

## **Post-partum neck and back pain after C section, are we misunderstanding the sequelae of surgical scars on female body mechanics?**

### **Summary**

Back and neck pain is a common problem that is often poorly addressed using today's evidenced based approaches. Statistically speaking, according to the [ACA](#) (American Chiropractic Association), it is the leading cause of disability worldwide and is the most common reason for missed work. Statistically speaking, according to [statista](#), females are more likely to have back pain than their male counterparts. There is now growing evidence that part of this population of females may be experiencing chronic pain because of a past surgery, most notably a C-section. While most C-sections are done to assure that a birth goes as planned and avoids danger to the mother and child, the way the scar heals both on the surface and underneath the scar can cause chronic problems in the back and neck, and affect the gait of the patient in the future.

Often these problems are misunderstood as being problems of the back and neck, yet there is growing evidence that abdominal scars are affecting the body mechanics of many post-partum women. The problems can reveal themselves months or years later with symptoms of neck, back, leg pain, foot pain because the scar can adhere to muscles, organs and the mesentery in ways most healthcare providers never imagined.

This article offers some expanded knowledge for healthcare providers on how to recognize and diagnose an active, or symptom producing scar. Providers should be familiar with how to palpate and evaluate scar, how to recognize symptoms that may be scar related which are now causing back problems and suggests protocols to use early on to help the patient resolve the scar before it becomes a chronic resulting in a lifetime of pain that is preventable with early detection.

### **Introduction**

There is a growing body of evidence showing that surgical incisions into the abdominal cavity may be a common cause of chronic back and neck problems(1). After observing and treating many patients suffering from lower back pain who have had C sections, it was apparent that the surgery and the way it healed affected their body mechanics and movement patterns. Palpation under and around these scars while the patient was standing or on their side or back revealed significant motion restrictions of the pelvis, hips, hip joints and even the shoulder. These restrictions, using myofascial release to improve the flexibility of the underlying and outer scar would often result in less back and neck pain almost immediately. In some of the worst cases, puckering around the scar was noticeable by moving the leg in different directions, showing there was indeed a communication between the scar and movement.

This is a growing concern most Obstetricians and patients have not addressed because of a lack of understanding of how an abdominal scar affects the mechanisms of movement in the back, neck and extremities. The resulting symptoms in the neck, back and even the knees and hips may be noticed a few months or even years after the surgery, and it may not be apparent that these symptoms have any relationship to the scar unless it is considered in the clinical workup by the treating practitioner.

Cutting into the core muscles, and its fascia can have unpredictable consequences during the healing process, and to the future tensile strength of the region post surgically. The way it heals may depend on body mechanics, genetics, exercise, movement, preexisting conditions and exercise.

The human body is quite adaptive, however, that adaptation may result in chronic pain when movement patterns are altered and the myofascia surrounding the abdomen, the legs and the upper body respond to those changes. According to Karel Lewit, MD and Sarka Olslanska , “The importance of soft tissues for the functioning of the motor system is widely underrated.”(1).

When physicians and other health practitioners learned anatomy and performed dissections, they cut through the fascia in the lab because it was in the way of the important structures they would be tested on. They were taught the origins and insertions of muscles and at the time it was taught that individual muscles were responsible for certain movements.

Moving ahead 30 years, the science behind understanding the fascial system is slowly changing the way many practitioners who are trained in evaluation and treatment of the myofascial system evaluate and treat. Author/researchers like Myers and Stecco are showing through their writings that the fascia is an exoskeleton of sorts and is involved in standing, movement of the core, joints and extremities. Current literature now suggests that the muscles are dependent on the fascia to work, and are part of movement systems that are integrated with the nervous system.

Myers reviewed the past literature regarding the fascia and opined that while some researchers had dissected the fascia over the years, its role had never been considered important in how the motor system functioned. His book, Anatomy Trains was based on his own dissections of the fascia The superficial and deeper layers he found allowed him to portray the role of fascia in a totally different light, offering us a point of view of what fascia does and why the muscles and the fascia are almost co dependent. More recent writings suggest that there is even communication between the fascia surrounding the organs (2) and the external fascia. Further evidence suggests that inside the fascia there is a neural network according to Schleip (3) which may be responsible for how acupuncture works, and the flow of chi, otherwise known as life force in acupuncture. The growing data in the authors opinion suggests that the neuromusculoskeletal architecture of the fascia and the muscles is far more complex and integrated than most health practitioners were shown during their medical education.

