

Weichteiltumore Radiologische Diagnostik

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Offenlegung

Ich habe keine Interessenskonflikte.



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Gliederung

- WHO-Klassifikation
- Ausgewählte Beispiele
- "Klassiker" / "Blickdiagnosen"**
- "benigne vs. maligne"**
- Pitfalls
- Was mache ich bei einem unklaren Tumor?



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WHO

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WHO Classification of Tumors, Soft Tissue and Bone Tumors, 5th Edition, 2020



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WHO Classification of Tumors, Soft Tissue and Bone Tumors, 5th Edition, 2020



Lipomatöse Tumoren – Lipom

- 50% aller Weichteiltumoren (häufigster Weichteiltumor)
- Morphologie: Fettgewebe, feine Septierungen und Kalzifikationen möglich
- Lokalisation: überall möglich
-> am häufigsten subkutan
-> multifokal (5-8%)
- Grösse: < 5 cm (80%) > 10 cm selten
- CAVE: > 5cm, atypische Lokalisation (z.B. intramuskulär), Schmerzen
-> Abklärung (Vorstellung im Sarkomboard)



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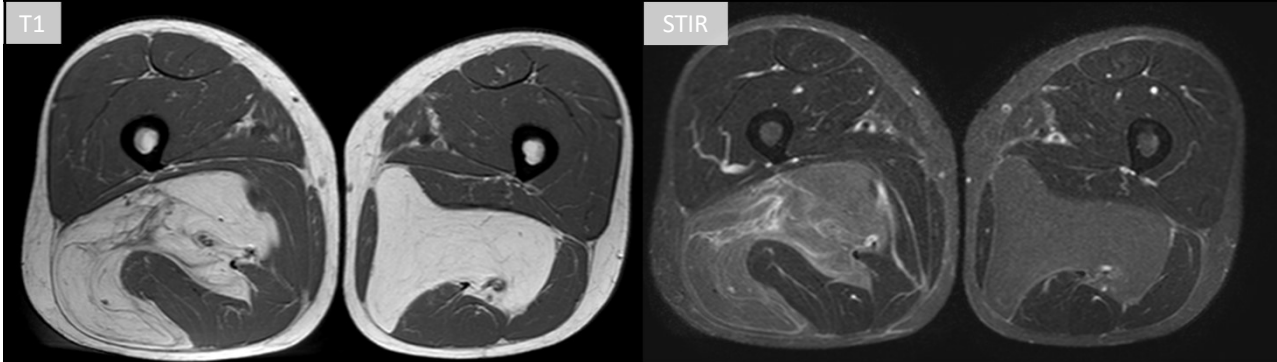
Lipomatöse Tumoren – Liposarkom

- Morphologie: oft grosse, septierte Masse mit / ohne fetthaltige und Weichteilkomponenten, Septierungen (>2mm) und Kalzifikationen (auch Ossifikationen in 10%) möglich
- Lokalisation: -> Rumpf/Retroperitoneum 42%
(hier andere Grössenwerte zur Abklärung: 10cm)
 - > untere Extremität 41%
 - > obere Extremität 11%
 - > Kopf-Hals 6%

Lipomatöse Tumoren – Liposarkom

- 16-20% aller malignen Weichteiltumoren
- entsteht häufig an neurovaskulären Bündeln, zwischen der Muskulatur
- Grösse bei Diagnostik: 2-30 cm (80%)

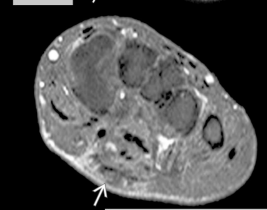
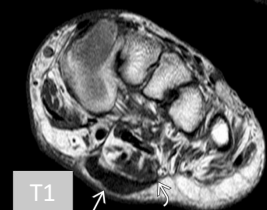
Lipomatöse Tumoren – Welche der Läsionen biopsieren? Lipom oder Liposarkom?



bioptisch gesichertes bilaterales Liposarkom

Fibröse Tumoren – Fibromatose (plantar)

- Lokalisation:
plantar = M. Ledderhose
-> mittlerer, unbelasteter Abschnitt
palmar = Dupuytren Kontraktur
-> insb. Dig 4, 5
- 1/3 multinodulär
- > 30. LJ; M > F
- Morphologie: noduläre Verdickung,
variables Enhancement



