NETHERLANDS CANCER INSTITUTE
ANTONI VAN LEEUWENHOEK

The role of radiotherapy in desmoids.

Rick Haas

Department of Radiotherapy
The Netherlands Cancer Institute Amsterdam

Sarcoma Patients EuroNet

What are desmoids?

Synonyms:

- desmoid tumor
- desmoid fibromatosis
- aggressive fibromatosis

Desmoids are rare:

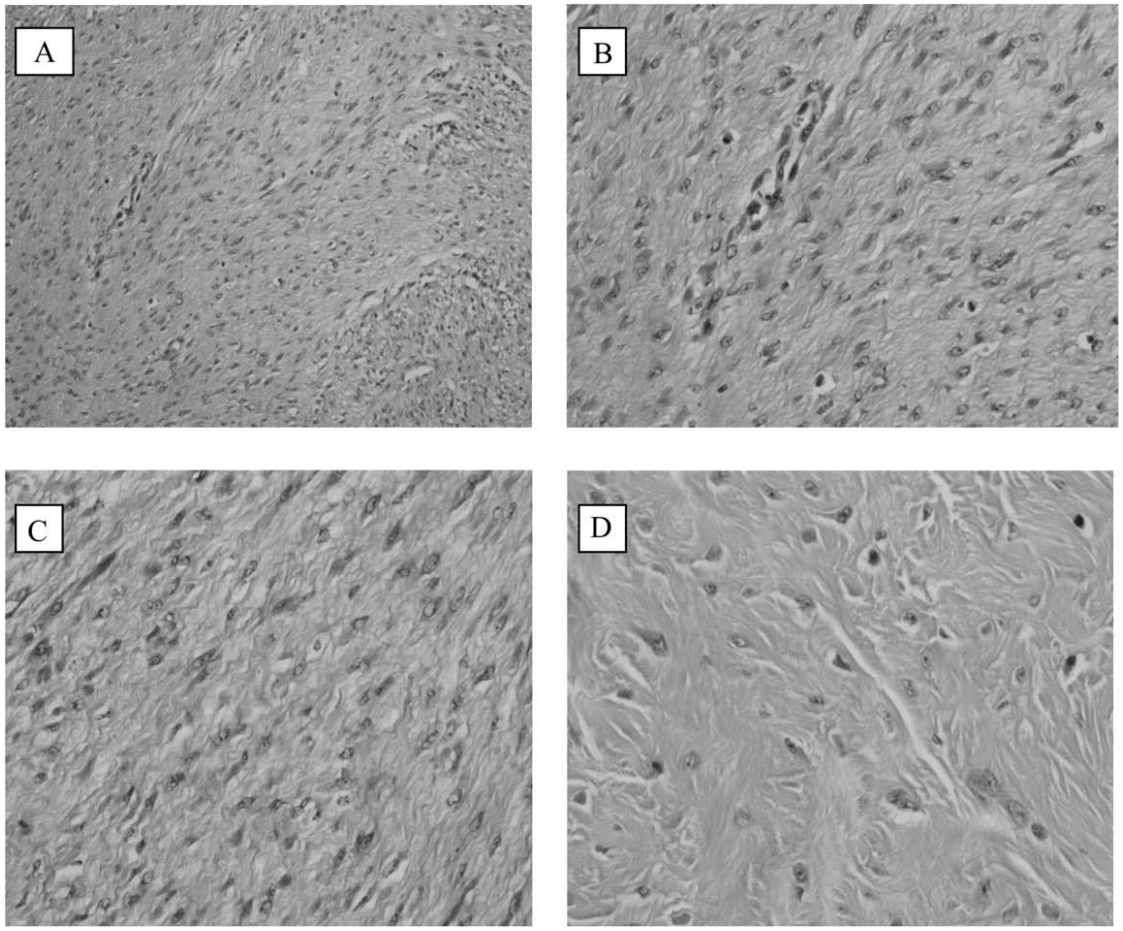
- ~0.03% of all neoplasms
- <3% of all soft tissue tumors
- 2–4 new cases per million per year

Types:

- Spontaneous (>90%)
  - mainly extremities and abdominal wall, but can be seen anywhere
- Associated with FAP (Gardner syndrome; 5-10%)
- Familial infiltrative fibromatosis, hereditary desmoid disease (~1%)
  - extremely rare, associated with APC mutations

Pathology can be difficult

Can look like scar tissue



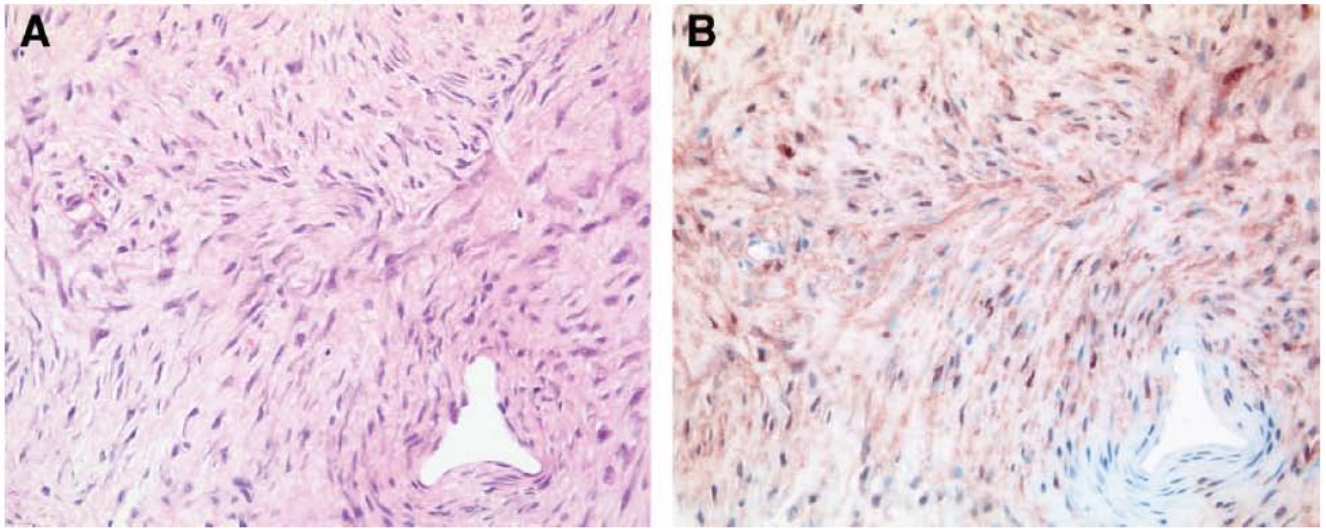
Escobar C et al. Ann Oncol 2012;23:562-569

Annals of Oncology

Pathology can be difficult

Tumors are usually beta-catenin positive

Many chromosomal changes have been documented.
mutations in codon 45F are associated with a poor prognosis



(A) Classic fibroblastic, spindle cell morphology of a desmoid tumor (hematoxylin and eosin, x200); **(B)** desmoid tumor with the characteristic expression of β-catenin (endothelial cells as negative control, x200).

What is the typical desmoid patient?

Slightly more females than males
sometimes related to pregnancy and traumas

Typically between 10 and 40 years of age

Clinical presentation

Usually a painless lump

Phases of growth and progression, stabilization, and sometimes spontaneous regression

It never metastasizes, but it frequently recurs locally.

