Introduction to Torticollis

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Agenda

- ✿ Definitions
- ✿ Causes / Symptoms
- ✿ Incidence/Prevalence
- ✿ Role of OT/PT
- ✿ Classifications of torticollis
- ✿ Treatments / Research

What is torticollis?

- Torticollis ("wry neck") neck is twisted and/or tilted
- Not a dx, but a set of symptoms
- Top of the head tilts to one side, the chin tilts to the other side
- Many variations of the condition

Causes of torticollis

- Congenital (present at birth)
- Acquired: muscle or nervous system injury
  - Spasming of the sternocleidomastoid, trapezius, & other neck muscles.
  - Can occur overnight
- In many cases, the cause is unknown (called idiopathic torticollis)

General symptoms of torticollis

- An inability to move the head normally
- Neck pain or stiffness
- Headaches
- Having one shoulder higher than the other
- Swollen neck muscles
- Chin tilts to one side

Impact of torticollis

Decreased head control
Limited visual tracking
Limited reaching on affected side
Preference for rolling to one side only
Delayed sitting
Asymmetrical crawling
Delayed walking
Poor balance
Difficulty feeding
Decreased tolerance to movement in space, such as swinging or sliding

PT and OT in treatment

- Assess
- Educate caregivers on what to do
- Devise stretching /strengthening program for carry-over
- Restore full neck movement to reverse / stop the progression of skull deformity, cranial- facial asymmetry, and prevent postural changes that may cause asymmetric motor development.
- Communicate between healthcare providers

Treatment geared towards

- Improving posture
- Improving associated muscle weakness through active head movements
- Gaining symmetry in movement
- Focusing on age appropriate motor skill development

Early ID and Education

- When identified and treated early, the majority of children with torticollis recover completely with no long-term effects.
- Carry-over at home leads to better outcomes.

The Term Tumor

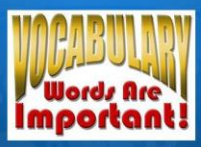
- Not a cancerous tumor, a little lump
- Unknown cause, said to resolve with or w/out tx
- Firm, moveable beneath skin (on the muscle on side of neck
- Feels like a little 'pea' when palpated
- Can be tender to touch
- Don't push too hard - it can flatten

Explain this term to caregivers

Classification Review

Why the classification review?

To get a grip on common terms so when you are reading research its not confusing.



Ways to classify type

Non-Osseous

Positional (no tightness/no tumor), Sandifer Syndrome, Congenital Muscular Torticollis

Osseous

Caused by spine malformation: Congential scoliosis, Klippel-Fiel Syndrome, hemivertebrae, occipitocervical dysfunction or cervical vertebrae dysfunction

Neurogenic

Ocular Torticollis, CNS tumors, Arnold Chiari Malformation, Benign Paroxysmal Torticollis

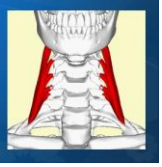
Types of congenital torticollis

No SCM contracture, normal X-Ray (positional torticollis)

SCM contracture & abnormal X-Ray (Klippel-Feil Syndrome, congenital scoliosis)

Unilateral SCM contracture, with tumor (non-cancerous), normal X-Ray (most common)

Unilateral SCM contracture, no tumor, normal X-Ray



Recall

The sternocleidomastoid originates at the sternum and clavicle and inserts on the mastoid process of the temporal bone on the same side.

There are two sternocleidomastoid muscles in the body. When they both contract, the neck is flexed.

Types of acquired torticollis

Acquired torticollis, non-traumatic without bony deformity (optical / neurological issues)

Acquired painful torticollis (cancers)

Acquired following trauma with or without bony lesion

Acquired non-traumatic, resulting in bony deformation

Expanding Definitions

The following expansion of definitions is an FYI that you can refer back to in order to help make sense of the various classifications.

Idiopathic torticollis

- Unclear what the cause is

Temporary torticollis

For most children, torticollis goes away after a day or two. All the child may need is rest, and perhaps a towel wrapped around the neck to keep it still.

Sometimes occurs when the child's lymph nodes are hot and swollen (inflamed) after he/she has had an ear infection or a cold.

Torticollis can also develop if a child hurts his/her head/neck. The joints between the bones in the neck swell and become sore.

