Congenital Muscular Torticollis: Experience of 14 Cases

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Congenital Muscular Torticollis (CMT) is a postural deformity of head and neck detected at birth or shortly after birth, primarily resulting from unilateral shortening of Sternocleidomastoid Muscle (SCM). In neonates and infants, patient may cure conservatively by physiotherapy but surgery is the treatment of choice for children and adolescents. There are various techniques of surgery. Here we show our experience regarding management of congenital muscular torticollis. In the present retrospective case series, fourteen patients of congenital muscular torticollis were treated. The cases were enrolled between Nov' 2005 to Oct' 2007 in Bangabandhu Sheikh Mujib Medical University, Gonosasthaya Somaj Vittik Medical College Hospital, Dhaka and different private clinics of Dhaka city of Bangladesh. Neonates and infants were treated conservatively with physiotherapy and others treated surgically by transection of both sternal and clavicular head of SCM under general anesthesia. Operated patients were released on following post operative day with advised to do physiotherapy. Patients age range from 7 days to 15 years of which ten were female and four male. SCM was shortened in all cases (8 on right side and 6 on left side). Eleven were female and three male. Of 14 patients, 2 neonates, 7 infants and 5 were more than 1 year age. There was no associated anomaly. Out of 9 neonates and infants 8 cured conservatively with physiotherapy and another one significantly improved. Six were treated surgically including one failed physiotherapy. Post operative period was uneventful and there was no complication. Results were evaluated clinically and comments of peers. Most of the patient of congenital muscular torticollis can be treated conservatively during infancy. Division of both sternal and clavicular head of SCM is easy and safe surgical technique for the treatment of CMT of older children and adolescents.

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Introduction

Congenital Muscular torticollis (CMT) is a postural deformity of head and neck detected at birth or shortly after birth, primarily resulting from unilateral fibrosis & shortening of the Sternocleidomastoid muscle[1,2]. The shortening of Sternocleidomastoid muscle (SCM) results in traction of mastoid process toward the sternoclavicular joint[3]. The head is therefore rotated away from & tilted toward the involved sternocleidomastoid muscle. The condition is some times called "Wryneck". Torticollis is also known as twisted neck.

The incidence of CMT is one in every 300 live births[4]. Plagiocephaly may co-exist in 80-90% of children with CMT[1,5].

Though impairment of SCM function is the most frequent cause of CMT but torticollis could also be result from other underlying disorders. The exact pathophysiology and etiology of sternocleidomastoid impairment in CMT is still unknown.

In CMT, patient's head remain tilted toward the involved side. Child and adolescents patient can't look forward. If the patient wants to look other sides he/she have to rotate whole body as he/she can't move neck.

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Gradually patient develops facial hemihypoplasia which results in flattening and under development of the malar eminence, downward displacement of the eye, ear and angle of mouth on the effected side. It also hampers the development of facial skeletons.

Children with CMT can be assigned to one of three groups[1]-

a. Children with a palpable swelling or pseudotumor of the sternocleidomastoid,
b. Children with SCM tightness but no tumor,
c. Children with all features of muscular torticollis without muscle tightness or tumor.

History, physical examination & clinical progression can do the diagnosis but in some cases ocular, neurological evaluation and radiological investigation of cervical spine is necessary[6].

Management depends upon the age of patient. Patient of below 1 year of age, treatment is conservative – Physiotherapy and above one year of age – treatment is surgery. 69 to 91 % patient may cure conservatively with physiotherapy within one year of age[1,7,8]. Conservative management of infants with torticollis consists of positioning, gentle range of motion, and strengthening through activation of head and trunk muscles as the infant gains control of upright postures[9,10].

Manual stretching is the most common form of treatment for CMT[10]. Proper stabilization and hand placement is vital for the success of each stretch; however, all child/parent pairs will not be comfortable with the same method of stretching or the same stretch positions. The severity of the torticollis, the age of the child, the tolerance of the child for handling, and the parent's ability to carry out the exercise program will determine the method of stretching. When performing stretching exercises, the position of the head and neck in flexion versus extension will impact the effectiveness of the stretch[9].

Surgery is the treatment of choice for the patient with CMT persisting after one year of age[11]. There are various techniques of surgery–

a. Division of both sternal and clavicular heads of SCM[11]
b. Lengthening of tight SCM by unipolar release[1,5]
c. Lengthening of tight SCM by bipolar release[12]
d. Subperiosteal lengthening[13]
e. Endoscopic release[14]

Subperiosteal lengthening, lengthening of tight SCM by unipolar or bipolar release, etc techniques are difficult and there is chance of injury to accessory nerve. Endoscopic surgery is a high-tech surgery and needs sophisticated instruments. Division of both sternal and clavicular heads of SCM is easy and there is less chance of injury to any nerves or large vessels and thus we practice this method.