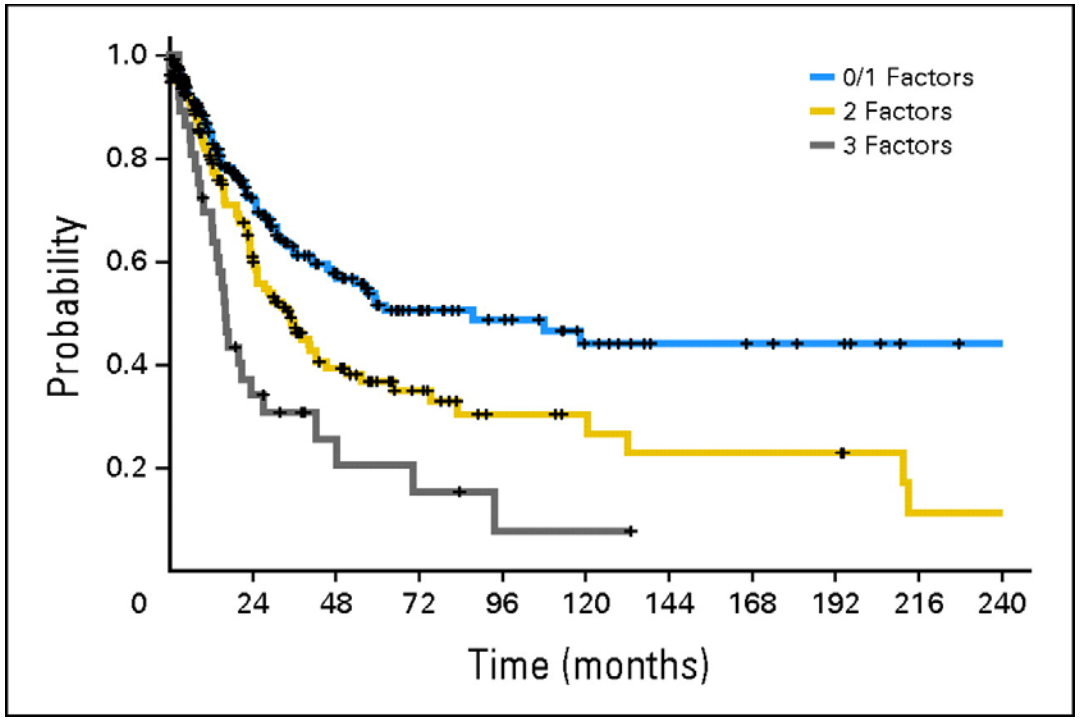
Prognostic factors for local recurrence

Are there “good’ and are there “bad” desmoids ?

What features predict the future of a desmoid patient ?

Prognostic factors for local recurrence

Age <37 years
Size > 7cm
Extra-abdominal disease
Macroscopic residual disease after surgery



Salas S et al. JCO 2011;29:3553-3558

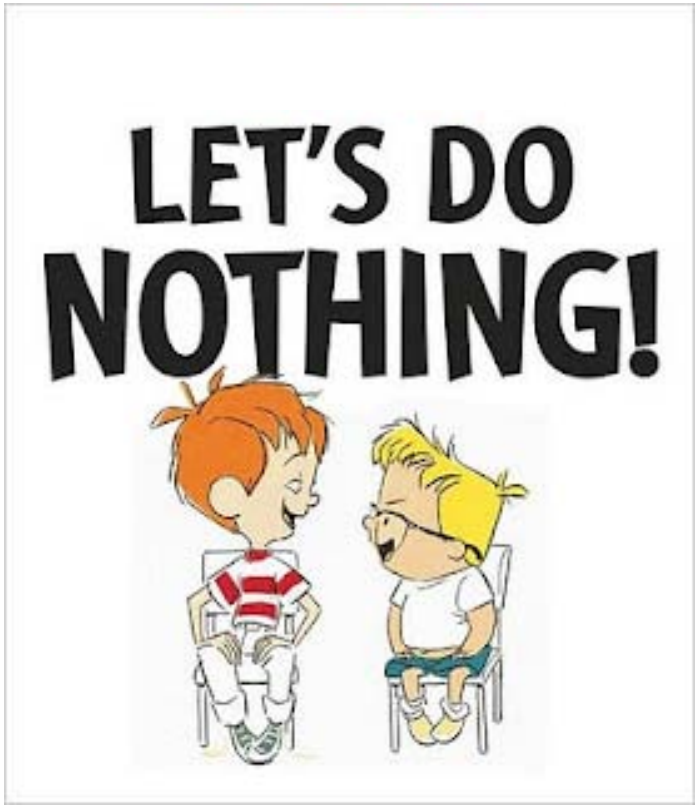
JOURNAL OF CLINICAL ONCOLOGY

Therapy for desmoids

Do nothing as long as reasonably possible

Weigh the balance between the trauma of surgery and the progression of the disease.

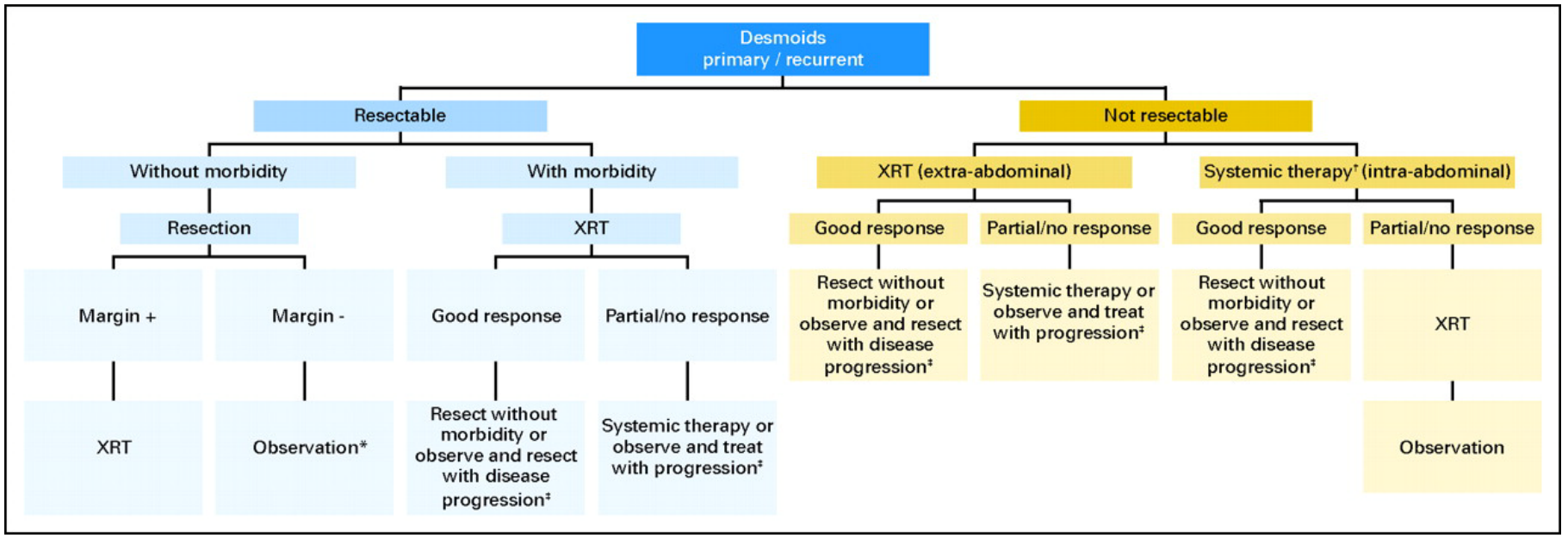
If treatment is necessary: radical surgery




margin

Therapy for desmoids

The University of Texas M.D. Anderson Cancer Center desmoid tumor treatment flow chart.



