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RESEARCH ARTICLE

A REVIEW OF DELAYED SURGICAL RELEASE OF CONGENITAL MUSCULAR TORTICOLLIS

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ABSTRACT

Background: Congenital muscular torticollis is a postural deformity resulting from unilateral shortening and fibrosis of the sternocleidomastoid muscle .Early diagnosis helps in achieving good results with conservative treatment. Delayed treatment of this condition results in suboptimal correction of torticollis & persistence of associated secondary deformities.
Aims: The aim of this study was to determine the efficacy of surgery in patients presenting late for the treatment.
Materials and Methods: This study was conducted from august 2011 to July 2013. 10 patients were included in the study. Data was collected in terms of age, sex, clinical presentation, additional deformities, range of neck movements pre& post operatively, history of previous treatment attempts, findings at operation and surgical procedures. All the patients underwent bipolar release of torticollis as described by ferkel.
Results: The mean age of the patients who were operated for CMT (6 females, 4 males) was 13.9 years (range: 7 yrs to 30 yrs).6 pts had rt side torticollis & 4 pts had lt side torticollis. mean follow up period was 1 year . All pts were diagnosed to have this deformity in early childhood. The most common complaints at presentation were restriction of neck motion, head tilt & fascial asymmetry. 1 pt had h/o previous surgical release & remaining pts did not undergo any treatment previously. All pts had shortening of sternomastoid muscle with thickening of both origin & insertion of the muscle. Significant improvement in neck movements & tilting of the head were noted after the surgical release. No significant complications were noted with the surgical procedure.
Conclusion: surgical release of CMT in neglected cases improves the quality of life by improving neck motion & resolving the head tilt & it is a relatively complication free method.

INTRODUCTION

Torticollis or wry neck is a clinical sign that could be due to variety of underlying disorders. Congenital muscular torticollis is a postural disorder detected in early infancy resulting primarily from unilateral fibrosis and shortening of sternomastoid muscle. It is the third most common congenital musculoskeletal anamoly after cdh and clubfoot. It occurs 1:300 live births. Early detection of this condition before the age of 1 yr responds to conservative treatment. Surgical release is commonly indicated in patients presenting after this age. Neglected cases of torticollis who continue to have this deformity uncorrected into childhood & adult age develop secondary deformities of face. Surgical correction in such cases may correct the deformity of neck but secondary deformiyies of face may persist. In this study we present our experience with the surgical management of such neglected cases of torticollis.

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MATERIALS AND METHODS

This study was conducted from august 2011 to June 2013 in the department of plastic surgery and burns Bangalore medical college and research center Bangalore. 10 consecutive patients admitted with features of torticollis were included in the study. Data were collected in terms of patients age, sex , duration of disease, additional deformities, range of neck movements, operative findings and type of surgery were collected. All the patients underwent bipolar release of strnomastiod muscle as described by ferkal under general anesthesia. Patients were given cervical collar support with controlled active movements for the first 3 months followed by active full range of movements for the next 3 months. Cervical collar was advised for 6 months postoperatively. Patients were followed up for 6 months to 2 yrs and improvement in neck movements and improvement in secondary deformities of face were noted. Table 1 provides details of all patients.

Surgical procedure

Under general aneasthesia with endotracheal intubation patient is positioned supine with neck extended and face rotated to contralateral side. 2-3 cm skin crease incision is made, 1cm

above the sternoclavicular origin of sternocledomastoid. Platysma is divided carefully to prevent injury to external jugular vein and accessory nerve. Two heads of sternocliedomastoid muscle is dissected from cervical fascia and are divided using diathermy. Upper end of strenomastoidis divided by making 2cm incision just below the mastoid process. Tight deep cervical fascial bands were realeased testing neck movements carefully under aneasthesia. Platysma is sutured with 4-0 interrupted absorbable suture.skin closure is done with 5-0 absorbable suture (Fig 1,2).

