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# SKIN BIOPSY FOR STEVENS-JOHNSON SYNDROME & TOXIC EPIDERMAL NECROLYSIS

***Evidence Based Medicine Guideline***

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**SUMMARY**

The accurate diagnosis of Stevens-Johnson Syndrome (SJS), toxic epidermal necrolysis (TEN), and SJS-TEN overlap are dependent upon skin biopsy. This is commonly performed as a 3-4 mm punch biopsy of representative acute skin lesions that can be quickly performed at the bedside under local anesthesia. Misdiagnosis may result from biopsy site selection, biopsy technique, or inappropriate choice of transport media.

**KEY POINTS**

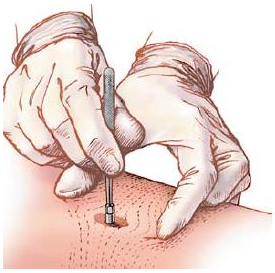
- Punch biopsy is considered the primary technique to obtain diagnostic skin specimens
- The biopsy specimen must include the full thickness of the skin
- An acute lesion should be biopsied whenever possible
- Avoid grasping the biopsy specimen with forceps to avoid crush artifact
- Two separate biopsy specimens should be sent to Pathology: one in formalin for pathologic examination and one in Michel's solution for direct immunofluorescence staining

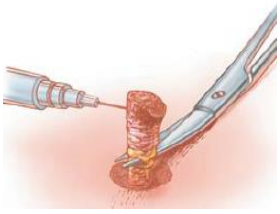
**EQUIPMENT**

- Non-sterile gloves
- Chlorhexidine or povidone-iodine for skin antisepsis
- 3 or 4 mm punch biopsy instrument
- Suture removal kit (iris scissors and forceps)
- 3-mL syringe filled with either 1 or 2% lidocaine with epinephrine and a 25, 27, or 30-gauge needle
- One labeled container of 10% formalin and one of Michel's solution to transport the biopsy specimens to Pathology

**PROCEDURE**

1) Obtain informed consent for the procedure
2) Select an appropriate biopsy site (commonly the most abnormal, recently appearing skin lesion)
3) Prepare the skin with chlorhexidine or povidone-iodine; allow to dry
4) Infiltrate the skin and subcutaneous tissues with local anesthetic
5) Stretch the skin along the lines of *least* skin tension (typically along the long axis of an extremity); this will result in an elliptical skin wound that is more easily sutured closed
6) Position the punch biopsy instrument over the border of a fresh skin lesion such that the biopsy will contain both normal and diseased skin
7) Using a twirling motion and steady pressure, push the punch biopsy instrument downward through the stretched skin to cut a full-thickness biopsy
8) Use the tip of the needle to elevate the biopsy specimen above the level of the skin; do not grasp with forceps to avoid crush injury to the biopsy tissue
9) Use scissors to divide the biopsy at the level of the subcutaneous tissues
10) Repeat steps 2-9 at a second site
11) Send both biopsy specimens to the pathology department using their preferred transport media and instructions
12) Close the biopsy site (optional) with 1 or 2 simple 5-0 nylon sutures
13) Apply a dry, sterile dressing





Images from Am Fam Physician 2002; 65:1155-1158

## TRANSPORTING BIOPSY SPECIMENS TO PATHOLOGY

Proper transport of the biopsy specimens is crucial to obtaining accurate results. Direct immunofluorescence (DIF) is the diagnostic test of choice to make the diagnosis of SJS / TEN. Each pathology department has a protocol / policy for such testing. Communicate with your pathology department prior to performing skin biopsies to discuss preferred specimen handling and transport media. Michel's solution is generally the preferred media for transporting DIF specimens as it preserves and safely stores the specimen for several days. Biopsies placed in saline generally must be analyzed within 24 hours which may not be possible if the biopsy is performed over a weekend. Sending biopsy specimens in a dry, empty container will result in a non-diagnostic specimen that will need to be repeated.

## PUNCH BIOPSY SPECIMENS AT ORLANDO REGIONAL MEDICAL CENTER

- Obtain a container of 10% formalin and a container of Michel's solution from Pathology (floor 2B)
  - These must be picked up and cannot be sent through the pneumatic tube system
- Perform TWO representative punch biopsy specimens
- Place one specimen in 10% formalin and one specimen in Michel's solution
- Hand deliver the specimens back to Pathology
- Enter orders for "Pathology Tissue Examination" and "Immunofluorescence" in EPIC

## REFERENCES


1) Elston DM, Stratman EJ, Miller SJ. Skin biopsy: Biopsy issues in specific diseases. *J Am Acad Dermatol* 2016; 74:1-16.
2) Zuber TJ. Punch biopsy of the skin. *Am Fam Physician* 2002; 65:1155-1158.
3) Mahmood MN. Direct Immunofluorescence of skin and oral mucosa: Guidelines for selecting the optimum biopsy site. *Dermatopathology* 2024; 11(1):52-61.