Lev D et al. JCO 2007;25:1785-1791

JOURNAL OF CLINICAL ONCOLOGY

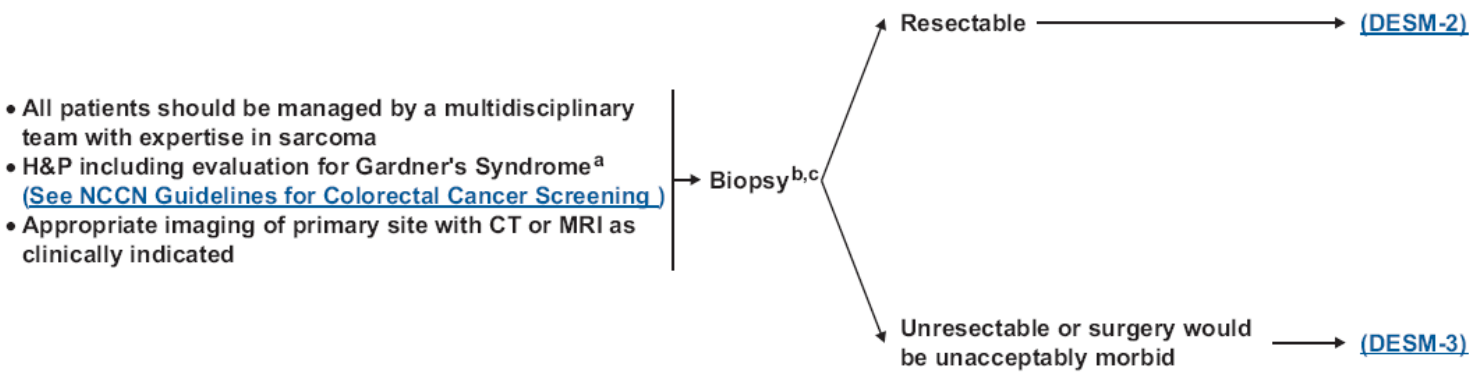
NCCN guideline

National Comprehensive Cancer Network®

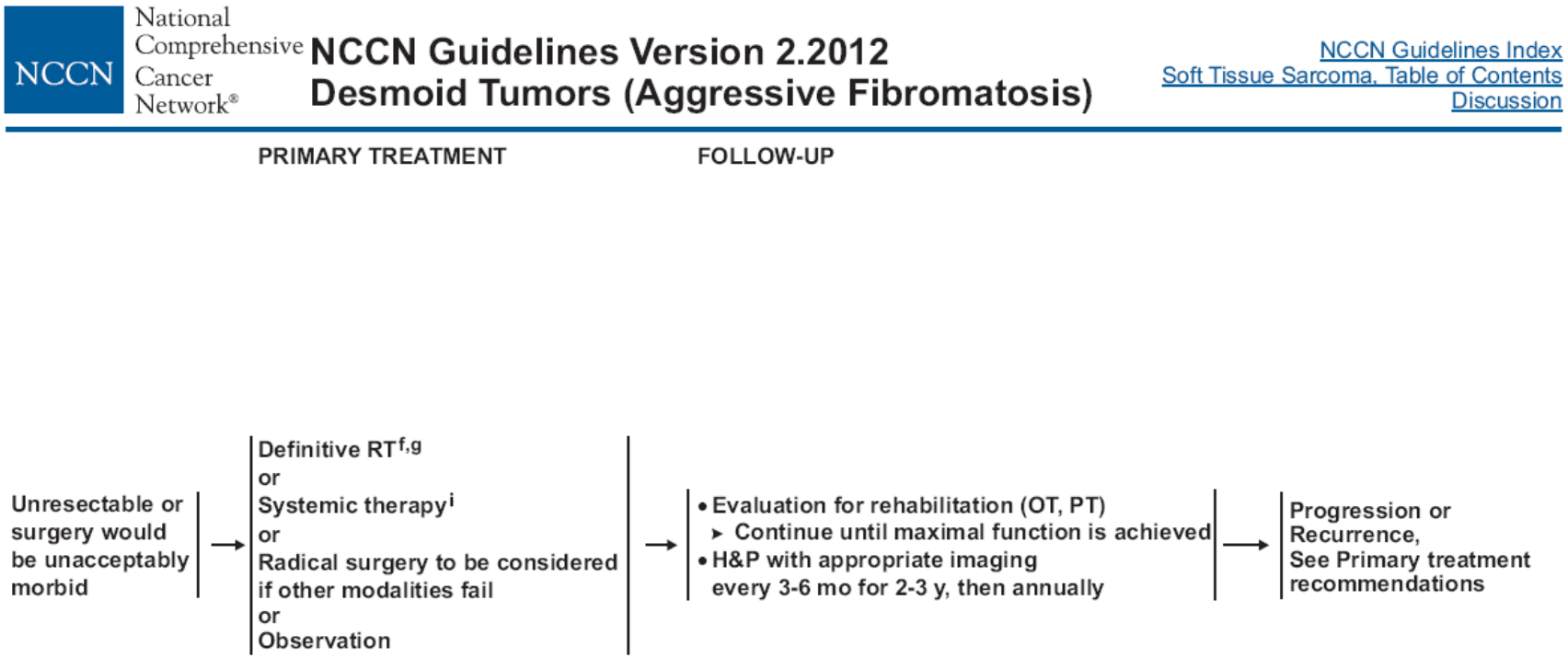
NCCN Guidelines Version 2.2012
Desmoid Tumors (Aggressive Fibromatosis)