Scars, or medical incision based interruptions in the fascial system can have long lasting effects on how we function, move and feel, since they may attach to deeper soft tissues including, fascia, organs, other muscular structures and even bone. The fascial restrictions that arise from the incision and how it heals creates a rift of sorts on how the fascia guides movement and how different tissues glide against each other, which is important to how we move and function mechanically in typical activities such as gait.(4) The idea of slicing through live tissue as necessary must be rethought, since there is a growing body of evidence that the incisions are resulting in symptomatic active painful scars in a significant portion of the patient population.

The typical types of incisions that are done in the abdomen are discussed in the excellent article by Robert V Higgins, MD; Chief Editor: Warner K Huh, MD Abdominal Incisions and Sutures in Gynecologic Oncological Surgery, which can be found which was featured in Medscape (5).

Medically, less invasive surgical approaches such as laparoscopy lead to better outcomes long term and reduce secondary complications (need a good reference here) . More surgeries are now done on females through the umbilicus (6) such as appendectomy and even vaginally such as kidney removal as well as hysterectomy (7) to avoid cutting through the abdominal muscles. Even with laparoscopy, as is commonly performed with endometriosis, post-surgical scarring is a common occurrence and reoccurrence, suggesting better surgical techniques may minimize scarring, but repeated surgeries may not resolve the problem (8) after new post-surgical adhesions again develop. In the case of C-sections, the typical scar cuts across the lower abdomen and is not minimally invasive, with scarring being an unpredictable consequence.

The growing interest in the fascial system has resulted in the Fascia Research Congress (9) which has grown each year, with different speakers who represent the professions that study and also perform procedures such as Myofascial Release and instrument assisted soft tissue techniques. These groups include and are not limited to Active Release Techniques, Stecco, Rolf institute, Hamer among others.

Along with previous papers that are bringing awareness of the effect of scarring from abdominal surgeries and the resulting chronic problems with lower back pain being one of the more common manifestations, most healthcare providers still have little understanding how abdominal scars are affecting their patients (10).

The scars that are responsible for pain and malfunction have been referred to as “Active Scars.(11)”

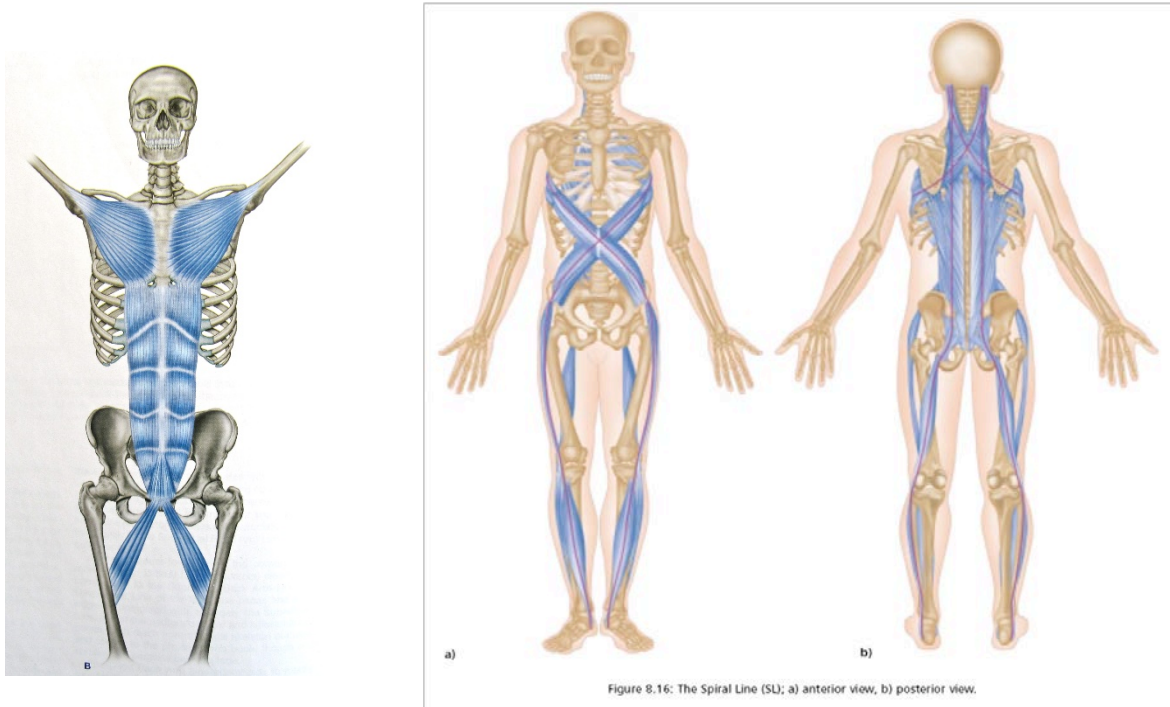
In the United States, the C – Section rate is around 33% in 2014 according to the CDC (12). It is this authors opinion after working with many of these patients that A portion of this population are likely experiencing post-partum back and neck problems that are directly related to an active scar, yet they are unaware the scar is causing problems in other parts of their bodies. They may have had physical therapy, massage, chiropractic management, injections of trigger points, surgeries or may have even been told by a rheumatologist that they have fibromyalgia. The diagnosis of Fibromyalgia is most common in women (90%), according to web MD. (13)

