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Rheumatoid Arthritis

Also known as:

RA

Definition: A chronic, inflammatory, and autoimmune disease affecting both the connective tissue and the synovial membrane of multiple joints.

GENERAL INFORMATION

- Etiology unknown; compromised immune system possible contributing factor
- Gradual onset
- All ages affected; most common between ages 25 and 50
- Women affected three times more often than men
- Remission usual in pregnant women with RA; high occurrence in women immediately postpartum
- Affects about 1% of the U.S. population
- Genetic predisposition

PATHOPHYSIOLOGY

RA results from many factors; there is no single genetic cause, as previously thought. The immune system's involvement in the development of RA is indicated by the presence of an antibody called rheumatoid factor (RF) in most cases. The body normally creates a specific antibody for every recognized invader. In an autoimmune disorder, the body mistakenly perceives part of its normal functioning to be invasive and sets up a defensive response against itself. RA is an example, and its inflammatory reaction can be powerful.

The disease triggers attacks on the joints' synovial fluid (necessary for normal joint movement), creating an inflammatory environment characterized by heat, swelling, pain, and stiffness. Multiple inflammatory chemicals are present during the disease's flare stage, thereby causing a domino effect of pain and swelling: (1) The presence of inflammatory chemicals leads to joint capsule fluid accumulation; (2) the synovial membrane thickens and swells, causing more fluid accumulation; (3) further internal joint pressure and pain trigger more inflamed tissue; (4) the cascading damage cyclically continues until bone and cartilage are also damaged.

Bilateral hand and wrist joints are commonly affected initially (Figure 33-1). The disease can progress to the knee, ankle, and foot joints. In severe cases, spinal involvement (C-1 and C-2) results in seriously compromised neck range of motion (ROM).

Progression is usually gradual, but it can occasionally be fast, followed by periods of flare and remission. RA can affect various joints mildly and not get worse for years and then drop into remission with only occasional flare-ups. In some cases, it progresses unremittingly from a mild state to frequent flares and severe debilitation.

Diagnosis is determined by various tests. Blood serum tests indicating the presence of RF, in approximately 75% of the diagnosed cases, reveals that the body is waging an autoimmune battle. However, some who suffer from RA do not have RF and some who have RF do not manifest the disease. A medical history is taken, along with X-rays of painful joints. Because RA can mimic other skeletal and musculoskeletal disorders, a firm diagnosis is often not made until four of the following symptoms

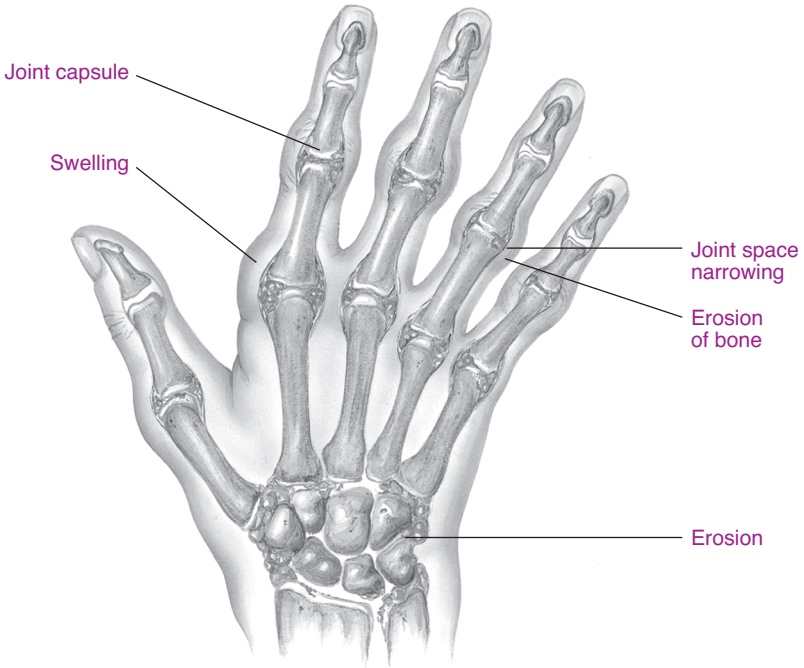

FIGURE 33-1 Joints typically affected by rheumatoid arthritis. Asset provided by Anatomical Chart Co.

persist: (1) rheumatoid nodules (firm, nontender, and subcutaneous joint nodules), (2) arthritis in three or more joints, (3) morning stiffness that persists for at least an hour, (4) arthritis of the fingers and wrist, (5) bilateral involvement, (6) a positive blood test for RF, and (7) X-rays indicating bony involvement.

If complete remission occurs, it is usually within the first 2 years of the disease. The prognosis varies; some clients live a mildly compromised life, while others may become wheelchair-bound. In rare cases, RA clients die from pulmonary and/or renal compromise.

OVERALL SIGNS AND SYMPTOMS

Symptoms manifest, with dramatically varying degrees of severity, depending on whether the disease is in the early stages, or if the client is experiencing a flare or a remission. During remission, the signs of RA continue but the painful inflammatory response is absent. Moderate RA is characterized by several flares followed by remissions. In severe RA, however, the inflammation is chronic and remissions are infrequent.

Early stage:

- Malaise
- Vague muscle aches and pains
- Gradual worsening, becoming joint specific
- Low-grade fever
- Appetite loss
- Anemia

Remission (subacute) stage:

- Stiffness after long periods of immobility
- Stiff, often deformed, swollen bilateral joints
- Shiny, tightly stretched skin over affected joints
- Puffy joints

- Achy affected extremity
- Malaise
- Anemia

Flare (acute) stage:

- Red, hot, painful, and swollen joints
- Restricted, painful ROM
- Improved movement with mild stretching
- Anemia

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Research indicates that massage decreases stress hormones and depression, increases natural painkilling endorphins, improves sleep and immune function, and eases muscle pain.
- Since persistent stress triggers pain and persistent pain triggers stress, both of which initiate the cascading effects of inflammation, any relaxation technique that reduces pain and stress can help address the deteriorating effects of this inflammatory disease.

TREATMENT OPTIONS

Early, aggressive treatment, which is often based on multiple medications, is supervised by a rheumatologist. This approach has recently replaced the more passive "wait and see" family physician approach of the past. The treatment goals are reducing pain and inflammation, minimizing joint damage, and improving well-being and overall function. A medication regimen focused on the specific RA stage, combined with diet alteration, exercise, stress reduction, massage, and sometimes surgery, can help meet these treatment goals.

Beneficial self-management techniques include hot showers to relieve morning stiffness, consistent yet moderate exercise, and massage during the remission stage. Acupuncture can release natural anti-inflammatory endorphins and can ease pain.

Various highly effective surgical options can significantly make the difference between a client living with intolerable pain and/or being wheelchair-bound or living a near-normal existence. Synovectomy removes the diseased joint lining, thereby reducing inflammatory tissue. Arthroscopic surgery determines the extent of bone and joint damage and simultaneously repairs tears. Joint replacement surgery reconstructs or replaces highly compromised joints. Arthrodesis fuses two bones together leading to limited movement but decreasing joint pain and increasing stability.

Common Medications

A medication cocktail is often the most effective pharmaceutical approach in treating this multi-symptomatic, systemic condition. Several categories of medications may be prescribed based on disease progression and the extent of systemic involvement. Nonsteroidal anti-inflammatory drugs (NSAIDs) help reduce inflammation and pain. Analgesics reduce pain but don't affect inflammation. Steroids slow joint damage caused by inflammation. Biologic response modifiers quiet the overreaction of the immune system in an autoimmune disease. Examples of commonly used medications are as follows:

- Salicylate nonopioid pain relievers, such as aspirin (Ecotrin, Empirin, Astrin)
- Nonopioid pain reliever and fever reducers, such as acetaminophen (Tylenol, Feverall, Anacin, Panadol)

Massage Therapist Tip

Being Aware of Medication Side Effects

Your RA client will most likely be taking multiple medications, most of which have significant side effects. Question your client about the duration, frequency, timing, and severity of her medication side effects. You may need to adapt your massage session to accommodate for dizziness, bathroom trips, and nausea. It is not beyond your scope of practice to sit down with your client and make a small chart of her medication side effects, so you can adjust your sessions accordingly.

- Anti-inflammatory immunosuppressants, such as methylprednisolone (Medrol)
- Heavy metal antagonist antirheumatics, such as penicillamine (Cuprimine)
- Immunosuppressants, such as azathioprine (Imuran) and abatacept (Orencia)
- Antimalarial amebicides, such as chloroquine (Aralen)
- Antimalarial anti-inflammatories, such as hydroxychloroquine (Plaquenil)
- Anti-inflammatories, such as sulfasalazine (Azulfidine) and infliximab (Remicade)
- Antirheumatics, such as etanercept (Enbrel) and adalimumab (Humira)
- Human monoclonal antibodies, such as golimumab (Simponi)

MASSAGE THERAPIST ASSESSMENT

Assessing an RA client includes the following:

- Observing compensatory movement and affected joints
- Intelligent, compassionate querying about ROM and about joint and muscle pain
- Gentle, cautious palpating of joint and muscle
- Thoroughly listing all medications and side effects
- Determining, with the client's help, whether she is experiencing a flare or remission

The therapist must approach an RA client with caution because serious damage can result from overzealous therapy.