NCCN Guidelines Index
Soft Tissue Sarcoma, Table of Contents
Discussion

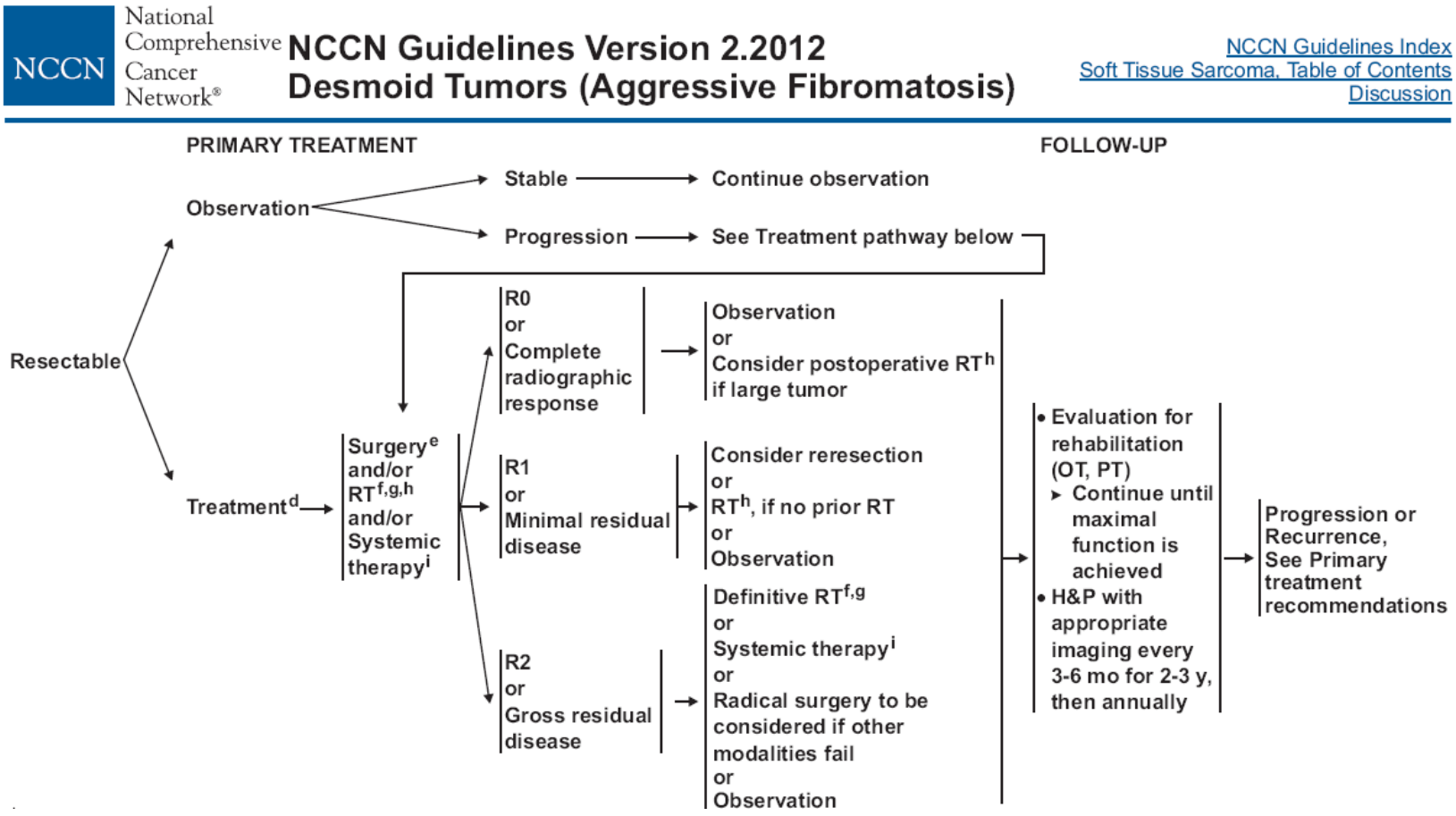
WORKUP



NCCN guideline



NCCN guideline



General guideline

General guideline

do nothing:
watch and wait

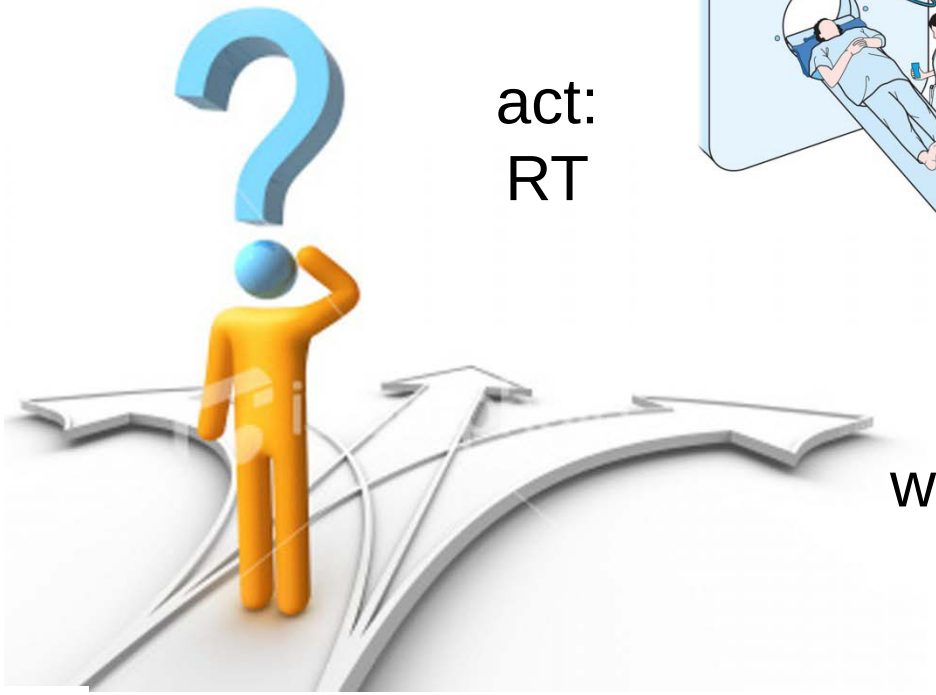
General guideline

act:
surgery

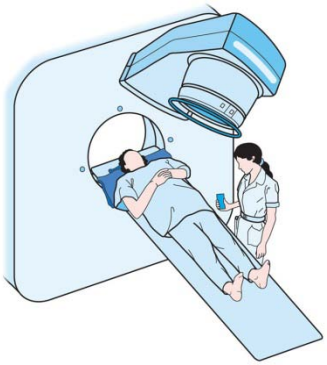
do nothing:
watch and wait

General guideline

act:
surgery



act:
RT



do nothing:
watch and wait

General guideline

decision making:
always together

Role of radiotherapy in desmoids

Radiotherapy in combination with surgery; RT before or after surgery

Or definitive radiotherapy without surgery

(Neo-) adjuvant radiotherapy

Important question: is this the first operation (primary disease) or is this a recurrence?

The more recurrences a patient has suffered, the stronger the indication for (neo-) adjuvant RT.

NCCN guideline: consider RT in

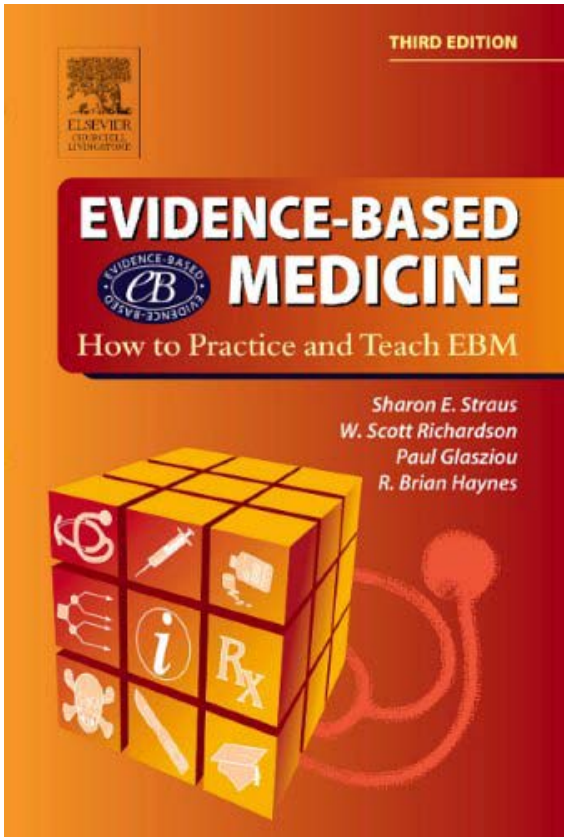
- large tumors
- R1 resection

Note: this will be a decision for a relatively young patient with a benign disease.

Literature: evidence based medicine

Desmoids are rare, surgery is the most important part of management

=> Not so many papers on RT in desmoids



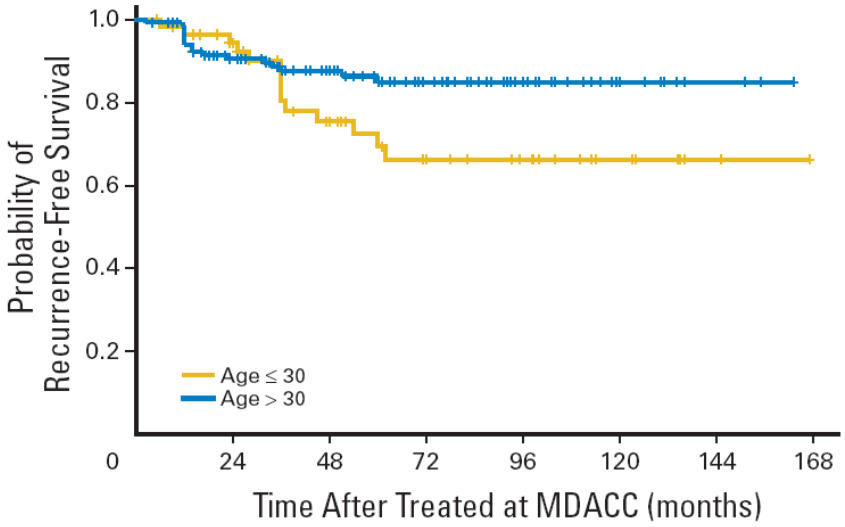
VOLUME 25 · NUMBER 13 · MAY 1 2007

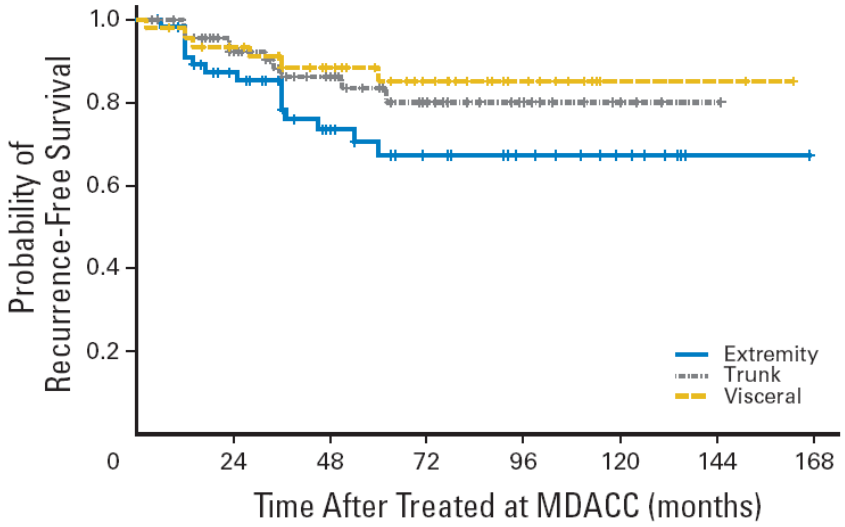
JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Optimizing Treatment of Desmoid Tumors

Dina Lev, Dhanasekaran Kotilingam, Caimiao Wei, Matthew T. Ballo, Gunar K. Zagars, Peter W.T. Pisters, Alexander A. Lazar, Shreyaskumar R. Patel, Robert S. Benjamin, and Raphael E. Pollock





