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Tackling special site biopsies – what residents need to know

By Paloma Madrigal, MD, Amylee Martin, MD, and Ashley Elsensohn, MD, MPH, FAAD

When starting dermatology residency, one may not be aware that certain sites can be more challenging to biopsy than others. In this feature, physicians from Loma Linda University address common questions from residents about site biopsies.

What sites do you find most challenging to biopsy?

Many would agree the scalp is challenging to biopsy because of the robust blood supply and the hair. The eyelids can also be a difficult site due to the delicate thin skin and concern for eye injury. The conchal bowl's curved shape makes it challenging to maneuver a blade. Some also find the nose difficult to biopsy given the high degree of pain/discomfort with administering local anesthetic and the risk of cutting uninvolved skin given its curved surface in some regions. Nail biopsies can be a source of anxiety for many given the need for a digital nerve block and avulsion of the nail. Finally, mucosal sites can be nuanced due to the 'slippery' nature and more difficult to access locations.

Scalp biopsies

We advise using a local anesthetic with epinephrine to help reduce bleeding when performing a scalp biopsy. While waiting 15 to 20 minutes for the anesthesia to be fully effective, physicians can see one to two other patients in the clinic thus enabling greater efficiency. When performing a punch biopsy, some recommend angling the punch parallel to the direction the hairs exit the scalp, rather than perpendicular, to avoid transecting the follicle.[1] It can be helpful to place a horizontal mattress suture at the perimeter of the skin that is to be sampled prior to inserting the punch, followed by immediately drawing the suture closed once the punch biopsy is completed.[2] Moreover, consider use of gelfoam when completing punch biopsies at vascular or friable sites.[1] Finally, using a ringed handle around the field with applied pressure can markedly aid in hemostasis.[3]

Mucosal biopsies

To reduce discomfort, we recommend applying topical anesthesia (avoid EMLA) 15 to 20 minutes prior to injecting local anesthesia when performing a biopsy on mucosal skin. Given the challenging locations and thin epithelium of mucosal sites, snip/scissor biopsies can be more effective than shave biopsies. This is done by placing a suture at the site to acquire tension with one hand, then tissue scissors can be used to cut around and below the suture with the other hand.[4] The use of electrocautery is often useful when providing hemostasis on mucosal sites.

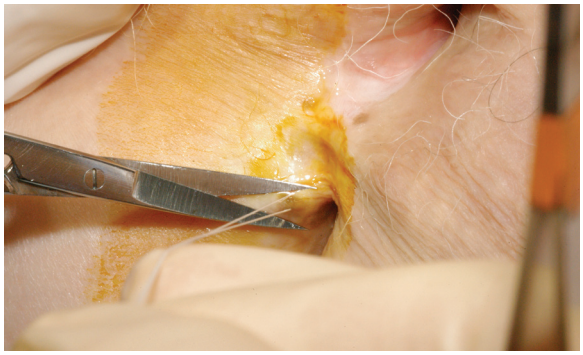

Photo courtesy of Hope Haefner, MD.

Nail biopsies

A recent study found that almost 84% of dermatology residents did not feel comfortable performing nail matrix biopsies.[5] This discomfort may potentially lead to delays in diagnosing nail unit malignancies, particularly melanomas. Nail clippings can help localize pigment. For example, pigment in the dorsal aspect of the nail plate is expected to be from the proximal matrix, with ventral pigment in the nail plate correlating with the distal matrix.[6] Once the decision to biopsy has been made, physicians should minimize the risk of permanent onychodystrophy by using the shave technique for nail matrix biopsy when appropriate. This technique involves reflecting the proximal nail fold, shaving off the thin proximal nail plate and then scoring the area to be excised (e.g., the longitudinal melanonychia).[7] We recommend reviewing the paper by Jellinek for when this technique would not be appropriate.[8] Of note, digital blocks are effective for

see BIOPSIES on p. 3

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BIOPSIES from p. 1

nail unit biopsies, using approximately 1.5 cc anesthesia at the lateral base of each side of the finger. It takes 20 to 30 minutes for anesthesia to take effect. Prior to the patient being discharged, we often give another small digital block with bupivacaine to ensure anesthesia for several hours, helping with discomfort which is usually greatest in the first 24 hours.

