

## RADIOTHERAPY FOR DUPUYTREN'S: FEB 2010 MEDLINE SEARCH

1. Strahlenther Onkol. 2010 Feb;186(2):82-90. Epub 2010 Jan 28.

Radiotherapy in early-stage Dupuytren's contracture. Long-term results after 13 years.

Betz N, Ott OJ, Adamietz B, Sauer R, Fietkau R, Keilholz L.

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**BACKGROUND AND PURPOSE:** In early-stage Dupuytren's contracture, radiotherapy is applied to prevent disease progression. Long-term outcome and late toxicity of the treatment were evaluated in a retrospective analysis. **PATIENTS AND METHODS:** Between 12/1982 and 02/2006, 135 patients (208 hands) were irradiated with orthovoltage (120 kV; 20 mA; 4-mm Al filter), in two courses with five daily fractions of 3.0 Gy to a total dose of 30 Gy; separated by a 6- to 8-week interval. The extent of disease was described according to a modified classification of Tubiana et al. Long-term outcome was analyzed at last follow-up between 02/2008 and 05/2008 with a median follow-up of 13 years (range, 2-25 years). Late treatment toxicity and objective reduction of symptoms as change in stage and numbers of nodules and cords were evaluated and used as evidence to assess treatment response. **RESULTS:** According to the individual stages, 123 cases (59%) remained stable, 20 (10%) improved, and 65 (31%) progressed. In stage N 87% and in stage N/I 70% remained stable or even regressed. In more advanced stages, the rate of disease progression increased to 62% (stage I) or 86% (stage II). 66% of the patients showed a long-term relief of symptoms (i.e., burning sensations, itching and scratching, pressure and tension). Radiotherapy did not increase the complication rate after surgery in case of disease progression and only minor late toxicity (skin atrophy, dry desquamation) could be observed in 32% of the patients. There was no evidence for a second malignancy induced by radiotherapy. **CONCLUSION:** After a mean follow-up of 13 years radiotherapy is effective in prevention of disease progression and improves patients' symptoms in early-stage Dupuytren's contracture (stage N, N/I). In case of disease progression after radiotherapy, a "salvage" operation is still feasible.

PMID: 20127225 [PubMed - indexed for MEDLINE]

2. Ned Tijdschr Geneeskd. 2009;153:A129.

[Treatment of Dupuytren's contracture; an overview of options]

[Article in Dutch]

van Rijssen AL, Werker PM.

Isala klinieken, afd. Plastische Chirurgie, Zwolle, The Netherlands.

In this article we systematically review treatment options for Dupuytren's contracture. There is little evidence on the effectiveness of many treatment modalities for Dupuytren's disease other than expert's opinions (level 4). Most hand surgeons perform selective fasciectomy for Dupuytren's disease. Because of its lower recurrence rate, dermofasciectomy is increasingly being performed to treat recurrences. Percutaneous needle fasciotomy is a minimally invasive treatment with good short-term results in

patients with mild to moderate contractures, but it has a high recurrence rate. Radiotherapy and the use of collagenase are promising, but their role in treating Dupuytren's disease is still unclear.

PMID: 19857298 [PubMed - indexed for MEDLINE]

3. Strahlenther Onkol. 2001 Nov;177(11):604-10.

[Radiotherapy of early stage Dupuytren disease. Long-term results after a median follow-up period of 10 years]

[Article in German]

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**PURPOSE:** In early stage Dupuytren's contracture radiotherapy was applied to prevent disease progression. Long-term results and late toxicity of this treatment were evaluated in a retrospective analysis. **PATIENTS AND METHODS:** Between 1982 and 1994, 99 patients (176 hands) received orthovoltage radiotherapy, which consisted of two courses with 5 x 3 Gy (total dose: 30 Gy, daily fractionated; 120 kV, 4 mm Al), separated by a 6 to 8-week pause. The Dupuytren's contracture was staged according to the classification of Tubiana et al. The long-term outcome was analyzed at last follow-up between July and November 1999. The median follow-up was 10 years (range 7-18 years). Late toxicity was assessed using the LENT-SOMA criteria. **RESULTS:** In Stage N 84% and Stage N/I 67% of cases remained stable. 65% of the cases in Stage I and 83% in Stage II showed progressive nodules and cords. In case of progression we saw no complications after a second radiotherapy or salvage operation. **CONCLUSION:** Radiotherapy effectively prevents disease progression for early stage Dupuytren's contracture (Stage N, N/I). Moreover, in case of disease progression despite radiotherapy salvage surgery is still feasible.