VOLUME 25 · NUMBER 13 · MAY 1 2007

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

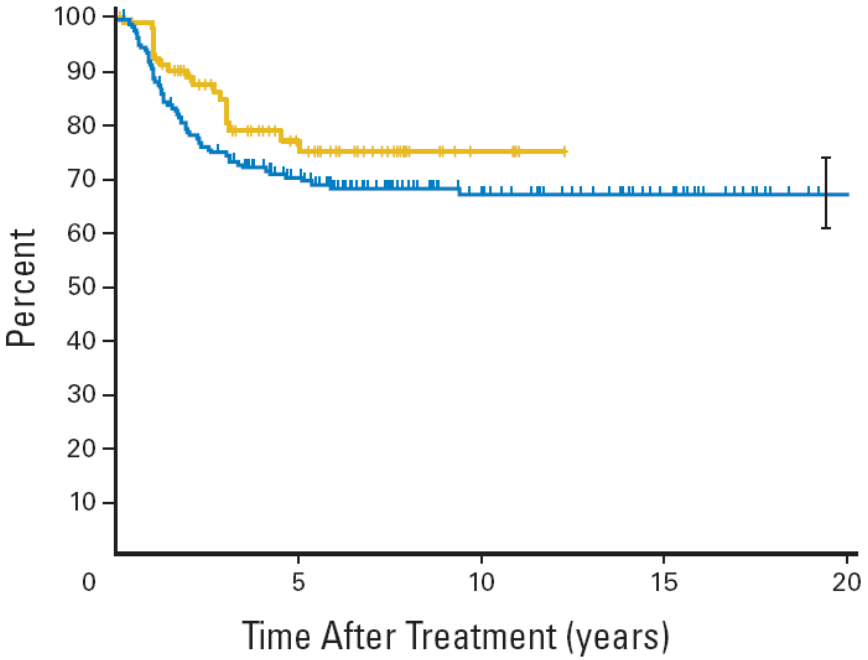
Optimizing Treatment of Desmoid Tumors

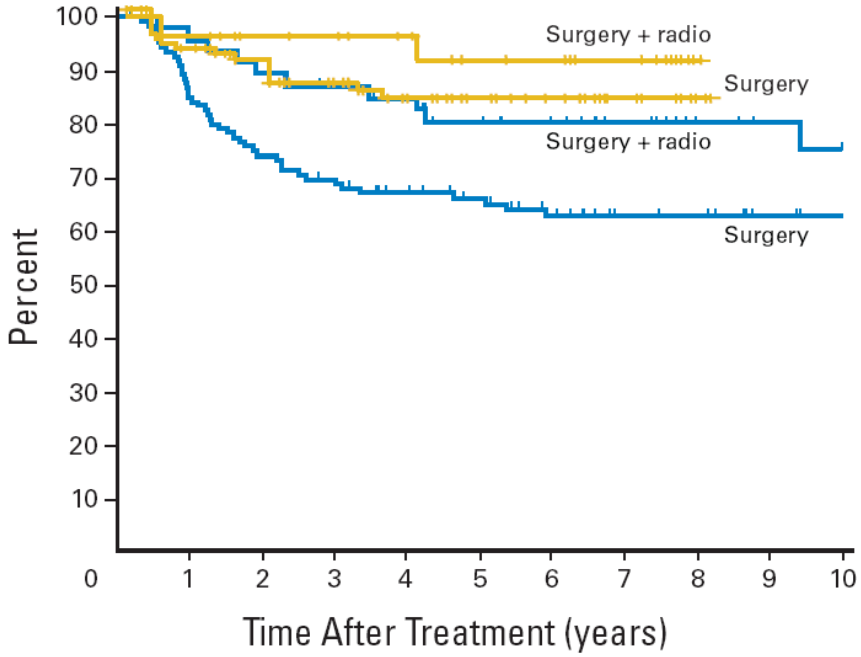
Dina Lev, Dhanasekaran Kotilingam, Caimiao Wei, Matthew T. Ballo, Gunar K. Zagars, Peter W.T. Pisters, Alexander A. Lazar, Shreyaskumar R. Patel, Robert S. Benjamin, and Raphael E. Pollock

