Original Article

Neurological Outcome after Surgical Management of Tethered Cord Syndrome

Surgical Management of Tethered Cord Syndrome

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ABSTRACT

Objective: To determine neurological outcome after surgical management of tethered cord syndrome.
Study Design: Descriptive case series study
Place and Duration of Study: This study was conducted at the Department of Neurosurgery, Punjab Institute of Neurosciences Lahore from April 2017 to October 2017.
Materials and Methods: Fifty patients with tethered cord syndrome and radiographic evidence of tethered cord syndrome on magnetic resonance imaging of 10 years to 50 years with either gender and patients of meningocele or mylomeningocele with radiographic evidence of TCS on MRI were included. Patients previously operated for detethering of TCS and now presenting with recurrence or signs and symptoms of tethered cord syndrome and who have systemic illness (uncontrolled diabetes, hypertension, ischemic heart disease) and not fit for general anesthesia were excluded. Lumbosacral MRI and baseline investigations were done. Number of patients with back pain, disturbed motor function and urinary incontinence were noted. Laminectomy and detethering of spinal cord under operative microscope was done. Patients were followed for 6 month postoperatively for outcome variables i.e. improvement in back pain, motor function, urinary incontinence.
Results: There were 30 (60.0%) male and 20 (40.0%) female patients with mean age was 36.6±10.7 years. Fifty (100.0%) patients had severe back pain at preoperatively and 50 (100.0%) patients had moderate pain postoperatively. Twelve (24.0%) patients had Grade–1 motor function and 38 (76.0%) patients had Grade-2 motor function preoperatively while 5 (10.0%) patients had Grade-3 motor function, 20 (40.0%) patients had Grade-4 motor function and 25 (50.0%) patients had Grade-5 motor function postoperatively. Fifty (100.0%) patients had urinary incontinence preoperatively and 33 (66.0%) patients had urinary incontinence and 17 (34.0%) patients had no urinary incontinence postoperatively. Thirty five (70.0%) patients had improvement in back pain, 18 (36.0%) patients had improvement in motor function and 17 (34.0%) patients had improvement in urinary incontinence at six month follow up.
Conclusion: The back pain, motor function and urinary incontinence improve postoperatively in the majority of patients. The rate of symptomatic improvement was greatest for back pain, followed by motor, and then urinary improvement.
Key Words: Tethered cord syndrome, neurological outcome, back pain, motor function, urinary incontinence

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INTRODUCTION

Tethered cord is a phrasing regularly utilized in writing that alludes to a short, thickened, and tight filum terminale, just as any pathology, which keeps the spinal rope from physiological rising.

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While optional tying is created by a scar in the zone of the dysraphism coming about because of post careful conclusion of the injury, which thusly does not allow ordinary cranial relocation of the conus inside the vertebral channel, and prompts axonal anoxia bringing about neural dysfunction.[1]
Tethered cord syndrome (TCS) comprises strong bond of the distal spinal cord to nearby structures, resulting in redundant spinal string footing amid truncal developments. Clinical indications of TCS incorporate sphincter unsettling influences, lumbosacral pain, sensorimotor shortfalls and orthopedic deformation. The point of the investigation is to survey the neurological result of surgical treatment of TCS.[2]
Tethered cord syndrome, frequently found in childhood, could be an improvement anomally impeding a longitudinal development tof spinal line than can be combined with different shade of spinal dysraphism.[3]

Surgical untethering aims the restoration about craniocaudal operation regarding the spinal twine in system in imitation of prevent the in addition development about symptoms, in imitation of restoration nuerological function, then according to enhance pain.[4,5] Investigations using electrophysio-logic and urodynamic studies are useful because shortly detection over delicate characteristic cord tethering or retethering.[5]

In most studies, pain was the first symptom to improve followed in turn by motor symptoms and urinary dysfunction.[6] According to Graces-Ambrossi et al, 30% at 6 months follow up had improved urinary symptoms, 69% assumed 40% at 6 months follow up.[6]

MATERIALS AND METHODS

This descriptive case series conducted at Department of Neurosurgery, Punjab Institute of Neurosciences Lahore from 1st April 2017 to 31st October 2017 on 50 patients with TCS and radiographic evidence of TCS on MRI of 10 years to 50 years with either gender and patients of meningocele or mylomeningocele with radiographic evidence of TCS on MRI were included. Patients previously operated for detethering of TCS and now presenting with recurrence or signs and symptoms of TCS and not fit for general anesthesia were excluded from this study. Demographic details Lumbosacral MRI and baseline investigations were done. Number of patients with back pain, disturbed motor function and urinary incontinence were noted. Laminectomy and detethring of spinal cord under operative microscope was done by supervisor, assisted by researcher. Patients were followed for 6 month postoperatively for outcome variables i.e. improvement in back pain, motor function, urinary incontinence.