PMID: 11757183 [PubMed - indexed for MEDLINE]

4. Int J Radiat Oncol Biol Phys. 2001 Mar 1;49(3):785-98.

Radiotherapy optimization in early-stage Dupuytren's contracture: first results of a randomized clinical study.

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**PURPOSE:** Radiotherapy (RT) can prevent progression of Dupuytren's contracture (DC). It is unknown whether there is a dose response and which dose is sufficient. Herein, the 1-year results of a prospective randomized trial are presented which compared two different RT dose concepts with each other. **METHODS:** 129 patients (67 males; 62 females) were entered in this study: 69 had bilateral and 60 unilateral involvement of DC accounting for 198 irradiated hands. According to Tubiana's classification, 73

hands had Stage N (nodules/cords, no extension deficit = flexion deformity), 61 had Stage N/I (< or = 10 degrees deficit), 59 had Stage I (11-45 degrees deficit), and 5 had Stage II (46-90 degrees deficit) DC. Prophylactic RT was randomly delivered; in Group A, 63 patients (95 hands) received 10 x 3 Gy (total dose, 30 Gy) in 2 series (5 x 3Gy) separated by 8 weeks; in Group B, 66 patients (103 hands) received 7 x 3 Gy (total dose, 21 Gy) in 1 series within 2 weeks. Orthovoltage RT (120 kV) was applied using standard cones and individual shielding of uninvolved areas of the palm. Relevant patient and disease parameters were equally distributed in both groups. Evaluation (toxicity, efficacy) was performed at 3 and 12 months after RT. Subjective (patient's opinion) and objective parameters (palpation, measurements, and comparative photographs) were applied to assess treatment response. Minimum follow-up (FU) was 1 year. RESULTS: Acute toxicity was minimal, but slightly more pronounced in Group B. Seventy-six (38%) hands developed skin reactions CTC 1 degrees (A, 30; B, 46); and 12 (6%) had skin reactions CTC 2 degrees (A, 4; B, 8). Chronic side effects were limited to dryness, desquamation, skin atrophy, and change of sensation (LENT 1 degrees) in 9 (5%) sites without differences between the two groups. At 3 and 12 months after RT, subjective and objective reduction of symptoms, nodules, and cords occurred in both groups ( $p < 0.01$ ) with no differences between the groups: in Group A, 55 (56%) sites regressed, 35 (37%) remained stable, and 7 (7%) progressed, whereas in Group B, 55 (53%) regressed, 39 (38%) remained stable, and 9 (9%) progressed at 12 months FU (NS). Overall and mean number of nodules, cords, and skin changes decreased at 3 and 12 months. The "treatment failure" rate at 1 year was 16 of 198 (8%), but only 4 (2%) sites required hand surgery for disease progression. Seven of 60 patients with unilateral DC received prophylactic RT for the initially uninvolved, contralateral hand due to progression of DC. CONCLUSION: Both prophylactic RT concepts have been well accepted and tolerated by patients. Within the first year, they were equally effective to prevent further disease progression of DC and obtain considerable symptomatic improvement. Although 1-year results suggest similar response rates for both treatment groups, long-term FU of > 5 years has to be awaited for final assessment and recommendation of an optimized RT treatment schedule.

PMID: 11172962 [PubMed - indexed for MEDLINE]

5. Strahlenther Onkol. 2001 Feb;177(2):74-81.

[Optimization of radiotherapy in Dupuytren's disease. Initial results of a controlled trial]

[Article in German]

Seegenschmiedt MH, Olschewski T, Guntrum F.

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PURPOSE: Radiotherapy prevents progression of Dupuytren's contracture. Herein, 1-year results of a prospective randomized trial comparing 2 different dose concepts are presented. PATIENTS AND METHODS: 129 patients (67 males, 62 females) were included in the study with a minimum 1-year follow-up: 69 had bilateral and 60 unilateral involvement of Dupuytren's disease accounting for 198 irradiated hands. According to Tubiana, 73 hands had Stage N, 61 Stage N/I (< or = 10 degrees flexion deformity), 59 Stage I (11 to 45 degrees) and 5 Stage II disease (46 to 90 degrees). Radiotherapy was randomly delivered: group A (63 patients/95 hands) received 10 times 3 Gy (total: 30 Gy) in 2 series (each 5 times 3 Gy) separated by 8 weeks; group B (66 patients/103 hands) received 7 times 3 Gy (total: 21 Gy) within 2 weeks. Orthovoltage radiotherapy (120 kV) with 40 cm standard cones and individual