Other sites

For biopsies of eyelid skin, careful parallel injection of the local anesthetic (directing the needle 90 degrees, away from the direction of the eye), can allow for safe tissue sampling. Additionally, for pedunculated lesions, gentle grasping of the lesion of interest and snipping of the lesion with the iris scissors can be more effective than using a blade. For the nose, we find it helpful to warn patients that administration of local anesthetic can be more uncomfortable compared to other body sites and pinching of the nose firmly can serve as a distraction to facilitate administration of the anesthetic. For longer procedures and more extensive procedures on the nose (e.g., extensive Mohs case), we recommend using bupivacaine for longer-lasting effects and less patient discomfort with re-numbing.

Do you recommend special aftercare instructions for certain sites?

Skin biopsies can take two to six weeks to heal, and it is helpful to remind patients that wounds on the lower extremities do take longer to heal. Mucosal sites heal quickly, usually over one to two weeks.[9] After a nail biopsy, it can take six to nine months for fingernails to grow out, and 12 to 18 months for toenails. Patients often ask physicians for antibiotics after biopsy. However, petroleum jelly alone promotes wound healing and prevents infection without putting patients at risk for allergic reactions.[10] We recommend patients specifically not use bacitracin and polymyxin B sulfate-containing topical over-the-counter antibiotics. Use of hydrogen peroxide is also discouraged as it can be harsh on healing skin. For biopsies near the ano-genital areas, these can be difficult to bandage so this is not needed. Instead, we recommend a thick layer of petrolatum jelly prior to urination/defecation to protect the biopsied area. DR

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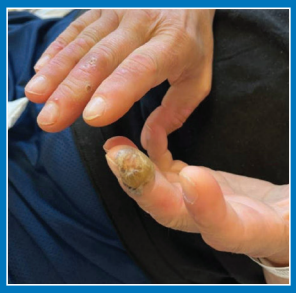
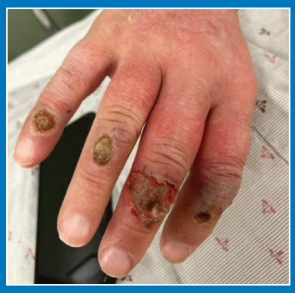
Race for the Case

By Chira Rosenbaum, DO, MS





A 60-year-old male with past medical history of diabetes mellitus type 2, deep venous thrombosis/pulmonary embolism, hypertension, pancreatitis, stroke, hyperlipidemia, and history of necrotizing fasciitis presented to the hospital with a chief complaint of blisters on his hands. The patient noticed new blisters on both hands a week prior, and he admits to associated pain and swelling of the bilateral hands. He denies pruritus or having blisters elsewhere on his body. The patient denied recent illness, travel, new medications, working outdoors or in hazardous conditions, or recent trauma to the hands. The patient reports taking a daily over-the-counter anti-inflammatory medication for pain associated with his chronic pancreatitis.

1. **What is the most likely diagnosis?**
2. **How would you differentiate this condition from a similar inherited form?**
3. **Describe the classic histopathologic findings of this condition.**
4. **What is the relevant work-up for this condition?**
5. **What medication is most likely to have caused this patient's episode?**

Respond with the correct answers at **www.aad.org/RaceForTheCase** for the opportunity to win a Starbucks gift card!

Race for the Case winner (Summer 2024)

The winner of the summer 2024 Race for the Case is Samantha Bizimungu, MD, a PGY-3 dermatology resident at University of Montreal. She correctly identified sarcoidosis in our latest Race for the Case and provided the most accurate responses in the quickest time. Congrats to Dr. Bizimungu!

You can read more about this case online at www.aad.org/race-case-answers. If you can solve the case above, there may be a Starbucks gift card in your future, and you may be invited to contribute your very own Race for the Case. Visit www.aad.org/RaceForTheCase.

Dermoscopic approach to melanocytic lesions of volar skin

By Vixey Silva, DO, Victoria Starzyk, DO, and Kendall Buchanan, MD, FAAD

Vixey Silva, DO, is PGY-3 dermatology resident at Largo Medical Center in Florida.

