

# Effectiveness and safety of cervical catheter tip placement in intrathecal baclofen treatment of spasticity: a systematic review

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## Background

- ▶ Intrathecal baclofen (ITB) via a thoracolumbar catheter effectively treats lower extremity (LE) spasticity. Effects on upper extremity (UE) are limited.<sup>1</sup>
- ▶ Difference in effectiveness might be related to the steep baclofen gradient in the cerebrospinal fluid, with a low cervical concentration after thoracolumbar administration.<sup>2</sup>
- ▶ Cervical ITB might ameliorate spasmolytic effects on UE, however it could negatively influence pulmonary function and sleep disorders.<sup>3</sup>

## Objective

To evaluate effectiveness and safety of ITB treatment administered via a cervical catheter tip.

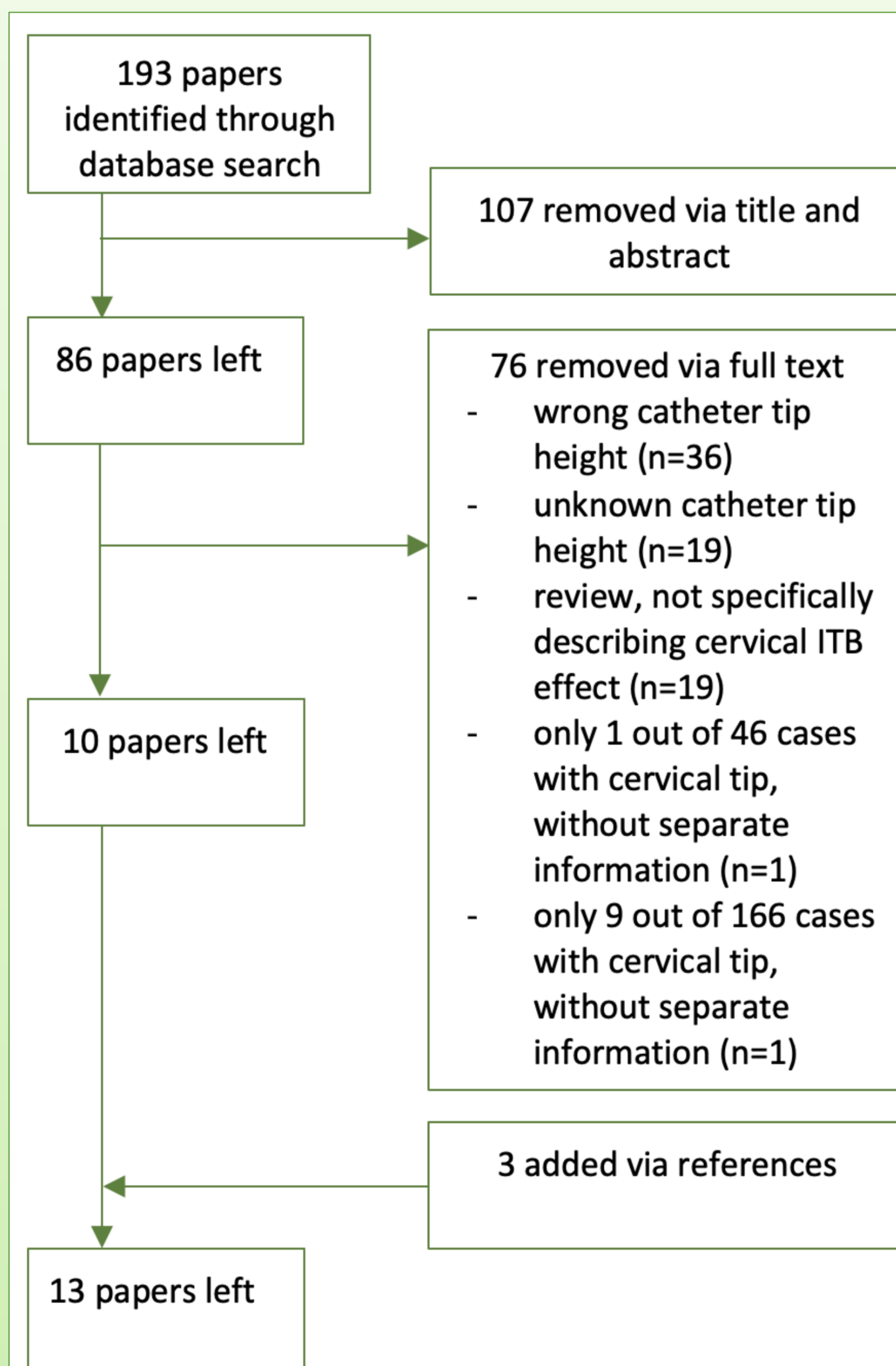
## Methods

### Search strategy

Literature search: PubMed and the Cochrane Library, up to September 2020.

### Selection of articles

- ▶ Patients with ITB, catheter tip at cervical region or at the first thoracic level.
- ▶ Independently of diagnosis.



## Results

**Studies (n=121):** 1 cohort study, 11 case series, 1 case report.

**Risk of bias:** moderate to critical.

**Spasticity (n=54):** improvement in only UE in 6%, in only LE in 2%, in both UE and LE in 50% and without specification of location in 41%. Cervical tip more effective to treat UE spasticity than thoracic tip.

**Arm function (n=33):** improved in 88%.

**Complications (n=116):** drug-related 1%, technical complications 20%. Effects on respiratory function and sleep apnea remain unknown.

## Conclusion

Cervical administered ITB seems to improve UE spasticity and function, without causing more complications than ITB administered via a lower catheter. However, mainly drug-related complications have not been thoroughly investigated and available literature is of poor methodological quality. More research is needed to confirm efficacy and safety.

Study	Number of cases	Tip height	Spasticity	Arm function	Complications
1	2	C5-6	MAS: 3 (UE) ⇒ 1-2 (UE&LE) (1) Subjective: + (UE), = (LE) (1)	Subjective: + (1)	NI
2	4	C2-C7	Subjective: = (1); + UE&LE (1); + LE (1); + UE (1)	Subjective: + (1)	0
3	1	C5-6	MAS: 2 (UE) ⇒ 0 (UE) (1)	NI	0
4	5	C5-T1	Subjective: + (5)	NI	1
5	20	Up to 10 cm from C7-C8	NI	NI	0
6	3	T1	MAS: 3-4 (UE&LE) ⇒ 0-3 (UE), 1-2 (LE) (3)	NI	NI
7	11	C1	NI	MUUL: + (11)	1
8	19	C1	NI	Subjective: + (15), = (3), - (1)	6
9	23	C5-C7	AS: 4.0 (UE&LE) ⇒ 3.0 (UE), 3.1 (LE) (23)	NI	10
10	2	C1-3	NI	Subjective: + (1)	2
11	15	C5-T5	Subjective: + (NI)	Subjective: + (NI)	NI
12	11	C4	AS: 3-4 ⇒ 1-3 (11)	NI	3
13	5	C4	AS: 3-5 ⇒ 1-3 (5)	NI	2

LE: lower extremity; (M)AS: (modified) Ashworth scale; MUUL: Melbourne assessment of unilateral limb scale; NI: no information; UE: upper extremity; +: improvement; =: stable; -: deterioration; ⇒: reflects pre- and post-intrathecal baclofen score

## References

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