Fixed torticollis

- Persistent contracture of cervical muscles on one side.
- Sometimes torticollis is fixed due to a problem with muscles or bone structure.
- In rare cases, fixed torticollis is caused by an abnormal area in the back part of the brain, or by a tumor in the spinal cord.
- Torticollis is sometimes caused by eye muscle imbalance or stomach acids that get into the tube that connects the mouth to the stomach (esophagus).
- The faces of some children with fixed torticollis may appear unbalanced or flattened. Children may also have mild delays in developing the ability to use their muscles.

Muscular torticollis

- Muscular torticollis is the most common type of fixed torticollis.
- It happens when the child's neck muscles are especially tight on one side, or if something has caused scarring on one side of the neck.
- The tight muscles or scarring can cause the child's head to tilt to one side.

Klippel-Feil Syndrome

- Klippel-Feil syndrome: bone disorder. Abnormal fusion of two or more spinal bones in the neck. Present from birth. Major features: short neck, appearance of a low hairline at the back of the head, limited ROM in the neck. Most affected people have one or two of these characteristic features.

Co-Morbid Conditions

- Hearing difficulties, eye abnormalities, cleft palate, abnormal kidneys or reproductive organs, heart abnormalities, or lung defects that can cause breathing problems. Skeletal defects including arms or legs of unequal length (limb length discrepancy), which can result in misalignment of the hips or knees.

Our Main Focus

Congenital Muscular Torticollis

Congenital muscular torticollis

- The child displays limited ROM in head / neck
- Head tilts to one side while chin tilts to the other due to sternocleidomastoid muscle issue
- Small, pea-sized lump is sometimes found on the sternocleidomastoid (SCM) muscle
- Asymmetries of the head and face, indicating plagiocephaly, may also be present
- Musculoskeletal problems, such as hip dysplasia, are often present

CMT: Prevalence & Incidence

On the rise…..

1 in every 300 live births (Luxford et al., 2009)

Incidence of CMT is reported as 0.017% to 1.9% in infants (2006)

Occurs in 0.4 to 3.94% of births (Lee et al., 2011, Petronic et al., 2010, Öhman A., et al., 2011).

Nichter (2016)

Early intervention for a child with congenital muscular torticollis at less than 1 month of age yields a 98% success rate by 2.5 months of age, with the infant achieving near normal ROM.

Intervention initiated at 6 months of age or later can require 9 to 10 months of therapy with less success in achieving full ROM of the cervical musculature.

Risks of No Tx

- Scoliosis
- Intermittent head tilt
- Craniofacial asymmetry
- Surgery if torticollis is discovered after 1 year of age

Left vs. Right Torticollis

Left Torticollis: tight LEFT SCM muscle, side-bending to the left and rotated to the right

Right Torticollis: tight RIGHT SCM muscle, side-bending to the right and rotated to the left

Rotation might be minimal and side-bending may more more pronounced

Common Occurrences

Plagiocephaly

Plagiocephaly: abnormal skull shape

Some Facts (Vimmeran, 2006)

Can lead to facial deformities

Congenital muscular torticollis can lead to plagiocephaly

Plagiocephaly can be present without torticollis

Plagiocephaly can lead to positional torticollis

Plagiocephaly CANNOT cause congenital muscular torticollis

Comorbid Conditions

Some associated problems related to torticollis include:

- Delayed motor development
- Visual disturbances (visual field, astigmatism)
- Orthodontic and jaw problems (TMJ)
- Auditory problems
- Oral motor problems (jaw/tongue alignment, muscle strength)

Research on Associated Issues

Changes in the skull and facial structure (Jeong, Min, Woo & Yim, 2015; de Chalain & Park, 2005; Oh, et al., 2009; Omidi-Kashani, et al., 2008; Yu, et al., 2004)

increased risk for early motor milestone delays (Öhman, Nilsson, Lagerkvist, et al., 2009; Schertz, et al., 2008)

Transient motor asymmetry (Watemberg, Ben-Sasson, & Goldfarb, 2016),

Hip dysplasia (Minihane, et al., 2008; von Heideken, et al., 2006; Walsh & Morrissy, 1998).

Changes in the skull and facial structure have been associated with early neurodevelopmental delays (Schertz, et al., 2008), particularly in motor skills (Speltz, et al., 2010), and an increased need for special services in school (Miller & Clarren, 2000).

Theories on Cause

Birth Trauma during the delivery

Birth Positioning

Intrauterine head positioning

Compartment Syndrome on SCM muscle

An Opiod Link?