T1 fs post KM

Fibröse Tumoren – Elastofibroma oder Elastofibroma dorsi

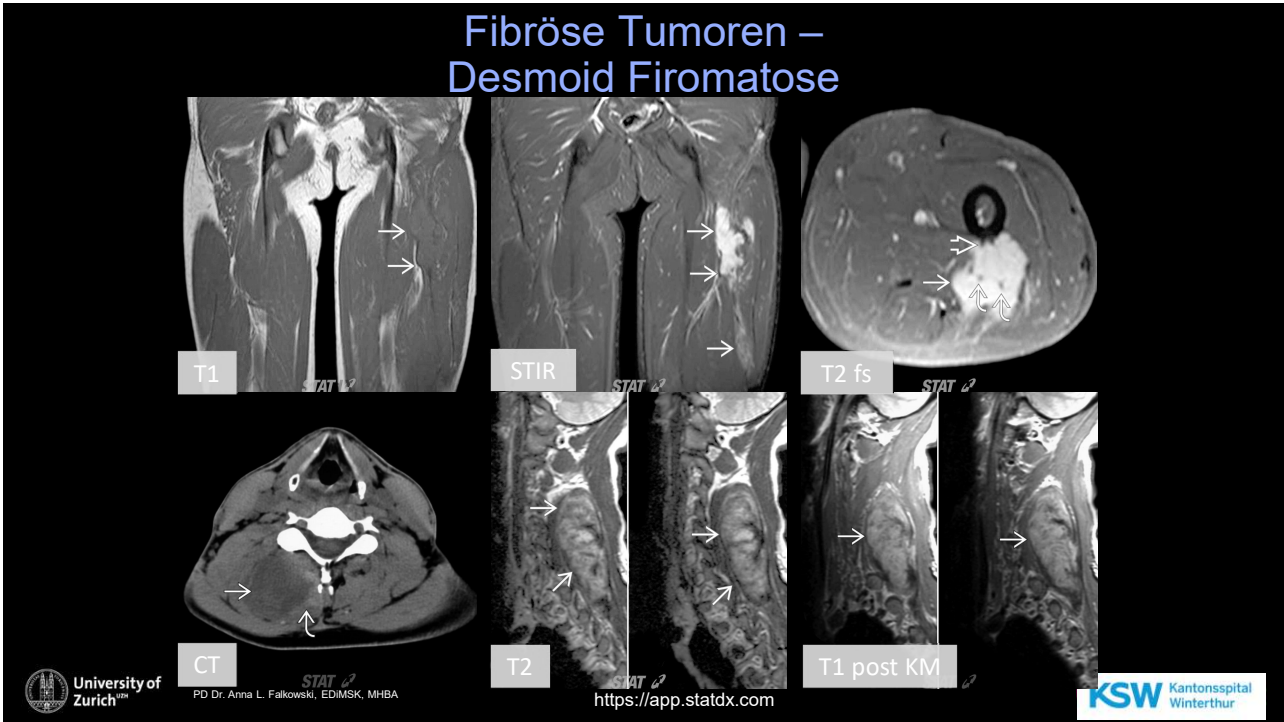
- Morphologie: unscharf, linsenförmig, heterogen, ggf. mit interponiertem Fett isodens/-intens zur Muskulatur, heterogenes Enhancement
- Lokalisation: 99% subscapulär tief zum M. serratus ant., evtl. bilateral
- > 50% asymptomatisch, Sz. / klicken bei Scapulabewegung
- 65.-70. LJ; F:M = 5-13 : 1



