feature

Stimulating Healing by Initiating Inflammatory Response

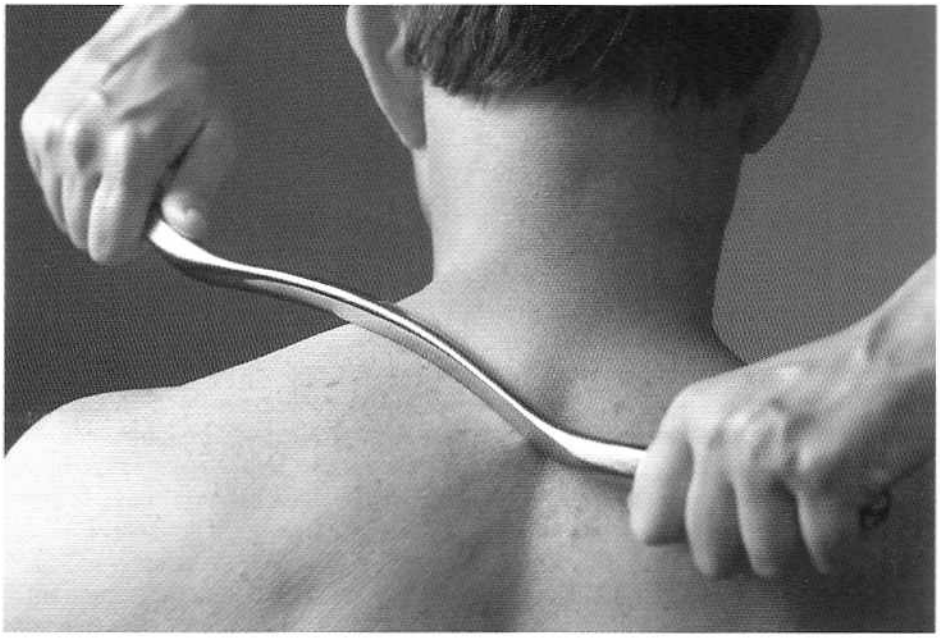
Patented stainless steel instruments aid in soft tissue treatment

Gordon E. Lawson, MSc, DC, DHN, DACBN

Dr. Gordon Lawson is president of MaxAbilitation, a multidisciplinary rehabilitation company, in Unionville, Ontario, and is co-owner of the Markham-Stouffville Designated Assessment Centre. He has been a lecturer at Canadian Memorial Chiropractic College (CMCC) and at York University in Toronto.

Stephen M. Perle, DC, MS

Dr. Stephen M. Perle is an associate professor of clinical sciences at the University of Bridgeport College of Chiropractic in Bridgeport, Connecticut and in private practice with Connecticut Chiropractic Specialists, LLC, in Milford, Conn. Further information on Graston Technique can be obtained by calling 1-866-926-2828 or visiting the web site at www.grastontechnique.com.



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One of six Graston Technique instruments, GT-1 ("handlebars") is used for muscles in the cervical region, hamstrings, quadriceps and the iliotibial band.

Though transverse friction massage (TFM) is a soft tissue treatment that has been used by chiropractors for over 50 years, its application can take a toll upon the doctor's thumbs and hands. Likewise, myofascial release is also hard on the doctor. Even though sacrificing one's own health for the well-being of one's patient is a time-honoured tradition in health care, it need not always be the case. A solution for the chiropractor and for the patient can be Graston Technique.

WHAT IS GRASTON TECHNIQUE?

Graston Technique, and its key component, Graston Instrument-assisted Soft Tissue Mobilization (GISTM), was introduced in 1994.

GISTM uses six specially designed stainless steel instruments that function as a focused extension of the chiropractor's hands. The practitioner glides the appropriate instrument – made of highly polished stainless steel, with a patented curvilinear edge – over the patient's lubricated skin. Enough force is applied to mobilize the soft tissues (muscles, tendons, ligaments and fascia) beneath. Each instrument is shaped and sized to facilitate the treatment of different body parts. The varying convex and concave design of the instruments accommodates the different contours of the body.