An RA client will be under a physician's care and may be seeing a physical therapist. It is best for the massage therapist to create a working relationship with both.

THERAPEUTIC GOALS

When the RA client is in early stages of the disease or is in remission, it is reasonable to expect that massage therapy can improve joint mobility, maintain connective tissue health, increase or maintain ROM, and reduce the pain and stress that often exacerbate the condition.

MASSAGE SESSION FREQUENCY

- 60-minute sessions once a week for the duration of the disease (except when the client is experiencing a flare)
- Infrequent therapy provides only temporary, palliative relief

MASSAGE PROTOCOL

Because of the autoimmune, systemic, and inflammatory nature of RA, the body's lymphatic and immune systems will be compromised. Any gentle, cephalic, effleurage-like techniques will help stimulate and cleanse these systems. Gentle proximal (to the affected joint) ROM will also stimulate lymph nodes.

Gentle exploratory palpation will help you determine the presence of swollen joints and rheumatoid nodules. Remember to proceed gently and to establish trust early to enable you to work with the appropriate depth as the session proceeds. Never work to the point of pain or even mild discomfort.

Techniques, such as skin rolling, compression, and dry effleurage that move and shift the ever-weaving but most likely profound stuck myofascia will also help eliminate waste products and increase ROM. Never use jostling or excitatory techniques that could risk moving your client into a sympathetic state.

Thinking It Through

Extensive research, ranging from studying the electroencephalographs (EEGs) of meditating monks to analyzing the heart rates of frustrated rats, repeatedly proves the profound healing that takes place in the body during the parasympathetic state. The cascading neuronal effects of a sympathetic ("fight-or-flight") response can last for hours or days and can exacerbate any systemic disease. However, the parasympathetic state, a state of deep physiologic rest, significantly reduces the effects of pain and stress. With this in mind, the therapist can ask himself how he maintains a calm mental state during a massage therapy session, and how he can affect others by helping them relax.

- What is my mental or emotional state as I approach my clients?
- If I am presently ill at ease, what can I do to erase my personal irritations so I can focus calmly on this client?
- What does my body feel like when I'm irritated or upset?
- What does my body feel like when I'm profoundly relaxed?
- Which techniques have I learned that can help my client reach a parasympathetic state?
- Where in the protocol should I include relaxation exercises?
- What are the signs that my client is not relaxing?
- Have I thought deeply about the mind-body connection and its effects on every aspect of my client's life?

Step-by-Step Protocol for Rheumatoid Arthritis of Bilateral Wrists and Fingers

Technique	Duration
Before beginning, palpate both wrists and hands for the presence of tenderness, nodules, and inflammation. If the joints are warm to the touch and/or appear red, do not proceed until the client is no longer in a flare.	
With the client positioned comfortably, place a hot pack on the left wrist and hand. Perform "slaying-the-dragon" techniques (general comforting techniques) anywhere on the body except the upper extremities.	5 minutes
Remove the hot pack, reheat it, and place it on the right wrist and hand. Watch the clock while performing the next step, and remove the hot pack after 5 minutes.	
Compression, light-to-medium pressure • The entire left upper extremity, begin proximally, work to the wrist and fingers. Be sure to include detailed compression on each digit.	2 minutes
Wringing, light-to-medium pressure • Biceps, triceps, flexors, extensors (*Do not wring affected joints.*)	2 minutes
ROM to end-feel • Shoulder • Elbow (spend extra time at this joint) • Wrist • Every joint of each digit	2 minutes
Compression, medium-to-deep pressure, a little more briskly • The entire left upper extremity, begin proximally, work to the wrist and fingers	2 minutes
Effleurage, petrissage, effleurage, medium pressure • Left biceps and triceps • Left flexors and extensors	4 minutes
Any combination of detailed effleurage, plucking, friction, petrissage, compression, digital kneading, and medium pressure • Around each left carpal bone • Around and between each knuckle joint • Into the palmar and dorsal hand surface	10 minutes
ROM to end-feel (noting if range has improved) • Wrist • Every joint of each digit	2 minutes
Effleurage, deep to tolerance • Start proximally at shoulder, work to end of digits	1 minute (Total time 25 minutes)
Repeat protocol to right arm, wrist, and hand.	25 minutes
Finish with relaxation techniques performed per the client's request.	5 minutes

Contraindications and Cautions

- **Since RA symptoms are exacerbated during a flare, all bodywork during this painful stage is absolutely contraindicated.**
- **Heat is never appropriate on tissue that is inflamed or swollen.**
- **Cold should be used judiciously and only after receiving permission from the attending physician or physical therapist.**
- **The end-feel of affected joints may not have the "bounce" of a normal joint; use caution during ROM exercises and stop immediately upon meeting resistance.**
- **RA medications may thin the client's blood or dull her pain perception. Do not work so deeply that you cause bruising.**

GETTING STARTED

Have hot packs and cold packs ready. Provide plenty of pillows and be inventive with positioning to accommodate your client's limited ROM. Be sure to offer her a bathroom break sometime during the session. If she uses a cane, walker, or wheelchair, rearrange your working space and reception area for easy and safe access. You may need to help her on and off the table and with undressing and dressing.

HOMEWORK

Your client will most likely be seeing a physical therapist (PT) or a personal trainer along with her attending physician. She certainly has been instructed to exercise, breathe deeply, and maintain her ROM. You can frequently and diplomatically remind her that even though she is in pain, if she does not continually use her muscles and joints, she will lose movement and will experience even more pain. Joints that are swollen and painful, however, should not be worked. The following homework assignments are well within your scope of practice and can provide the added support your client needs to maintain a desirable lifestyle. Detailed strengthening exercises are best left to a trained PT.

- Before exercising, apply heat via a hot pack or a hot shower.
- Move gently at the start of your exercise regimen to warm the joints and muscles.
- Move every joint of your body, not just your affected ones, into full ROM every day.
- Avoid keeping your joints in the same position for long periods.
- Avoid long periods of grasping and pinching.
- Breathe deeply at least three times a day.
- Practice progressive relaxation exercises. Lying down or sitting comfortably progressively tighten and relax every major muscle set of your body. Work from your toes to your nose. Imagine all the stress leaving each muscle as you relax it.
- Drink plenty of water. Your muscles and joints will benefit, and adequate hydration will help your liver efficiently process your medications.

Review

1. Define rheumatoid arthritis.
2. Describe the symptoms during remission and during a flare.
3. In which joints does RA usually initially occur?
4. Which connective tissues may also be affected by RA?
5. Describe the various classifications of medications an RA client may be taking.
6. Explain the massage therapy contraindications for an RA client.
7. What is the prognosis for a client who has an RA?

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34

Scars

Definition: Irregular fibrous tissue that replaces normal tissue following injury or incision.

GENERAL INFORMATION

- Caused by lacerative trauma, burns, surgery, and breaches in the dermis
- Can occur anywhere on the body
- Onset within hours of injury; ongoing formation
- More prevalent in younger people

PATHOPHYSIOLOGY

The following scenario outlines the body's physiologic response to any localized injury, including the chemical reaction of scar formation. The explanation also reinforces the thinking behind the massage protocol. When a finger is accidentally cut by a knife, bleeding immediately ensues from lacerated capillaries. Multiple alert signals to the brain indicate something akin to, "Oh no, the body is bleeding, we've got to act fast to close up this wound!" Chemicals rush to the area to cauterize capillary ends, thereby stopping the bleeding. Tissue regrowth starts immediately to close the skin rupture. Because the skin barrier was breached, there is a possibility of infection, and macrophages flood the site to combat infectious organisms. The process is efficient and swift, but not tidy. A microscopic view would reveal a messy network of collagen and fibroblasts knitting tissue back together quickly to heal the breach and avoid infection. Next comes the pathophysiology of scar formation.

When an insult or injury happens to the body from a surgical incision, a burn, a trauma, or a severe dermatological condition, a natural healing process begins, involving an inflammatory response and a complex chemical domino effect. The result is wound healing, scar formation, and the avoidance of infection. Here are the basic steps in this cascading process:

1. Inflammation and vascularization
2. Epithelium rebuilding
3. Tissue granulation
4. Fibroplasias and matrix formation
5. Wound contraction
6. New vascularization
7. Matrix and collagen remodeling

The entire process can last from a matter of weeks to as long as 2 years.

Matrix and collagen remodeling is of particular interest to the massage therapist because this is a process that can be directly affected by massage techniques. *Therapists should note that localized inflammation and the presence of macrophages are important, ongoing elements in the formation of healthy, pliable scar tissue. This will become evident during the protocol discussion later in this chapter.*

Although all scars diminish in size and color over time, the final scar tissue is different from, and weaker than, the original skin. The previously symmetrical collagen and fascia are replaced by an irregular web of tissue that is only about 80% as strong as the preinjured site. Sensation may be lost, and sweat pores or hair follicles are gone. A person's metabolism, activity level, vitamin and mineral intake, insulin delivery, immune system efficiency, ethnic background, and age can directly affect wound healing and scarring.

