

Spinal Column Shortening for Tethered Cord Syndrome in Children and Transitional Adults

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Introduction

Classical release for tethered cord syndrome (TCS) carries potential complications as new neurological deficits, cerebrospinal fluid leak or retethering. We applied spinal column shortening (SCS) to patients with primary and secondary TCS and report treatment outcomes.

Methods

Retrospective review of the demographic and procedural data of children and young adults who had undergone SCS, Pedicle subtraction osteotomy (PSO) or Vertebral column resection (VCR), for primary or secondary TCS.



Results

7 patients with TCS caused by myelomeningocele (MMC), lipomyelomeningocele (LMMC), and transitional spinal lipoma were treated with SCS. Demographics and clinical and operative data are in the Table below.

Pt	Age	Gender	Form of Spinal	Presentation	Prior Untether.	Surgical Procedure	Hospital Stay	Complications/Need for Further Surgery	Follow- up
			Dysraphism				(days)		(Months)
1	8	M	MMC	Holocord	0	t12-tl2	5	Persistent hand	37
				syrinx; Hand		fusion;		weakness	
				weakness		ver 11			
2	19	F	LMMC	Back/leg	3	t10-t12	4	Worsening back	32
				pain; B/B		fusion; pso		pain; Urinary	
				dysfunction		t11		urgency	
3	30	М	Transitional	Leg pain;	0	t12-tl2	Na	Hyperlordosis	31
			spinal	Foot drop		fusion; pso		thoracolumbar	
			lipoma			11		junction; Persistent	
								foot drop	
4	23	F	LMMC	Back/leg	0	t12-tl2	4	Catastrophic failure	31
				pain;		fusion; pso		of instrumentation;	
				Bladder		11		PJK s/p re-do fusion	
				dysfunction				t8t13	
5	16	М	MMC	Leg	3	t4t8	4	Persistent residual	27
				weakness;		fusion; pso		back pain s/p t2-	
				B/B		t6		pelvis fusion for	
				dysfunction				severe scoliosis	
6	10	F	MMC	Back/leg	0	t10-tl3	6	Persistent some leg	26
				pain; Leg		fusion; pso		weakness	
				weakness		11			
7	10	F	LMMC	Leg pain;	1	t12-tl2	5	None	32
				B/B		fusion; pso			

71% (5 of 7) **improvement in preoperative** symptoms.

Mean operative time: 6 hours and 40 minutes Average EBL: 587 cc (250–900 cc). Mean hospital stay: 5 days (range, 4–6 days). <u>Complications:</u> 1 failure of her spinal instrumentation and proximal junctional kyphosis at 3 months after surgery needing revision surgery with extension of her spinal instrumentation and fusion. No wound infection, CSF leak or intraoperative complications

Mean difference between final and initial for

SRS-22 scores was **0.26** (-0.59–1.05). Minimum clinically important difference (MCID) of 0.4. For **ODI** scores was **-13%** (range, 2– -32%) MCID of -12.8%.

The time course of changes in SRS-22 and ODI for six and five patients, respectively, is presented in the next figure. CT-based radiographic outcomes showed solid fusion in all cases by the most recent follow-up.



Conclusions

Spinal column shortening appears to be a safe and efficacious option for the treatment of tethered cord syndrome both in our small series. However, further studies will be needed to address questions that remain unanswered, such as the consistency and durability of our outcomes, indications and patient selection for spinal column shortening, as well as timing of surgery.

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