McAllister (2018)
Cincinnati Children's Hospital Medical Center

A recent study of infants born in withdrawal second to opioid exposure in utero shows a dramatic increase in torticollis. Many of the infants also had plagiocephaly.

Unclear whether opioid exposure in utero was the cause of torticollis.

- These infants have hypertonia (tightness of their muscles) which may predispose them to torticollis.
- May be due to their positioning and swaddling to keep them calm and happy after birth.

Torticollis Treatments

Treatment Umbrella

- Applying heat, massage, PT/OT/chiropractic care, traction, stretching exercises, neck braces
- In serious cases, surgery is needed. A doctor can do several things:
  - Fuse abnormal vertebrae
  - Lengthen neck muscles
  - Cut nerves or muscles
  - Deep brain stimulation to interrupt nerve signals (used only in the most severe cases of cervical dystonia)

Medical Treatments

Medications

- Muscle relaxants
- Medications used to treat the tremors of Parkinson's disease
- Botulinum toxin (Botox) injections repeated every few months
- Pain medications

PT/OT Gold Standard Treatments

AROM

PROM

Positioning

Tummy time

Righting Reactions

TOT Braces / Orthosis

Home program of exercises and stimulation activities

Treatment

Through educating parents: they need to carry over what you do

Evidence for using a Home Exercise Program

Öhman, et al., 2011 found that the active participation of caregivers in a handling program provides strong support for the effectiveness of HEP.

Strengthen

Öhman, Mårdbrink, Stensby, & Beckung (2011) show that handling strategies combined with strength exercises are effective as the sole intervention for improving muscle function in infants with CMT.

Treatment

Stretching through Play

Treating through Play

- Play in a variety of positions, including prone (on the tummy), lying on the side, sitting, and supported standing.
- Tummy time is particularly important for babies to develop the ability to lift and turn their head in both directions without their head being in contact with the supporting surface of a crib or seat.

Tummy Time

Tummy time: Place the infant on their tummy and place toys to the opposite side of where the infant normally looks. Encourage the infant to look to that side by:

- Blowing bubbles for them to reach out to
- Use peers or siblings to entertain them
- Activate musical toys
- Look at themselves in a safety mirror
- Tickles, songs, funny faces

Ohman et al. (2009)

Among other variables, they looked at whether the time spent in a prone position had any influence on motor development.

82 infants with CMT (35 females and 47 males) were compared with 40 healthy infants (18 females and 22 males).

The CMT group achieved early motor milestones significantly later than the control group until the age of 10 months.

The risk of delay seems to be more strongly associated with little or no time prone when awake than with CMT.

Tummy Time Video

https://www.youtube.com/watch?v=M3rCtW9DMD4

Tell Caregivers

Tummy time strengthens the neck, shoulder, arm, and back muscles, in addition to preventing flattening of the back of the head.

At least 15 minutes, 4x's a day.

If the baby is unable to tolerate the full time, use shorter intervals of tummy time, with increased frequency throughout the day.

Supporting the child on one's chest, across the lap, or propped on a pillow helps the baby tolerate tummy time better.

Tell Caregivers

It is important that your baby is always awake and supervised during tummy time.

Rolling

Rolling: Encourage the infant to roll towards the tight side, first on flat surfaces then on inclines. This exercise can be incorporated during:

- Diaper changes
- Changing clothes
- Tummy time

Righting Reactions: 3+mo's

Head/body righting reactions: Make a game of holding the infant facing you at eye level. If they are heavy, you can rest their bottom on the top of your knees. Slowly tilt the infant towards their tight side. As you slowly tilt them back to eye level, encourage them to bring their weak side up by:

- Chat with the infant
- Sing songs (e.g. I'm a little teapot)
- Make funny faces
- Make silly noises

Righting Reactions

You can use a yoga ball for this as well.

Also tilt forward and backwards (in addition to side to side)

The goal is for the baby to keep their head in midline

Righting Reactions

https://www.youtube.com/watch?v=8BwjnkKWIdY

AROM: @3 mo.'s

Infants track at 3-4 months old (black, white, red are better tracked)

Move your face from side to side

Try in sitting/supine/prone

Engaging Toys Video

https://www.youtube.com/watch?v=1GQI85tiZHI

Side Lying Play

Side lying allows gravity to do some of the work of stretching the neck and bringing the hands to the middle of the body.

Side Lying Stretch Video

https://www.youtube.com/watch?v=xHn6aN0lK8A

Teach Caregivers

Tell Caregivers

Babies often play by bringing their hands together and their feet up to their hands. Encourage the baby to reach for toys and rattles equally with either hand.