shielding was applied. Patient and disease parameters were equally distributed in both groups. Evaluation (toxicity, efficacy) was performed at 3 and 12 months with regard to subjective (patient's opinion) and objective parameters (palpation, measurements, comparative photographs--physician). RESULTS: Acute toxicity was minimal: 76 (38%) hands had skin reactions CTC Grade 1, 12 (6%) CTC Grade 2. Chronic side effects (dryness, skin atrophy, change of sensation, LENT Grade 1) occurred in 9 (5%) hands without differences between treatment groups. At 3 and 12 months follow-up, subjective symptoms and objective signs, nodules and cords, were reduced in both groups ( $p < 0.01$ ) with no differences between groups: a total of 110 (55%) hands (group A: 55, group B: 55) regressed, 74 (37%) hands (group A: 35; group B: 39) were stable. Overall and mean number of nodules, cords and skin changes decreased at 3 and 12 months. 16 of 198 (8%) hands (group A: 7; group B: 9) progressed at 12 months follow-up ("treatment failure"); at 1 year, 7 of 60 patients with unilateral Dupuytren's disease required prophylactic radiotherapy for the contralateral hand due to disease progression. CONCLUSIONS: Prophylactic radiotherapy reduces symptoms and prevents disease progression in early-stage Dupuytren's disease. Both treatment concepts are well-tolerated and equally effective. Acute toxicity is slightly increased with treatment concept B (7 times 3 Gy), while chronic sequelae are low in both treatment groups. Long-term evaluation with follow-up of more than 5 years has to be awaited to recommend one or the other dose concept.

PMID: 11233838 [PubMed - indexed for MEDLINE]

6. Int J Radiat Oncol Biol Phys. 2000 Apr 1;47(1):195-202.

Radiation therapy for benign diseases: patterns of care study in Germany.

Seegenschmiedt MH, Katalinic A, Makoski H, Haase W, Gademann G, Hassenstein E.

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BACKGROUND: Radiotherapy of benign diseases is controversial and rarely applied in Anglo-American countries, whereas in other parts of the world it is commonly practiced for several benign disorders. Similar to a European survey, a patterns of care study was conducted in Germany. METHOD: Using a mailed questionnaire, radiation equipment, treatment indication, number of patients, and treatment concepts were assessed in 1994, 1995, and 1996 in 134 of 152 German institutions (88%): 22 in East and 112 in West Germany; 30 in university hospitals and 104 in community hospitals. Average numbers of each institution and of all institutions were analyzed for frequencies and ratios between regions and among institutions. Radiation treatment concepts were analyzed. RESULTS: A mean of 2 (range 1-7) megavoltage and 1.4 (range 0-4) orthovoltage units were available per institution; 32 institutions (24%) had no orthovoltage equipment. A mean of 20,082 patients were treated annually: 456 (2%) for inflammatory diseases (221 hidradenitis, 78 local infection, 23 parotitis; 134 not specified) 12,600 (63%) for degenerative diseases (2711 peritendinitis humeroscapularis, 1555 epicondylitis humeri; 1382 plantar/dorsal heel spur; 2434 degenerative osteoarthritis; 4518 not specified); 927 (5%) for hyperproliferative diseases (146 Dupuytren's contracture, 382 keloids; 155 Peyronie's disease; 244 not specified); 1210 (6%) for functional disorders (853 Graves' orbitopathy; 357 not specified); and 4889 (24%) for other disorders (e.g., 3680 heterotopic ossification prophylaxis). In univariate analysis, there were geographic (West vs. East Germany) differences in using radiation therapy (RT) for inflammatory and degenerative disorders, and institutional differences (university versus community hospitals) in using RT for hyperproliferative and functional disorders ( $p < 0.05$ ). The prescribed dose concepts were

mostly in the low dose range, <10 Gy but varied widely and inconsistently within geographic regions and institutions. CONCLUSION: Radiation therapy is a well-accepted and frequently practiced treatment for several benign diseases in Germany; however, there are significant geographic and institutional differences. As the number of orthovoltage units decreases, an increasing patient load will demand more megavoltage units, which may compromise the cost-effectiveness of this treatment. Only 4% of all clinical institutions have been involved in controlled clinical trials. To maintain a high level of RT service to other disciplines, RT treatment guidelines, quality control, and continuing medical education are required.