Other forms of compromised tissue not addressed in this chapter, but directly related to scarring, include the following:

- *Adhesion:* Plates, strands, or localized scar tissue that typically form in the chest, abdomen, or pelvis after surgery or radiation
- *Fibrotic adhesion:* Plates, strands, or localized scar tissue that form secondary to ongoing chronic inflammatory conditions affecting joints
- *Hypertrophic scar:* Scar tissue overgrowth that remains within the boundaries of the original insult but involves tissue deep into the dermis; often associated with second- and third-degree burns
- *Keloid scar:* Scar tissue overgrowth outside the boundaries of the original injury; often characterized by a gnarled, noticeably ropy appearance, and most often found in dark-skinned people
- *Contracture:* Shortened connective tissue, usually around a joint, formed after prolonged immobility

OVERALL SIGNS AND SYMPTOMS

Wounds and scars are classified into characteristic stages of acute, subacute, and chronic. Depending on the severity of the injury, the wound or scarring process can last from a matter of weeks to as long as 2 years.

Acute scarring (earliest):

- Redness
- Raised appearance
- Hypersensitivity
- Continuous weeping of serous fluid

Subacute scarring (wound healing begun):

- Pink or pale appearance
- Flat or slightly puckered appearance
- Possible lost sensation

Chronic scarring (wound healing complete):

- Slightly raised, puckered, or sunken appearance
- A white line in lighter skin and a dark line in darker skin
- Taut, probably insensitive tissue surrounding the scar
- Usually not problematic or painful
- Coolness compared to surrounding tissue
- Possible stiffness or pulling if the scar lies close to or on a joint

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Massage therapy can loosen restrictive fibrous tissue, increase localized circulation, and facilitate healing.
- Since the matrix and collagen remodeling phase can last for months, during which time tensile strength—the rebounding, responsive, soft but resilient

nature of normal skin—is being restored, the final appearance and integrity of scarred skin can be improved by massage therapy techniques.

TREATMENT OPTIONS

Although scarring cannot be completely eliminated, the goals of treatment are to minimize scar appearance, speed up tissue healing, and improve tissue mobility. Some products applied topically can reduce unsightliness, but more research is needed to validate the effectiveness claimed by their advertising.

Invasive and minor surgeries can alter a scar's appearance and increase tissue mobility. Dermabrasion removes built-up skin, and chemical peels and laser resurfacing even out color and texture. Grafting healthy skin from another part of the body and attaching it to extensively burned or injured areas can help control or prevent long-term regional stiffness and immobility. Cortisone injection may effectively reduce the appearance of keloid or hypertrophic scarring.

Common Medications

Prescription or over-the-counter (OTC) medications applied directly to a healing wound or postoperative site can facilitate repair, increase the rate of epithelial tissue growth, and decrease infection. The following is a list of prescription and OTC medications formulated to help treat keloid scars, minimize surgical scars, minimize old scars, and reduce burn scars. Before any of these medications are used, a physician should be consulted about the manufacturer's promised results. (Note: Most of these kinds of medicines are known primarily by their brand name, so they are listed that way.)

- MEDscar
- Dermatix Ultra
- Talsyn-CI

FIGURE 34-1 Cross-fiber friction for scar work. The technique is performed with the thumb or fingertips, with deep strokes perpendicular to the scar and no farther than 1 inch away from the scar's border.

Thinking It Through

An essential element of the massage therapist's scar work protocol is to purposely create an area of localized inflammation. During the intensely focused, digital, cross-fiber friction technique (Figure 34-1) performed to trigger the inflammatory response, the therapist can think through the physiologic benefits of creating such a temporary irritant:

- The scar is not merely the visible line but the erratic "rope" of tissue deep to the scar. I must carefully palpate so my work directly affects the subcutaneous tissue.
- The cross-fiber friction techniques must be extremely localized, deep, consistent, and of sufficient duration to create hyperemia (reddening of the skin).
- When the skin is reddened, I know I have "tricked" the body into an inflammatory response, and the immune system will send macrophages to fight the mock battle.
- When the macrophages appear on the scene, they begin eating away *deep into the ropy scar, which is exactly where I want the erosion to occur.*
- After I work the appropriate amount of time, it would be physiologically irresponsible to "walk away" from this battlefield without "cleaning out" the results of the "hard-working" macrophages. Centripetal effleurage will flush waste from the area and aid the infusion of arterial blood.

Thinking It Through *(cont.)*

- In conclusion: I must set up a mini-battlefield of macrophages to help me perform scar work by using the body's normal inflammation process to further reduce the scar and increase local tissue mobility.

Massage Therapist Tip

The Timing of Scar Work Following Surgery or Injury

As effective as scar work is, you must use caution before beginning this aggressive treatment. Although most surgeons will tell a patient that the surgical seal should be healed in 4–8 weeks, this does not give you free rein to begin aggressive work. The scar work mantra is: "The newer the scar, the lighter the work." You could begin scar work after 2 months, but the approach would be very light, even cautious. Remember, the scar is not merely the closed-up line visible on the skin's surface; it is the damaged subcutaneous tissue that has endured assault. Scar work is highly effective and can remodel damaged tissue, even if begun weeks or months after the wound occurrence. Erring on the side of caution is the wisest course in deciding when to begin.

- ZENMED
- Kelo-Cote
- PreferON
- Scar Esthetique
- Bio-Oil
- Scar Zone
- Mederma

MASSAGE THERAPIST ASSESSMENT

A visual inspection will reveal tissue that appears paler than surrounding tissue, and/or a distinct darkened line, and/or a wavy or puckered patch of shiny or discolored skin. In any case, the scarred tissue will be easily identifiable. Digital palpation will indicate that the affected skin is slightly cooler to the touch. Tissue immediately deep to the scar may feel ropy or tough. Careful, sensitive probing into the scar may reveal varying regions of lumpiness intertwined with a tough smoothness. If the palpation causes any discomfort for the client, the massage therapist should not proceed with scar work until pain-free probing can be performed.

THERAPEUTIC GOALS

Reasonable goals for scar work performed on the mature scar during the subacute or chronic stage are remodeled scar tissue, followed by increased tissue and/or joint mobility in the immediate and surrounding areas.

MASSAGE SESSION FREQUENCY

Expert, focused scar work must initially be performed by a massage therapist. However, if a client is willing and able to learn the protocol—and to perform it several times a day—impressive results can be achieved after one instructional professional session. If the client is unwilling or unable to perform intensive, daily self-care, improvement will rest in the hands of the therapist.

- Ideally: 15- to 30-minute localized sessions at least once a week. For larger or complicated scars involving a joint, the localized work might last 30–45 minutes. (The remainder of the session can include other requested therapeutic or relaxation techniques.) These sessions must be followed by daily self-care performed by the client.
- Infrequent scar work results in no improvement in appearance and no increase in tissue mobility, other than that which occurs over time.

MASSAGE PROTOCOL

Before starting this protocol, it is important that your attitude toward the client's scar be one of positive acceptance. Many people who bear physical scars think of them as unsightly or embarrassing. Scars often also carry an unpleasant emotional history. As you release surrounding adhesions and diminish the scar's physical appearance, be aware that you are helping return the body to its highest function—not that you are in any way eradicating something that is wrong with the client's body.

Your work will be focused, detailed, and aggressive. In order to achieve the localized inflammatory process that is essential for true scar diminishment, pay attention to the effects of your work on both the local tissue and the person bearing the scar. You may cause discomfort during this protocol, but it is not acceptable to cause pain.

Step-by-Step Protocol for Postoperative Scar Following Knee Replacement Surgery

Technique	Duration
After determining the level of disrobing and comfortably positioning the client to allow for your easy access during the protocol, apply a hot pack to the scar site. Leave it in place while you perform relaxation techniques to another part of the client's body.	5 minutes
Compression, wringing, jostling, medium pressure, slowly and *non*rhythmic. Begin proximally, working within a few inches of the scar but *not engaging the scar tissue yet*. • Quadriceps, adductors, tibialis anterior, anterior soleus	2 minutes
Compression, wringing, jostling, pressure deep to the client's tolerance, more quickly *non*rhythmic. Begin proximally, working within a few inches of the scar but *not engaging the scar tissue yet*. • Quadriceps, adductors, near but not on the knee, tibialis anterior, anterior soleus	2 minutes
Range of motion (ROM), to the client's tolerance, moving to end-feel and holding the stretch • Knee joint	1 minute
Place both of your hands on either side of the knee and pull the tissue *toward the scar*. Reposition your hands in several points around the perimeter of the knee, and continue to attempt to stretch tissue *toward the scar*.	1 minute
Plucking, gentle hacking, more wringing • Tissue surrounding the scar	1 minute
Lubricate the entire knee and scar region. Effleurage, petrissage, digital kneading, medium-to-deep pressure, briskly rhythmic • All muscles, including the quadriceps, adductors, tibialis anterior, that attach at or around the patella	3 minutes
Cross-fiber friction, medium pressure, directly over and within 1 inch of the borders of the scar. Attempt to create hyperemia (redness).	3 minutes
Cross-fiber friction, deep pressure, to the client's tolerance, directly over and within 1 inch of the borders of the scar. Attempt to create further hyperemia.	3 minutes
Small circles, made by digital kneading, tracing from about 1 inch away from the scar border and circling back in *toward* the scar	3 minutes
Cross-fiber friction, deep pressure, to the client's tolerance, directly over and within 1 inch of the borders of the scar	3 minutes
ROM, moving to the client's tolerance, to end-feel. Hold the stretch. • Knee joint	1 minute

(continued)

Contraindications and Cautions

- **Wounds from incompletely healed incisions, with remaining stitches, or that appear red, puffy, swollen, or seeping should not be touched.**
- **Friction on a newer (yet healed) wound is performed more lightly than a completely healed scar site that is months or years old.**
- **Friction on a keloid scar is not beneficial and can unnecessarily irritate surrounding tissue.**
- **Do not use friction, which purposefully sets up a site of localized inflammation, on a client taking anti-inflammatory medication or blood thinners.**

Technique	Duration
Effleurage, brisk, deep • From above the knee working just short of the inguinal area	1 minute
Effleurage, slower, light pressure, almost feathering • From above the knee working just short of the inguinal area	1 minute (30 minutes, including hot pack application)
Use the remaining time to perform either therapy or relaxation techniques per the client's request. *Do not replace the hot pack on the scar.*	30 minutes

Ample warming and stretching techniques, before and after the protocol, will ensure that the tissue (and the client) can tolerate the deep techniques.

