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## Case Report

# Role of physiotherapy in preventing tears rolling down the legs in an eight year old girl: A case report

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### ABSTRACT

Urinary incontinence in children is an underdiagnosed symptom in India with a prevalence of 7%. An appropriate diagnosis and early intervention can help prevent the progression of the disorder. Here we present a case report of an 8-year-old girl referred for physiotherapy with the chief complaint of urinary incontinence. She had a wide bladder neck along with leaking urine and a small bladder capacity. She was managed conservatively with medications and comprehensive physiotherapeutic assessment and management that included a combination of electrotherapy, pelvic floor training, balance and postural exercises and other interventions that gave a positive outcome in terms of eliminating the dribbling episodes and improvement in her quality of life.

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## 1. Introduction

International Children's Continence Society (ICCS) defines urinary incontinence as involuntary wetting at an inappropriate time and place in a child aged five years or more.<sup>1</sup> Daytime urinary incontinence is common in school-aged children affecting their psycho-social development. The overall prevalence in India is 7.61% with 14.29% of them experiencing daytime wetting and only 24.11% of the parents seeking medical consultation. Urinary incontinence has a multifactorial origin, hence treatment considering the child, family and environment as a whole is recommended. Physiotherapeutic treatment can be used in the management of urinary incontinence in children.

## 2. Case Report

An 8-year-old girl was referred for physiotherapy by the pediatrician with complaints of urinary incontinence and dribbling episodes occurring throughout the day as well

as at night (5-6 pads per day), with no family history of the same. As reported by the parent, bedwetting and dribbling was first noticed at 2 years of age, but no treatment was taken for the same. As the problem persisted, they approached the pediatrician and was prescribed anti-inflammatory, antibacterial and antimuscarinic medications (TAB Dapsone 25 mg and TAB Tropan 5 mg) for 10 days. No improvement was noticed, and she was admitted to the pediatric ward for further investigations and was referred for physiotherapy management.

The investigations consisting of routine urine examination, complete blood count, peripheral smear, Chest X-ray, creatinine serum levels, activation platelet thromboplastin time, CT scan and USG of Kidney Ureter Bladder (KUB) showed normal findings. The X-ray and MRI of the lumbar spine showed loss of lumbar lordosis and sacralisation of L5 vertebrae. Cystogenitoscopy with Micturating cystourethrogram (MCU) found a wide urinary bladder neck and also leakage via the neck. The Cystoscopy performed in 2019 stated that the trigone was not seen and the urethra neck was wide open. The cystoscopy performed

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**Fig. 1:** Posterior and anterior view: **a:** Pre-treatment; **b:** Post-treatment



**Fig. 2:** Left and right lateral view: **a:** Pre-treatment; **b:** Post-treatment

**Table 1:** Pre-treatment and post-treatment physiotherapy assessment

	Pre-treatment assessment	Post-treatment assessment (Session 23-week 15)
<b>On observation (pelvic floor)</b>		
Anorectal crease	Normal	Normal
Discharge	Absent	Absent
Foul smell	Absent	Absent
Hygiene	Maintained	Maintained
Squeeze	Present	Present
Lift	Absent	Present
Complete relaxation	Absent	Present
<b>On palpation</b>		
Tenderness in the lower abdomen	Grade 1	Absent
<b>Laycock's perfect scoring scale</b>		
Power	Grade 1	Grade 3 (adductors trick mvt)
Endurance	5sec hold with 2 repetitions	10sec hold with 5 repetitions
Repetition	3 repetitions in 10sec	10 repetitions in 10 sec
Frequency of fast contraction	9 repetitions with 2 rest pauses of 10 sec. Terminated at 35sec due to fatigue and incomplete contraction (dribbling present)	56 complete contractions without any rest pause for 1 min (no dribbling)
Each contraction time	7sec	16sec
<b>Muscle tightness</b>		
Hamstring tightness	Mild tightness (left > right)	Absent
Iliopsoas tightness	Mild tightness (left > right)	Absent

**Table 2:** Pre-treatment and post-treatment outcome measures assessment

<b>Outcome measures (scales)</b>		
Pediatric balance scale scoring*	55/56	56/56
Dysfunctional voiding scoring system*	10/30	3/30
<b>Pediatric quality of life questionnaire - Parent reported*</b>		
Domain	Score (%)	Score (%)
Physical functioning	31	96.8
Emotional functioning	60	80
Social Functioning	70	100
School functioning	90	95
Total score	50	93.69

\*Inference :

The Pediatric balance scoring scale states that the higher the score better is the balance.

A lower score obtained in the Dysfunctional voiding scoring system states improvement in problems faced due to voiding.

The Pediatric quality of life questionnaire - Parent reported states that the higher the score better the quality of life.

**Table 3:** Voiding diary

Weeks of Physiotherapy management	Frequency (times/day)
Week 0-3	17
Week 3-6	15
Week 6-9	10
Week 9-12	8
Week 12-15	6

+ Inference: Post physiotherapy management the frequency of voiding reduced from 17 times per day to 6 times per day which is considered as a normal voiding frequency for children of the mentioned age group, with no episode of dribbling in 15 weeks.