PMID: 10758324 [PubMed - indexed for MEDLINE]

7. Strahlenther Onkol. 1999 Nov;175(11):541-7.

[Radiotherapy of benign diseases: a pattern of care study in Germany]

[Article in German]

Seegenschmiedt MH, Katalinic A, Makoski HB, Haase W, Gademann G, Hassenstein E.

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BACKGROUND: Radiation therapy of benign diseases is controversially discussed and rarely applied in Anglo-American countries, while in other parts of the world, especially Central and East Europe, it is commonly practised for several benign disorders. Similar to the European Society of Therapeutic Radiology and Oncology survey, a patterns of care study was performed in Germany. METHOD: A questionnaire was mailed in 3 years (1994, 1995, 1996) to all radiation facilities in Germany, which assessed equipment, indications, number of patients and treatment concepts. A total of 134 (88%) institutions returned all requested data: 22 in East and 112 in West Germany; 30 in university and 104 in community/private hospitals. The average data of each institution and of all institutions were analyzed for frequencies and ratios between different regions and institutions. RESULTS: A mean of 2 (range 1 to 7) megavoltage (Linac/Cobalt 60) and 1.4 (range 0 to 4) orthovoltage units were available per institution; 32 (24%) institutions had no orthovoltage equipment. A mean of 20,082 patients were treated per year: 456 (2%) for inflammatory diseases (221 hidradenitis, 78 nail bed infection, 23 parotitis, 134 not specified), 12,600 (63%) for degenerative diseases (2,711 peritendinitis humeroscapularis, 1,555 epicondylitis humeri, 1,382 heel spur, 2,434 degenerative osteoarthritis, 4,518 not specified), 927 (5%) for hypertrophic diseases (146 Dupuytren's contracture, 382 keloids, 155 Peyronie's disease, 244 not specified), 1,210 (6%) for functional disorders (853 Graves' orbitopathy, 357 not specified), and 4,889 (24%) for other disorders (e.g. 3,680 heterotopic ossification prophylaxis). In univariate analysis, there were significant geographical (West vs East Germany) differences in the use of radiotherapy for inflammatory and degenerative disorders and institutional differences (university vs community/private hospitals) in the use of radiotherapy for hypertrophic and functional disorders ( $p < 0.05$ ). The prescribed dose concepts were mostly in the low dose range (< 10 Gy), but varied widely and inconsistently within geographic regions and institution types. CONCLUSION: Radiotherapy is a well accepted and frequently practised treatment for several benign diseases in Germany, however, there are significant geographical and institutional differences. As the number of orthovoltage units decreases, an increasing patient load is in demand of more megavoltage units, which may compromise the cost-effectiveness of this treatment. Only 4% of all clinical institutions are involved in controlled

clinical trials. To maintain a high level of radiotherapy service to other disciplines, radiotherapy treatment guidelines, quality control and continuing medical education are required.

PMID: 10584123 [PubMed - indexed for MEDLINE]

8. Cancer Radiother. 1997;1(5):407-16.

[Role of radiotherapy in benign diseases]

[Article in French]

Kantor G, Van Houtte P, Beauvois S, Roelandts M.

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Radiation therapy of benign diseases represent a wide panel of indications. Some indications are clearly identified as treatment of arteriovenous malformations (AVM), hyperthyroid opthalmopathy, postoperative heterotopic bone formations or keloid scars. Some indications are under evaluation as complications induced by neo-vessels of age-related macular degeneration or coronary restenosis after angioplasty. Some indications remain controversial with poor evidence of efficiency as treatment of bursitis, tendinitis or Dupuytren's disease. Some indications are now obsolete such as warts, or contra-indicated as treatment of infant and children.

PMID: 9587370 [PubMed - indexed for MEDLINE]

9. Strahlenther Onkol. 1997 Jan;173(1):27-35.

[Radiotherapy in the early stage of Dupuytren's disease. The indications, technic and long-term results]

[Article in German]

Keilholz L, Seegenschmiedt MH, Born AD, Sauer R.