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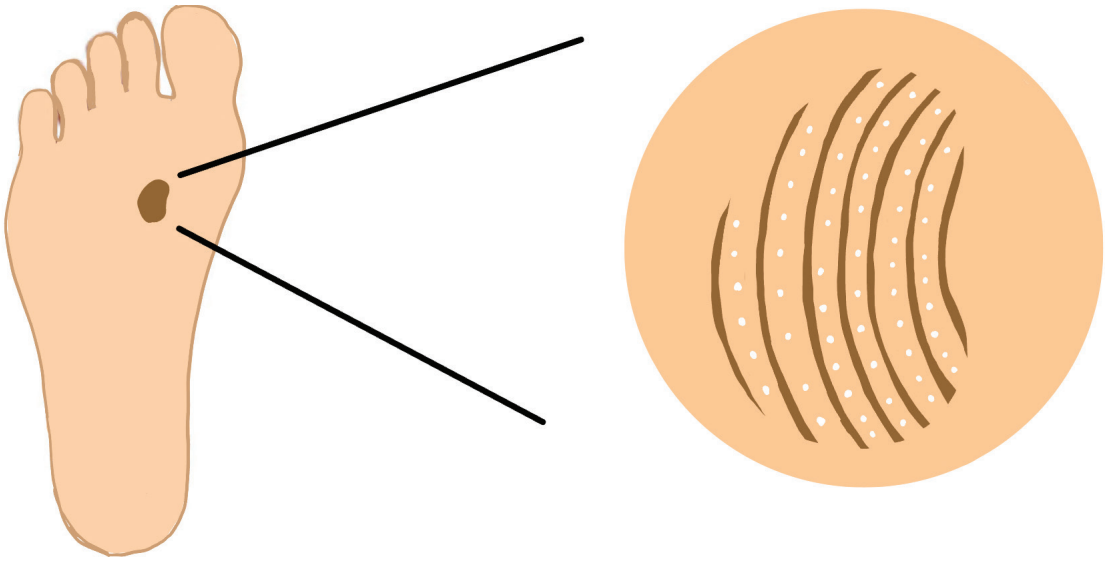
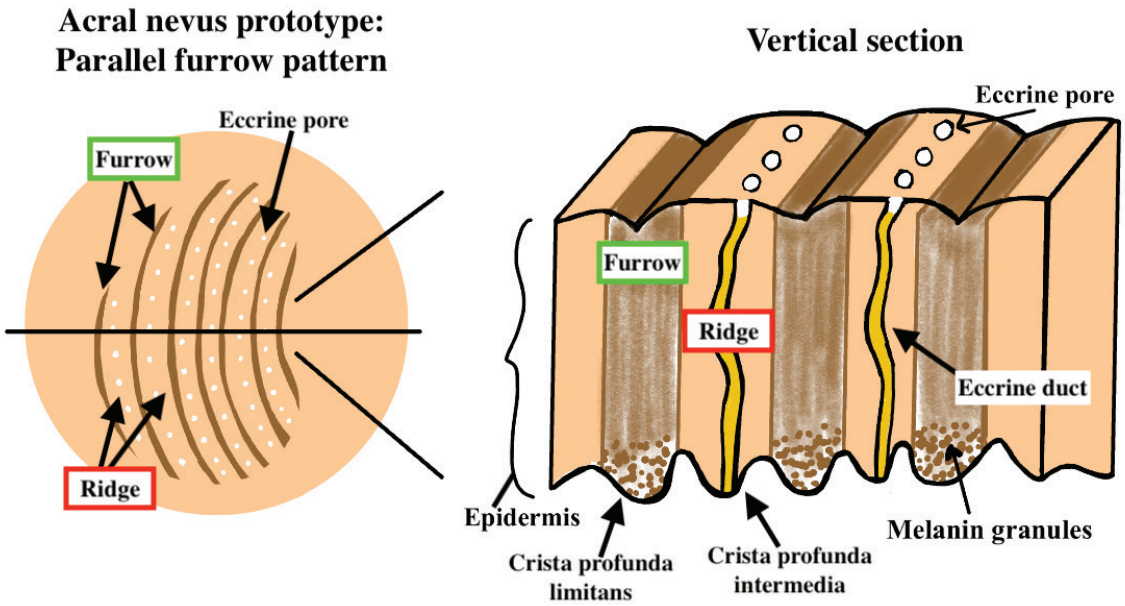
Kendall Buchanan, MD, FAAD, is an assistant professor in the department of dermatology at the Medical College of Georgia in Augusta.

