



CONGENITAL MUSCULAR TORTICOLLIS: SURGICAL MANAGEMENT WITH UNIPOLAR RELEASE

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Dr. Vikas Sikarwar (MS) ENT Assistant professor ENT Department Govt. Doon Medical College Dehradun, Uttarakhand 248001

Dr. Ravindra Singh Bisht (MS) ENT Professor & Head Department of ENT Govt. Doon Medical College. Dehradun, Uttarakhand.

Dr. Arjun Singh Doshad (MS) E.N.T Assistant Professor Department of ENT Veer Chandra Singh Garhwali Government Institute of Medical Science and Research Srinagar Garhwal, Uttarakhand.

Dr. Amit Shah* (MDS) Oral And Maxillofacial Surgery Associate Professor & Head, Department of Dentistry Government Doon Medical College. Dehradun, Uttarakhand 248001
*Corresponding Author

ABSTRACT

Aims: To evaluate effectiveness of unipolar release in patients of congenital muscular torticollis. Settings and Design: Observational descriptive study design. **Methods and Material:** 4 cases of congenital muscular torticollis were surgically managed with unipolar release and outcome analysed. **Statistical analysis used:** Descriptive **Results:** All four patients had a neutral head position; full range of neck rotation and lateral flexion with no complications. **Conclusions:** Congenital muscular torticollis should be differentiated from other causes of torticollis. Initial management is conservative, if it fails then surgical treatment is recommended. In our experience unipolar SCM release with division of both sternal and clavicular head of SCM is easy and safe surgical technique for the treatment of CMT and Postoperative physiotherapy has an important role in preventing recurrence

KEYWORDS

Congenital muscular torticollis (CMT), Unipolar release, Physiotherapy.

INTRODUCTION

Congenital muscular torticollis is a congenital musculoskeletal condition characterized by Head tilt towards the affected side and chin rotated toward opposite side due to short and taut sternocleidomastoid muscle, long term effects are craniofacial asymmetry and deformity of skull [1]. CMT is a rare condition with incidence of 0.3% to 1.9% of live births [2].

The etiopathogenesis of CMT is still unknown, although several theories have been proposed for its occurrence: Possibly, It is secondary to an intrauterine or perinatal trauma causing SCM injury that leads to ischemia and fibrosis; several obstetric and perinatal factors like, firstborn child, breech presentation, multiple gestation or dystocic delivery, possibly causing trauma to SCM and subsequent development of CMT.

Initially, the management of CMT is primarily conservative, consisting of: physiotherapy, environmental modification and positioning methods. If conservative treatment fails, then surgery is indicated. Various surgical procedures are advised for management of CMT includes, unipolar SCM muscle release, bipolar SCM muscle release, Z-plasty and radical resection of the SCM and endoscopic methods; each has its own advantages and disadvantages [2]. CMT is often under diagnosed and referred for evaluation and treatment at later stage, compromising functional and cosmetic prognosis.

PATIENTS AND METHODS

Case 1: A patient 5 years old boy from hilly areas of Uttarakhand presented with tilted neck toward left side and restricted head movement since birth. For which he took conservative treatment but did not have any relief. On examination neck was found tilted toward left side with chin deviated toward opposite side (Fig 1a). Flattening of face was also there. On palpation taut, Cord like thick band of SCM Muscle was noticed. Patient was further investigated, USG neck, X-ray cervical spine was done to rule out any other pathology. Neurological, orthopedics and, ophthalmology examination did not yield any other deficit. Diagnosis of congenital muscular torticollis was made and Patient was planned for surgery. Uni-polar release was done. Post operatively hard collar was applied and physiotherapy was started on 2nd post op day. Patient was followed for 6 months postoperatively. Neck deformity was completely Corrected with full range of motions.

CASE 2: 4 year male child reported with bent neck soon after birth. Patient took physiotherapy for the same with no appreciable benefit. After detailed clinical examination and investigations unipolar release of left side SCM muscle is done releasing its both the heads, followed by the hard collar application and physiotherapy. Patient was followed for 1 year, neck deformity was completely corrected with full range of motion.

Case 3: 11 Year old Female child presented with bent neck since birth for which she took physiotherapy with no appreciable benefits. Patient had bent neck towards right side and chin tilted toward opposite side. Phlagiccephaly was present. After detailed examination and investigation. Unipolar release was done, lower end of SCM both ends are released. Post operatively on day 2 hard collar was put and rigorous physiotherapy started for 3 months after that patient was told to do stretching exercises at home. Patient was followed for 2 years there was no complication or recurrence during follow-ups. Patent neck deformity was fully corrected, with full range of neck motion restored.

Case 4: Patient 3.4 year male reported with bent neck soon after birth. Patient took physiotherapy for the same with no appreciable benefit. After detailed clinical examination and investigations unipolar release of left side SCM muscle is done releasing its both the heads, followed by the hard collar application and physiotherapy. Patient was followed for 10 months, neck deformity was completely corrected with full range of motion

Unipolar release was done in all cases, the surgery was taken under general anesthesia. The Patient positioned in supine position with head in hyperextension, rotated toward the shoulder of the unaffected side. Just above the clavicle-sternum junction on the affected side a horizontal neck incision of about 4 cm was given to the depth of the tendons of the sternal and clavicular attachments of sternocleidomastoid muscles, and subplatysmal flap elevated. Both the heads of sternocleidomastoid muscles were identified. The tendon sheath was incised longitudinally and a hemostat passed posterior to the tendons. Now giving traction on the hemostat, tendons were drawn outside the wound and then 2.5 cm of their inferior ends were resected with adjacent fascia. Transected ends of the muscle were then dissected free from the surrounding fascia and carotid sheath with caution. Wound was explored and checked for any remaining bands of contracted muscle or fascia and, if any are found, they were divided them under direct vision and the deformity was overcorrected.