Tell Caregivers

Toy placement influences the direction in which the baby looks. You want to place toys on both sides of your baby so that they are able to actively look to both sides.

Perform this activity with the baby on his/her belly and back.

Toys with sounds and lights are especially helpful.

Treatment

through stretching

Note

Manual stretching is the most common tx

No consistent formula reported to determine the intensity of stretching to improve PROM, nor consensus on the techniques to perform the stretches.

The frequency of stretching sessions per day, # of repetitions, and duration of stretches /rest periods, and the # of individuals required for the stretches vary across studies.

Trend: more frequent intervention throughout the day, every day, has better outcomes.

Evidence for:

Controlled Manual Stretching

Cheng et al. (2001)

821 infants with CMT

Given a standardized program of manual stretching (passive stretching)

Followed for a mean of 4.5 years

Before treatment, patients were classified into one of three clinical groups: (1) palpable sternomastoid tumor, (2) muscular torticollis (thickening and tightness of the sternocleidomastoid muscle), and (3) postural torticollis (torticollis but no tightness or tumor)

Cheng et al. (2001)

The Bottom Line:

Controlled manual stretching is safe / effective in the tx of congenital muscular torticollis when a patient is seen before age one.

The most important factors that predict the outcome of manual stretching are the clinical group, the initial deficit in rotation of the neck, and the age of the patient at presentation.

Lu et al. (2017)

Compared short-term efficacy of 2 dosages of stretching treatment on the clinical outcomes in infants with congenital muscular torticollis.

Prospective randomized controlled study

50 infants with CMT were randomly assigned to 100-times stretching group or 50-times stretching group (stretch on affected sternocleidomastoid muscle).

Assessed at baseline and 4 and 8 weeks after treatment.

The sternocleidomastoid muscle growth analyzed by the thickness ratio of sternocleidomastoid muscles was measured using ultrasonography at baseline and 8 weeks after treatment.

Lu et al. (2017)

Results:

The 100 x's stretching group showed greater improvement compared with 50-times stretching group in head tilt and cervical passive range of motion at 4 and 8 weeks after treatment ($P < 0.05$).

The Bottom Line:

The stretching treatment of 100 x's per day is associated with greater improvement in head tilt and cervical passive range of motion.

Stretch

How to stretch

Caution

Stretches should never be painful

Stop if the infant resists

Low intensity, sustained, pain free

When you stretch

Keep child calm

Hold stretch for at least thirty seconds

Repeat 10-15 times per day

Rotational Stretch

Rotation stretch: Gently hold the infant's shoulder down and gently rotate the infant's head all the way to one side until the chin is over the shoulder.

Hold this position for 30 seconds. Repeat 2-4 times. Do this exercise 3-4 times a day.

Tips for the Rotational Stretch

Remember to use some tricks like:

- A musical toy
- Looking in a safety mirror
- Reach for a household pet
- Carpeted surface
- Having a caregiver, peer or sibling play peek-a-boo

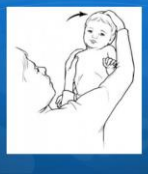
Video

https://www.youtube.com/watch?v=wJ12ol2Nk0k

Side-Bend Stretch

Side-bend stretch: When holding the infant's shoulder down and gently, but firmly, side-bend the infant's ear to the same shoulder.

Hold this position for 30 seconds, as tolerated by the baby. Repeat 2-4 times. Do this exercise 3-4 times a day.



Side Bend Stretch Video

https://www.youtube.com/watch?v=cN_vkPbifs4

Tips for the Side-Bend Stretch

Encourage the infant to maintain this position by encouraging the caregiver to:

- Blow "raspberries" on the side of the neck that is being stretched
- Give "Eskimo" kisses to their infant's nose
- Kiss the baby on the side of the neck that is being stretched
- Chat with the infant
- Sing songs so that the infant watches the caregiver's face

Video of Stretches

https://www.youtube.com/watch?v=MtrBQH7bBUM

2 Person Stretch

Torticollis on the right

Person one stabilizes the shoulders. person two does the stretching.

Cup left side of face.

Support skull with the right hand under the occipital.

The left hand is placed on the chin (for right rotation and left lateral flexion)

Slight traction is given and then a right rotation is performed over the available ROM.

Hold for 10 seconds.

