Journal of Bodywork & Movement Therapies (2014) 18, 501–513

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/jbmt

DETAILED CASE REPORTS

Idiopathic scoliosis: The tethered spine II: post-surgical pain

Lucy Whyte Ferguson, D.C [a,b,c,*]

[a] El Prado/Taos, NM, USA
[b] University of New Mexico School of Medicine, Pain Center, Albuquerque, NM, USA
[c] Project ECHO Chronic Pain and Headache Management, Albuquerque, NM, USA

Received 7 July 2013; received in revised form 14 April 2014; accepted 1 May 2014

KEYWORDS
Late operative site pain;
Scoliosis;
Idiopathic scoliosis;
Myofascial pain syndrome;
Chronic pain;
Fascial pain;
Benign joint hypermobility syndrome

Summary The treatment of severe chronic pain in young people following surgery for the correction of curvatures of idiopathic scoliosis (IS) is presented through two case histories. Effective treatment involved release of myofascial trigger points (TrPs) known to refer pain into the spine, and treatment of related fascia and joint dysfunction. The TrPs found to be contributing to spinal area pain were located in muscles at some distance from the spine rather than in the paraspinal muscles. Referred pain from these TrPs apparently accounted for pain throughout the base of the neck and thoracolumbar spine. Exploratory surgery was considered for one patient to address pain following rod placement but the second surgery became unnecessary when the pain was controlled with treatment of the myofascial pain and joint dysfunction. The other individual had both scoliosis and hyperkyphosis, had undergone primary scoliosis surgery, and subsequently underwent a second surgery to remove hardware in an attempt to address her persistent pain following the initial surgery (and because of dislodged screws). The second surgery did not, however, reduce her pain. In both cases these individuals, with severe chronic pain following scoliosis corrective surgery, experienced a marked decrease of pain after myofascial treatment. As will be discussed below, despite the fact that a significant minority of individuals who have scoliosis corrective surgery are thought to require a second surgery, and despite the fact that pain is the most common reason leading to such revision surgery, myofascial pain syndrome (MPS) had apparently not previously been considered as a possible factor in their pain.

Background

The studies cited below demonstrate that pain after scoliosis surgery is a significant problem and revision surgeries due to pain are relatively common and not universally

* University of New Mexico School of Medicine, Pain Center, Albuquerque, NM, USA.
E-mail address: lwf@newmex.com.

http://dx.doi.org/10.1016/j.jbmt.2014.05.001
1360-8592/

successful. In a study of 1433 adolescents conducted to evaluate pain prior to and after surgical installation of hardware to control scoliotic curvatures, 75% experienced pain prior to surgery, rated mild to severe. Two years after surgery, 41.0% reported decreased pain, 38.6% reported no change, and 17.6% reported increased pain (Landman et al., 2011). Studies show that the rate of revision surgery after primary surgery for idiopathic scoliosis varies from 4.6% to 25% and the variations probably relate to the type of instrumentation and the length of follow-up (Sponseller, 2010). The most common reasons for revision surgery are infection, increased deformity, pseudoarthrosis, implant dislodgement, and late operative site pain (LOSP). In a nine year study of 182 consecutive patients operated on for idiopathic scoliosis, 19% required revision surgery and the most common reason for reoperation, 8% (14/182), was LOSP. "LOSP was characterized by midline or parascapular pain that was made worse by direct palpation of the incision. There is usually, but not always, a pain-free interval between incision healing and onset of LOSP." (Cook et al., 2000) Of those requiring revision surgery, 71% had successful relief of pain after implant removal. This means that 29% did not have pain relief after the second surgery (Cook et al., 2000). In one study of 1046 individuals who underwent primary scoliosis surgery, 135 required second surgeries and of these, 21.5% had 2 or more separate revision procedures (Richards et al., 2006). In this study, revision surgeries were less successful than the primary surgeries. There is some evidence that some cases of LOSP are caused either by late development of infection and/or an allergic or corrosive reaction to the metal implants (Gaines et al., 2001). However, since revision surgeries to treat infections and reactions and to remove hardware fail to help 29% of LOSP patients, it follows that these explanations do not account for all of the possible causes of LOSP.