Hemostasis was attained and skin closed with 4/0 prolene. Neck extension was achieved without any strain.

RESULT

A total of 4 children with congenital muscular torticollis were included in study; 3 were male (75 %) and 1 was female (25%). Age of patients range from 40 to 132 months, mean age of surgery was 70 months. Mean period of physiotherapy was 6 months. In all cases unipolar sternocleidomastoid muscle release was done using uniform method by same senior Author (Fig 1b). Follow-up was done for six months assessing head position, range of neck rotation and lateral flexion. All patients achieved neutral head position, full range of neck rotation and full range of lateral flexion (Fig 1c, 1d, 1e).

DISCUSSION

CMT is most common congenital musculoskeletal anomaly after hip displacement and congenital foot [3]; where infant presents with deviated neck with restricted neck movements soon after birth or few weeks after birth due to short and stiff Sternocleidomastoid muscle. Secondary effects of untreated torticollis are Plagiocephaly, Facial, hypoplasia and Musculoskeletal effects. The incidence varies between 0.4 and 1.9% and there appears to be male predominance has been seen with a relative ratio of 3:2 [2].

Etiology of CMT is not known, many hypothesis have been proposed, in one hypothesis it is suggested this disease is common in primigravida due to tight uterus exerting pressure and causing trauma to Sternocleidomastoid muscle. Other causes include birth injuries, breach where haematoma is formed followed by formation of fibrous contracture [5] etc. Oligohydramnios is also proposed as one of the factors causes restricted fetal atmosphere may cause strain on SCM and subsequent torticollis. Other hypotheses have included ischaemic [6], neurogenic, infective hereditary theories.

It is important to differentiate CMT from acquired causes of torticollis like spinal tumours, ophthalmologic deficiency, Hearing deficits, neurological causes like syringomyelia, Arnold chiari malformation, osseous causes like Klippel Feil syndrome and cervical deformities, syndromes like Grisel and Sandifer. Complete workup should be done in this regard. Congenital muscular torticollis is benign; missing a case of nonmuscular torticollis is potentially life-threatening. [2]

Physiotherapy is main modality for the management of CMT in infants; Physiotherapy should be initiated earliest possible, Petronic et al. stated that if stretching is started within 1.5 months after birth (i.e., 6-7 weeks), the head and neck range of motion is recovered in 98% of patients [9]. A standardized physiotherapy program of manual muscle stretching for 30 minutes, 3 sessions per week; 15 gentle manual stretches of the tight muscle with sustained force for 1-2 second repeated 3 times with a rest period of 10 seconds between stretches. The parents are also educated to carry out a home program of active positioning with specific instructions. It is well established that patients who are younger at the time of diagnosis have a better chance of recovery after conservative treatment alone and rarely require an operation [7, 8]. It is recommended that increasing the passive motion range also through active positioning of the infant during feeding, playing, carrying [10]. The outcome of physiotherapy differs according to the torticollis type, the age of diagnosis, time of treatment initiation, and treatment adherence among parents [11].

Surgery of affected SCM is recommended if patient does not improve within six months of starting physiotherapy. Optimum time for surgical intervention is recommended at the age of 1-4 years; some studies reported that surgery produces good results in patients even up to 12 years old [12]. Surgical options include: Unipolar release, bipolar release, Z-plasty and radical excision, endoscopic release. The choice of surgery depends on surgeon's preference and severity of disease. Unipolar release works well in most cases, but recurrence rates are high at 7%. [13]. Bipolar release is normally used in older children with a severe deformity without loss of neck column, but leaves two incision scars and may cause nerve injury [14]. Z-lengthening preserves the neckline, but it is difficult to estimate the extent of lengthening intra-operatively. Endoscopic technique is cosmetically appealing by giving incision in the hair-bearing scalp or anterior axillary line but has greater risk of complications like spinal accessory and greater auricular nerves injury [15].

The causes of recurrence are: incomplete correction involved

structures, inadequate postoperative immobilisation in the neutral position and inadequate postoperative physiotherapy.

CONCLUSION

Congenital muscular torticollis should be differentiated from other causes of torticollis. Initial management is conservative, if it fails then surgical treatment is recommended. In our experience unipolar SCM release with division of both sternal and clavicular head of SCM is easy and safe surgical technique for the treatment of CMT and Postoperative physiotherapy has an important role in preventing recurrence.



Legends for Figures:

Figure 1. Preoperative: Congenital muscular torticollis

Figure 2. Perioperative: Unipolar SCM release.

Figure 3 : Post operative : Normal head position restored.

Figure 4. Post operative: Full range of neck flexion restored.

Figure 5. Post operative: Full range of neck rotation restored.

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