Local control

1965-1994

1994-2005

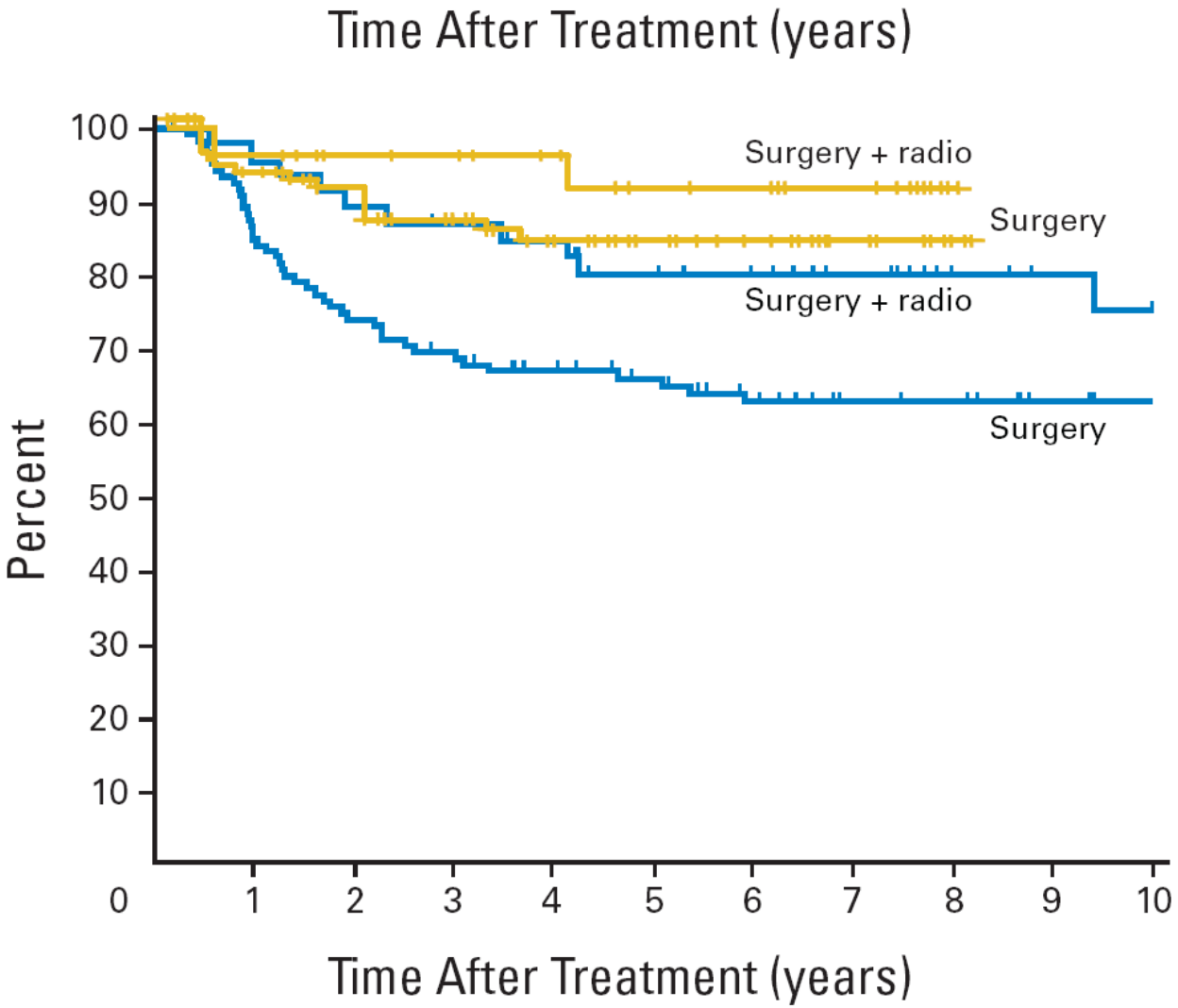




VOLUME 25 · NUMBER 13 · MAY 1 2007

JOURNAL OF CLINICAL ONCOLOGY

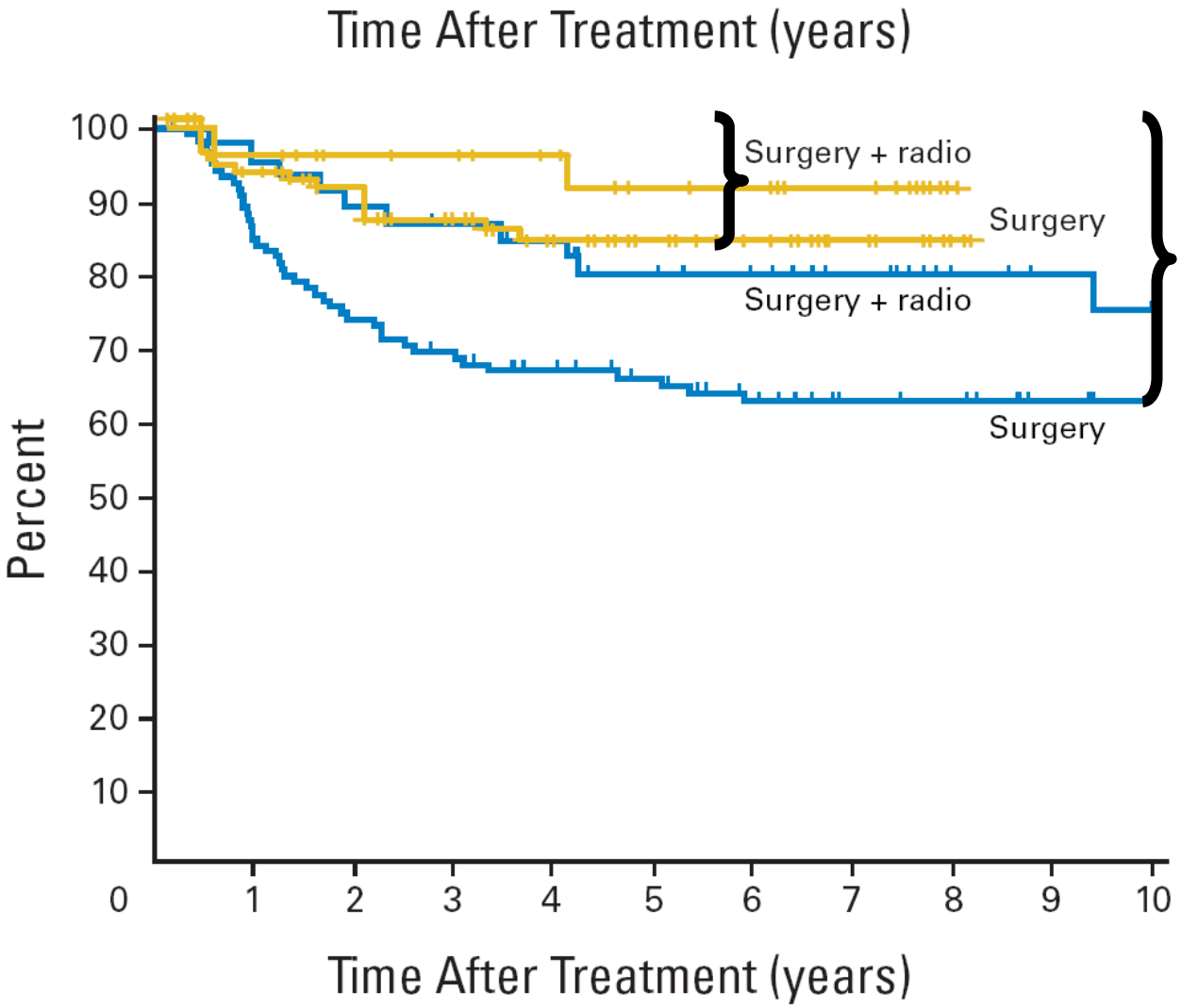
ORIGINAL REPORT



VOLUME 25 · NUMBER 13 · MAY 1 2007

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT



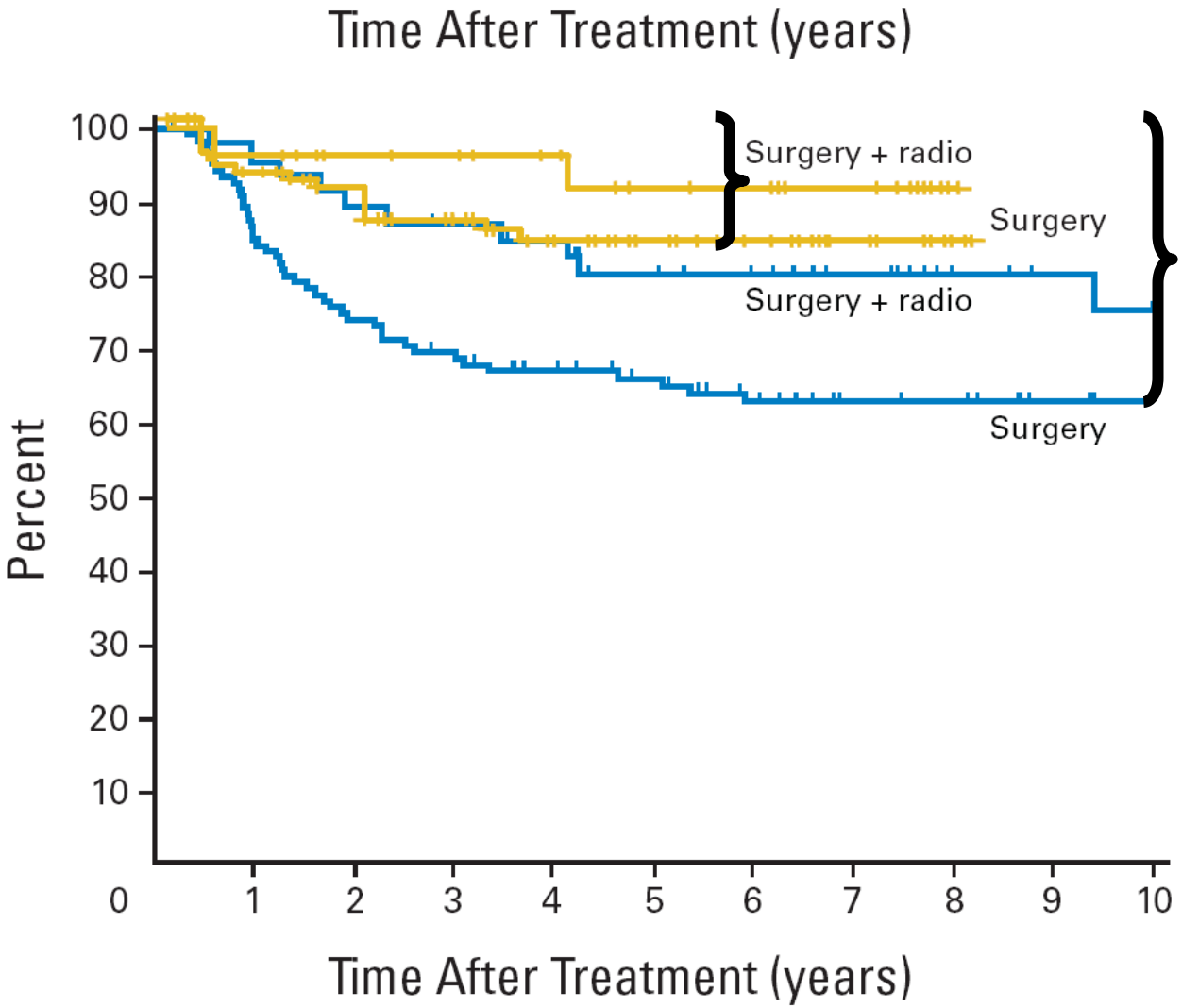
The value of RT in both periods:

a gain in local control by a factor of 2

VOLUME 25 · NUMBER 13 · MAY 1 2007

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT



The value of RT in both periods:

a gain in local control by a factor of 2

But the absolute gain is becoming smaller: less patient benefit from RT because of better surgery

Int. J. Radiation Oncology Biol. Phys., Vol. 80, No. 3, pp. 787–792, 2011

0360-3016/$–see front matter

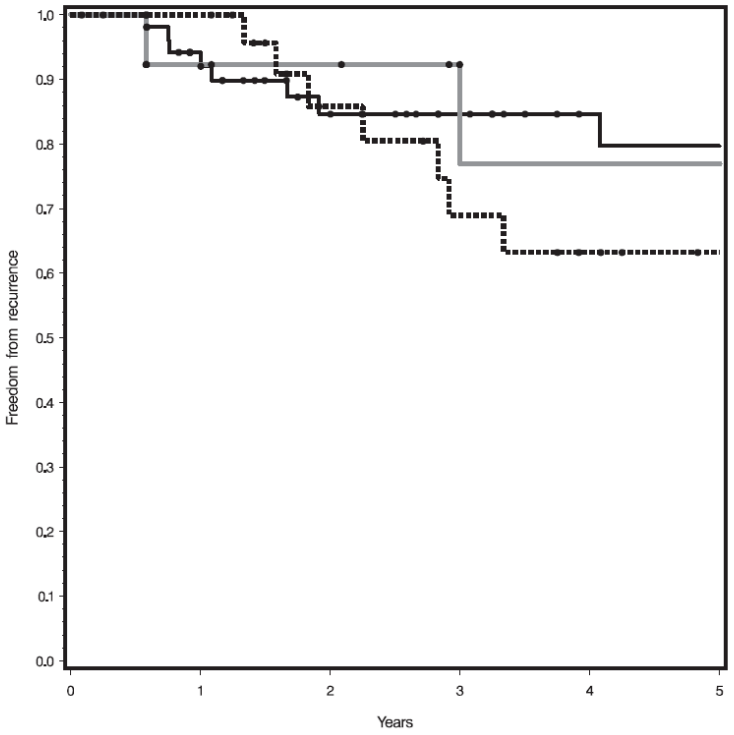
ELSEVIER

doi:10.1016/j.ijrobp.2010.02.053

CLINICAL INVESTIGATION **Sarcoma**

ROLE OF RADIOTHERAPY IN THE MANAGEMENT OF DESMOID TUMORS

Iris Gluck, M.D.,*§ Kent A. Griffith, M.P.H., M.S.,† J. Sybil Biermann, M.D.,‡
Felix Y. Feng, M.D.,§ David R. Lucas, M.D.,‖ and Edgar Ben-Josef, M.D.§