Graston Technique instruments are used as an aid in the diagnosis and treatment of soft tissue dysfunction or pathology. They provide tactile diagnostic feedback to both the chiropractor and patient. Unlike TFM, the instruments are moved in a multitude

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of directions and angles. Normal tissue has a smooth feel through the instruments. However, when the instrument glides over a problem area, it feels like it has become stuck in a "divot" in the soft tissue or that the tissue is irregularly bumpy, giving the sense of running over speed bumps. These divots, or "speed bumps," are referred to by Graston Technique instructors as "adhesions."

When initially introduced to the technique, both authors were skeptical that the instruments could be of diagnostic benefit, but later found them to be a great enhancement to palpation. Generally, everything the chiropractor senses with the instruments, the patient senses as well. The adhesions felt by the doctor will be identified by the patient as the location of their clinical complaint.

The various concave or convex designs of Graston instruments fit the body's many soft tissue components. GT-5, or the "boomerang," adapts to the contours of the trapezius muscle. Adhesions, restrictions and scar tissue can be felt through the patented stainless steel instruments.

The exact direction of movement of the instruments that produces an abnormal feeling seems to be specific to the individual adhesion. Often, an adhesion can be found with the instruments whereas it cannot be palpated without them. When using the instruments for treatment (GISTM), the practitioner moves them in the same vector that was originally used to locate the adhesion.

As in TFM, the practitioner can modulate force and depth to reduce the discomfort of GISTM. Studies using a rat tendon injury model have shown that healing responses are proportional to the force used.(1)

TYPICAL SESSION

A typical treatment session will start with the patient doing a cardiovascular warmup, followed by heating the local tissues (with ultrasound, infrared, etc.) and then localized GISTM for three to five minutes. GISTM treatment is followed by stretches, high repetition of low weight exercise, low repetition of high weight exercise, and, finally, cryotherapy.

Most DCs report that performing GISTM is much easier on their own hands than are any of the manual soft tissue treatments. A day of treating patients with GISTM does not result in sore hands or thumbs as would several hours of TFM or myofascial release.

HISTORY AND ORIGINS

It is often said that necessity is the mother of invention, and such was the case with Graston Technique. The instruments were developed by a competitive waterskier, who had sustained a serious knee injury that failed to respond to surgery and typical therapies. Though he found self-administered TFM to be effective, the continuous use of his thumbs and fingers resulted in carpal tunnel syndrome. Drawing upon his vocational background as a machinist, he devised the GISTM instruments. Ultimately, these steel instruments provided him with relief and increased his ROM to near normal.

Although the technique was initiated by and named after a layperson, it is now taught by teams of chiropractors, physiotherapists and certified athletic trainers.

HOW IT WORKS

Studies at Ball State University and Ball Memorial Hospital have shown that intermittent loading of fibroblasts stimulates them to both synthesize collagen and to replicate.(2-5) This may be the mechanism that is responsible for the finding that GISTM does activate fibroblasts to synthesize and replicate. (1, 6)

Over the past decade, the understanding of tendon injuries has greatly expanded. It is no longer acceptable to speak about tendonitis, since tendons generally do not become inflamed. We know now that a lack of circulation in tendons causes tendons to degenerate with use, and not in fact become inflamed. If they were inflamed, they would be more amenable to healing than in the majority of chronic tendon conditions often seen. The terms tendinosis or tendinopathy have replaced tendonitis.(7)

Treatment, in part, requires stimulating the wound-healing cycle, which starts with inflammation. GISTM, like TFM, causes what Dr. J.H. Cyriax called traumatic hyperemia, thus setting up a local inflammatory response in the degenerated tissue, which stimulates healing.

A clear understanding of the mechanism of the action of GISTM in muscle disorders is lacking. It is theorized that GISTM breaks up adhesions in muscle and between muscle and its fascia. With more superficial problems, one might compare the instruments moving the fascia to moving an air bubble from under one of those clingy stickers. As the bubble moves, the fascia detaches from the muscle beneath. For deeper problems, the instruments allow for a great depth of penetration in the tissue, and they appear to separate fascial planes.

More research needs to be conducted to improve our understanding of the effects of these instruments in clinical practice.