Throughout the protocol, keep one anatomic principle and one physiologic process in mind. You are attempting to stretch, move, and remodel the fascia while simultaneously causing a "false" localized inflammatory response. If you let each of these concepts underlie your techniques, your protocol will yield very positive results.

Getting Started

Have a hot pack ready for localized application before you begin. Although your initial thought might be that the client doesn't need to completely disrobe, the scar work protocol itself may last for only 15–30 minutes, leaving ample time to perform an overall relaxation massage, or work on tight shoulders or lower back. Discuss with the client the "after scar work" needs before determining the extent of disrobing.

HOMEWORK

For scar remodeling to occur, the tissue must be consistently stimulated and stretched. Weekly or biweekly massage therapy sessions will not provide adequate improvement. Encourage your client to perform self-care mini-massage sessions, ideally using vitamin E oil, at least once a day and up to six times daily for optimum improvement and tissue health. (You may find a highly motivated client willing to do anything to reduce the scarring, but overzealous work can do harm, thus the earlier discussed limitation.)

- To soften the scarred area, apply a hot water bottle, run warm water over it, or begin work directly after your shower. This step is advantageous but not essential.
- Do not work to the point of pain or discomfort. This is not a "no pain, no gain" endeavor.
- After drizzling an ample amount of vitamin E oil directly onto and immediately surrounding the scarred area, gently massage *the surrounding tissue* first, making 100 deep, firm circles. Imagine you are trying to bring blood to the scarred area, and make your circles to achieve this (Figure 34-2).
- Now, make 100 deep firm circles *directly on the scarred area*. You might feel some ropy tissue deep underneath the scar, *and this is the area you ultimately want to massage into*.
- Firmly, with an open palm, massage and rub the entire area, stroking in the direction of your heart.
- Move and stretch the limb.

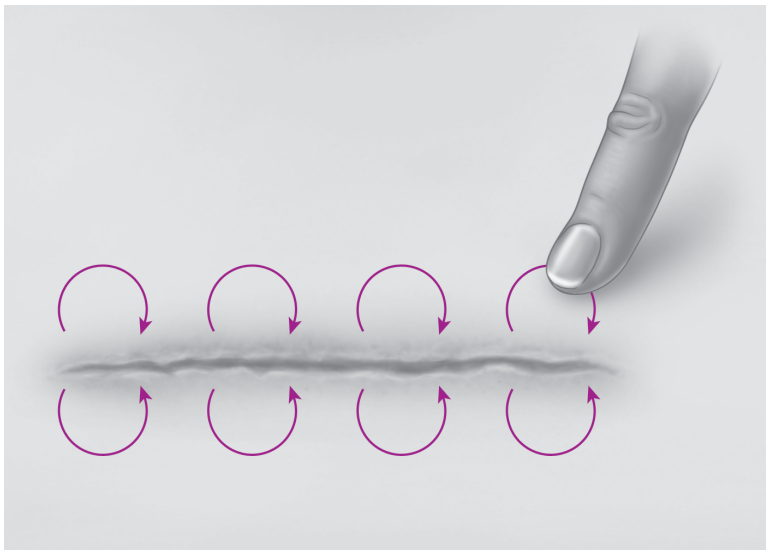

FIGURE 34-2 Massaging a scar: Make deep, small, localized circles with the fingertips, as if pushing blood *toward* the scarred area.

- Feel free to perform this exercise up to six times every day. It helps if the area you are working on becomes reddened, but do not work to the point of pain.

Review

1. What is a scar?
2. What is an adhesion?
3. What is a keloid scar, and in which populations do they most typically occur?
4. List the contraindications and cautions for scar work.
5. Explain the physiologic process behind setting up a localized area of inflammation during the treatment protocol.

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Also known as:

Radiculopathy (spinal disc extrusion compressing a lower back nerve root)

35

Sciatica

Definition: Pain in the lumbar spine region radiating from the buttock down the back of the leg to the foot.

GENERAL INFORMATION

Sciatica is not a condition unto itself; it is a collection of secondary symptoms indicating one of several possible primary etiologies.

- Causes: secondary to conditions that compress or irritate the sciatic nerve as it exits the spinal cord
- Most common cause: herniated disc in the lumbar spine
- Other causes: degenerative disc disease, piriformis syndrome, degenerative arthritis, gluteal muscle spasms, spinal stenosis, vascular abnormalities in and around the spinal cord, trauma, spinal tumor, infection, inflammation, and injury to the sacroiliac ligaments, or the gluteus medius or maximus muscles
- Risk factors: advanced age, occupations that demand constant back twisting, carrying heavy loads, or driving long distances
- Possible sudden onset
- Duration of days or weeks
- Prevalent in adults age 30–50

Morbidity and Mortality

Statistics indicating occurrence are difficult, if not impossible, to determine because of the varied etiology of the condition. It is estimated, however, that millions of Americans suffer from sciatica at some point during their lifetime secondary to a herniated disc.

Most people completely recover without treatment. Permanent damage, which rarely occurs, can be related to trauma, infection, or tumor. Possible complications are loss of feeling or movement in the affected leg and, most seriously, loss of bowel or bladder function.

PATHOPHYSIOLOGY

A short anatomic review will help elucidate why the longest nerve in the body is so often injured. The sciatic nerve originates in the lower back at lumbar vertebra L-3, where it runs through the bony canal in the spine. A pair of nerve roots exit the spine, then come together to form the true sciatic nerve, which then runs the length of the posterior leg. At the popliteal fossa, the large nerve branches into two smaller nerves called the peroneal and tibial nerves (Figure 35-1).

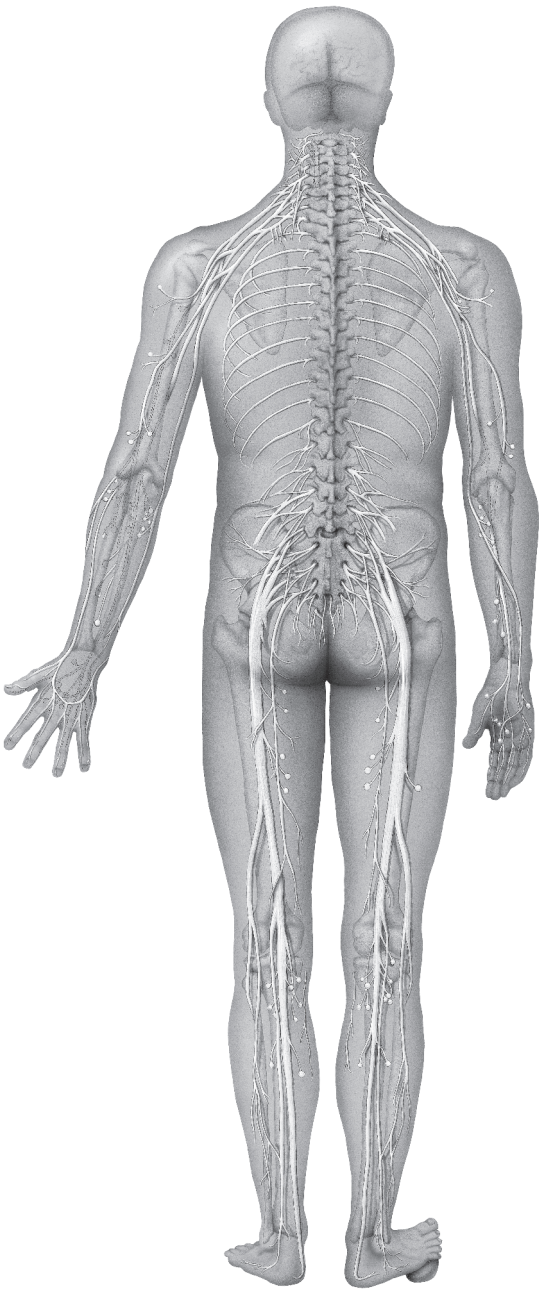

FIGURE 35-1 Spinal nerves, including the largest, the sciatic nerve. It originates in the lumbar spine and travels posteriorly down the leg and bifurcates (branches) in the popliteal fossa. Asset provided by Anatomical Chart Co.