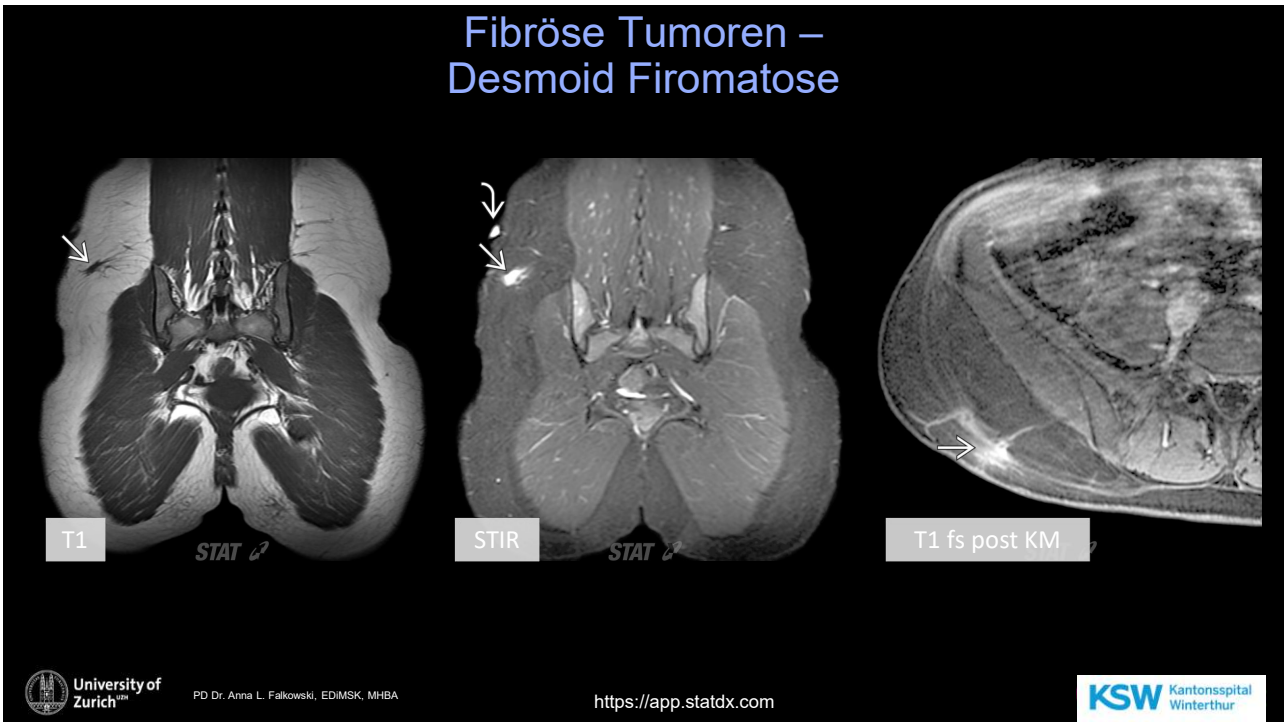
Fibröse Tumoren – Desmoid Firomatose

- (benigne), lokal aggressive fibroblastische Proliferation, neigt zu Rezidiven
- Lokalisation: 70% Extremitäten, intramuskulär Abdominalwand (F 20.-30.LJ)
- Morphologie: unspezifisch, oft unscharf, infiltrierend, ggf. Knochenreaktion
CT: hypo- / iso- / hyperintens
MRI: T1 hypo- / isointens, T2 iso- / hyperintens variables Enhancement

Fibröse Tumoren – Desmoid Firomatose



Fibröse Tumoren – Desmoid Firomatose



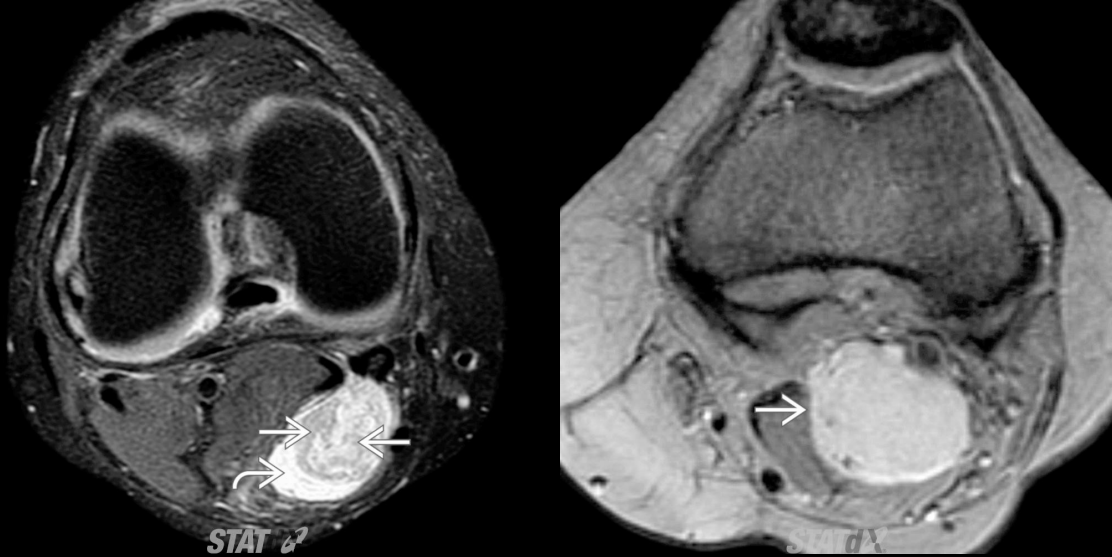
Synoviale Tumoren – Synovialsarkom

- Sarkom mit mesenchymalem Ursprung in para-artikulärer Region der Extr. (*nicht* von Synovialm.)
-> wenn intraartikulär, dann von extern eingewachsen
- 8-10% aller Weichteilsarkome
- 15.-40. Lebensjahr
- Lokalisation:
 - > untere Extremität 60%
 - > obere Extremität 15%
 - > Rest (Kopf-Hals, Rumpf)
 - > oft in Gelenknähe