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AIM: Radiotherapy was applied in our clinic to prevent the disease progression in early stage Dupuytren's contracture. Initial response, long-term outcome, acute and late toxicity of the treatment were evaluated in a retrospective analysis. PATIENTS AND METHOD: Between 1982 and 1993, 96 patients (142 hands) received orthovoltage radiotherapy, which consisted of 2 radiotherapy courses with daily fractionation of 5 x 3 Gy (total dose: 30 Gy) separated by a 6 weeks interval. The Dupuytren's contracture was staged according to the classification of Tubiana et al. [38]. The initial evaluation was performed 3 months after completion of radiotherapy, while long-term outcome was analysed at last follow-up between February and April 1994. The mean follow-up was 6 +/- 2 (range 1 to 12) years. Fifty-seven patients with a follow-up of > or = 5 (median 7,5; mean 9,5 to 12) years were separately evaluated for long-term outcome, i.e. prevention of disease progression. Acute and late treatment toxicity was assessed using the RTOG/EORTC criteria. RESULTS: According to stage, 130 (92%) cases remained stable at 3 months follow-up, 10(7%) improved and 2 (1%) progressed. An objective reduction of symptomatic

cords and nodules was achieved in 107 (75%) cases at 3 months follow-up. Moreover, 87% of the patients reported a subjective relief of symptoms. In long-term follow-up, only 16 of 142 (11%) cases had progressed according to stage. In the group with a minimum follow-up of 5 years (n = 57), 44 (77%) patients experienced no progression, while 13 (23%) progressed inside (8 cases) or outside (5 cases) of the radiotherapy field. Many "failures" could have been avoided with appropriate choice of larger safety margins included in the treated portals, however, most failures were successfully managed by a second radiotherapy or hand surgery. CONCLUSION: Radiotherapy prevents disease progression for early stage Dupuytren's contracture. Thus, an otherwise necessary surgical procedure in advanced stages of Dupuytren's contracture can be avoided. Moreover, in case of disease progression despite radiotherapy a second radiotherapy or salvage operation is still feasible.

PMID: 9082583 [PubMed - indexed for MEDLINE]

10. Int J Radiat Oncol Biol Phys. 1996 Nov 1;36(4):891-7.

Radiotherapy for prevention of disease progression in early-stage Dupuytren's contracture: initial and long-term results.

Keilholz L, Seegenschmiedt MH, Sauer R.

Department of Radiation Oncology, University Erlangen-Nuremberg, Germany.

PURPOSE: Radiotherapy (RT) was given to prevent disease progression in early-stage Dupuytren's contracture. Initial response, long-term outcome, and treatment toxicity were evaluated. METHODS: Between 1982 and 1993, 96 patients (142 hands) received orthovoltage RT, which consisted of two courses with daily fractionation of 5 x 3 Gy (total dose 30 Gy) separated by a 6-week interval. The extent of disease was staged according to the classification of Tubiana et al.. Initial evaluation was performed 3 months after completion of RT; long-term outcome was analyzed at last follow-up (i.e., between February and April 1994). The mean follow-up was 6 +/- 2 (range 1-12) years. Fifty-seven patients with a minimum follow-up of 5 (median 7.5; mean 9.5-12) years were separately evaluated for long-term outcome (i.e., prevention of disease progression). Acute and late treatment toxicity was assessed using the Radiation Therapy Oncology Group/EORTC criteria. RESULTS: According to stage, 130 cases (92%) remained stable at 3 months follow-up, 10 improved (7%), and 2 progressed (1%). An objective reduction of symptomatic cords and nodules was achieved in 107 cases (75%) at 3 months follow-up. Moreover, 87% of the patients reported a subjective relief of symptoms. In long-term follow-up, only 16 of 142 cases (11%) had progressed according to stage. In the group with minimum follow-up 5 years (n = 57), 44 patients (77%) experienced no disease progression, whereas 13 progressed (23%) inside [8 cases (14%)] or outside [5 cases (9%)] of the RT field. Most failures could have been avoided with appropriate choice of larger safety margins included in the treated portals; however, the failures outside were still amenable for another RT course. CONCLUSION: Radiotherapy is effective to prevent disease progression for early-stage Dupuytren's contracture. Thus, it helps to avoid an otherwise necessary surgical procedure which is performed in advanced stages of Dupuytren's contracture.