The sciatic nerve is actually a bundle of five separate spinal nerves—at L-3, L-4, L-5, S-1, and S-2—and each one innervates a distinct path of sensory and/or motor function down the leg, thus explaining the wide variety of symptomatic presentations. Symptoms are directly related to *which segment* of the nerve is compressed or irritated. Because the nerve is so large, and since it runs through major, strong muscle masses and often lies up against bony prominences in the posterior pelvis (Figure 35-2), it is easy to see why sciatica is so pervasive.

Diagnosis is aided by a medical history, combined with a physical examination and muscle strength and reflex testing. The physical exam is followed by X-rays and an MRI and/or CT scan to determine the precise location of the sciatic nerve involvement. A confirmed diagnosis is often difficult because injury to the lower back and gluteal nerves, ligaments, and muscles can cause referred pain that mimics sciatica.

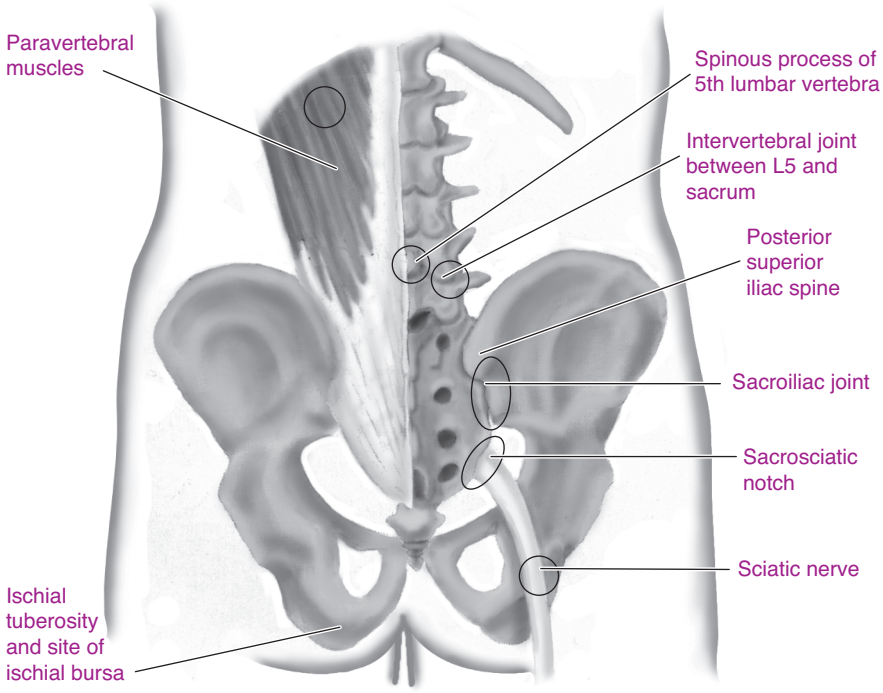

FIGURE 35-2 The location of the spinal nerve, nestled between large gluteal muscles and often running over or near bony prominences, makes it especially vulnerable for compression, injury, and inflammation. From Bickley LS, Szilagyi P. *Bates' Guide to Physical Examination and History Taking*, 8th ed. Philadelphia: Lippincott Williams & Wilkins, 2003.

OVERALL SIGNS AND SYMPTOMS

Symptoms and onset are very specific to the function of the strand of the sciatic nerve affected. For example, impingement at L-5 causes weakness in the big toe and perhaps foot drop. Or, if the sciatica is secondary to a herniated disc at L-4/5 or L-5/S-1, the symptoms will be exacerbated by squatting, sneezing, side bending, coughing, or laughing. Pain is usually unilateral and *referred*, which means that the cause of the pain originates in one location but is felt in another, usually distal, location. Symptoms include:

- Mild, achy discomfort to sharp, burning, excruciating, and shooting pain
- Numbness or muscle weakness in the foot or leg
- Burning sensation or tingling in the posterior/lateral thigh and/or leg
- Pain originating in the gluteal complex, running down the back of the leg
- Nagging, cramping sensation in the thigh
- Rarely, a loss of bladder or bowel control

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- If sciatica is secondary to nerve root compression, massage therapy can provide comfort but cannot relieve the cause of the pain.
- If, however, sciatica is secondary to a tendon, ligament, or muscle injury, massage techniques can provide relief and decrease symptoms.
- If the etiology is degenerative disc disease, muscle spasm, piriformis syndrome, or trigger points, massage therapy can provide relief (see Chapters 13, 24, 28, and 43, respectively).

TREATMENT OPTIONS

Sciatica responds well to moderate, conservative treatment that attempts to both relieve pain and prevent further recurrence. Self-care, physical therapy (PT), and over-the-counter (OTC) medications are the most effective and pervasive treatments for this usually transient but irritating condition. Self-care techniques include hot or cold pack application, exercise, stretching, and building core strength, along with taking medications. If self-care techniques fail, PT is used for rehabilitation where necessary, to correct poor posture and/or lifelong improper body mechanics, combined with stretching, strengthening, and flexing the core and back muscles. Surgery, the treatment of last resort, is performed if symptoms progress, pain is intractable, and/or bowel or bladder dysfunction occurs. Surgeries include microdiscectomy, discectomy, and lumbar laminectomy to remove the compressing disc or relieve pressure on the nerve.

Prevention includes maintaining ideal weight, exercising regularly for overall back health and core strength, maintaining proper posture and body mechanics, changing position often when driving or sitting, adjusting hip and leg position while not overextending to reach the gas and brake pedals while driving, and lifting and bending properly.

Common Medications

There are no medications targeted to treat sciatica; instead, several categories of medications are given alone or in combination in order to address the etiology and severity of discomfort and pain.

- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin, Advil)
- OTC pain and anti-inflammatory medications, to address minor symptoms
- Oral steroids, to decrease inflammation and mid-range pain
- Locally injected steroids, to reduce more severe pain
- Muscle relaxants, to address muscle spasm
- Narcotics, for intractable pain
- Antidepressants in combination with any of the preceding medications, to address chronic pain that affects lifestyle

MASSAGE THERAPIST ASSESSMENT

Although many clients will present to a massage therapist with classic signs of sciatica, it is not appropriate for her to either assess or begin work based on a verbal report from a client alone. The therapist must have a firm diagnosis of the *cause* of the sciatica before proceeding with treatment. Although a simple muscle spasm or twisting event can, in fact, cause sciatic pain, the same symptoms can also accompany a bulging disc, in which case a massage therapist could unintentionally do a great deal of harm with minimal therapy. Sciatic symptoms appear secondary to conditions as benign as muscle spasm or as serious as osteoporosis, fracture, cancerous tumor, or nerve root infection.

There are times, however, when a client is in pain and is astute enough about his own body to report something like this: "Oh, this happens every few months, it's just my sciatica acting up again." In this situation, a massage therapist's assessment of sciatica is done by asking the client to physically point out the exact origin, route, and ending point of the pain and confirm that injury or trauma *is not a possible cause for onset*. The client's response must indicate a *posterior* and sometimes slightly *lateral* path of pain and tingling/numbness. If the client indicates *anterior* thigh or leg pain, or numbness or symptoms on the dorsal (front) of the foot, the therapist is not dealing with sciatica.

Thinking It Through

Except for the earliest stages of sciatica when pain may be intolerable and bed rest or immobility is prescribed, movement is an essential treatment for this condition. Although encouraging movement when a client is in pain may seem counterintuitive, thinking through the physiology of healing and muscle spasm will clarify the importance of encouraging your client *not to remain on the couch* when suffering from sciatic pain. The therapist can consider these points:

- Remember the pain-spasm-pain cycle (see Chapter 3). Fresh, oxygenated blood to hypertonic muscles is essential to reduce both spasm and pain.
- Movement helps exchange nutrients and fluids within the spinal discs. This ebb and flow of nutrients and waste products keeps the discs lubricated, pliable, and healthy. Immobility decreases this important exchange and stiffens the discs.
- Movement increases lymphatic cleansing, thus reducing the accumulated waste products that often accompany pain, immobility, and inflammation.
- Movement can increase the production of endorphins—the body's natural painkillers.

THERAPEUTIC GOALS

It is reasonable to expect spasming muscles to relax, localized blood circulation to improve, and endorphin flow and overall mobility to increase as a result of effective and careful massage therapy techniques.

MASSAGE SESSION FREQUENCY

If pain is severe (therapy not contraindicated):

- Ideally: 60-minute sessions twice a week
- Minimally: 60-minute sessions once a week

If pain has subsided:

- Ideally: 60-minute sessions once a week

Used preventively:

- Ideally: 60- to 90-minute sessions once a month

MASSAGE PROTOCOL

The massage protocols for degenerative disc disease in Chapter 13, muscle spasm in Chapter 24, piriformis syndrome in Chapter 28, and trigger points in Chapter 43 will help you determine an appropriate protocol for treating sciatica. In addition, once you are sure of the etiology of your client's pain, any combination of the following techniques used on the gluteal complex, thoracolumbar myofascia, sacroiliac joints, proximal hamstrings, and entire lumbar spine region should relieve pain and increase mobility.