Synoviale Tumoren – Synovialsarkom

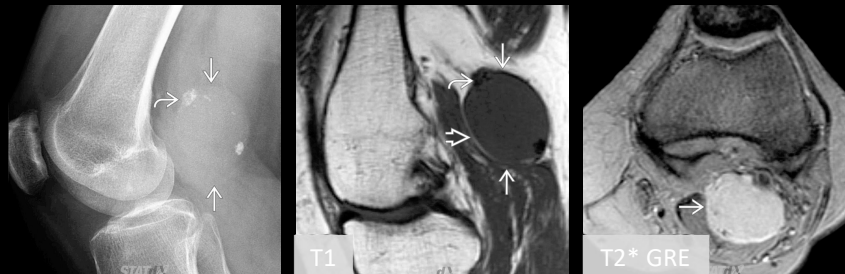
- Morphologie: umschrieben, rundlich, lobuliert, mit Verkalkungen
- *CAVE: wächst langsam (oft über Jahre)*

Synoviale Tumoren – Welches ist das Synovialsarkom?

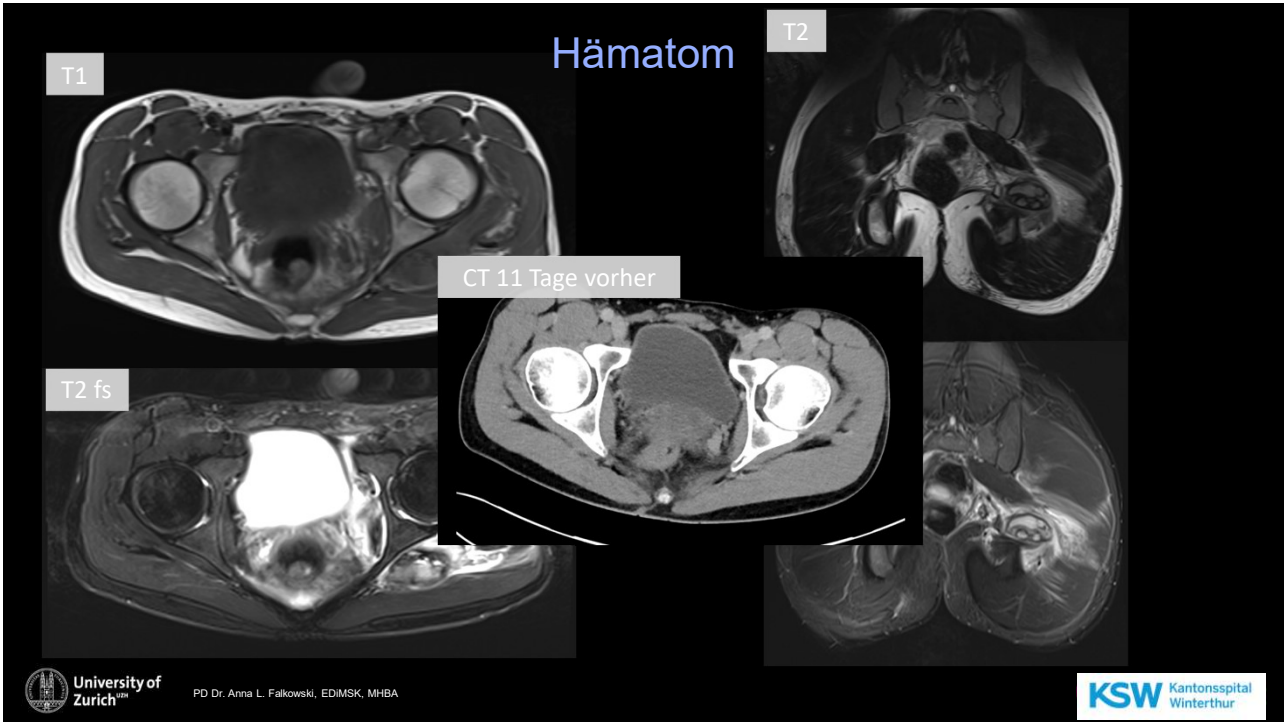
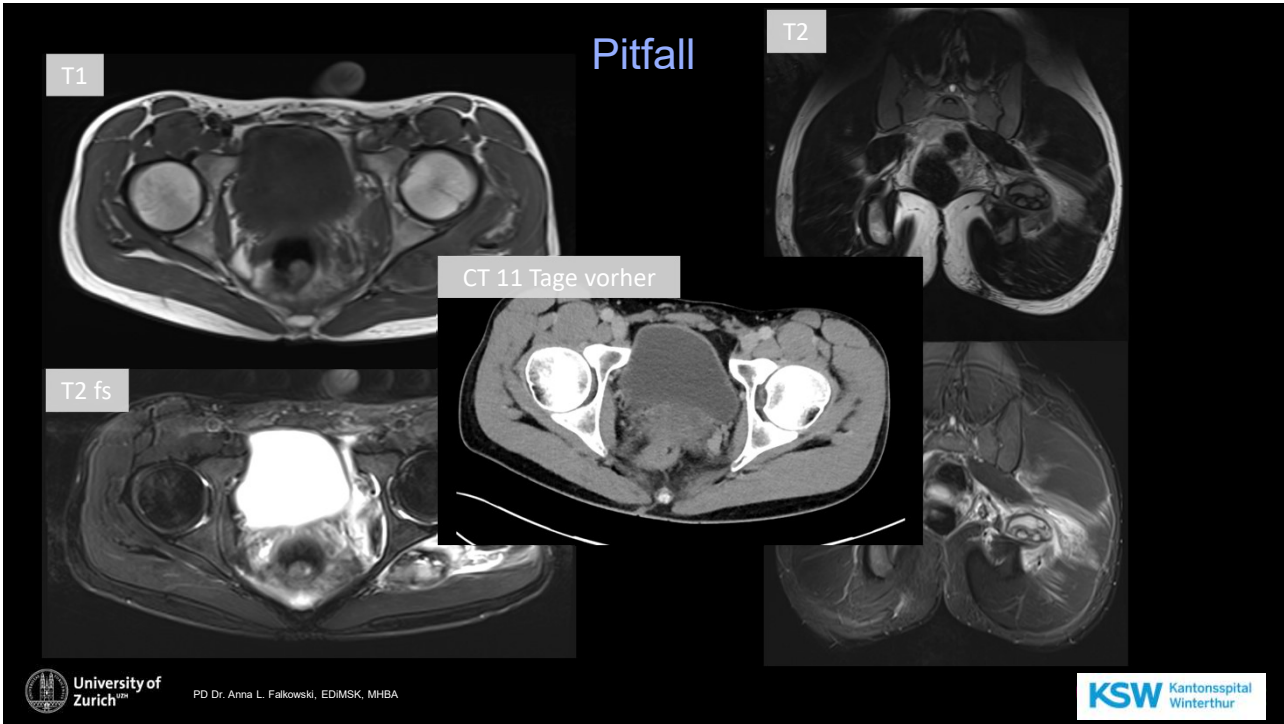


Synoviale Tumoren – Synovialsarkom

- Morphologie: umschrieben, rundlich, lobuliert, mit Verkalkungen
- CAVE: wächst langsam (oft über Jahre)



- CAVE: T1 hypo- und T2 hyperintens (~~„zytisch“~~ in MSK fehlleitend), KM-Gabe erforderlich zur Differenzierung



Hämatom

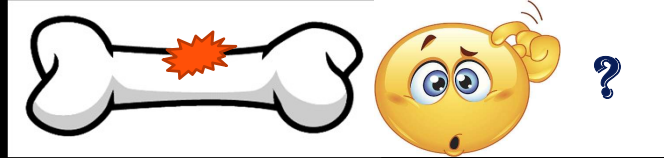
Stages of hematoma			T1	T2
Hyperacute	< 24hrs		Grey	White
Acute	1-3 days		Dark Grey	Black
Early Subacute	> 3 days		White	Black
Late subacute	> 7 days		White	White
Chronic	> 14 days		Black	Black

Je nach Blutabbaurate, Organisation, Stadium:
Oxy-, Desoxy-, Methämoglobin, Hämosiderin

Information für Kliniker

- Tumorcharakteristik: lipomatös, verkalkt /-knöchert, etc.
- Grösse
- Lokalisation: muskulär, epifaszial, subkutan, etc.
- Bezug zu Nerven, Gefässen (verdrängend, ummauernd, infiltrierend, vom Nerven ausgehend)
 - > für Nerven: T1, wegen Fettschicht
- Infiltration
- korrekte Sarkomartbestimmung zweitrangig
 - (evtl. Patientenalter hilfreich)
- Empfehlung zum Sarkomzentrum / Sarkomsprechstunde

Was mache ich bei einem unklaren Tumor? (Knochen und Weichteile)



Arbeite ich in einem Sarkomzentrum?

