Clinical Protocol for Radiotherapy for Dupuytren's and Ledderhose Disease (UK)

1. Introduction and Purpose

This document guides the GCUK recommended radiotherapy protocol for the treatment of Dupuytren's disease of the hand and Ledderhose disease of the foot.

2. Terms and Definitions and Abbreviations

Dupuytren's disease: This is a benign hyper-proliferative disorder of the palmar (hand) fascia. This manifests as nodules, cords and skin retraction.

Dupuytren's contracture: This occurs when the cords form a contracture, so that the fingers cannot be straightened.

Ledderhose disease (plantar fibromatosis): This is a benign hyper-proliferative disorder of the plantar (foot) fascia. This tends to cause nodules (lumps) which may be painful and limit mobility.

Surgical strategies for release of contracture: These strategies include surgical fasciotomy, collagenase injection (Xiapex), and needle aponeurotomy.

DD Dupuytren's Disease
LD Ledderhose Disease
GC GenesisCare
OMS Oncology Management System
HFS Head First Supine
FFP Feet First Prone

3. Patient selection/Inclusion criteria

a. Dupuytren's disease

- In early progressive disease, radiotherapy is used to prevent the formation of a contracture where there is either no contracture (stage N), or up to 10 degrees of contracture (stage N/1).

- In advanced disease: Whilst radiotherapy has no role in the treatment of an established contracture, there may sometimes be a role for treating other active nodules.
- Post-operative: radiotherapy may be used after the release of a contracture to prevent the repeat formation of a contracture.
- Garrod's (dorsal Peripheral Interphalangeal joint) pads – can also be treated with radiotherapy.

b. Ledderhose disease

Radiotherapy is generally used a primary treatment for Ledderhose disease where there is a growth of nodules or symptoms (generally pain) associated with the nodules.

4. Radiotherapy Dataset

Essential:

- Radiotherapy Referral (paper or electronic) detailing site and laterality.
- Electron Prescription and Planning form (PHY-TEM-002) completed by clinician detailing site, laterality and for Dupuytren's referrals this must include stage of disease.

Desirable:

- Referral letter from referring specialist to clinician where available.
- Pre-consultation questionnaire returned from patient stating site and laterality.
- Clinic annotation from consultant stating site and laterality.

5. Repeating radiotherapy

For patients who have tolerated the first course of radiotherapy, and whose disease progresses at least one year after the initial treatment, a repeat dose of radiotherapy to the hand or foot may be considered.

6. Consent

As per Dupuytren's Consent Form (RT-TEM-207).

7. Scheduling of Patients

Cases may start any weekday – Preferably not a Friday. Treatment is delivered in two phases, delivered 2-4 months apart.

8. Target Volumes

Hand:
Palpable nodules and/or cords and areas of skin retraction are marked. An initial margin of 2cm is marked to field edge. The field is modified according to loss of hyperextension, symptoms etc. Sometimes, if the disease is multifocal, the whole hand may be marked as the target.

Re-treatment (hand and foot):
The margins for re-treatment may be reduced to reduce toxicity.

Post-operative (hand): The area which has been released will be covered, and often other disease on the palm and fingers is covered, although that is an individualised decision per patient.

Foot:
The nodules are marked and 2cm added around to field edge. Sometimes more of the plantar fascia may be included. If there are no palpable nodules, and the fibromas have only been noted on a scan, then this area may be image-defined.

Modality:
6Mev electrons with either 0.5 cm bolus (for Elekta machines) or 0.8cm bolus (for Varian machines) over entire area.

Organs at Risk:
Not applicable

9. Prescription Dose

Standard protocol for Dupuytren's and Ledderhose disease:

- Phase 1 = 15 Gy in 5 fractions over 1 week
- Gap = 8-16 weeks (generally 12 weeks patient preference)
- Phase 2 = 15 Gy in 5 fractions over 1 week

Alternative protocol: 21 Gy in 7 fractions over 2.5 weeks, with each fraction being given on alternate weekdays.

