

Percutaneous Needle Tenotomy for Tendo-achillis Release in Clubfoot – Technical Note

Sandeep Patwardhan¹, Ashok Shyam^{1,2}, Parag Sancheti¹

ABSTRACT

Tendo-achillis tenotomy is required as last step of ponseti method of treatment of Congenital Talipes Equino Varus (CTEV). This technical note describes a simple method of doing a percutaneous tenotomy of tendo-achillis using a wide bore needle. This is a simple method and easy to learn and gives predictable results.

Keywords: Congenital Talipes Equino Varus, Clubfoot, percutaneous needle tenotomy, tendo-achillis

INTRODUCTION

Tenotomy of the tendo-achillis is required in almost 85% of cases of Congenital Talipes Equino Varus (CTEV) treated with Ponseti technique [1,2]. The tenotomy is essential to correct the equinus deformity and gain dorsiflexion [1,2]. Mini-open and percutaneous techniques are been described for doing tendo-achillis tenotomy. Use of wide bore needle to perform percutaneous tenotomy of tendo-achillis was first described by Minkowitz et al [3] and has been reported by few other authors [4,5]. With the global ponseti initiative aiming to reach the rural population, this is a simple technique to be learned and used. We describe the details of the technique and provide a video of the same.

TECHNIQUE

Tendo-achillis tenotomy is planned when midfoot pirani score came to zero after serial casting by ponseti technique. The baby is taken under inhalation

anaesthesia or alternatively oral sedative can be used.



Figure 1. Technique of percutaneous needle tenotomy of Tendo-achillis. Preprocedure ankle plantar flexion and dorsiflexion where tendo-achillis tightness can be felt (A,B). 16 Gauge needle is inserted from the medial side of tendo-achillis about a finger breadth proximal to the insertion (C). Tenotomy is completed by cutting through the tendon while a constant dorsiflexion force is applied to the foot (D). A release is felt when tenotomy is completed and needle is removed. Post-procedure ankle movements are much improved as compared to the preprocedure movements (E,F)

Knee is kept at 90° flexion and hip abducted to reach the posterior part of the foot. The equinus deformity at the ankle is assessed (Fig.1A,B). The parts are prepared with betadine solution and all aseptic

¹Sancheti Institute for Orthopaedics and Rehabilitation
16, Shivaji nagar, Pune, India

²Indian Orthopaedic Research Group, Thane, India.

Corresponding Author:

Dr. Ashok Shyam
Sancheti Institute for Orthopaedics and Rehabilitation
16, Shivaji nagar, Pune, India
Email – drashokshyam@yahoo.co.uk

precautions are taken. The tendo-achillis is palpated as a tense cord when the foot is dorsiflexed. Sterile 16 gauge needle is chosen for the procedure. The foot is kept dorsiflexed to tense the tendo-achillis and needle is inserted from the medial border of the tendo-achillis about one finger breadth proximal to the insertion of tendo-achillis or the posterior heel crease (Fig.1C). In case the child is very chubby, it is sometimes difficult to feel the complete extent of tendo-achillis. In these cases a more proximal insertion of the needle will be required and needle will be required to be inserted to a greater depth. The tip of the needle is used to cut the tense fibres of tendo-achillis and a Grating sensation can be felt and heard (refer video). A dorsiflexion force is continuously applied to the foot and as the tenotomy is completed a snap is felt and heard (refer video) with visible correction of dorsiflexion (Fig.1D). After this the needle is removed and dorsiflexion is rechecked and ankle movements are full and free (Fig.1E,F). A corrective cast is then applied for 3 weeks.

DISCUSSION

Tenotomy of the tendo-achillis is an essential step of ponseti treatment of CTEV. Conventional blade tenotomy achieves good correction, however complications like damage to neurovascular structures leading to bleeding or pseudo aneurysms are reported [6,7]. In this respect needle tenotomy is a relatively simple procedure which is less invasive and probably has less morbidity. It does not require an operation theatre and can safely be done as OPD procedure under sedation. This will also decrease the cost of the procedure. Again as mentioned earlier, with global clubfeet initiative, more paramedics are being involved in treatment of CTEV. This percutaneous needle technique is easy to learn and is relatively free of complications and will be much useful for these initiatives too. This technique is already described in literature [3,4] and we are just providing a detail technical steps and a video for easy learning and thus promote use of this safe procedure. The author has been using this technique for over 6 years now and has performed over 600 procedures with good results in all cases. In all cases adequate correction could be achieved and no open procedure was required in any case. Even with such good results, authors found that the technique is poorly reported in literature with only three series [3,4,5]. The main purpose of this technical note is to create awareness of this technique and to evoke other surgeons to use and validate it as more data is

required in terms of defining the limitation of the technique, use in delayed and older cases and use in syndromic feet.

VIDEO TECHNIQUE

Available on www.jocr.co.in
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CLINICAL MESSAGE

Percutaneous needle tenotomy for tendoachillis release in Club Foot is a simple and reliable procedure.

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