WHEN TO USE, WHEN NOT TO USE

In a prospective series of 1,000 cases treated with GISTM, the technique was effective in treating a broad range of soft tissue disorders including: carpal tunnel syndrome, cervical pain, de Quervain's syndrome, epicondylitis, fibromyalgia, IT band syndrome, joint sprain, lower back pain, muscle strain, painful scarring, plantar fasciitis, post-fracture pain, and tendinopathy. Treatment was effective in reducing pain and numbness, and increasing patient functional capabilities in both activities of daily living (ADLs), and work-related function. But, as with any treatment, it was not effective with all patients.(8)

TherapyCare Resources Inc., parent company of Graston Technique, has funded clinical trials to study the effectiveness of GISTM for carpal tunnel syndrome, tennis elbow and post-surgical low back pain.

CONTRAINDICATIONS

There are a few absolute contraindications to the use of GISTM, such as: open

wounds and unhealed suture sites; unhealed fractures; thrombophlebitis; uncontrolled hypertension; kidney dysfunction; patient intolerance, non-compliance or hypersensitivity; hematoma; osteomyelitis, and; myositis ossificans.

Some relative contraindications include: anti-coagulant medications; cancer, depending on its type and location; varicose veins; burn scars; acute inflammatory condition (e.g., synovitis); inflammatory condition secondary to infection; rheumatoid arthritis — if there is acute inflammation, GISTM is contraindicated because it will exacerbate the inflammation; pregnancy, because of associated inherent ligament laxity; and, osteoporosis. The patient's age is a consideration, although not specifically a contraindication. It is more important to be informed about medications, the patient's skin condition and tolerance of the procedure than just age alone.(9)

INCORPORATION INTO CHIROPRACTIC TREATMENT

Any treatment method describing itself as a panacea is one to be avoided. Graston Technique has not made such a claim and in fact encourages the use of other rational, evidence-based and appropriate treatments to be used in conjunction with it for the conditions noted above. For an adept manual clinician, it is relatively easy to learn how to use the instruments. Many DCs say they have saved their hands from the wear and tear imposed by TFM or myofascial release.

GISTM treatments generally take less than 10 minutes and are usually spaced at least one day apart, fitting conveniently into a chiropractor's current treatment plans for appropriate conditions.

More than 30 major collegiate and professional sports organizations have incorporated Graston Technique into their treatment regimes. It is part of the curriculum at chiropractic colleges including National, Northwestern and University of Bridgeport. •

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CASE STUDY: FRACTURED FIBULA AND ANKLE SPRAIN

A 21-year-old university student presented to Dr. Gordon Lawson's office with severe chronic left ankle pain. One year previously, while walking home, she had slipped on ice, fracturing her fibula and spraining her ankle medially and laterally, requiring an open reduction internal fixation (ORIF). Her ankle was put in a cast for eight weeks and she was then referred for physiotherapy.

Physiotherapy treatment for 10 months at a frequency of two to three times per week included mobilization, stationary bike, heating pad, and tubing. The patient felt there had been some modest improvement but her lower leg, ankle and foot continued to be markedly painful.

EXAMINATION

The chiropractor's examination revealed limited dorsiflexion, with tenderness to a moderate degree on palpation over the medial deltoid ligaments and all three of the lateral ligaments. There was slight muscle wasting of the gastrocnemius. The patient was neuronally intact with no evidence of numbness.

DIAGNOSIS

Healed fracture of the left fibula.

Continuing mechanical dysfunction of the left ankle due to fibrous adhesions and scarring in the medial and lateral ankle ligaments, as well as of the extensor retinaculum.

MANAGEMENT

The patient was initially managed with mobilization, manipulation, myofascial release techniques, wobble board, and tubing exercises. She was seen at a frequency of twice per week for six weeks, showing modest improvement but continued dysfunction. She was later treated on an intermittent basis, at a frequency of approximately once per month.

After becoming qualified in the Graston Technique, the chiropractor had the patient recalled. She was treated six times for specific management of the medial and lateral ligaments as well as the extensor retinaculum. The entire Graston Technique protocol was used.

On each visit, the patient was instructed to warm up on the exercise bike for 10 minutes, after which a heating pad was placed around the affected ankle, and GISTM was applied. The patient then performed stretching and low weight, high repetition exercises using tubing, followed by cryotherapy.

OUTCOME

After six visits, the patient showed marked improvement, with increased range of motion and decreased pain. She was discharged from care. At a followup six months later, the patient was found to be symptom-free.

COMMENTS

Introducing the Graston Technique to the patient's treatment plan resulted in removal of fibrous adhesions, and a rapid return to full pain-free function.