Re-treatment: 15 Gy in 5 fractions over 1 week as a single phase

Dose Constraints: Not applicable

Plan approval: Prescription sign off by referring consultant as plan approval

10. DD and LD pathway and mark-up procedure

For the DD and LD pathway and mark-up procedure see:

- Electron skin cancer and benign conditions Pathways RT-SOP-515

- Electrons skin cancer and benign mark-up work instruction RT-WI-516

11. Pre-treatment Quality Assurance

Not applicable

12. Pre-treatment Verification/Checks

Upon receipt of bespoke electron cut outs, a check must be performed to ensure they have been made to the correct size and shape. Follow the process in the Electron skin cancer and benign conditions Pathways RT-SOP-515.

13. Treatment Delivery including patient set-up

For treatment position and delivery process follow the below documentation:

- Electron: Skin cancer and Benign radiotherapy treatment work instruction (RT-WI-517)
- Radiotherapy Treatment Policy (RT-POL-014)
- Varian treatment delivery work instruction (RT-WI-436)
- Radiotherapy Weekly Patient Assessment work instruction (RT-WI-407)
- Radiotherapy end of treatment work instruction (RT-WI-408)
- Electron Prescription and Planning form (PHY-TEM-002)
- Dupuytren's Consent form (RT-TEM-207)
- Patient identification procedures for radiotherapy UK-Standard Operating Procedure (RT-SOP-003)
- Skin radiotherapy standard operating procedure PHY-SOP-022
- Electron: skin cancer and benign – mark-up work instruction RT-WI-516
- Electron Databook - Elekta Linacs PHY-TEM-023
- Electron: Skin cancer and Benign radiotherapy pathways RT-POL-515

14. Follow-up process

- Follow-up appointments – not required
- Questionnaires sent at 3 and 12 months post treatment- then at 12-month intervals for 5 years

15. References

1. Seegenschmiedt MH, Olschewski T, Guntrum F. Radiotherapy optimization in early-stage Dupuytren's contracture: First results of a randomized clinical study. *Int J Radiat Oncol Biol Phys* 2001; 49: 785-798.

2. Seegenschmiedt MH, Keilholz L, Wielputz M, et al. Long-term outcome of radiotherapy for early stage Dupuytren's disease: A phase III clinical study. In: Eaton C, Seegenschmiedt MH, Bayat A, et al. (eds). Dupuytren's disease and related hyperproliferative disorders. Springer 2012. 349-371.
3. Seegenschmiedt MH, Wielputz M, Hanslian E, and Fehlauer F. Long-term outcome of radiotherapy for primary and recurrent Ledderhose disease. In: Eaton C, Seegenschmiedt MH, Bayat A, et al. (eds). Dupuytren's disease and related hyperproliferative disorders. Springer 2012. 409-427.
4. Seegenschmiedt MH, Attassi M. Radiation therapy for Morbus Ledderhose indication and clinical results. Strahlenther Onkol. 2003 Dec;179(12):847-53.
5. A review of the use of radiotherapy in the UK for the treatment of benign clinical conditions and benign tumours. London: The Royal College of Radiologists, 2015.

Revision History

Version	Date Created	Created By	Description of change
1.0	August 2018	Clinical Development Manager	New Document
2.0	November 2018	Head of Quality	Updated document refers to a change in patient positioning for patients attending for Dupuytren's treatment.
3.0	March 2019	Portfolio Lead Radiotherapy	Radiotherapy Dataset included
4.0	May 2019	Portfolio Lead Radiotherapy	Document reviewed and updated
5.0	July 2020	Rory Walford - Skin and Benign specialist radiographer	Document reviewed and updated
6.0	September 2020	Rory Walford - Skin and Benign specialist radiographer	Added work instructions for Varian linac and sitting position
7.0	December 2021	Rory Walford- skin Benign Specialist radiographer	Annual review