Table 1. Details of patients

	Age	Sex	Side of torticollis	duration	deformity of ipsilateral face
Patient 1	9	f	right	9	no
2	14	f	Left	14	yes
3	30	M	Right	30	no
4	8	F	Left	8	no
5	23	F	Right	23	yes
6	5	M	Left	5	no
7	13	M	Right	13	yes
8	15	M	Right	15	yes
9	7	F	Left	7	no
10	9	F	Right	5	no

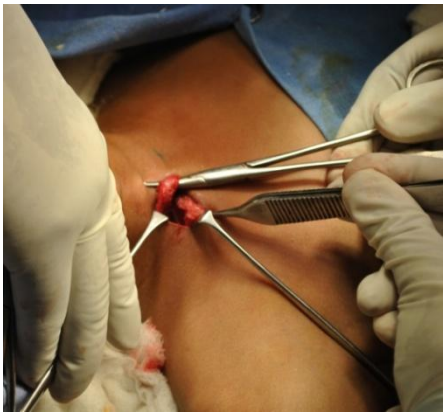


Fig. 1. Division of lower end

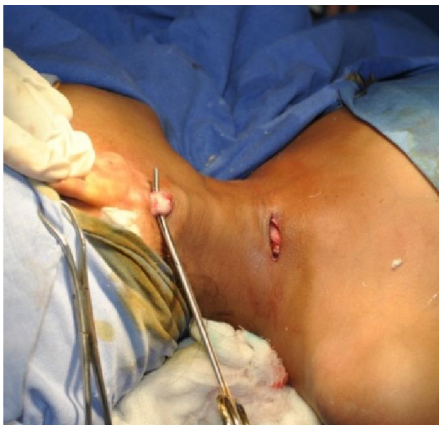
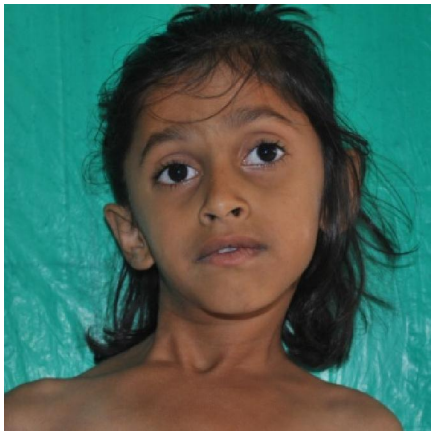
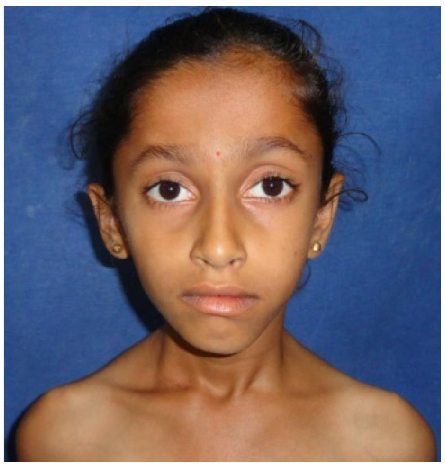


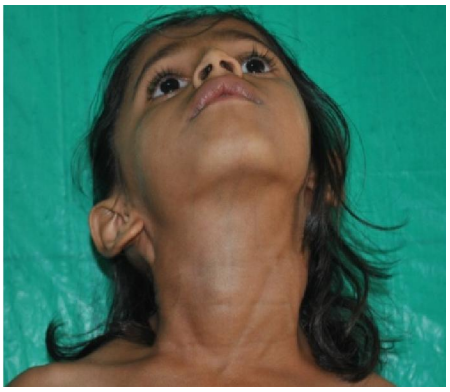
Fig. 2. Division of upper end of sternomastoid

RESULTS

The mean age of patients who were operated for congenital muscular torticollis in our study was 13.9 yrs. (range 7yrs-30yrs). Of the 10 pts included in the study 6 were females and 4 were male pts. shortening of sternomastoid was noted on rt side in 6 pts and on lt side in 4 pts. Mean follow up period







