[O14] PERCUTANEOUS NEEDLE FLEXOR TENOTOMY OF HAMMER, MALLET AND CLAW TOES IN THE DIABETIC PATIENT

Jonas Hedegaard Andersen[1], Sine Hangaard[2], Klaus Kirketerp-Møller[2], Anne Rasmussen[2]

[1]*Nordsjaellands Hospital Hilleroed, Steno Diabetes Center A/S, Hilleroed, Denmark*
[2]*Bispebjerg Hospital, Steno Diabetes Center A/S, Copenhagen, Denmark*

Aim: Diabetic foot ulcer is a costly complication, prevention and prompt treatment is important to reduce the risk of infection, minor and major amputations. The aim of the study was to examine the effectiveness of a modified minimally invasive flexor tenotomy technique performed with needle, to prevent and heal toe ulcers in diabetic patient with claw, hammer and mallet toe deformities, seen in our multidisciplinary outpatient clinic.

Method: Patients referred from podiatrist to orthopedic surgeon between 17th Feb. 2015 and 23th Feb. 2016 that underwent percutaneous needle tenotomy of the deep and superficial flexor tendons of the toes. The surgical procedure was performed in local anesthetics. The tenotomy was Performed with a needle, with a diameter of 1,2 mm, and length of 40mm. The needle was introduced through the skin immediately proximal to the web level, in the toe chosen for tenotomy, corresponding to the placement of the deep and superficial flexor tendons. All patients were offered therapeutic sandals and seen at 2 and 7 days post intervention.

Results/Discussion: 42 patients had 135 toes treated by percutaneous tenotomy, 16(12%) toes with ulcers and 119(88%) toes with impending ulcerations were treated. Average age was 66.02 years (41-89 years), 30 (71%) were males, average diabetes duration was 24,69 years (6-70 years), 28 patients had type 2 diabetes (66,6%), average BMI were 29,9 kg/m^2 (18,9-41,6 kg/m^2), HbA1c 63,23 mmol/mol (33-96 mmol/mol), total cholesterol 4,7 mmol/L (1,4-9,4 mmol/L) and blood pressure 135/75 mmHg (97-200/56-96 mmHg), 4 patients were smokers (10%). Total loss of vibration sense (>50 volt) was observed in 57% off right and 55% of left feet, palpable foot pulses were found on right foot in 36 patients (86%) and 38 on left foot (90%). Retinopathy was present in 5 patients (12%). Ualbcrea ratio was 92,4 (3-920).

All surgical incisions healed uneventfully, 41 patients after 2 days (98%), and one patient after 7 days (2%). No complications, e.g. bleeding or pain were recorded. There were 12 neuropathic (75%), 3 neuro-ischemic (19%) and 1 ischemic ulcer (6%). The average duration of ulcer before tenotomi was 6,5 weeks (1-26 weeks), all ulcers (16) healed in the observation period, in a mean of 24 days (2-105 days). There was no recurrence of toe ulcer in the period. No infection was recorded and no amputations performed due to the procedure. Eight patients had transfer complication (19%), with a total of 12 toes affected. 4 toes had transfer ulcers (33%), and 8 incurred pressure signs (67%) after the primary tenotomy. One patient underwent re-tenotomy due to insufficient primary procedure (2%). Mostly the tenotomy was performed on right foot 90 toes (67%). The tenotomies performed were distributed on: first toe 22 (17%), second toe 37 (27%), third toe 34 (25%), fourth toe 23 (17%) and fifth toe 19 (14%). 6 patients (14%) needed assistance from home nurse to change the dressing or wound observation after the procedure. 28 patients (67%) were treated with handmade shoes with rocker bottom to prevent future ulcers.

Conclusion: Needle tenotomy is a simple, safe and effective procedure for preventing and/or treating ulcers of claw, mallet and hammertoe deformities in diabetic patients. This off-loading surgery should be offered all patients at-risk of ulcers of a hammer, mallet or claw toe. The procedure can result in transfer ulcers if not performed on all toes of one foot at same primary intervention. Flexor tendon tenotomy of the first toe can present a challenge, likely due to the caliber of the tendons, and relation to the sesamoids. The follow-up period was relatively short, and further investigation is needed, and will be carried out at our center.