Surgery only
RT only
Surgery + RT

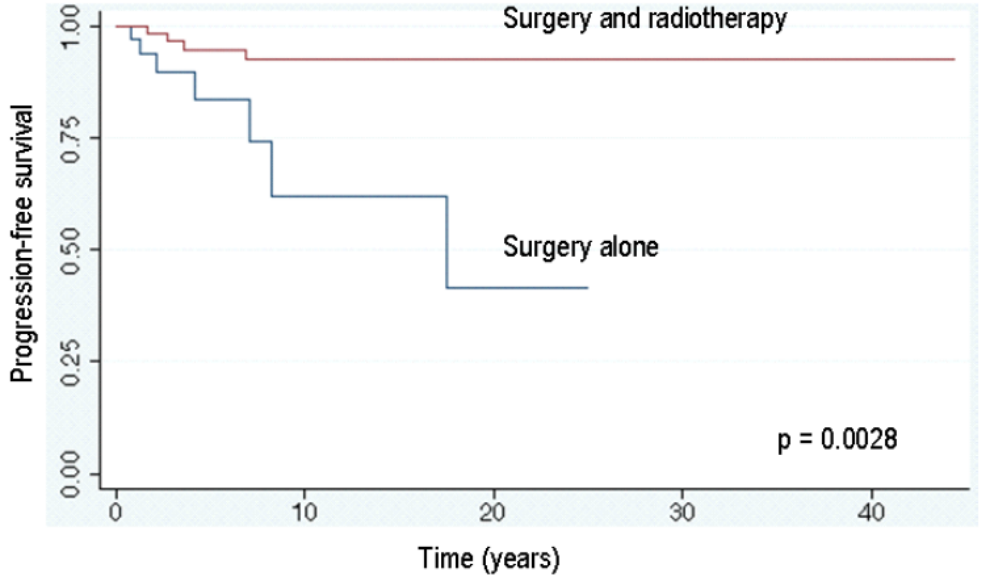
Selection???

Radiation Oncology *Radiation Oncology* 2007, **2**:12

Research

The impact of radiotherapy in the treatment of desmoid tumours. An international survey of 110 patients. A study of the Rare Cancer Network

Brigitta G Baumert



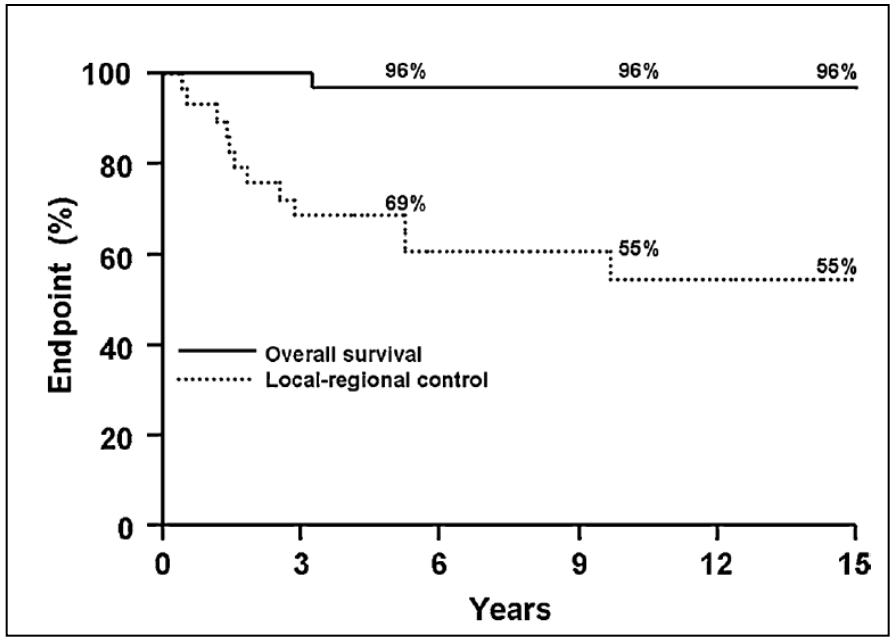
Selection???

Pediatr Blood Cancer 2011;57:435–442

External-Beam Radiotherapy for Pediatric and Young Adult Desmoid Tumors

Michael S. Rutenberg, MD, PhD,[1] Daniel J. Indelicato, MD,[1,5]* Jacquelyn A. Knapik, MD,[3]
Joanne P. Lagmay, MD,[2] Christopher Morris, MS,[1] Robert A. Zlotecki, MD, PhD,[1]
Mark T. Scarborough, MD,[4] Charles P. Gibbs, JR, MD,[4] and Robert B. Marcus, JR, MD[5]

A report on 30 patients < 30 years old



Characteristic (no. of patients)	5-year local-regional control (%)	15-year local-regional control (%)	*P*-value
Previous treatment			
Surgery (17)	69	53	0.55
None (12)	67	67	
Preoperative radiotherapy (1)	[a]	[a]	
Margins at radiotherapy			
Micro positive (6)	67	[a]	0.88
Micro negative (8)	63	63	
Unresected tumor (16)	73	57	
Radiotherapy dose			
<55 Gy (16)	53	30	0.02
≥55 Gy (14)	86	79	

Int. J. Radiation Oncology Biol. Phys., Vol. 71, No. 2, pp. 441–447, 2008

0360-3016/08/$–see front matter

ELSEVIER

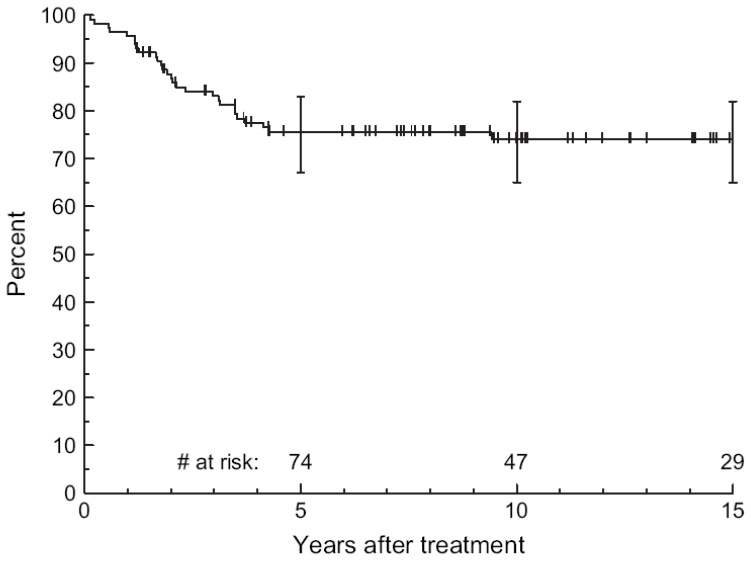
doi:10.1016/j.ijrobp.2007.10.013

CLINICAL INVESTIGATION **Sarcoma**

LONG-TERM OUTCOMES FOR DESMOID TUMORS TREATED WITH RADIATION THERAPY

B. ASHLEIGH GUADAGNOLO, M.D., M.P.H., GUNAR K. ZAGARS, M.D., AND MATTHEW T. BALLO, M.D.

Department of Radiation Oncology, The University of Texas M. D. Anderson Cancer Center, Houston, TX



Actuarial local control for all 115 patients.