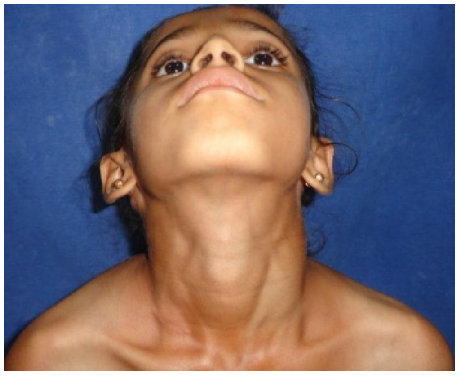


Fig. 3. Pre & Post op photo of a 9 yr old child with Rt torticollis after bipolar release [shown in fig 1& 2]

was 1 yr. All patients were diagnosed to have this deformity in early childhood. The most common complaints at presentation were restriction of neck movements, headtilt and facial asymmetry. 1 patient had h/o previous attempt of surgical

release of torticollis and remaining patients did not undergo any treatment previously. No associated bony abnormalities were noted among these patients. All patients were noted to have cord like thickening of both origin and insertion of sternomastoid at surgery. Surgical complications like wound infection, haemorrhage, accessory or facial nerve injury were nil in this study. Operated scars healed well in all patients. No recurrence of the deformity was noted throughout the follow up period. All patients experienced significant improvement in head tilt and range of neck movements after surgery. After the surgical release out of 4 pts who were associated with ipsilateral asymmetry 2 pts had a moderate improvement in facial asymmetry after surgery.

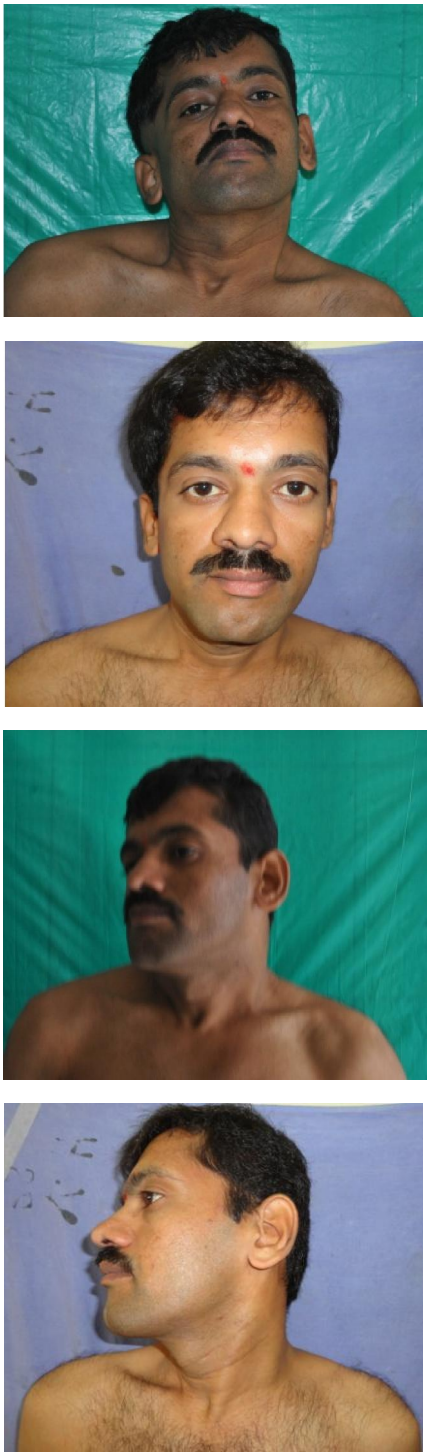


Fig. 4. Pre & Post op photo of 30 yr old male pt with Rt side torticollis

DISCUSSION

The term Torticollis is derived from Latin which means a twisted neck. Tubby in 1912 defined it as "a deformity, congenital or acquired, characterized by lateral inclination of the head to the shoulder, with torsion of the neck and deviation of the face" (Tubby, 1912). Are although there multiple causes for torticollis Congenital Muscular Torticollis (CMT) primarily involves shortening of the sternocleidomastoid muscle, and clearly should be differentiated from many other congenital and acquired types of torticollis (Torticollis Lukman and Abdur-Rahman Brian; Song Ho Chang *et al*.,: S¨onmez *et al*., 2005) (Table 2).