None of the studies reviewed by the author considered the possibility that myofascial pain syndrome (MPS) and/or joint dysfunction might play a role in LOSP. Considering the fact that 8% of post-scoliosis surgery patients experience pain severe enough to undergo revision surgery, and considering the fact that revision surgeries fail to address the pain in 29% of these patients, it is imperative to search for other possible causes of pain after surgery. Furthermore, as discussed below, there is evidence that hardware removal may result is some degree of curve progression. Overall, implant removal is discouraged prior to 2 years following primary surgery. In a study of 43 patients following implant removal, 41 had increase of their main thoracic coronal curvature of 10 degrees or less, and 2 had between 11 degrees and 20 degrees of progression of thoracic curvature. Nineteen patients had between 11 and 20 degree increase in thoracic kyphosis and 5 had over a 20 degree increase in thoracic kyphosis (Rathjen et al., 2007), indicating a degree of instability in several planes following removal of hardware. Since idiopathic scoliosis is not generally considered a kyphotic syndrome, the fact that over 50% of the patients in this study had a progression of kyphosis after removal of hardware raises the questions whether there are patients who have both hyperkyphosis and scoliosis and whether these patients have less successful primary scoliosis surgeries, more LOSP, and more problems with revision surgeries. The second case history in this article may be an example of just such a scenario.

In order to decrease the need for repeat surgeries, and the curve progression that may result from hardware removal, it is imperative to investigate how the primary surgery changes relationships between joints and muscles and patterns of body organization. Because none of the existing literature addresses the possibility that some patients may have difficulty adapting to these changes in joint function, muscle function, and body organization, this article is an initial exposition of this hypothesis. Prior to primary scoliosis corrective surgery, it would be surprising if myofascial tissues *did not* have asymmetrical patterns of tension that correlate with the spinal curvatures. Whether the myofascial tension asymmetries play a role in causing the development of the scoliotic curvatures or simply develop as a result of the curvatures, if the spine is tethered by asymmetrical myofascially shortened muscle and fascial tissues that conform to the scoliotic curvatures, insertion of hardware to straighten the spine likely places new stresses on these myofascial tissues. While some individuals may adapt to these changes without difficulty, others may have difficulty with this adaptation process. By the same token, joint function, particularly rib/spinal function may have been adapted to the scoliotic curvatures including the rib hump and any hyperkyphosis that was present prior to the surgery. Joint function in some individuals may adapt easily to the altered demands that result from the insertion of hardware, but other individuals may have particular difficulty with this adaptation process. Our attention should especially focus on those who do not have a pain-free period after incision healing from the primary surgery, because the lack of a pain-free period may be particularly indicative of a problem with adaptation. It is important to recognize that MPS and joint dysfunction can be so painful that patients would willingly undergo revision surgeries. If the pain that these individuals are suffering is in fact from MPS and related joint dysfunction, then it is not surprising that revision surgery would not adequately address their pain. This difficulty in adaptation of myofascial tissues and joint function would, then, be a possible explanation for the failure of revision surgery and removal of hardware to relieve the pain experienced by a significant minority of individuals after primary scoliosis surgery.

Purpose

The diagnosis and treatment of severe pain following scoliosis corrective surgery is very challenging. While some adolescents experience pain prior to surgery, others do not. When those who do not experience pain prior to surgery develop pain after surgery, and others who had pain prior to surgery experience increased pain after surgery, it is not surprising that the increased pain following the initial surgery is viewed as directly caused by the surgery, and a further surgery is contemplated to try to relieve the pain. Yet there may be extraspinal areas of joint and myofascial dysfunction that were painless or less painful prior to surgery but cannot adapt to the changes that arise from the surgery and thus now contribute to higher levels of post-operative pain. The purpose of presenting these two case