Lower back or neck problems are common in the female population. The fact they have a C-section scar may never have been part of the discussion when they visited their primary doctor, prior therapist or even their obstetrician due to a lack of awareness. This may explain why so many attempts at treatment fail to offer any useful long term result, resulting in billions spent for lower back pain interventions in many patients who had C-sections. (17). Is the fact they had a C-section in the history, and is the healthcare provider looking at the patient, or merely the symptom they presented with?

Patients with active c section scars may mistakenly believe that their pain is from aging, from lifting their children or just from activity or stress.

A good model for understanding the effect of an active scar is to first understand what is normal, and what is not. We evaluate x – rays and other tests using a normal base line which is compared to the current study being examined. In comparison, myofascial function has normal movement, glide and mechanical characteristics we should expect with normal variations taken into account.

Myofascial malfunction occurs in people who never had abdominal surgery, however, active scars are unique in how they affect motion in the body.



Myers talks about the anterior superficial front line (18) as well as the spiral line. His static models shows also how the fascia crosses over in the front and the back allowing for rotation. The tight restricted fascia can be easily palpated. Those who are adept at fascial treatment can feel how these areas restrict motion and affect the normal glide tissues should have against other tissues. Performing a release of the fascial restriction will improve mobility, soft tissue pliability and glide and the patient will often feel a difference as the restriction of movement is eliminated.

What if we cut into the fascia, how does this affect the fascial matrix on the surface and more importantly, how does it affect the deeper fascial planes as Myers describes as the deep frontal line (19). What does it feel like and how does it affect the stability of the core, which is essential for proper movement and is usually implicated in most functional lower back pain. Even with laparoscopic procedures, surgeons are now more concerned with tissue damage and scarring, since this affect a patient's long term outcome (20).

C section scars unlike laparoscopic procedures, due to the openness of the procedure, the law of unintended consequences from an open scar can destabilize the area resulting in active scar formation.

How can we properly palpate a scar and how can we tell there is a link to the scar and the mechanism behind lower back pain in this patient? Can a patient be given relatively early procedures post surgically minimize the likelihood that a C-section scar becomes active months or years later? While C-section may not be unavoidable in many cases and is clearly risk management, perhaps post-surgical early intervention going forward may be a helpful approach to a problem that is often poorly understood and commonly overlooked.

A scar will vary from patient to patient, with some incisions being smooth, while others can be ragged or dimpled, yet others can have a keloid formation but, that does not determine whether the scar is affecting motion of the body. In this author's experience, these scars can extend well underneath the problem area, affecting leg extension, attaching to the intestines, the muscles, the mesentery and some will even affect the diaphragm, and according to Lewit(1), the bone as well. Since each scar will vary with the type, and history (e.g. did it get infected, did it open), we need to check the patient's mobility while we are palpating the scar. Since scars and patients are all different, we as healthcare practitioners must personalize our approach to each patient during our scar evaluation.

Lewit suggests two methods which including skin stretching and folding of the connective tissue which allows him to palpate a barrier phenomenon which when properly released, brings about improved function and an improvement in a patients clinical picture. While this idea is really about improving tissue glide, what about patients who have deep scars that run in multiple directions that are much more difficult to treat? There are others publishing on this subject and more is being learned and considered as possible approaches to this growing problem (20, 21).

Schleip, in his 2003 paper, suggested the idea of fascial plasticity and its integration with the autonomic nervous system (22). Is the healed scar permanently affecting the patient's gait?

While there is no common consensus on scar evaluation, through the treatment of hundreds of these cases, pictured and described below are my methods of evaluating and palpating glide, motion restrictions or barriers and reductions in motion restrictions that may affect the gait process itself.

Healthcare providers are encouraged to try these evaluator techniques to determine whether a scar may be active and possibly be causing mechanical back and neck pain.

Position 1. While the patient is standing, the practitioner can palpate the front of the scar and contact it



just caudally from the scar, with minor traction cephalad, while asking the patient to extend and rotate. Normal functioning tissue will allow those motions, adhesions at the scar restrict movement as the patient attempts to straighten up or rotate. There can and is often tenderness at the restriction and scar line as well. Releasing the scar is a matter of contacting the restriction as the patient applies pressure in that direction of movement being tested. A patient with an active scar will be restricted in these motions and may even experience pain at the scar line or below it while you palpate. This is a positive test for an active scar. The patient should be referred to a practitioner skilled in myofascial

release of scars.