1. Patterns of melanocytic nevi on volar skin

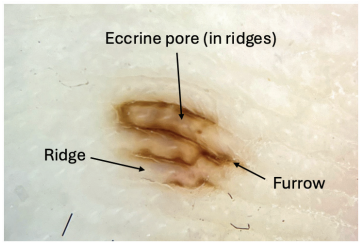
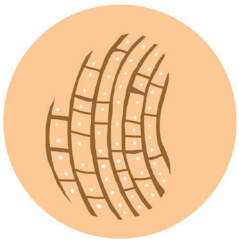
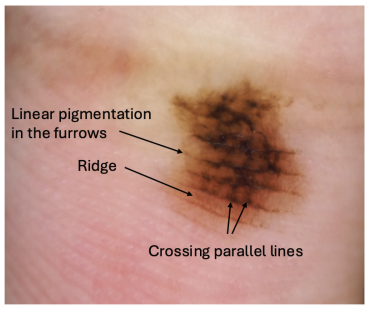
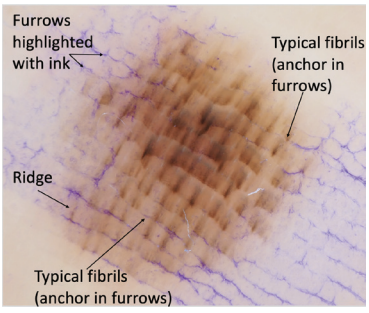




- Crista profunda limitans corresponds to furrows while crista profunda intermedia corresponds to the ridges
- **Pearls:** (1) Ridges are wider than furrows; (2) Eccrine ducts open onto the ridge surface and can appear as white dots
- **Ink test:** Smudging ink onto the surface will result in ink deposition into the furrows, revealing the location of furrows and ridges

Dermoscopic approach to melanocytic lesions of volar skin

By Vixey Silva, DO, Victoria Starzyk, DO, and Kendall Buchanan, MD, FAAD

Pattern	Description	Images	Dermoscopic photo
Parallel furrow pattern (PFP)	Melanin pigment produced by melanocytes is found within the crista profunda limitans giving a pigmented appearance to the furrows Most common benign acral pattern **Variants:** Single line variant, Single-dotted line variant, double line variant, double-dotted line variant (peas in pod) **Pearls:** (1) Diffuse linear pigmentation within the furrows is highly suggestive of a benign acral nevus; (2) "**F**urrows are **F**riendly"		
Lattice-like pattern	Melanin produced by melanocyte is found within the furrows and as crossing parallel lines in the ridges **Pearl:** This pattern is more commonly located on the arch of the foot		
Fibrillar (Type A or regular) pattern	Melanin produced by melanocytes is found as thin, parallel, transverse lines, with no respect to the ridges or furrows Melanin in the cornified layer has an oblique orientation secondary to mechanical pressure. The fibrils are evenly distributed and are of similar color and thickness. Eccrine pores may not always be visible **Pearls:** (1) Ends of fibrils are anchored in furrows; (2) Classic location: weight-bearing sole		 ***Ink test: The ink settles in the furrows, making them easier to identify**

View the complete chart with references online at aad.org/boardsfodder.

The authors gratefully thank Harold S. Rabinovitz, MD, FAAD, for providing clinical images used in this chart.

More study charts online!