- Stimulation will increase local circulation.
- Application of hot and/or cold packs will increase or reduce circulation.
- Muscle relaxation techniques will reduce spasm.
- Relaxing techniques will release endorphins.
- Myofascial release will soften the tissue in order to allow you to work deeply.
- Trigger point work (used with caution and only if you've been appropriately trained) will release acute hypertonicity.
- Basic holding and stretching will relax muscles, release joints, and improve lymphatic flow.
- Basic Swedish techniques will soothe and relax.

Getting Started

Although therapy to the gluteal region to address sciatic problems is most often very beneficial, it takes diplomacy, tact, and patience to "get in." Most clients are understandably initially hesitant to allow prolonged work directly on such a private area. They will "hold" themselves or resist your work, which will frustrate a successful outcome. Before the client is undressed and gets on the table, it's wise to counsel him about exactly which techniques you will be using. Let him know that he'll remain draped to his comfort level. Perhaps explain a little anatomy so he understands the route of the sciatic nerve and how it must be released and, thus, your therapeutic rationale for working on his gluteals. Most clients suffering from sciatica are desperate to achieve relief and will allow you to proceed after your careful and compassionate explanation.

Step-by-Step Protocol for Sciatica

Technique	Duration
Begin myofascial stretching techniques with the client positioned comfortably prone. Work over the entire surface of the back from the base of the neck to the sacrum. Include use of your two flat hands pushing in opposite directions, deep compression, or skin rolling. Start superficially, work deep to the client's tolerance.	5 minutes
Once the client is relaxed and the back muscles have been softened, ask permission to work on the gluteus muscles. You can work over the sheet if modesty and your place of employment demands, but working directly on the skin is most effective.	
Facing your client's head, place your body-side forearm lateral to the gluteus maximus and medius. Push in the direction of the sacrum and slightly up the back. Remain stationary as your forearm firmly stays above the ischial tuberosity but deep around the bony ridges of the posterior pelvis. Rest here for a minute. You are trying to displace as much gluteal tissue as possible and help release any restrictions around the sciatic nerve while not pushing the nerve into any underlying bone. Ask your client to relax, because his natural inclination when someone works deep on the gluteals will be to hold his breath. Release after about 1 minute and continue planting and pushing your forearm along the lateral border of the gluteus maximus and medius until you have moved the entire gluteal complex. Remember, you are not gliding with this technique, but planting your forearm, pushing it deep into the tissue and then holding the tissue. Repeat on the other side.	5 minutes 5 minutes
With a soft fist, jostle the entire gluteal complex from the posterior/superior iliac spine (PSIS) to the ischial tuberosity. If the client has experienced pain in his hamstrings, include jostling of the hamstrings. This is firm, deep, and fairly rapid work. Engage all gluteal tissue. Repeat on the other side.	5 minutes 5 minutes
Knead, firm to deep, all gluteal tissue. Include the hamstring insertions on the ischial tuberosity. Repeat on the other side.	5 minutes 5 minutes
Effleurage, petrissage, effleurage, medium to deep, slow and purposeful to the entire gluteal and hamstring complex. Repeat on the other side.	5 minutes 5 minutes
Effleurage, petrissage, effleurage, all muscles of the back. Move briskly.	5 minutes
Final jostling of the gluteal complex. Slow, purposeful, medium deep stroking of the entire posterior surface of the body from the occipital ridge to the hamstrings.	5 minutes 5 minutes

Contraindications and Cautions

- **Unless the client has a history of chronic sciatica and reports that he is sure of the etiology, do not proceed in treating this condition without a firm diagnosis indicating the primary cause of the symptoms.**
- **Cross-fiber friction techniques are not appropriate if the etiology is inflammatory.**
- **Deep work is not appropriate if the etiology is a tumor or suspected cancer.**
- **Hip adduction, abduction, flexion, and extension stretches are best supervised by a PT, with regard to treating this condition.**
- **Do not perform direct work proximal to, distal to, or near an injection site (such as for a steroid injection) for at least 24 hours after the injection.**

Massage Therapist Tip

How to Ice an Injury

Inflammation often accompanies musculoskeletal injuries. To reduce inflammation, ice is most effectively applied locally within the first 48 hours of an acute injury or anytime during a flare-up of an acute or chronic inflammatory condition. Here are three safe and effective ice application techniques: (1) Perform ice massage with an ice pop. Freeze water in a paper cup into which you've placed a popsicle stick; peel the paper off the frozen pop before use. Constantly move the ice pop in a wide area around the affected area. (2) Place a few ice cubes and a little water in a plastic, sealable bag and lay the bag over the affected area; be sure to place the bag over the sheet, not directly on the skin. (3) Use a bag of frozen vegetables or fruit and follow the same instructions as in (2). Never ice for longer than 15 minutes. Allow the tissue to return to normal sensation and warmth, waiting at least an hour, before reapplying ice. Reapplication of ice is appropriate and safe if you follow these guidelines.

HOMEWORK

While remaining well within your scope of practice, you can encourage your client with sciatica to keep moving and to carry out the following homework assignments. It would serve both you and your client well to work in conjunction with his PT.

- Unless you are in acute pain or have been instructed by your physician to remain immobile, keep moving, because even limited movement is important.
- Do low-impact exercise routines that incorporate strengthening and stretching without aggravating your symptoms, such as water aerobics and/or the stationary bicycle.
- Use cold packs or ice to reduce inflammation or intolerable pain.
- Use hot packs when your pain is dull and achy.
- When taking a long drive, move your hips, rotate your pelvis, and stretch safely; stop hourly to get out and move around.
- Rather than sitting for long periods, stretch, get up, and walk around.
- Before getting out of bed, gently stretch your entire body, moving all joints, focusing on gentle stretching of your hip joints.

Review

1. Define sciatica.
2. List several common causes of sciatica.
3. Describe some contraindications for massage therapy with a client who has sciatica.
4. Name effective self-care techniques for a client with chronic low-back pain.
5. How frequently would you see a client suffering from an acute (not disc-related) attack of sciatica?
6. Why are aggressive hip stretches not appropriate when a client who has sciatica is on your table?

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36

Scoliosis

Definition: An abnormal lateral curvature of the spinal column.

GENERAL INFORMATION

- Cause in infants and adolescents: unknown
- Common causes in adults: sudden pressure on spinal discs; abnormal, persistent wear and tear on the spinal column; exacerbation from childhood scoliosis
- Less common causes in adults: degenerative disc disease, lumbar spinal stenosis, piriformis syndrome
- Rare causes: infection, tumor
- *Not caused* by poor posture, poor diet, or the use of backpacks
- Gradual onset, categorized as infantile, juvenile, adolescent, adult
- Possible lifetime duration
- Can worsen during growth spurts
- More prevalent in young girls than young boys
- Genetic predisposition
- No cure

Morbidity and Mortality

Scoliosis of unknown cause (idiopathic) accounts for 80–85% of all scoliosis diagnoses in the U.S.. The condition affects about 3% of the general population and about 10 in every 200 children between ages 10 and 15. Degenerative scoliosis usually occurs after the age of 40 and is often associated with osteoporosis. Although rare, severe complications secondary to scoliosis do occur; the more severe the initial curvature, the more likely the condition is to progress and worsen. Most instances of scoliosis, however, do not progress, and the condition is not usually life altering.

A normal spine has a curvature of 0–10 degrees. In curvatures greater than 70 degrees, the rib cage may press against the lungs and heart, substantially compromising the functioning of both. Complications from misshapen bones can include nerve irritation. Severe scoliosis can decrease a child's life expectancy from reduced pulmonary function.

PATHOPHYSIOLOGY

Scoliotic curvature can occur in either the thoracic or the lumbar spine, or both (Figure 36-1). It is generally categorized as functional, neuromuscular, or degenerative.

- *Functional scoliosis:* Characterized by a medically normal spine in which a curve is caused by a functional abnormality somewhere else in the body, such as one leg being shorter than the other or a habitual, uneven standing position.
- *Neuromuscular scoliosis:* Results from faulty bone formation often secondary to a medical condition, such as muscular dystrophy, cerebral palsy, or a birth defect.
- *Degenerative scoliosis:* Occurs in older adults and secondarily to changes in the arthritic or osteoporotic spine.

Massage Therapist Tip

Labeling Spinal Curvatures

This brief review will help you correctly identify normal and abnormal spinal curvatures. All spinal columns have a slight thoracic *kyphosis*, a normal forward bending (the spine curves posteriorly). A hunchback or pronounced forward thoracic curvature is termed *hyperkyphosis*. All backs also have a slight lumbar *lordosis*, a normal backward bending. A swayback or pronounced posterior lumbar curvature is appropriately termed *hyperlordosis*. *Scoliosis* is an abnormal, S-shaped curvature of the spine.