PMID: 8960518 [PubMed - indexed for MEDLINE]

11. Vestn Otorinolaringol. 1995 Mar-Apr;(2):8-10.

[Intravascular laser irradiation of the blood in the treatment of suppurative septic complications in otorhinolaryngology]

[Article in Russian]

Palchun VT, Lapchednko AS, Kucherov AG.

The paper reviews the results of intravascular laser radiation (ILR) for pyoseptic complications in 8 patients with otogenic and 2 patients with rhinogenic meningitis, 1 patient with cavernous sinus thrombosis and 5 patients with Dupuytren's phlegmon. The adjuvant to conventional treatment use of ILR activates immune system, improves rheological blood characteristics, enhances tissue regeneration.

PMID: 7785162 [PubMed - indexed for MEDLINE]

12. Chirurg. 1993 Jun;64(6):492-4.

[Lack of effectiveness of alternative non-surgical treatment procedures of Dupuytren contracture]

[Article in German]

Weinzierl G, Flügel M, Geldmacher J.

Abteilung für Handchirurgie und Plastische Chirurgie, Chirurgischen Universitätsklinik Erlangen.

In the early stage of the disease a group of patients was treated with radiotherapy, later another group with injections of superoxid-dismutase. The results of follow-up examinations 7 years after radiotherapy and 3 years after treatment with superoxid-dismutase respectively do not differ clearly from spontaneous course of Dupuytren's contracture grade one. At present we cannot recommend an alternative treatment for early stage Dupuytren's contracture.

PMID: 8359061 [PubMed - indexed for MEDLINE]

13. Fortschr Med. 1991 Apr 5;109(10):223-6.

[Dupuytren's contracture. When operate? Conservative preliminary treatment?]

[Article in German]

Falter E, Herndl E, Mühlbauer W.

Abteilung für Plastische-, Wiederherstellende- und Handchirurgie, Städtisches Krankenhaus München-Bogenhausen.

The etiology, symptomatology, clinical findings, course and staging of Dupuytren's contracture are discussed. Surgery is indicated from the second stage onwards; since pain very rarely occurs, it plays no role in establishing the indication for operation. The surgical techniques available are described. Conservative therapy has no influence on the course of the condition, while radiotherapy is inadmissible on account of its side effects. Physical therapy and physiotherapeutic pre-operative measures can improve the results of surgery.

PMID: 2071079 [PubMed - indexed for MEDLINE]

14. Strahlentherapie. 1985 Mar;161(3):143-7.

[Dupuytren's contracture. Radiotherapy in the early stages]

[Article in German]

Herbst M, Regler G.

Conventional radiotherapy is the treatment of choice for the early stages of the Dupuytren contracture. The conventional semi-deep therapy is more favorable than the soft ray technique and the moulage technique. 62 patients have been treated at Erlangen; 33 out of them (46 irradiated hands) with a minimum observation time of 18 months have been evaluated. The pathologic process was stopped in 98% of the cases. 85% of the patients showed an improvement of troubles by regression of tubercles and cords, pains and sensation of pressure. A recurrence was observed only in one patient at the edge of the irradiated volume.

PMID: 3975949 [PubMed - indexed for MEDLINE]

15. Radiobiol Radiother (Berl). 1984;25(6):851-3.

[Radiotherapy of Dupuytren's contracture]

[Article in German]

Köhler AH.

PMID: 6528027 [PubMed - indexed for MEDLINE]

16. Fysiatr Revmatol Vestn. 1981 Jun;59(3):121-5.

[Physical therapy of Dupuytren's contracture]

[Article in Slovak]

Horváth G, Cisár P.

PMID: 7196372 [PubMed - indexed for MEDLINE]

17. MMW Munch Med Wochenschr. 1980 Jan 25;122(4):125-30.

[The treatment of Dupuytren's contracture. A social medical problem (author's transl)]

[Article in German]

Vogt HJ, Hochschau L.

After a brief description of the characteristics of Dupuytren's disease the operative and conservative therapeutic measures are examined from both clinical and social medical aspects. It is shown in 154 patients with Dupuytren's contracture of the hands in various stages that an advance of this disease could usually be prevented by treatment with soft X-rays. A comparison of costs shows that this therapy is at least 11 times cheaper than a good operative procedure without follow-up treatment. For the patient it is highly important that only little time is lost in the outpatient compared with inpatient treatment. Loss of work-place, professional incapacity or inability to work because of Dupuytren's disease can be prevented with a probability bordering on certainty.