## Position 2.

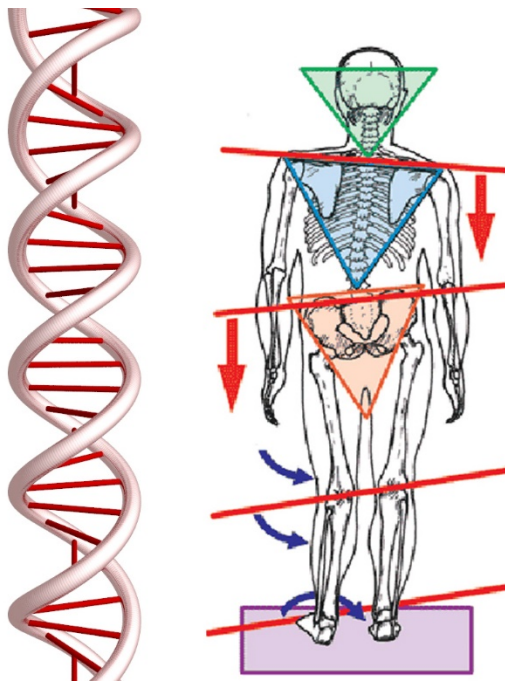


With the patient on their back, palpate with the patients knee bent underneath the scar and feel for restrictions in leg abduction, the leg in a frog leg position and the leg in flexion of 90 degrees and then abduction. Do you feel restrictions of movement underneath the scar itself? How is internal and external rotation of the hip in that position? Are there restrictions of those motion you can palpate at the scar itself.

These are three reliable positions for feeling for restrictions related to C-section scars. These patients should be referred to a practitioner skilled in myofascial release of

In the hands of a trained practitioners, think of myofascial release as a dissection of the tissues without cutting into the skin and the peritoneum. Done by hand, with the goal of treatment is to improve fascial movement, glide and perhaps neurological integrity within the tissues, without the side effect of new scarring from again breaking the skin.

### Why would we consider the upper body as well in an abdominal scar?



The body compensates in ways most physicians could not possibly imagine with reductionist thinking. If your patient has biomechanical asymmetries and has an active scar, it can distort the pelvis and affect how they walk. The compensation can look similar to a DNA strand. Conversely, when we take a step forward, the arms counter stride and there is motion that occurs through the thoraco lumbar junction to allow for the counter stride.

A C-section scar can distort mechanisms of gait in the lower back, and also cause an almost mirror image of those mechanisms in the upper thoracic region and affect the movement of the neck, the shoulders and the ribs as well.

As we age, our joints change in character and flexibility. A patient who already has mechanical problems in the hips and pelvis can be exacerbated by an active C-section scar. Will this result in the spine having degeneration patterns from years of aberrant movement in the lower body that is compensated in the upper body? Is it possible that there is a statistical link between most fibromyalgia diagnosed females and c section scars, resulting in chronic pain that has no known or understood connection?

Many different types of symptoms in the neck and back resulting from undiagnosed active scars may have been preventable had we acted early on as the scar was young and before it became tough and fibrous.

### **Conclusions.**

There is a growing database of the effects of active scars and how it affects patients and can be the potential cause for future pain and mechanical dysfunction.

After an uncomplicated C- section, six weeks is the standard healing time period for most incisions that are healing normally.

It is the authors opinion that a patients OB should check the scar at the six or seventh week for restrictions of movement. The first position maneuver is an accurate screen for possible problems created by a scar. The second can offer some clarity as to how much movement in the lower body is restricted by the active scar.

Most OB's, if they find restriction should consider referral to a healthcare provider who can perform myofascial release treatment to the scar.

The benefit to early intervention is that a young scar will respond well to movement and movement should be encouraged.

A good standard post obstetrical C-section practice would be to show your patient how to gently stretch the outside of the scar both along the width and the length after about several weeks. The scar will be sore, however stretching can markedly reduce the soreness while increasing the flexibility of the scar as it heals.

Chronic scars that are active should be evaluated and treated by a healthcare provider trained in myofascial release treatment. Instrument Assisted soft tissue treatments such as Graston can be very effective on improving soft tissue flexibility on a dense scar and it can markedly reduce the sensitivity as well.

Obstetricians need to become more aware of the mechanisms behind chronicity that can develop after C-section. Early intervention is the key to preventing future problems in their post C-section patient.

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