**Table 4:** Physiotherapy management

	Week 0-3	Week 3-6	Week 6-9	Week 9-12	Week 12-15
<b>Pelvic floor muscle activation and strengthening</b>					
IFT	✓	✓	✓	✓	✓
Kegel's exercise (fast and slow fibers-rest time between sets: 5 seconds)	15 repetitions-2 sets	20 repetitions-2 sets	30 repetitions-2 sets	30 repetitions-3 sets	30 repetitions-4 sets
<b>Breathing exercises</b>					
Diaphragmatic breathing exercise, thoracic expansion exercise-rest time between sets: 5 seconds	10 repetitions-2 sets	15 repetitions-2 sets	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets
<b>Muscle activation and strengthening exercises</b>					
Isometrics for hip flexors, adductors,gluteus, abductors- rest time between sets: 5 seconds	10 repetitions-2 sets	15 repetitions-2 sets	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets
Pelvic bridging -rest time between sets: 5 seconds	10 repetitions-2 sets	15 repetitions-2 sets	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets
Quadriceps and hamstring strengthening with half kg weight-rest time between sets: 5 seconds	-	10 repetitions-2 sets	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets
Unilateral pelvic bridging: 20 sec hold -rest time between sets: 5 seconds	-	10 repetitions-2 sets	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets
Abdominal muscles (internal obliques, external obliques, transverse abdominis using Swiss ball) -rest time between sets: 5 seconds	-	15 repetitions-2 sets	20 repetitions-2 sets	20 repetitions-3 sets	30 repetitions-3 sets
<b>Stretching</b>					
Bilateral Iliopsoas	-	✓	✓	✓	✓
Bilateral Hamstrings	-	✓	✓	✓	✓
<b>Posture correction</b>					
Posture correction (posterior pelvic tilt, knee stabilisation exercises)	-	✓	✓	✓	✓
Wall Squats-rest time between sets: 5 seconds	-	10 repetitions-2 sets with 5 sec hold	15 repetitions-2 sets with 10 sec hold	20 repetitions-2 sets with 10 sec hold	20 repetitions-3 sets with 15 sec hold
<b>Balance training</b>					
Balance training in standing with reach-outs	-	✓	✓	✓	✓
<b>Knack maneuver</b>					
Knack maneuver during activity	-	✓	✓	✓	✓
<b>Gait training</b>					
Gait training	-	✓	✓	✓	✓

in 2021 reported that the capacity of the urinary bladder was small, along with a slightly hypospastic urethra and bifid vagina.

### 3. Physiotherapy Management

Physiotherapy management was done throughout 15 weeks, twice a day consisting of 3 supervised sessions per week and an unsupervised home exercise program for the other days. The initial management started with activation of the pelvic floor muscles using 2 – Pole IFT (Interferential Therapy) stimulation (2 electrodes bilaterally over lower end of Labio Majora, frequency 4 Hz, 10mins, comfortable intensity). Isometric activation of the muscles groups of the hip and the knee was initiated along with pelvic bridging and Kegel's exercises. Later exercises for strengthening the abdominal capsule, stretching of the bilateral hamstring and iliopsoas muscles along with postural correction and gait training were added. We observed that with treatment progression, dribbling episodes were associated only with high impact jumping activities while playing hence, we incorporated knack manoeuvre in the program. The progression of these exercises was done every 3 weeks by increasing the repetitions and duration (Table 4). The same exercises were advised to the parent to be continued as home program with the same repetitions and hold time as that of the supervised sessions.

### 4. Discussion

In our case study, the 8-year-old girl came to us with a complaint of urinary incontinence. Our physiotherapy management was a combination of various treatment approaches over 15 weeks. In a study conducted by Sankarganesh et al. (2018) they stated that the stimulation of pudendal nerve using electrical currents would cause a direct motor response and widespread contraction of pelvic floor muscles<sup>2</sup> hence, our treatment began with electrical stimulation using IFT which assisted in the initiation of contraction of the pelvic floor muscles. The abdominal capsule consists of the diaphragm, the abdominal muscles, the back extensors and the pelvic floor and weakness of any one of the components would lead to dysfunction in the other. Based on this concept and the results of previous studies our exercise protocol consisted of a combination of breathing exercises,<sup>3</sup> abdominal muscle strengthening<sup>3</sup> along with pelvic floor muscle strengthening using Kegel's exercise<sup>4</sup> to improve the strength of the abdominal capsule as a whole which showed a positive result in reducing the dribbling episodes. As we observed postural deviations during our assessment postural correction was started along with stretching and strengthening of lower limb muscles. The posture correction along with balance training

cumulatively helped in adapting better gait patterns. As we progressed with our treatment we noticed that the dribbling episodes occurred only with high impact activities such as jumping and hence the incorporation of Knack maneuver in the treatment protocol helped in reducing the dribbling episodes even during high impact activities. Thus physiotherapy management including multiple components helped in dealing with the problem of urinary incontinence and improving the patients overall quality of life and negated the need for surgical intervention.

### 5. Conclusion

Incorporating a holistic approach using physiotherapy maneuvers in the treatment of urinary incontinence in children was thus found to be effective in treating the disorder and also to eliminate the need for surgical intervention.

### 6. Source of Funding

None.

### 7. Conflict of Interest

The authors declare no conflict of interest.

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