

The nerves supplying feeling to the skin of an injured or surgical area can become hyperactive. The pain nerve fibers may dominate all feeling in the area, and this pain may be higher in severity than the patient, doctor, or therapist expected. Hypersensitivity causes pain, numbness, and heightened response to touch. People with hypersensitivity may begin to limit the use of their finger or hand, which can result in a longer recovery. If not addressed, this can cause a pain loop. In this loop, pain causes further limited use of the injured area. The patient can get stuck in a rut and won't be able to improve their pain or motion. This pain is more intense and complex, and it can take much longer to go away.

Causes

Hypersensitivity can be caused by:

- Injury
- Casting
- Laceration to skin resulting in a scar
- Nerve irritation
- Medications

Symptoms

Signs and symptoms of oversensitivity are:

- Pain, which can be sharp, burning, or shooting
- Inability to tolerate touch or pressure to area
- Adherent scar restricting nerve mobility
- Nerve return following laceration or repair

Diagnosis and Treatment

History and physical exam are most important. Physical exam tests include Two-Point discrimination or Semmes-Weinstein Monofilament testing. It is helpful to rate the pain on a similar scale at each visit to monitor progress. These tests help identify a possible sensation loss. Formal testing by a physician may include a nerve conduction test. It may be important to identify any underlying nerve disorders, such as carpal tunnel syndrome.

The goal of desensitization therapy is to provide a constant stimulus to the affected area for a short period of time and should be repeated multiple times throughout the day. These periods of input try to stimulate the brain with input other than pain. The brain responds by adjusting to the response, thus decreasing the heightened reaction.

Gradual introduction of light pressure or touch to the painful area over time decreases the pain response. When an unexpected pressure to the hypersensitive area occurs, the desensitization therapy makes the event feel more normal and less painful. Once the sensitive area becomes adapted to the gentle stimuli, use graded materials or textures. For example, some programs begin with a cotton ball and gradually progress to Velcro or even sandpaper. The amount of force used to apply the stimulus can be graded to increase the



Figure 1 - Common desensitization therapy techniques for hypersensitive areas of the hand include massaging the affected skin with a hairbrush or other coarse material to provide constant stimulus for short, repeated intervals throughout the day.

stimuli. Suggestions for a therapy program involve introduction of the stimuli to the affected body part for two to four minutes five to eight times per day.

A home program can involve various techniques for desensitization. The following is a suggested example to start with:

- Rub the sensitive area with fabrics of various textures. Begin with softer fabrics and progress to rougher ones. Examples include cotton balls, silk, paper towel, Velcro and loop, flannel, denim, and corduroy.
- Tap along the sensitive area using a small eraser or your fingertips. Slowly increase the pressure. If your fingertip is the involved area, tap it onto a surface.
- Using a hairbrush or a soft toothbrush, massage along the sensitive area in multiple direction and in circles.
- Place your hand in a container filled with any of the following dry items: rice, Cheerios, dry beans, sand, or corn. Open and close your hand in the container to get resistance. Make sure the container is deep enough to submerge past the affected area.
- Place your hand in water of two different temperatures. Try to feel the difference between warm and cool instead of the pain. You can focus on wet vs. dry.

Many of these techniques can be performed using eyes open and eyes closed. With eyes open, you are using vision to add information you see to what you are feeling on the sensitive skin. With eyes closed, you try to concentrate on the sensation (rough, smooth, cold, warm, light, firm, clockwise circle, movement left or right) rather than pain. Alternating eyes open or closed during therapy may help. The idea is to let all sensations other than pain be experienced so your mind doesn't pay attention to the pain as much.

It can also be helpful use a mirror. While you apply different sensations to the sensitive skin, look at the area in the mirror. Instead of looking directly at the area that hurts, looking in a mirror makes the area seem like an image or a video rather than your own body.