CAPSULITIS (ARTHRITIS)

The articular capsule forms a complete envelope around a movable joint. Each capsule is made up of two strata: a white external fibrous tissue layer (stratum fibrosum), and an internal lining of synovial membrane (stratum synoviale). The synovial membrane is a loose structure of folds composed of connective tissue, fat, and blood vessels that commonly surround the margin of articular cartilage and fill clefts and crevices created by the capsule. The synovial lining is filled with synovial fluid that acts to decrease friction created by tendon motion through the joint. The synovial cavity normally contains only enough synovial fluid to moisten and lubricate synovial surfaces. If injured, however, the synovial membrane may respond to irritation caused by inflammatories produced by the tissues (histamine, bradykinin, and prostaglandins) by secreting excessive amounts of synovial fluid. The additional fluid causes pressure within the capsule to mount, thereby causing pain and discomfort, which may be increased by motion of the involved joint or tendons.

Capsulitis may be confirmed through specific range of motion tests or DSR survey. The DSR survey will demonstrate relatively high skin resistance to be present over the joint capsule site. Additionally, there may be modest soft tissue swelling visually apparent and the joint will be hot and tender to the touch. The most commonly seen example of *capsulitis* seen in the clinic is *shoulder capsulitis.*

If unrelieved, capsulitis may progress to a state of joint disease that is usually called arthritis. Common *non-pathological* arthritis (as opposed to pathological forms like *rheumatoid arthritis*) is really a nonspecific term denoting an inflammatory joint process, without an autoimmune component, which may affect the articular cartilage and the soft tissues associated with the joint. A bony outgrowth (overgrowth) along the joint margins may also result, especially to those joints that bear weight. The resulting condition is called *osteoarthritis*.

The exact etiology of osteoarthritis has not yet been determined, but it is known that mechanical injury, atrophy of associated musculature, and various genetic factors seem to play a role in its development. Its appearance generally stems from a nonspecific, exaggerated response to an inflammatory process affecting the capsule.

With *osteoarthritis*, there is usually a slight enlargement of the affected joint with accompanying palpation tenderness along joint margins. The later stages of the *osteoarthritis syndrome* are marked by a limitation of joint ranges of motion brought on by joint changes. There may be joint pain even when the joint is at rest. Crepitation may be evident when the joint is palpated or auscultated. Loose articular fragments within the joint space may produce transient "locking" of the involved joint (most commonly affecting the knees). Moderate swelling or puffiness, and loss of normal joint contour, may become visually apparent. Irregular degeneration and loss of articular cartilage may begin to cause joint misalignment. If the spine is affected, there may be a limitation of normal ranges of motion and a localization of pain resulting from impingement on soft tissues by bony outgrowth (spurring). Radiation of pain may result if the bony outgrowths begin to impinge on peripheral nerves or nerve roots (commonly seen in association with cervical and lumbar osteoarthritis).

Symptoms of osteoarthritis are usually slow to develop, with periods of marked remission or improvement, especially with proper treatment. Additional trauma to the involved joint(s) will intensify and prolong the symptoms. Should the progress of joint degeneration continue long enough without timely therapeutic intervention, extreme disability of the joint may result. However, unlike *rheumatoid arthritis*, simple *osteoarthritis* seldom causes ankylosis of the involved joint(s), except in the spine.

Treatment

C*apsulitis* and *arthritis* have been shown to be responsive to treatment that includes ice packing, soft tissue manipulation (to break adhesions), phonophoresis of anti-inflammatories, and toning of the muscles crossing the involved joint with medium frequency electrical stimulation or isometric exercise.