JA

NEIN

Biopsie

Überweisen an Sarkomzentrum

Was ist ein Sarkomzentrum?

- Idealerweise zertifiziert nach internationalen Richtlinien
(Deutsche Krebsgesellschaft DKG = German Cancer Society)
- Bestimmte Anzahl an Diagnosen, Operationen, etc. notwendig
- Radiologe muss zertifiziert sein mit:
 - European Diploma in Muskuloskeletal Radiology (EDIMSK)
 - DGMSR Stufe II ("Expert MSK")
 - DRG Stufe II

Beispiel eines Sarkomzentrums



Orthopedic Oncology



KSW / LUKS / USZ
Prof. Dr. med. Dr. sc. nat. Bruno Fuchs
DGOu Zentralkol



LUKS
Georg Schelling



LUKS
Dr. med. Andreas Scheufler



KSW
Dr. Felix Gleider



Hirslanden
Prof. Dr. med. Paul Magnus Schneider



Stadthospital Wied und Triemli, Zürich
Dr. med. Manfred Odermatt



KSQR
Prof. Dr. med. Markus Furrer



KSW
Dr. Hans Geipke



LUKS
Dr. med. Peter Keutenholz



LUKS
Dr. med. Alfred Leiser



LUKS
Dr. med. Einar Fritsche



LUKS
PD. Dr. med. Mario Scapioni



KSW
Dr. med. Alberto Franchi



KSW
Dr. med. Abel Jandali



EOC
Dr. med. Paolo Gattini



LUKS
Dr. med. (I) Fabrizio Minervini



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Beispiel eines Sarkomzentrums



Pathology



Pathologie Engge Zürich
Prof. Dr. med. Beata Bode



KSQR
PD Dr. Philipp Veier



KSW
PD Dr. med. Peter Bode



EOC
Dr. med. Rossella Sarro



LUKS
Dr. med. Thomas Trunamann



LUKS
Dr. med. Kim van Oudenhoede



KSW
PD Dr. Anna Falowski



KSW
PD Dr. Tim Fischer



EOC
Dr. med. Guiseppe Pesce



LUKS
Prof. Dr. med. Gabriela Bluder



KSW
Prof. Dr. med. Daniel Zuelten



KSW
Dr. med. Stefan Brodmann



EOC
Dr. med. Vito Spataro



LUKS
Dr. med. Veronika Blum



KSW
Dr. med. Ralf Zacharias



EOC
Dr. med. Barbara Kopf



LUKS
Dr. med. Alexander Vogtmeier



EOC
Dr. med. Marco Curti



EOC
Dr. med. Giovanni Zaccari



KSQR
Dr. Dr. med. Brigitta Oberwell



KSQR
Dr. med. Nadine Ciesler-Kies



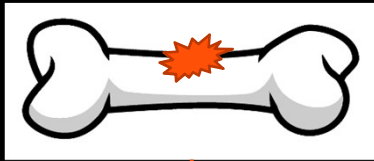
KSQR
Dr. med. Thomas Heide



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Wie geht man mit einer unklaren Läsion im Sarkomzentrum um?



Biopsieweg wird
diskutiert und
dokumentiert

Biopsie



RADIOLOGIE:
Bildpräsentation

+

PATHOLOGIE:
histologische Präsentation

INTERDISCIPLINÄR:
Therapeutisches Vorgehen
(Onkologie,
Radioonkologie,
interventionelle Radiologie,
Chirurgie)

Fazit

- > 100 Entitäten
- „Klassiker“ sind häufig
-> Anatomie oft wegweisend
- T1 hypo- und T2 hyperintens ≠ „zystisch“
- langsames Wachstum, Verkalkungen und keine Infiltration
≠ „benigne“
- lieber einen zu viel im Sarkomboard als einen zu wenig
- Zuweisung zu Sarkomzentrum

Thank you



University of Zurich

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KSW Kantonsspital Winterthur