Methods

Fourteen cases of congenital muscular torticollis (CMT) were treated from Nov' 2005 to Oct' 2007 in Bangabandhu Sheikh Mujib Medical University, Gonosasthaya Somaj Vittik Medical College Hospital, Dhaka and different private clinics of Dhaka city of Bangladesh. Patients were diagnosed clinically. All the patients present with short sternocleidomastoid muscle. There were no facial hemihypoplasia or any other associated abnormalities.

Neonates and infants were treated conservatively with physiotherapy as out patient - none was admitted. Physiotherapy is simple – manual stretching of affected SCM, frequent movement of head on opposite direction of head position, lied lateral position on affected side. Patient's mother was trained accordingly. Physiotherapy was given at home by mother.

Older children were treated surgically by transaction of both sternal and clavicular head of SCM under general anesthesia. Operated patients were released on following post operative day with advised to do physiotherapy. Out of 6 patients, 5 were untreated on neonatal and infantile period and failed physiotherapy was one.

All of the operated patients were admitted to hospital. Under general anesthesia, an approximately 3 cm transverse curvilinear incision was made on skin crease line about 2-5 cm above and medial part of clavicle (Figure 1) just over SCM.

Figure 1: Incision line for release SCM

The platysma was divided. Subplatysmal flaps were developed along the SCM for 1-2 cm superiorly and to the level of clavicle inferiorly. The posterior aspect of the SCM was then dissected free from the underlying carotid sheath. The clavicular and sternal heads of SCM underlying investing cervical fascia, were divided at this level with by electrocautery (Figure 2 & 2a). Hemostasis ensured.

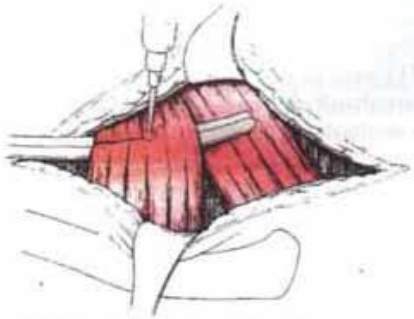

Figure 2: Division of SCM (Sketch)

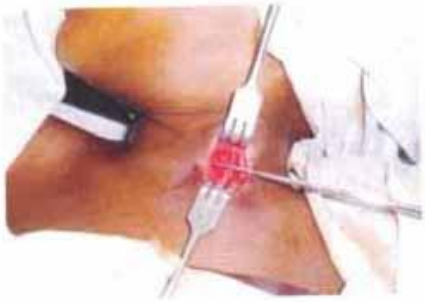

Figure 2a: Division of SCM

Transected ends of the muscle were than dissected free from the surrounding fascia and carotid sheath with caution (Figure 3 & 3a).

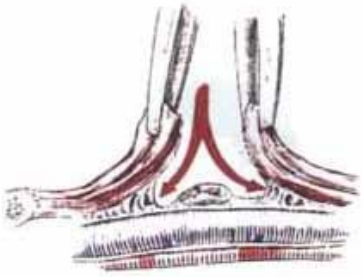

Figure 3: Transected ends of SCM

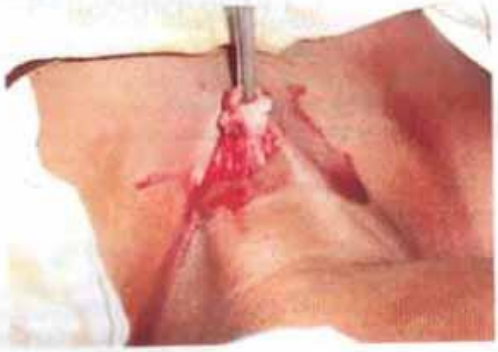

Figure 3a: Dissection of transected ends of SCM

Surrounding cervical fascia also released as they may contribute to contracture. Wound is than palpated to ensure that all contracted tissue is released. We didn't divide the external jugular vein. After ensuring hemostasis, wound was closed in layers - Platysma and skin. Post operative period was uneventful.

The patients were maintained 30° up position for first 24 hours and than the patients allowed to go home and advised for physiotherapy. Follow up was given on 7th Post operative day and after 3 and 6 months.

Results

Patients age range from 7 days to 15 years of which 10 (ten) were female and four male. SCM was shortened in all cases (8 on right side and 6 on left side). Of 14 patients, 2 neonates, 7 infants and 5 were more than 1 year age. There was no associated anomaly. Eleven patients have the history of normal vaginal delivery, one patient have the history of forceps delivery and two have the history caesarian operation.