RESULTS

There were 30 (60.0%) male and 20 (40.0%) female patients with mean age was 36.6±10.7 years. Fifty (100.0%) patients had severe back pain at preoperatively and 50 (100.0%) patients had moderate back pain postoperatively. Twelve (24.0%) patients had Grade–1 motor function and 38 (76.0%) patients had Grade-2 motor function preoperatively while 5 (10.0%) patients had Grade-3 motor function, 20 (40.0%) patients had Grade-4 motor function and 25 (50.0%) patients had Grade-5 motor function postoperatively. Fifty (100.0%) patients had urinary incontinence preoperatively and 33 (66.0%) patients had urinary incontinence and 17 (34.0%) patients had no urinary incontinence postoperatively. Thirty five (70.0%) patients had development in back pain, 18 (36.0%) patients had improvement in motor function and 17 (34.0%) patients had improvement in urinary incontinence at six month follow up.

Table No.1: Distribution of patients by preoperative and postoperative back pain (n=50)

Back pain	Preoperative		Postoperative	
	No.	%	No.	%
Mild pain	-	-	-	-
Moderate pain	-	-	50	100.0
Severe pain	50	100.0	-	-

Table No.2: Distribution of patients by preoperative and postoperative motor function (n=50)

Motor function (MRC Scale)	Preoperative		Postoperative	
	No.	%	No.	%
Grade-0	-	-	-	-
Grade-1	12	34.0	-	-
Grade-2	38	76.0	0	0
Grade-3	-	-	5	10.0
Grade-4	-	-	20	40.0
Grade-5	-	-	25	50.0

Table No.3: Distribution of patients by preoperative and postoperative urinary incontinence (n=50)

Urinary incontinence	Preoperative		Postoperative	
	No.	%	No.	%
Yes	50	100.0	19	38.0
No	-	-	31	62.0

Table No.4: Frequency of improvement in neurological status after six month follow up (n=50)

Neurological status	Preoperative		Postoperative	
	No.	%	No.	%
Improvement in back pain	35	70.0	15	30.0
Improvement in motor function	18	36.0	32	64.0
Improvement in urinary incontinence	17	34.0	33	66.0

DISCUSSION

Surgical untethering aims the restoration regarding craniocaudal mobility on the spinal twine in order in limitation of stop the in addition development of symptoms in imitation of reserve neurological function, or according to enhance judgement.[4,7,8,9,10,11,12]

The present study showed mean age.36±10.7 years with age range 10-50 years. While Garces-Ambrossi et al[6] showed mean age 38±13 years,

The present study showed 60% male and 40% female patients. While Aufschnaiter et al[8] showed 48% male and 52% female patients.

After six months follow up, in current study 70.0% patients had improvement in back pain. As compared with the study of Garces-Ambrossi et al[6] there were 79% patients had improvement in back pain.

In present study after six months follow up 36.0% patients had improvement in motor function. While

Garces-Ambrossi et al[6] 40% patients had improvement in motor function

According to current analysis 34.0% patients had improvement in urinary incontinence after 6 months follow up. As compared with the study of Garces-Ambrossi et al[6] 30% patients had improvement.

CONCLUSION

The back pain, motor function and urinary incontinence postoperatively improved in greater number of patients.

Author's Contribution:

Concept & Design of Study:	Muhammad Aqeel Natt
Drafting:	Saba Akram
Data Analysis:	Muhammad Shakir
Revisiting Critically:	Muhammad Aqeel Natt, Saba Akram
Final Approval of version:	Muhammad Aqeel Natt

Conflict of Interest: The study has no conflict of interest to declare by any author.

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