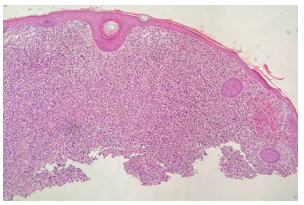
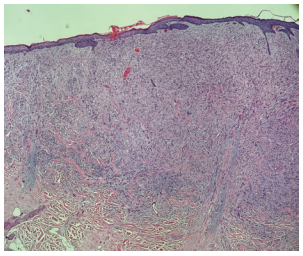
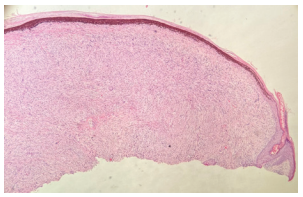
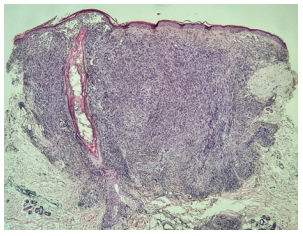
In addition to the full, expanded **Dermoscopic approach to melanocytic lesions of volar skin** chart, we have a new **Mutations in select cutaneous and soft tissue neoplasms** chart by Austin Park, MD, Kathleen Kramer, MD, and Vikas Shrivastava, MD, FAAD; and a new **Dermpath buzzwords** chart by Timothy Holland, DO, Catherine Brahe, MD, and Vikas Shrivastava, MD, FAAD.

These and many more charts can be found at **www.aad.org/boardsfodder**.

SLAM microscopic differential diagnosis

Atypical dermal spindle cell tumor "SLAMmed" up against the epidermis

By Chiara Rosenbaum, DO, MS, and Kent J. Krach, MD, FAAD

Diagnosis	Histopathologic features	Immunostaining profile	Histology image
Squamous cell carcinoma (sarcomatoid/ spindle cell type SCC)	• Spindle-shaped cells infiltrating the dermis with overlying epidermal keratinocytic atypia +/- epidermal connection	• Cytokeratin+ (CK5/6, CK903, and MNF-116), p63+, and p40+ (most specific marker for SCC vs. AFX)	
Leiomyosarcoma	• Fascicles of eosinophilic fusiform cells with blunt-ended nuclei (cigar-shaped) with perinuclear vacuoles (glycogen) • Mitoses and nuclear atypia present	• Desmin+ and SMA+ (diffuse cytoplasmic staining vs. tram-track in AFX) • If diagnostic dilemma, h-caldesmon+, calponin+, muscle actin (HHF35)+, SMM+	
Atypical fibroxanthoma (AFX)	• Dome-shaped dermal nodule comprised of a mixture of cell types (multinucleated giant cells, histiocyte-like cells, foam cells, and spindle cells) • Numerous atypical mitotic figures present • Some consider AFX to be a superficial variant of pleomorphic undifferentiated sarcoma*	AFX is a diagnosis of exclusion! • Negative stains = cytokeratin, p63, p40, S100, SOX-10, and Desmin • Most useful positive stains = CD10, Procollagen-1 • Other positive stains = S100A6, CD68, CD74, CD99, CD117	
Melanoma (desmoplastic/ spindle cell type)	• Atypical junctional melanocytic proliferation (often subtle), spindle cells within fibromyxoid stroma, and nodular lymphoid aggregates +/- perineural extension	• S100+, SOX-10+ (differentiates from scar), and p75/nerve growth factor receptor+ (useful for S100- desmoplastic melanomas) • HMB-45 is unreliable	

*If an AFX demonstrates deep subcutaneous invasion, necrosis, and/or lymphovascular or perineural invasion, the tumor is considered a *pleomorphic dermal sarcoma* or *undifferentiated pleomorphic sarcoma (UPS)* — both of which have high-grade malignant potential and are associated with a poor prognosis.

Staining Panel

Diagnosis	CK5/6	Desmin	CD10	SOX-10/S100
Spindle cell SCC	+	-	+/-	-
Leiomyosarcoma	-	+	-	-
AFX/UPS	-	-	+	-
Melanoma (desmoplastic)	-	-	+/-	+

It is worth noting that any tumor with spindle cell morphology may show CD10 expression

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Histology slides courtesy of Sean Stephenson, DO, FAAD.

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Clinical Pearls

Clinical Pearls will help prepare residents for the future by providing them with pearls about what they should know about a specific subject area by the time they complete their residency.

Melanocytic lesions

By Vikas Shrivastava, MD, FAAD

1. Understand the report.
Histopathologic reports for melanocytic lesions can be complicated. One must understand what is being said and what testing was performed. You must agree with the pathologist's interpretation before discussing management and prognosis.