The lateral flexion stretch is also initiated with a slight traction, followed by slight forward flexion and 10° of right rotation. Then the head is moved laterally, so that the left ear approached the left shoulder.

Two-Person Stretch (not a great video)

https://www.youtube.com/watch?v=esnoChe9Ln8

Treatment

Through holding positions

Treatment through Positioning

- To encourage active movement of the neck in both directions, present toys to the baby on the non-preferred side. Be aware of how the baby is placed onto the changing table or in the crib, and position them so that they turn towards the non-preferred side to look out towards the middle of the room (towards people).
- When you carry the baby, be aware of how you are holding them to discourage the natural head tilt.

Teach Caregivers

Football Hold

Football hold: For example, if the infant has left torticollis, the infant's left ear rests against your left forearm as they face away from you. Place your other arm between the child's legs and support the child's body. Encourage caregivers to carry the infant in this hold as much as possible.

This next video shows the "Football hold" – a great way to hold a baby with Torticollis to stretch the tight side (tight side is against the caregiver's forearm):

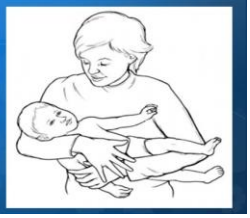
Football Hold Video

This video shows the "Football hold" – a great way to hold a baby with Torticollis to stretch the tight side (tight side is against the caregiver's forearm):

https://www.youtube.com/watch?time_continue=3&v=LxGenW5EHxU

Carrying Position: Variation of the Side Bend

Right ear rests against right forearm. Forearm is placed between the child's ear and shoulder. Use the forearm to lift the child's head away from the shoulder to get a side-bending stretch. Place the left arm between the child's legs. Support the child's body and grasp the right shoulder with the left hand.



Carriers

Tell Caregivers

Carriers (car seats, swings, strollers, bouncers) create contact with the back of the baby's head. This is ok for short periods of time.

Important to change positions in order to avoid prolonged pressure on the back of the head.

Change the position of carriers to encourage the baby to look in different directions.

Front baby carriers can be used when support is provided for the head and neck for young infants. Once good head control is achieved, the child may be placed facing away from parent in the carrier. It is recommended to carry your child in your arms often.

Avoid

Toys like bouncers and exer-saucers

Letting the baby sleep in a poor postural position

A Tip

Instruct parents in positioning the child in car seats, etc. Use small rolls to get the head in midline.

If the rolls fall, place them under car seat material.

Feeding

Feeding Tricks

Feeding: When bottle feeding the infant, present the bottle so they look opposite to their preferred side.

- Hold the bottle towards the tight side
- Encourage the infant to finish the bottle in this position

Tell Caregivers

Interchange the arm with which you hold the baby during feeding. Whether breast or bottle feeding, it is important to change positions for each feeding session in order to provide an opportunity for the baby to turn his or her head to either side.

Sleeping

Tell Caregivers

When you place the baby on his/her back to sleep, alternate the side to which the head turns.

Custom Neck Orthosis

Tubular Orthosis for Torticollis: TOT Brace

Used when:

- Head tilt greater than 5 degrees
- Child is older than 4 months of age

Important to check for redness that persists after 30 mins

Evidence for: Custom Neck Orthosis

Sytsma et al. (2016)

Case study

32-month-old boy presented with refractory congenital muscular torticollis (CMT). Some mention about a single episode of BoNT-A injections to the right upper trapezius muscles.

The study concluded that the improvement of the patient's refractory CMT has been shown with use of a custom neck orthosis following BoNT-A injections.

Bottom line: the orthosis can play a role with other supports

Supplemental Interventions

There are various supplemental interventions:

Microcurrent Therapy

Taping

TAMO approach

TOT collars (gets classed here)

Botox

Microcurrent Therapy

Kim, Kwon, and Lee (2009)

Microcurrent therapy: "low-intensity alternative current" which is delivered at 100-200 microamperes, and is thought to restore homeostasis of $Ca^{2}+$ within the muscle.

Six sessions of microcurrent therapy applied to the SCM to six sessions of manual stretching in 15 infants with CMT.

The group that received microcurrent had significant improvements in head tilt angle, rotation range, and reduced incidence of crying compared to the group that received manual stretching.

TAMO THERAPY

Tscharnuter Akademie for Motor Organization (TAMO) therapy is a therapeutic approach based on dynamic theories of motor control. Research evidence supporting this approach is limited.

