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# Perspectives in Deformities Treatment: A Systematic Review on Percutaneous Needle Tenotomies

**Topic:** Complications/Sequelae (ie Spasticity, Immobilization and Frailty)

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## BACKGROUND

Progressive range-of-motion limitations and resistance to passive mobilizations of upper and/or lower limb joints may lead, clinically, to deformities. Percutaneous needle tenotomies (PNTs) constitute a promising approach that enables direct access to tendons through minimally invasive interventions. They can be performed rapidly without need for large incisions or general anaesthesia. However, the reported procedures are heterogeneous and currently conducted without guidelines. We aimed to determine the indications for PNTs described in the current literature. Our secondary aim was to identify the different procedures reported, as well as their efficacy and their safety.

## METHODS

A systematic review following PRISMA guidelines (and Prospero registration CRD42022350571) was conducted to identify original articles that mentioned PNT in humans and reported its application, description, effectiveness or adverse events. Non-percutaneous tendinous surgical procedures and ineligible designs were excluded. The Downs and Black checklist was used to assess the risk of bias.

## RESULTS

A total of 540 studies were identified from the MEDLINE, Embase, Cochrane Library, and PEDro databases. Fourteen clinical studies met the inclusion criteria and were found to have an acceptable quality (674 individuals, 1664 tenotomies). Our results indicated a wide variety of indications for PNTs in children and in adults. We highlighted 24 tendons as eligible targets in the upper and lower limbs. Tenotomies were performed with either 16- or 18-Ga needles, lasted from 1 to 30 min, and were performed using various procedures. Their efficacy was mainly assessed through clinical outcomes highlighting tendon discontinuity on palpation after the procedure. Passive range-of-motion gains after tenotomy were reported for both upper and lower limbs with an estimated 5% complication rate.

## CONCLUSION

Current evidence suggests that PNT procedures are safe and effective for treating various deformities, but require supervision by trained multidisciplinary teams. Further studies are needed to validate the efficacy of PNT, involving rigorous analysis of reported pain and longer follow-ups.

**Statement of Disclosures**

None

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