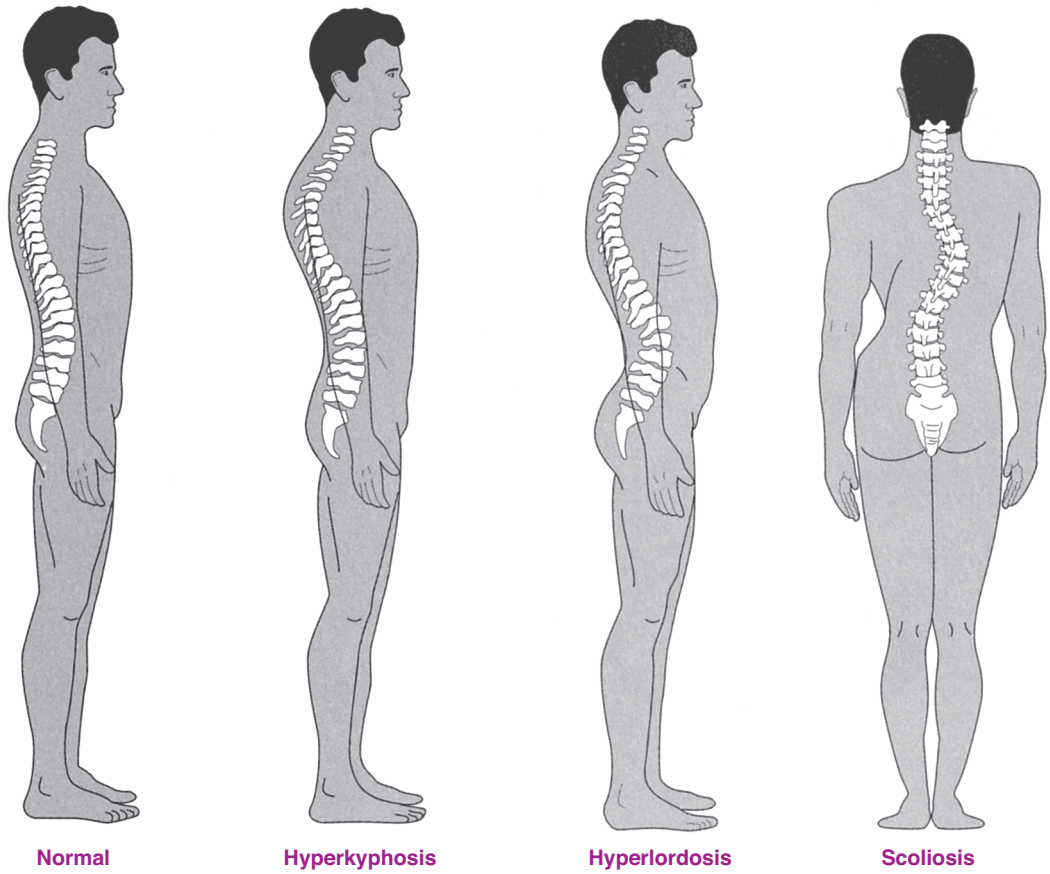

FIGURE 36-1 **(A) Normal spinal curves include gentle kyphosis and lordosis. (B) Hyperkyphosis. (C) Hyperlordosis. (D) Scoliosis. Adapted from Willis MC. *Medical Terminology: The Language of Health Care,* 1st ed. Baltimore, MD: Lippincott Williams & Wilkins, 1996.**

In response to scoliosis, the back muscles surrounding the spine attempt to hold the spinal column upright and straight. This constant (losing) battle creates muscular hypertonicity (the tense, bunched muscles will appear convex on one side of the spine) and hypotonicity (the lax, weakened muscles will appear concave on the contralateral side of the spine).

Diagnosis is confirmed by observing the person in standing and forward-bending positions. Palpation will also reveal abnormal spinal curves and musculature adaptations. X-rays and sometimes a CT scan and/or an MRI will help determine the exact position of the curvature and the effects on surrounding tissues and nerves. Questions about individual medical history will address pain progression, injuries, surgeries, bowel and bladder function, and leg pain. Scoliosis in children is now usually identified by routine school screening programs. Mild scoliosis in adults often goes undiagnosed until found by a massage therapist, physical therapist (PT), personal trainer, or astute partner.

OVERALL SIGNS AND SYMPTOMS

The pain associated with scoliosis ranges from mild to moderate to severe; it can be temporary or lifelong or it can be completely absent. Pain is most common in adults with severe or degenerative scoliosis and in children with a severe curve. This abnormal spinal curvature is often asymptomatic or mildly symptomatic in both children and adolescents. Adult signs and symptoms can be subtle and difficult to determine, because years of miniscule muscular and spinal adjustments often cause aches and pains that are considered "normal." Usually, the more advanced the age

and progressive the condition, the more prevalent the pain. An actual abnormal spinal curvature is, of course, the single most pervasive sign. Other signs and symptoms include the following:

- One shoulder or hip appearing higher than the other
- One shoulder blade protruding more
- One leg appearing longer
- One arm hanging lower
- The upper body tilting to one side
- The head appearing off-center
- A hump appearing on one side of the thoracic spine when bending forward
- A hump appearing on one side of the thoracic spine when lying prone
- Hypertonicity and hypotonicity in spinal and surrounding muscles
- Back pain
- Weakness, numbness, and/or pain in the lower extremities
- In rare cases, breathing problems, fatigue, or heart failure

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- No matter what form the scoliosis takes or at what age it becomes a problem, massage therapy's focus on relieving muscular pain and discomfort can substantially help a physician's or PT's treatments.
- In cases of functional scoliosis, the massage therapist can work to help correct habitual muscular adaptations and compensations that have led to scoliosis.
- In cases of neuromuscular and degenerative scoliosis, massage therapy can address the muscular hypertonicity and hypotonicity, joint pain, and stress that accompany any precipitating medical condition.

TREATMENT OPTIONS

The level of treatment is directly related to the degree of spinal curvature, the overall symptomatic picture, and the person's age. Treatment at any age usually cannot reverse the curve, but it can help slightly straighten a spine, slow the progression, and relieve pain and discomfort. Beginning conservatively, ongoing observation at any age is considered the baseline treatment for scoliosis. Treatment then moves to bracing and/or PT as necessary, and finally to surgery, as a last resort.

About 90% of infantile scoliosis cases resolve without treatment. Bracing, PT, exercise, and sometimes medications are recommended for curvatures of 40 degrees or less. Curves greater than 40 degrees may require surgery. In adults with osteoporosis and scoliosis, the osteoporosis is treated conservatively with exercise and medication for pain relief. Conservative treatment for adult scoliosis will not reverse the curve but can slow progression while reducing pain and discomfort.

Surgery is appropriate only for those experiencing severe pain or breathing difficulties, or for people in whom the progressive deformity is significantly compromising the lifestyle. Surgery for scoliosis involves spinal fusion with the insertion of rods and other hardware, which remain in place for a lifetime.

Common Medications

Since pain may or may not accompany scoliosis, and because any pain could be due to muscular and joint abnormalities, organ dysfunction, nerve involvement, or a tumor, there is no single medication suggested for the condition.

- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin, Advil)

Thinking It Through

This seemingly innocuous, often idiopathic condition can have profound long-term effects on the body's structure and function. A quick mental review of the domino-like effects of even a mildly curved spine will help the therapist understand the complexity of taking care of a client with scoliosis and the extraordinary attention to detail necessary for an effective treatment. Using the example of a 40-year-old female client with idiopathic scoliosis that has produced a noticeable and hypertrophic muscular hump on one side of her thoracic spine, the massage therapist can ask herself these questions:

- Which back muscles are directly affected by the scoliosis?
- What are the locations of the paraspinals, the deeper transverse muscles, the multifidi, the erector spinae, and the intercostals?
- Why would the quadratus lumborum (QL) be affected?
- Why would the gluteal muscles be affected?
- How is the diaphragm affected?
- How are her balance and gait affected?
- How might her sleeping positions be compromised?
- Might she have headaches? Why?

MASSAGE THERAPIST ASSESSMENT

Although it is outside the massage therapist's scope of practice to diagnose scoliosis, she can assess the severity of the curvature, its effects on the rest of the body, and the extent of the muscular concavity (hypotonicity) and/or convexity (hypertonicity) in order to determine an effective treatment protocol. It would be ideal for the therapist to work with a PT or a physician who is caring for the client, and even more helpful to have written reports of the X-rays and MRIs to help determine the extent of the curvature, as well as an indication of affected organs and nerves. In the absence of these diagnostic confirmations, and in cases where a client will say, "I've had scoliosis since I was a kid, it's not really serious but my back always hurts, please do something," the therapist can assess to help determine the most effective treatment plan.

- When the client walks in, the therapist notes her posture, whether one shoulder is lower, or one shoulder rolls forward. In the presence of pronounced muscular hypertrophy (enlarged muscle cells), the muscles of the back may abnormally protrude under the shirt.
- When the client is on the table, positioned prone, the therapist stands at her head and looks down the spine. One side of the spine will probably look rounded and raised (the hypertonic/convex side of the spine) compared to the other side.
- Again with the client prone, the therapist palpates down the spine by using her thumbs running along the transverse processes. A palpable spinal curve will be revealed. The hypertrophic muscles will feel much more hypertonic, and the contralateral/hypotonic/concave side will feel substantially different.
- In the supine position, the client's shoulders may not evenly rest on the table due to the abnormal spinal muscle hypertrophy.

THERAPEUTIC GOALS

The staggering number of specific muscles that are affected by scoliosis highlights the need for creating realistic goals. The client's age and onset of scoliosis further affect treatment goals. Over time, with continuous therapy, the therapist can help stretch shortened muscles, relieve hypertonicity and spasm, remove myofascial restrictions, increase breathing capacity and restricted range of motion (ROM), relieve constipation and headaches, increase circulation to hypertonic muscles, and remove waste from underused muscles.