This approach emphasizes environmental forces and conditions that exert an organizing influence on motor patterns. Rather than correcting movement patterns directly, the therapist applies forces and torques which contribute to the spontaneous formation of adaptive motor patterns. In contrast to neuro-developmental and neuro-physiological techniques of facilitation and inhibition the TAMO therapy approach provides sensory feedback of only those forces that are associated with unassisted, self-initiated movement patterns.

Evidence for TAMO, Rahlin (2005)

A case report

Examined the use of TAMO therapy in an infant with congenital muscular torticollis (CMT). The patient was a 4.5-month-old baby boy (corrected age) with left CMT.

Intervention included TAMO therapy, AROM exercise, soft tissue mobilization, and parent instruction. Changes in the amount of lateral head tilt were documented using still photography

The Bottom Line

This case report is the first attempt to describe a successful application of TAMO therapy as a major component of physical therapy intervention for an infant with CMT.

Kinesiology Taping

Evidence for: Kinesiology Taping

Kinesio® Tape is designed to stabilize an injured or painful joint through its application on the surrounding muscle (Kinesio-USA, 2010).

Supporting Research

Powell (2010) found 3 case studies noting that kinesio taping may decrease treatment duration (second to longer lasting efficacy with Kinesio application)

Öhman (2012) noted that kinesiotaping had an immediate effect on muscular imbalance in children with congenital torticollis.

Giray et al. (2017)

Prospective, single blind, randomized controlled trial.

Infants with CMT aged 3-12 months.

Interventions:

Group 1: 11 infants who only received exercises

Group 2: 12 infants who received kinesiology taping applied on the affected side by using inhibition technique in addition to exercises.

Group 3: 10 infants who additionally received kinesiology taping applied on the unaffected side by using facilitation technique and on the affected side by using inhibition technique.

Giray et al. (2017)

Significant differences for all of the outcome variables in all groups except cervical rotation in Group 3 ($P<0.05$).

No significant differences were found between groups at any of the follow-up time points for any of the outcome variables ($P>0.05$).

Bottom Line: There is no any additive effect of kinesiology taping to exercises for the treatment of congenital muscular torticollis. Also different techniques of applying kinesiology taping resulted in similar clinical outcomes.

How to Learn Taping

Get certified through coursework

Learn to tape:

If you want to get certified: https://kinesiotaping.com/education/become-a-certified-kinesio-taping-practitioner-cktp/

https://learn2tape.com/

Botulinum Toxin Type A

BOTOX

Evidence for:

Botulinum Toxin Type A

Joyce & Chalain (2005)

15 patients, idiopathic muscular torticollis & positional plagiocephaly. All responded poorly to conservative treatment (physiotherapy, stretching exercises, or use of a helmet).

Goal: To avoid progression to surgical release.

Patients were treated with botulinum toxin injected into the affected SCM and subsequent additional physiotherapy.

Joyce & Chalain (2005)

Results:

14 of 15 children obtained sufficient improvement in neck range of motion and head position as to make surgical release of the muscle unnecessary.

The examiners concluded that use of botulinum toxin is a safe and effective adjunct to physical therapy in treating recalcitrant idiopathic muscular torticollis.

The Dicey

Soft tissue massage

Craniosacral therapy

Total Motion Release

Feldenkrais

Positional Release Therapy

TMR = Total Motion Release for Tots

A *modified version* of Total Motion Release.

Focuses on achievement of functional outcomes. A modified positional release concept that uses a evaluation and feedback system to assess and treat postural asymmetry in order to achieve objective improvements in functional outcomes.

https://tmrseminars.com/what-is-tmr-tots/

Positional Release Therapy

video:
https://www.youtube.com/watch?v=uZpJZuOVYmI

What if they miss the boat? Omidi-Kashani et al. (2008)

Prospective study to determine the efficacy of surgery in neglected adult cases.

Omidi-Kashani et al. (2008)

Bipolar release was performed in all patients.

10 males, 4 females. The age ranged from 18 to 32 (average 21.9) years. Mean follow-up period was 2.5 years (range 1–5 years).

Excellent results noted in 7 patients, good in 5, and poor in 2 patients. Significant improvement (>10°) of the cervico-thoracic scoliosis was noted only in 3 of 10 patients.

The Bottom Line:

Patients with congenital muscular torticollis can benefit from surgical treatment even in adulthood. Surgery restores neck ROM and resolves head tilt; therefore it can improve the quality of life.

The procedure is an effective and relatively complication-free method.

Thank You

reach me at: otkidsmass.com

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