

# Lower Pole Release in Congenital Muscular Torticollis – Retrospective Analysis of Outcomes in 15 Cases

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### Abstract

Congenital muscular torticollis is a common congenital problem. It is considered to be amenable to treatment which may be conservative or surgical. There are as yet no fixed guidelines as to the methodology or the timing of treatment. It is certainly advised to be prudent in selecting the appropriate treatment which should neither be too conservative nor over-invasive. We are reporting a series of 15 cases in which we did a unipolar release of the sternocleidomastoid muscle at the lower attachment. Retrospective analysis of 15 consecutive patients is done. During the postoperative period the parents were advised to regularly continue with the stretching exercises, focus on activities on the opposite side of the face and use a semi-rigid cervical collar, specially designed for active correction of these cases. We got very satisfactory postoperative results in most of our patients except one who had resistant deformity due to advanced age. In conclusion we would like to bring the focus back to unipolar release which is shifting unduly in favour of a bipolar release. This would also reduce the chances of the complication of accessory nerve injury. We have used the scoring system developed by Cheng *et al* and modified by Shim in which the present cases showed improvement of 7 points with p-value of less than 0.0001

**Key words:** Torticollis, unipolar release, rehabilitation.

### Introduction:

Congenital muscular torticollis (CMT) is a relatively common birth disorder with incidence reported from 0.4% to 1.3% of live births<sup>1</sup>. CMT or fibromatosis colli (Fig1) occurs in the sternocleidomastoid (SCM) muscle of children. It usually develops during the first few weeks of life as a hard white fibrous mass located within the lower part of the muscle which often shortens and causes a torticollis. In a review of 624 cases of torticollis, Cheng and Au<sup>2</sup> suggested birth trauma, intra-uterine malposition, infection and venous occlusion as the most common causes. Microscopically the lesion is fibroblastic and varies from poorly cellular,

resembling a desmoid, to more cellular, resembling the other fibromatoses<sup>3</sup>.

Clinically, in the infant, the tumour is palpable at birth to 2 weeks of age. It is more common on right side and localised near the clavicular attachment of the SCM muscle. The tumour usually disappears by 1 year of age. It is associated with dysplastic hip in 7-20% of cases<sup>4</sup>. It is reported that if conservative management is delayed beyond a certain point of time, then surgery becomes almost an essential intervention<sup>1,5-7</sup>. The effort must be made to correct the deformity at the earliest to prevent the complications of facial asymmetry<sup>1</sup>, residual tight

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#### Cite as:

Gupta Ajay, Kothari S.Y, Lower Pole Release in Congenital Muscular Torticollis – Retrospective Analysis of Outcomes in 15 Cases June 2016; Vol 27(2) : 46-48

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Received on 22/03/ 2015, Accepted on, 05/04/2016



**Fig 1 - Pre-operative torticollis in one of the patients**

bands<sup>8</sup>, unsightly scars, loss of contour of neck<sup>9</sup> and altered visual fixation.

### Materials and Methods:

We are presenting a retrospective analysis of a series of 15 cases of CMT who were treated surgically in the department during the period from January 2005 to October 2007. The patient selection criterion followed for this procedure was children between 2 and 14 years of age presenting after a reasonable trial of stretching. Exclusion criterion was any previous surgical intervention done on the child. In this series of 15 patients, 7 were males and 8 were females with mean age of 6.9 years (range 3-12years). Eight cases had right sided while 7 had left sided CMT. Mean follow-up duration was 5.1 months (range 1-11 months). We have used the clinical assessment tool devised by Cheng *et al*<sup>10</sup> and later modified by Shim *et al*<sup>11</sup>.

Unipolar SCM release at the lower pole (sternoclavicular head) was done in all 15 cases. The position of the patient was supine with the head supported in mild extension and lateral rotation. A skin incision was placed transversely 2cm above the clavicle. Protecting external jugular vein, the platysma was divided in the line of incision to enter deep cervical fascia. The two heads of SCM were identified. The tight bands and the muscle were divided. Intra-operative range of motion of the neck was assessed at this stage and any residual bands identified were also removed. Postoperative care consisted of use of a semi-rigid cervical collar, specially designed for active correction. Stretching exercises were started on third postoperative day. The patients were all discharged on 5th postoperative day with home exercise programme and cervical collar continued for 3-6 months.

**Table 1:** Summary of Results in 15 Patients

Clinical findings	Pre-operative		Postoperative	
	Values	Score*	Values	Score*
Rotational deficit	13	1	4	3
Lateral bending deficit	18	1	7	2
Facial asymmetry	Mild	2	Mild	2
Scar	-	3	Mild	2
Band	-	1	Nil	3
Head tilt	Moderate	1	No	3
Subjective assessment	-	0	Good	2
Total	Fair	10	Excellent	17

(\*Rounded of values)

### Results :

The results obtained in this series of patients are tabulated using the modified Chang's score in Table 1. One case (case No 13) has been excluded from analysis as he was 14 years age and needed bipolar release, later on. Nine parameters have been analysed; the average value of each parameter is given with the score as described by Cheng *et al* and Shim *et al*<sup>11</sup>. The average pre-operative score in the patients was 10 which improved to 17 ( $p < 0.0001$ ) during the follow-up period after surgery. The overall results can thus be classified as excellent. Rotational deficit range reduced from pre-operative  $13+4.6^0$  to  $4+3.4^0$  postoperatively with lateral bending deficit reducing from an average of  $18+4.7^0$  to  $7+4.6^0$ . The subjective assessment of the patient in this series of 15 cases was good to excellent (Fig 2) all through except the thirteenth case where the results were poor (this patient was later followed up with upper pole release as well and excluded from this analysis). The p-value for rotational deficit, lateral bending and head tilt is  $< 0.0001$  using single tailed paired Chi-square T test implying significant improvement.

### Discussion:

There has been a lot of debate on the modality of treatment for congenital infantile torticollis with a shifting of opinion in favour of a bipolar release. Cheng *et al*<sup>12</sup>. in 2001 reported a multivariate study on these patients and concluded that stretching of the contracted muscle is possible up to one year of age but recommended a bipolar release after this age for adequate correction. We chose unipolar release in the patients over 2 years of age who did not improve despite a reasonable period of stretching. Similar opinion of increased requirement of SCM muscle lengthening after the age of 1 year has



**Fig 2 - Postoperative Correction in the Same Child**

been expressed by Do<sup>13</sup>. Coventry and Harris<sup>1</sup> showed that very few children below the age of 1 year needed surgery and surgery was effective in as old as 12 years' age. The present cases were between 2 and 14 years. It has also been highlighted that the timing of surgery is crucial for good results<sup>5,11,14</sup>.

The complications of surgery reported in literature have included tethering of scar to deep structures for below 1 year, failure to correct the tilt of the head or facial asymmetry for above 4 years and reattachment of sternal or clavicular head or loss of contour of muscle for above 5 years<sup>8</sup>. In this series there were mild scars except two cases of hypertrophic scar. This was cosmetically objectionable especially in girls. There was total recovery of the head tilt component. Facial asymmetry persisted while the rotational deficits were significantly corrected. There were only four cases with post operative sternoclavicular bands who responded well to postoperative stretching.

### Conclusions:

1. Unipolar release is effective if done thoroughly
2. Meticulous postoperative care and exercises are essential
3. Scarring in exposed neck area may be cosmetically unacceptable especially in girls.

### Conflict of Interest:

There is no conflict of interest and no grant was received for this work from any external agency.

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