MASSAGE SESSION FREQUENCY

Scoliosis is a lifelong condition. The client might present in childhood or adulthood, with or without pain, while actively being treated by a physician or never having seen one. The complexity of the muscular and bony involvement makes estimating the frequency of massage sessions impractical. Once begun, however, weekly massage therapy sessions will prove much more effective than sporadic work. Therapy should continue for as long as the symptoms persist, which is usually the client's lifetime.

MASSAGE PROTOCOL

As massage therapists, we are trained to look at the client holistically. This is never more important than when treating scoliosis. Because the body's basic supporting structure is compromised, therefore, everything attached to that structure is also compromised. A one-size-fits-all protocol does not exist. Instead, each client must be viewed for her particular set of aches and pains and adaptations. Using your

anatomy book to review the layers of back muscles and how each of them connect to the head, abdomen, and lower extremities will give you a much clearer picture of which treatment to choose.

Your work will be spot work, localized for each session. You could cause massive reactive spasms if you attempt to release and loosen all hypertonic back muscles at one time. Map out the client's symptoms and pains and determine a step-by-step approach to her therapy that includes her understanding of what is going on in her body and how you will both address her discomfort. Include some relaxation techniques in each session so the client is not overwhelmed with too much detailed, localized therapy.

Excellent SOAP charting will help you track progression, digression, areas treated, and the client's reaction to each session. You have a rare opportunity to treat this client for life, so your best efforts at diplomacy and patience, combined with intelligent skills, will go a long way toward making a significant difference in her quality of life.

Rather than the usual step-by-step process for treating one condition, the protocol outlined subsequently provides suggestions for more localized work, which will be your approach in treating scoliosis. Localized, sequential, carefully thought-out massage therapy performed and then assessed by the client is the best plan of action for this complicated yet seemingly simple condition. That said, there may be sessions where the client simply wants moderately firm work to her entire back, "just to relax." This will help, but be careful not to work deeply on an entire scoliotic back; spasms will result as the back's muscles unnaturally relax and then fight to right themselves again.

Although there has been a substantial amount written about how massage therapy can structurally correct scoliosis, it is not my belief that this is possible. Put in its simplest anatomic light: Bone wins out over muscle. If the (hard) bone is pulling on (soft) muscle unrelentingly, it's plain to see which structure will "win." It is up to you, the massage therapist, to understand that you cannot alter bony formations (well outside your scope of practice) but can substantially and sometimes profoundly affect the muscle's reaction to that bony abnormality. Unless the scoliosis is purely functional (secondary to bad posture), the condition cannot be corrected by massage therapy alone. It is in that spirit and with this understanding, combined with many years of clinical practice, that the following protocol suggestions are offered—in an attempt to relieve pain, discomfort, and stress and allow the body to heal to its greatest extent.

Getting Started

Positioning for client comfort is extremely important, so be sure to have plenty of pillows ready. Have hot packs and cold packs prepared. Remember to call your client the day after the first few sessions to make sure your work has not caused reactive spasms.

HOMEWORK

In an adult who is enduring mild, lifelong scoliosis, the following suggestions can help relieve pain, headaches, and/or stress. In a child with bracing or an adult with comorbidities, homework assignments are best left to the treating PT, chiropractor, or physician.

- Avoid postures that worsen your condition. Carry a backpack (making sure to keep your back upright) rather than a heavy purse on one shoulder.
- If your job demands that you sit all day, make sure your chair provides adequate support.
- If you stand all day, ask a physician about a supportive back brace.
- Breathe deeply throughout the day.
- Stretch your back daily. Go to a PT and get a set of back exercises that will help stretch your tight muscles and strengthen your weak muscles.

Step-by-Step Protocol for Adult Idiopathic Scoliosis of About 20 Degrees with No Secondary Morbidity

Technique	Duration
There is no "correct" order for the following work. You can pick and choose techniques that are appropriate for your client's needs for any given session.	All durations are to the client's tolerance and should last at least as long as it takes to feel the tissue soften and respond.
Begin and end each 60-minute session with long, slow relaxation techniques. Include effleurage, petrissage, compression, and stroking anywhere on the body at the client's request.	5 minutes to begin and 5 minutes to end the session
Apply a hot pack to hypertonic tissue, and a cold pack to spasming tissue. Be keenly aware of the tissue and client's response to the application of both heat and cold.	5–10 minutes for each
Myofascial stretching techniques. Include use of your two flat hands pushing in opposite directions, deep compression or skin rolling. Start superficially and work deep to the client's tolerance. • This work, unlike most of the following protocol, can be performed over the entire back in order to prepare it for deeper, localized work.	
Effleurage, petrissage, compression, digital kneading, muscle stripping, and jostling. Start superficially, advance to medium depth, and then work as deeply as the client will allow. Work slowly, rhythmically as you focus on *one specific area of the affected back.* • When working the splenius capitis muscles, work firmly along the occipital ridge and into the transverse process of the cervical spine. • When working the levator scapulae, work deeply into the occipital ridge and along the medial and superior borders of the scapula. Move the scapula as much as possible. • In your attempts to move the scapula, be sure to perform detailed work into the medial, superior, *and lateral* borders (you will have to work into the axilla). • When working the rhomboids, note which side is convex and which side is concave. Be sure not to stretch overstretched muscles. Digitally knead into the laminar grooves and then into the lateral border of the scapula. Use the heel of your hand to deeply work these muscles and to flush out waste. • With work on the large trapezius, be aware of all bony borders and use them to your advantage. Flow easily up into the base of the skull at the occipital ridge, move down to the top of the shoulders, glide deeply into the thoracolumbar fascia, and work into the cervical and thoracic laminar grooves. Imagine you are trying to lift this large *superficial* muscle off the back, and try to move it so you can get to the underlying musculature.	

(continued)

Contraindications and Cautions

- **Although the client will experience multiple areas of fascial and muscular restrictions, it is best not to overwork any one body part, attempt to work the entire back, or worse, work multiple regions randomly. You and the client should determine one localized region to be worked at each session.**
- **Resisted breathing techniques that attempt to hold and release the rib cage should not be performed in the presence of osteoporosis, fused vertebrae, or rib hypermobility or hypomobility.**
- **Applying heat or cold to a spine in which metal rods have been implanted is contraindicated because the metal could retain the applied temperature.**
- **Scoliosis of unknown origin that causes nerve or radiating pain might be related to an infection or tumor, and the client should be referred to a physician before massage therapy treatment.**

Technique	Duration
• On the latissimus dorsi, use compression, stripping, apply your focused forearm, and use petrissage on this large muscle. It must be softened before you can approach the underlying musculature. • Strip the finer, underlying obliques. • Imagine the small, hardworking erector spinae group and try to push them off the spine with compression, digital kneading, and stripping. Determine which side is hypertrophic and which is less developed. • Identify the QLs. Try to grip and move them as you perform detailed cross-fiber work along the bottom of the ribs and the superior crest of the pelvis.	
If you are trained in trigger point work, you will have ample opportunities to use your skills, because there will be multiple regions of long-standing hypertonicity that have created knots. Be careful not to be overly aggressive or focused, because trigger point work, performed without control and for too long, will cause post-session pain.	
The gluteal complex has worked hard to help hold the lower back muscles in response to the abnormal spinal curve. Asking the client's permission, perform deep kneading, compression, jostling, petrissage, muscle stripping, deep effleurage, and, if you are trained, trigger point work on the large gluteal muscles. Work from the sacroiliac (SI) joint, to the posterior/superior iliac spine (PSIS), down to the ischial tuberosities.	
The tensor fasciae latae will be hypertonic secondary to the gluteal hypertonicity. Use the heel of your hand or your forearm to compress, strip, and move this tough, dense tissue.	
Your client will have adjusted to her scoliosis by adapting inefficient breathing patterns. *If you are sure no osteoporosis exists in the ribs, if there is no spinal hardware, and if the client has normal "spring" in her costals,* you can perform resisted breathing exercises to both stimulate and move the diaphragm and increase thoracic efficiency.	
After one or two localized areas have been worked, ask your client to stretch her back out to the greatest ROM she is capable of while taking deep breaths. She may lie supine on the table, while spreading her arms out to either side and then bringing them over and above her head as she deeply inhales and exhales. She can also stand at the side of the table, lean over the table, and, using the table as a resisted breathing device, take several deep breaths.	
If the client is constipated secondary to an inefficiently functioning diaphragm and inactivity, offer to perform colon massage.	

- Stretch your arms out to the sides and over your head to work your chest muscles every day.
- Don't stay in one position for long periods.
- Experiment with hot or cold applications to your back (if you don't have inserted hardware).
- Even on days when you are sore, keep moving. Immobility will worsen your symptoms.

Review

1. Define the normal and abnormal spinal curvatures.
2. List muscles that may be affected by scoliosis.
3. Is scoliosis painful?
4. How is scoliosis typically treated?
5. Which medications are typically used to treat scoliosis?
6. How can you assess for the presence of scoliosis?
7. How aggressive is the massage therapy when treating this condition?
8. Would you work on the entire back at the first massage therapy session? Why or why not?

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