2. Establish a relationship.
Histopathologic analysis via H+E staining is the gold diagnostic standard[i] [ii]. Key features include cytologic atypia, lentiginous hyperplasia, Pagetoid scatter, lack of maturation, and inflammation.

Borderline lesions are challenging. Panels of immunohistochemical stains can help establish a diagnosis and include SOX10 (or other sensitive melanocytic stain), HMB-45 (lack of deep staining reassuring), p16 (retention reassuring) and Ki67 (low proliferation index reassuring)[iii]. Furthermore, p53, has been shown to help distinguish desmoplastic melanoma from neurofibroma (negative reassuring)[iv].

If you do not agree with your pathologist, frank discussion is paramount.

3. Don't over-rely on PRAME.
Nuclear immunoreactivity for PRAME is seen in up to 90% of melanomas and may be used to identify precursor nevus, highlight residual melanoma, and delineate background melanocytic hyperplasia.

That said, desmoplastic melanoma is typically PRAME negative and benign lesions may have some staining. Interpretation must account for intensity (weak-strong) and number of nuclei staining (1-25%, 26-50%, 51-75%, 76-100%).

Spitzoid lesions are difficult to classify using PRAME alone. McAfee et al showed the combined utility of p16 (positive reassuring) and BRAF V600E (negative reassuring) in this group while Boutko et al described a role for TERT-promoter mutation analysis (negative reassuring)[vi, vii].

For concerning lesions with discordant staining, FISH or CGH may be performed[viii].

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DR

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The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the United States government.

More Clinical Pearls online!

Visit the archives at **www.aad.org/member/publications/more/dir/clinical-pearls**.

Inside this Issue

Anisha Guda, MD, is a PGY-4 dermatology resident at UT Southwestern Medical Center and a member of the AAD Residents and Fellows Committee.

Finding your own path

By Anisha Guda, MD

As you start to get comfortable in the new academic year, you may begin to wonder what the future holds. "What should I do next?" and "Where do I go from here?" are questions that can oftentimes fill the mind of a dermatology resident. We have spent countless hours of dedicated time and energy to get to this position, and for so long the goal has been to be here. But once you have achieved this goal, it is natural to feel uneasy about the future. "What do I do now?"

When you feel this way, I would encourage you to think back to what brought you to dermatology. How did you fall in love with the field? What triggered your passion? Residency is a great time to explore your interests in dermatology and develop your niche in the field. Try to find 'your people' and 'your community.' Discover what drives you and fills your cup. When you can feel this, you will know that is where you belong.

What makes dermatology great is that there are so many varied options you can pursue based on your interests. In this issue, we look at the tools residents need to perform special site biopsies. But dermatology offers many diverse tasks. Do you enjoy doing procedures and working with your hands and getting instant gratification from your work? Then consider pursuing a procedural fellowship such as Mohs surgery. Do you enjoy caring for children, taking care of their needs, and perhaps even treating their vascular malformations? Then consider a career in pediatric dermatology. Would you rather focus on a special population group or topic such as vulvar dermatology, GVHD, oncodermatology, CTCL, or another more-specific area? Do you want to become a leader in helping treat those patients? Do you derive joy from facial aesthetics, making people feel better about the way that they look on the outside? Consider a career in cosmetic dermatology. Do you want to focus on hair transplantation? Do you want to focus on entrepreneurship and product development? Or would you rather focus on general dermatology and treat a broad spectrum of patient conditions?

Use your rotations to discover if you enjoy treating a specific patient population. Talk to your mentors, your seniors, and your colleagues. Seek their advice and perspective. Go to conferences and participate in research. Most importantly, use this time to feel inspired.

It can be overwhelming to know that there are so many options available. But that is what also makes it exciting! There is not one path that is right or wrong. The correct path for you is the one that brings you joy and pushes you forward. Everyone's path is different. What matters more is that you find the path that is right for you and brings you joy. Find your people — those you want to constantly surround yourself with. In this whole process, don't forget to enjoy the journey. The path you take to get to your destination will shape you into the dermatologist you will ultimately become for your patients.

We hope you enjoy this issue focusing on special site biopsies and that you can integrate this into your training as a resident and your practice as a dermatologist. DR

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