SPECIFICITY OF LIGAMENT INTERLINK FOR PATIENT WITH PECTUS EXCAVATUM: A CASE STUDY.

Olegs Suhorukovs, M.D.
Medical and educational centre “VOKS”,
Riga, Latvia

Pectus excavatum (sunken or funnel chest)

- Congenital chest wall deformity in which several ribs, typically affecting 4-5 ribs.
- The sternum grow abnormally, producing a concave, or caved-in, appearance in the anterior chest wall.

Pectus excavatum
(sunken or funnel chest)

- The most common type of all congenital chest wall abnormalities (90%), the sternum grow abnormally, producing a concave.
- Pathology occurs in an estimated 1 in 300-400 births
- Male predominance (male-to-female ratio of 3:1)
- More than 90% of cases are diagnosed within the first year of life.
- Worsening during rapid bone growth in the early teenage years.

Treatment

- For a treatment are used surgical corrections
- Massage, breathing exercises, corset are not always so effective for symptoms reducing


Case study

- A 24-year-old male, smoker, presented with chest pain and discomfort during breathing. Onset of the discomfort began two months prior to the examination. He especially felt discomfort and pain under and in the immediate area surrounding his sternum during deep inspiration. It became worse after physical activity. He had an anterior chest wall deformity affecting the 4th to the-6th ribs on both sides, having a classic concave form. He was taking non-steroid anti-inflammatory drugs (NSAID), but without pain relief.
Pectus excavatum, 24 years old male.
Case study

- The pectus exavatum was easily noted during visual examination of the patient.
- The depth of the concavity was measured to be 4 cm.
- The circumference of the thorax was measured during inspiration and rest, at the nipple line level and was measured to be 96 cm и 104 cm, accordingly.
- Spirometry was performed on the patient as well. Pre and post flow and volume were measured.
The evaluation of deep in concavity size related to outer contour of the chest.
Spirometry graph before treatment
AK procedure

- Initial manual muscle testing - N
- The first challenge (direct) was made to the thorax using a quick, manual, impulse-like challenge in the frontal and the sagittal planes
- Post-challenge manual muscle testing showed inhibition of the m.serratus anterior and m.pectoralis major muscles on the left side of the chest
The dynamic impulse challenge of left side of the chest in the sagittal plane.
Manual muscle testing of m. Serratus ant. with the dynamic challenge
The dynamic impulse challenge of left side of the chest in the frontal plane
Manual muscle testing of m. Serratus anticus with the dynamic challenge of the left side of the chest.
AK procedure

- The second (indirect) challenge technique is an indirect stimulus using a 128 Hz. tuning fork on the sternal part of the 4th through 6th ribs. A modified middle trapezius muscle on the opposite side is used as the indicator muscle.

- The middle trapezius is one of several muscles that are sensitive and may weaken when subject to stimuli (challenge) resulting in aberrant afferent input into the higher centres (by J. Shafer).

- In this case, the m. trapezius medius (on the right) was used as an indicator and became inhibited following challenge using a tuning fork on the sternal part of 4-5-6 ribs on the left side.
Manual muscle testing of m. trapezium dxt with the dynamic challenge by a tuning fork on the left side of the chest.
AK procedure

- That each challenge procedure was specific only for the muscles indicated and neither challenge would weaken the muscles of the other. The chest wall challenge weakened only the left m. pectoralis sternal and m. serratus anterior, but not the right middle trapezius.

- That challenge specificity and indicator muscle specificity are critical to a correct diagnostic and therapeutic outcome.
AK procedure

- Therapy localization (TL) was used to locate the potential treatment site.
- TL over the left 4th thru 6th ribs and intercostals spaces on the left eliminated both challenge patterns.
- The problem was due to a structural imbalance in the area underlying the TL.
AK treatment with modified ligament interlink technique

- The concept of ligament’s interlink used for this case is modified from that initially described by Shafer, who modified and improved upon the classic ligament interlink technique first described by Goodheart.