Table 2. Differential diagnosis of torticollis

Congenital
1. Sternomastoid tumour
2. Muscular torticollis
3. Congenital vertebral anomalies (cervical hemivertebral)
4. Klippel-Feil syndrome (atlanto-axial fusion)
Trauma
1. Rotary subluxation of atlantoaxial or atlanto-occipital joints (post ear, nose, throat (ENT) surgery, such as tonsillectomy; retropharygeal abscess drainage)
2. Cervical spine fracture
3. Clavicular fracture
Inflammatory
1. Grisel syndrome
2. Diskitis
3. Vertebral osteomyelitis
4. Juvenile rheumatoid arthritis
5. Cervical disc calcification
6. Retropharyngeal abscess
7. Cervical lymphadenitis
8. Acute lymphoblastic leukaemia
Neurologic
1. Posterior fossa tumour
2. Syringomyelia
3. Arnold-Chiari malformation
4. Paroxysmal torticollis of infancy
5. Cerebral palsy
6. Strabismus
Others
1. Sandifer syndrome in chronic gastro-oesophageal reflux
2. Thymitis
3. Thyroiditis
4. Postural; familial

Most cases of CMT resolve completely either spontaneously within months after birth or with conservative measures initiated early, such as gentle controlled passive manual stretching exercises on the affected side. S¨onmez *et al*. (2005) found that 95% of patients diagnosed and treated effectively before the age of one year did not need surgical treatment (S¨onmez *et al*., 2005). In patients seen later, surgical intervention should be considered as the treatment of choice in order to avoid further irreversible changes. Surgery is also recommended in patients with residual head tilt, passive rotation deficit, or lateral bending of more than 15◦ at the age of 6 months (Farzad Omidi-Kashani *et al*., 2008). The timing of surgery in neglected cases of torticollis is controversial. Canale *et al*., 1982 reported that full recovery of facial asymmetry after the age of 4 is difficult to achieve (Canale *et al*., 1982), but many authors like Lee *et al*. (1986), Minamitani *et al*. (1990) and Chen and Ko (2000) reported that late release of the sternocleidomastoid muscle for patients more than 6 years of age could yield acceptable results. Only

few reports of surgical treatment for adults (over 20 years old) is available in the literature. Patwardhan *et al*. (2011), Burstein and Cohen (1998) reported good to excellent results after surgical release in adults. In the present study, we also achieved good surgical results in patients with neglected CMT. Muscle paralysis with Botulinum toxin in some longstanding cases may show benefit however if this fails surgery may be necessary (Christopher David Jones *et al*., 2012). Surgical techniques that have been described include unipolar release, bipolar release, resection of the sternocleidomastoid muscle (or tumour) and endoscopic release (Burstein and Cohen, 1998). In resistant cases, the extent of sternocleidomastoid tightness determines the necessary surgical technique.

Although, there are various surgical procedures for CMT, unipolar and bipolar release are the most popular. Bipolar releases are usually used in older ones with severe deformity. Wirth *et al*. (1992) in a review of 55 patients with an average follow-up of 15 years after surgical release recommended that biterminal release should be performed at the age of 3–5 years in all patients who do not respond to non-operative treatment Wirth *et al*. (1992). Although, it has been reported that bipolar release combined with Z-plasty can preserve the normal v-contour of sternocleidomastoid muscle in the neckline, we have not observed the loss of normal contour of sternocleidomastoid muscle in the patients treated with a bipolar release without Z-plasty. With meticulous repair of the platisma, loss of cervical column does not occur clinically. Available literature regarding treatment of torticollis in patients presenting in childhood or in adult age group, suggest that at the time of distal operation, both sternal and clavicular heads must be released, even though the clavicular head seems trivial. Due to muscular adhesion to the fascia,excision of 2 cm of muscle is advised. After resecting both clavicular and sternal heads, the patient's head must be turned to the lateral side and all the firm touched fascial bands released (Farzad Omidi-Kashani *et al*., 2008).

Conclusion

The majority of patients with CMT are successfully treated with physiotherapy provided diagnosis is made early. Bipolar release of sternomastoid muscle in neglected cases of CMT improves the quality of life by improving neck motion & resolving the head tilt & it is a relatively complication free method.

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