PMID: 6767935 [PubMed - indexed for MEDLINE]

18. Dtsch Med Wochenschr. 1975 Jun 13;100(24):1360.

[Letter: Dupuytren's contracture]

[Article in German]

Schink W.

PMID: 1132355 [PubMed - indexed for MEDLINE]

19. Khirurgiia (Mosk). 1974 Dec;(12):106-10.

[Treatment of Dupuytren's contracture (literature review)]

[Article in Russian]

Iandarov VM.

PMID: 4374575 [PubMed - indexed for MEDLINE]

20. Semin Arthritis Rheum. 1973;3(2):155-76.

Dupuytren's contracture: a review.

Vijanto JA.

PMID: 4584528 [PubMed - indexed for MEDLINE]

21. J Kans Med Soc. 1972 Mar;73(3):108-11 passim.

Dupuytren's contracture. When and what to do about Dupuytren's contracture.

Ketchum LD, Robinson DW, Masters FW.

PMID: 4551364 [PubMed - indexed for MEDLINE]

22. J Commun. 1969 Sep;19(3):142-57.

[Treatment of Dupuytren's disease by superficial roentgentherapy with a beryllium-window tube]

[Article in Italian]

Pastremoli A.

PMID: 5346508 [PubMed - indexed for MEDLINE]

23. Friuli Med. 1966 May-Jun;21(3):391-403.

[Radiotherapy of Dupuytren's disease]

[Article in Italian]

Corsi M.

PMID: 5985683 [PubMed - indexed for MEDLINE]

24. Riforma Med. 1963 Aug 24;77:931-4.

[ON THE ROENTGEN TREATMENT OF DUPUYTREN'S DISEASE.]

[Article in Italian]

MARSICO G.

PMID: 14083526 [PubMed - indexed for MEDLINE]

25. Z Arztl Fortbild (Jena). 1963 Jul 1;57:724-33.

[THE TREATMENT OF BENIGN NEOPLASMS AND HYPERPLASIAS OF THE SKIN WITH CRITICAL OBSERVATIONS ON RADIOTHERAPY.]

[Article in German]

SIELER H.

PMID: 14077579 [PubMed - indexed for MEDLINE]

26. Cesk Rentgenol. 1959 Dec;13:393-6.

[Our experiences with radium-irradiation of Dupuytren's contracture.]

[Article in Czech]

RASIN F, DVORAK V.

PMID: 14436337 [PubMed - indexed for MEDLINE]

27. Friuli Med. 1957 Mar-Apr;12(2):223-40.

[Dupuytren's disease; combination review & case reports.]

[Article in Italian]

SCARFI G, ENGLARO GC, VIDAL B.

PMID: 13462019 [PubMed - indexed for MEDLINE]

28. Wien Klin Wochenschr. 1956 Jul 27;68(30):608-9.

[Radiotherapy in Dupuytren's disease.]

[Article in German]

OTT A.

PMID: 13392859 [PubMed - indexed for MEDLINE]

29. Br J Radiol. 1955 Nov;28(335):610-4.

Dupuytren's contracture.

FINNEY R.

PMID: 13269766 [PubMed - indexed for MEDLINE]

30. Strahlentherapie Sonderb. 1954;31:1-367.

[Irradiation therapy of tumors; technic, results and problems.]

[Article in German]

OESER H.

PMID: 14359027 [PubMed - OLDMEDLINE]

31. Lancet. 1953 Nov 21;265(6795):1064-6.

Dupuytren's contracture a radiotherapeutic approach.

FENNEY R.

PMID: 13110053 [PubMed - indexed for MEDLINE]

32. Radioter Radiobiol Fis Medica. 1953;8(6):445-56.

[Clinical and radiobiologic considerations of the efficacy of roentgentherapy in Dupuytren's contracture.]

[Article in Undetermined Language]

SALVINI L, CALDERA F.

PMID: 13155840 [PubMed - indexed for MEDLINE]

33. Strahlentherapie. 1953;90(4):608-12.

[The problem of Dupuytren's finger contraction and its treatment with radium.]

[Article in Undetermined Language]

FINCK KW.

PMID: 13102057 [PubMed - indexed for MEDLINE]

34. Cas Lek Cesk. 1948 Aug 13;87(31):867-71.

[Radiotherapy of Dupuytren's contracture.]

[Article in Undetermined Language]

SLANINA J.

PMID: 18883067 [PubMed - indexed for MEDLINE]