Int. J. Radiation Oncology Biol. Phys., Vol. 71, No. 2, pp. 441–447, 2008

0360-3016/08/$–see front matter

ELSEVIER

doi:10.1016/j.ijrobp.2007.10.013

CLINICAL INVESTIGATION **Sarcoma**

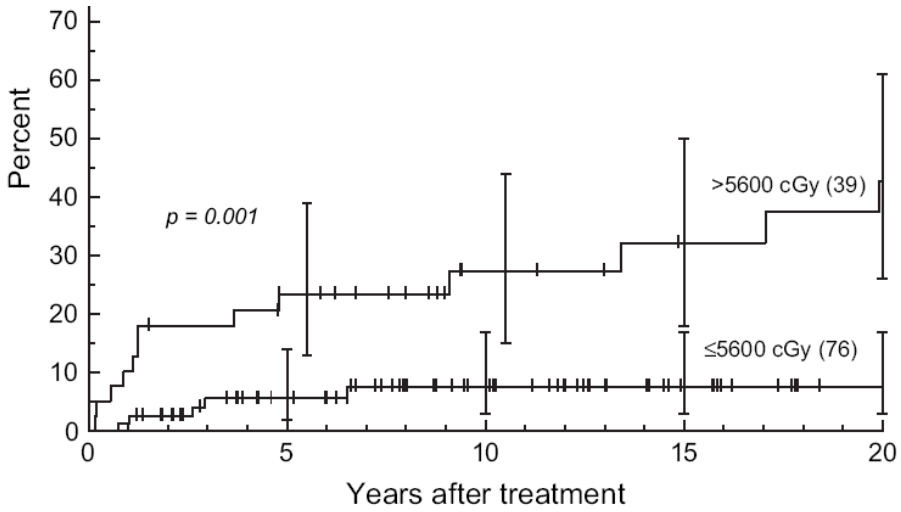
LONG-TERM OUTCOMES FOR DESMOID TUMORS TREATED WITH RADIATION THERAPY

B. ASHLEIGH GUADAGNOLO, M.D., M.P.H., GUNAR K. ZAGARS, M.D., AND MATTHEW T. BALLO, M.D.

Department of Radiation Oncology, The University of Texas M. D. Anderson Cancer Center, Houston, TX

41 of 115 patients treated by RT only
- 17% CR
- 68% long term local control

>56Gy no better local control but more complications



Annals of Oncology

Annals of Oncology 24: 2672–2676, 2013
doi:10.1093/annonc/mdt254
Published online 17 July 2013

Results of a phase II pilot study of moderate dose radiotherapy for inoperable desmoid-type fibromatosis—an EORTC STBSG and ROG study (EORTC 62991–22998)

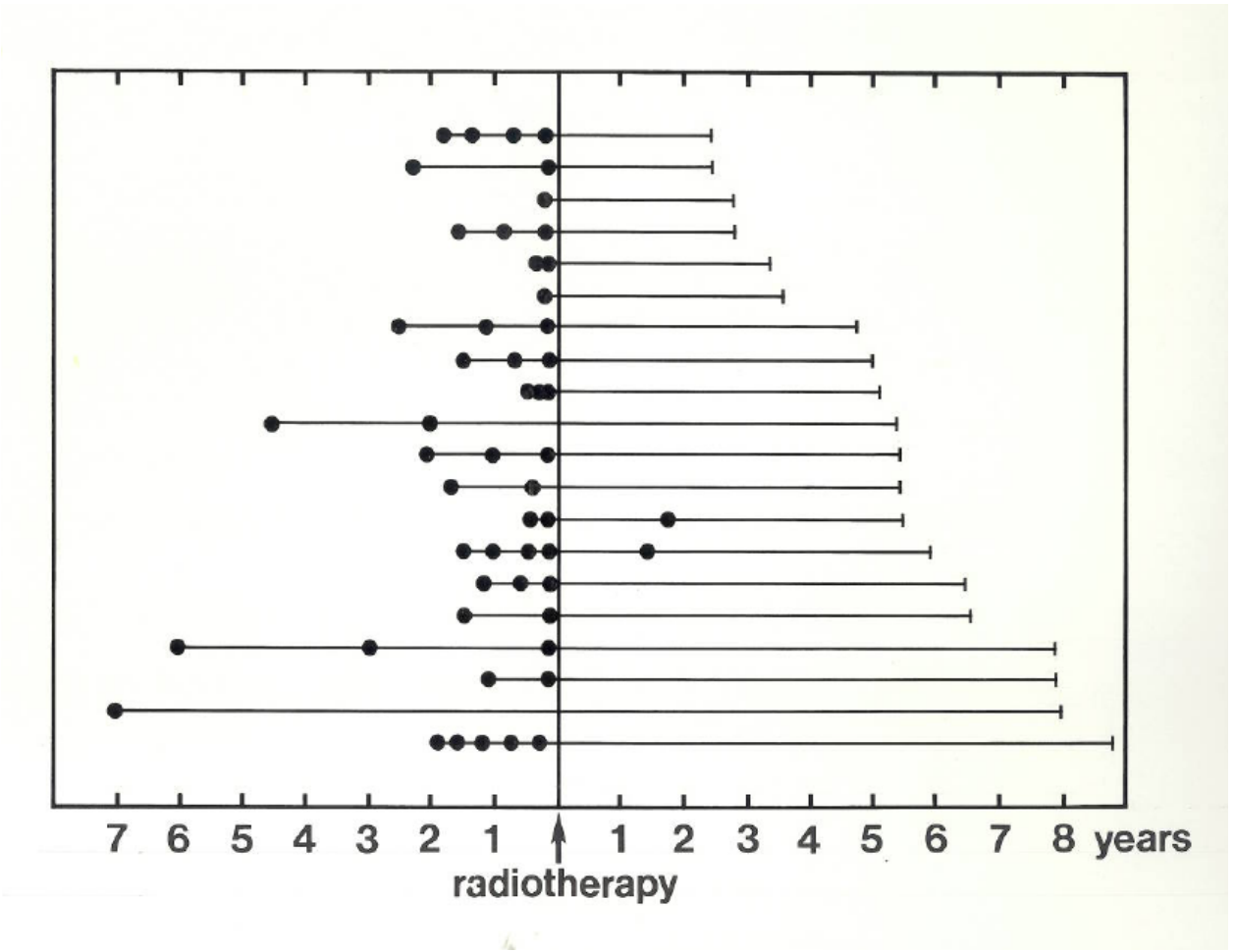
44 pts; RT 28 x 2Gy = 56Gy
27 females and 17 males; median age 39 years, median follow-up 5 years

3 years local control: 81.5%
CR 14%
PR 36%
SD 41%
} clinical benefit 91%

If progressive; most recurrences <3 years

The role of radiotherapy in the treatment of desmoid tumours.
Keus R, Bartelink H. Radiother Oncol. 1986; 7(1):1-5.

20 patients;
49 events before RT, 2 events after RT,
FU after RT longer than before RT



The way **not** to go

ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

EJSO 36 (2010) 84–88

EJSO
the Journal of Cancer Surgery

www.ejso.com

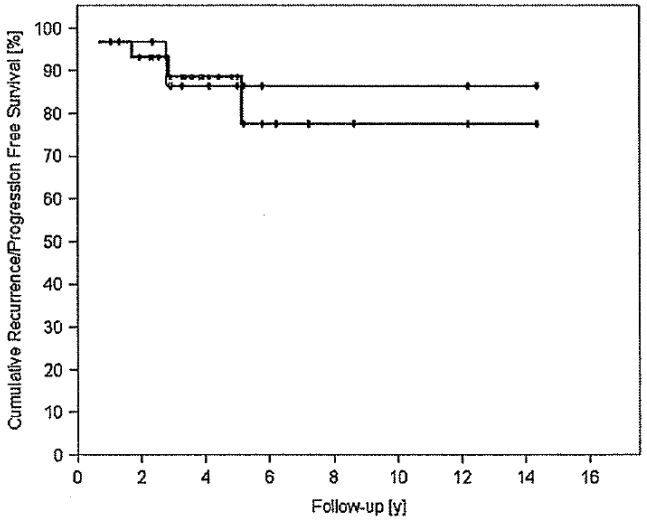
Radiation therapy in the treatment of desmoid tumours reduces surgical indications

H.A. Rüdiger [a,b,*], S.Y.K. Ngan [c], M. Ng [c], G.J. Powell [a], P.F.M. Choong [a]

Radiotherapy only (no surgery)

- 20% CR
- 20% PR
- 55% growth arrest (SD)
- 5% PD

Message: less surgery and more radiotherapy



Comment: far more experience with surgery than with RT only

In conclusion

Desmoids are benign but locally aggressive

Watch and wait as long as reasonably feasible

If treatment is necessary preferably surgery

But if surgery mutilates too much: RT

Thanks for your attention

Mt Everest