- Normal extremity ligament interlink patterns are on the opposed analogous joints, they interact in a gait movement fashion.
Modified ligament interlink technique for thorax

- The diagonally opposed ribs did not prove to be active analogues of the ribs on the left.
- The analogous area was on the right, directly opposite the 4th through 6th ribs on the left.
- This resulted in a mirror image ligament interlink pattern that had not yet been described.
- There appeared to be a symmetry principal of proprioceptive interaction between his right and left 4-5-6 rib areas.
AK treatment with modified ligament interlink technique

- The modified ligament interlink manipulation as described by Shafer, does not involve hyoid bone displacement.
- TL is made by the patient over the area in need of therapy.
- Pain, often excruciating, will be felt by the patient over the analogous area during manipulation.
- Should the TL, however, be removed from the therapeutic area, the pain during manipulation of the analogue will also disappear.
- This activation and deactivation of the analogue pain response has been described by Shafer and is an interesting and critical feature of the ligament interlink procedure.
Ligament interlink technique by Goodheart

- A diagnostic and treatment instrument for chronic joints problems.
- The technique demanded the use of a double TL in order to locate the lesion and analogous ligament (joint).
- The patient would simultaneously touch the symptomatic and non-symptomatic contra lateral joints.
- Does involve hyoid bone displacement
- The positive diagnosis was made when a weakness of strong indicator muscle was noted.
- Neither of the joints have positive therapy localization individually.
Modified ligament interlink technique by Shafer

- The specific orthopaedic tests together with testing of muscles related to joint allows to find areas with disturbances in joints and proprioceptive function. It is possible performed in direct way (method) and test muscles related to joints after structures challenges or indirect way (method) to use extensor muscle on opposite side (m.trapezius medius, for instance) during challenge by tuning fork, which disturbs vibrato-receptors of the joint. TL on affected zone restores associated joint’s muscles.

- The magnet’s south pole (kinesiological) may be used alongside or, in many instances, in lieu of, the hand TL. In this case, both classic hand and magnet TL were used to confirm the area.

- The treatment procedure was as described by Goodheart, but without the hyoid displacement.
Treatment procedure

- A treatment was done by massaging the opposite to the dysfunction corresponding point while the patient was performed therapy localizing the dysfunctional area;
- TL can also was done by the south (in AK) pole of the magnet.
- A criterion for the correct location of the treatment point was determined by severe pain in the area being massaged which went away in the absence of TL.
- Massage (digital manipulation) lasts until pain disappears, that was about from 30 till 50 seconds.
- Repeated direct or indirect methods of dysfunction evaluation do not cause weakening of the corresponding muscles.
The massage in the point related to the dysfunctional point on the opposite side with TL by patient’s hand, according to a mirror symmetry.
The massage in the point related to the dysfunctional point on the opposite side with TL by a magnet.
Results

- The patient improved dramatically immediately after the treatment procedure. The VAS consisted of 1 ball. It was 0 balls during next visits after 2 and 4 weeks.
- The visual view of pectus exavatum did not change.
- The depth of concave stated the same, 4 cm.
- The circular size of the thorax witches was measured during inspiration and rest, on the nipples line level was staid the same, 96 cm и 104 cm, accordingly.
- The flow (litre per second) of breathing air during forcing expiration was growth from 8 till 11 l /sec, as shows spirometry graphs.
Spirometry graph before treatment
Discussion

- AK practice shows that treatment based on the ligament interlink proves to be an effective means of correction of posttraumatic conditions of muscular-skeletal system (7). Well-known ligament interlinks discovered by Goodheart (5) and further developed by Shafer (6) are based on a quadruped (6) type of cross interrelationship with the principle of pointed symmetry, e.g. dorsum of the left wrist relates to the dorsum of the right foot. In this case, heterogenic gait is a determining factor in formation of these persistent neurological links between proprioceptors of the opposite parts of the body.
In the thorax ligament interlink is based on the reflex of respiration. Thus, according to the results of this case study body mapping acquires new peculiarities. Looking for therapy points we used mirror type of symmetry in which a treatment point is located on the opposite side of the thorax correspondingly to the dysfunctional area.
Discussion

- The movement is the main factor which characterise ligament interlink specificity
- Gate movement (quadruped principle)
- Breathing movement (symmetrical)
- ............... movement? What is the next?
- Any constant movement any part of the body needs the central proprioceptive control
Conclusion

- The value of this advanced ligament interlink method of treatment shows its specificity for pectus excavatum and thorax.

- This case shows a new ligament interlink relations for a thorax based on a breathing mechanism (opposite to quadruped one)
Conclusion

- The method presented can be used in consequences of injuries of the thorax, congenital and acquired deformities of the thorax, consequences of pulmonary diseases, e.g. pleuritis.

- This method and the principle of ligament interlink for the thorax significantly support and expand possibilities of the already known approach, add precision to body mapping in relation to the above mentioned interlinks, emphasize existence of various discovered and not until now discovered mechanisms for ligament interlink of different parts of the body.


Thank you for your attention