Table I: Mode of child born

Mode of child born	No. of patients
Cesarean section	2
Normal vaginal delivery	11
Forceps (first born baby)	1
Total	14

Among the normal vaginal delivery patients, five have prolonged labour of which four was first born baby (Table I). None can give the history of breech delivery. Most of the patient's mother can give

proper antenatal history. There is no family history of torticollis in any patient. There was history of sternomastoid tumor on neck in 2 (two) patients including the patient who had failed physiotherapy.

Table II: Treatment result

Mode of treatment	No. of patients	Cured (%)
Conservative (<1year age)	9	8 (89%)
Surgery (>1year age)	5	5 (100%)
Total	14	-

Out of 9 neonates and infants 8 cured conservatively with physiotherapy (Table II) and another one significantly improved. Total 5 were treated surgically. Post operative period was uneventful and there was no complication.

Results of operation were assessed subjectively by clinical evaluation, patient's response and critical analysis by peers. Over all result is excellent in respect of movement of head and neck and position of face. On 7th Post operative day, all of the patient can move their head and neck as they want, there was no tilting of head and child can look forward. There were no complications. After 6 months all patients are look like a normal baby. There is no recurrence. Results of operation were shown in figure 4 & 5.

Figure 4: Preoperative CMT

Figure 4a: Post-operative CMT of figure 4

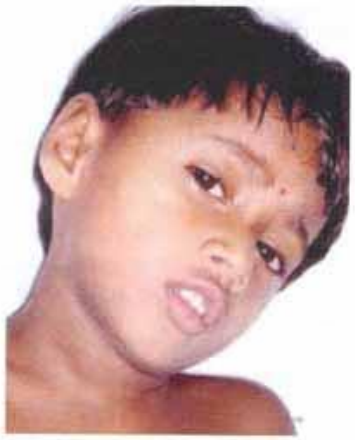

Figure 5: Preoperative CMT

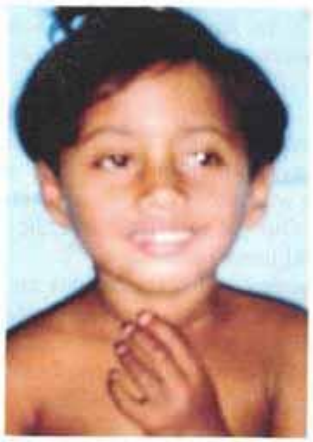

Figure 5a: Post-operative CMT of figure 5

Discussion

CMT patient's head always remain tilted to the affected side, they can't look forward, can't rotate the head and neck as they want. They have to move the whole body to see the side objects. Untreated cases develop mandibular Hypoplasia, facial hemihypoplasia, skeletal deformity of face, etc which leads to permanent disfiguration. So CMT patients suffer both functional and cosmetic problems.

Though in literature, the incidence of CMT is 1 in every 300 live births[4], but we have no data about CMT in Bangladesh.

The optimal management of CMT has been urged for many years. Most agree that physiotherapy is the mainstay of the treatment. In literature success rate of physiotherapy is 69-91%[1]. In our study it is 89% which is within the limit of international studies.

Surgery is usually reserved for patients whose conditions were persistent beyond the age of one year or when cervical function and facial deformities are unacceptable[11].

There are various techniques of surgery of which division of both sternal and clavicular head of sternocleidomastoid muscle is easy and less time consuming. It can be done as a day case surgery. There is no chance of injury to the accessory nerve as it passes more superiorly[11]. External jogular vein can also be preserved as we done. Movement of the head and neck depends upon the synergistic and antagonistic activities of the different cervical muscles, such as splenius capitis, trapezius, platysma, the longus coli, the longus capitis, rectus capitis, etc[15]. So, in absence of CMT in one side will not interfere with the movement of head and neck.

In our study, Right: Left = 1.3:1 which corresponds with the study of others[16]. There are records of family history of CMT in 3.6%[16] but we have no such finding which also corresponds with the study of others[17]. Our patients also have the history of sternomastoid tumors like others[6,18].

Facial asymmetry and plagiocephaly are common, though not invariable associated anomaly with CMT. Both believed to be secondary to the Torticollis. Reported co-existence of hip dysplasias with CMT varies from 0.6 to 20%[16] but we have no such condition or any other associated anomalies like others. [17] We have no wound infection or any other complications. Though in reported literature recurrent torticollis is about 3%[19] but we have no such record.

Conclusion

Early detection and initiation of physical therapy is related to improved outcomes and less need for surgical treatment of the SCM. Repositioning is a required element of early management of torticollis. Most of the patient of congenital muscular torticollis can be treated conservatively during infantile period. Division of both sternal and clavicular heads of sternocleidomastoid muscle in case of persistent torticollis, beyond the age of one year is a safe and simple method of surgery with an excellent result in respect of movement of head and neck, position of head, appearance and comments of peers.

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