

МРТ- И КТ-АРТРОГРАФИЯ

Й. Крамер

Институт радиологии, Шиллер-Парк, Линц, Австрия

MR/CT IMAGING TECHNIQUE: FOCUS ON MR/CT-ARTHRO

J. Kramer

Röntgeninstitut am Schillerpark, Linz, Austria

© Й. Крамер, 2015 г.

MRA/CTA

- THERE MUST BE A RECOMMENDATION
- PATIENT HAS TO FILL OUT A SPECIAL SHEET AT REGISTRATION (PERFORMED CONSENT)

ARTHROGRAPHY BY USING FLUROSCOPY-ULTRASOUND-CT-MRI

COMPLICATIONS

(262 000 ARTHROGRAMS - 134 INSTITUTIONS)

MINOR OCCURRENCES	9594
CHEMICAL SYNOVITIS/PAIN	4969
VAGAL REACTIONS	3788
IMMEDIATE	775
DELAYED	171
MAJOR REACTIONS	75
ANAPHYLAXIS	8
SEPTIC ARTHRITIS	29
CELLUTIS	16
VASCULAR COMPLICATIONS	5
MISCELLANEOUS	17
SEIZURES, NERVE PALSY, FAT NECROSIS, etc.	
TOTAL COMPLICATIONS	9669 3,6%

Infections: Hugo PC et. al. Sem MS Radiol 1998 - Newberg et. Al. Radiology 1985 (<0,003%)

COMPLICATIONS

262.000 ARTHROGRAMS - 134 INSTITUTIONS

13.320 MR ARTHROGRAMS

- 6 REPORTED REACTIONS
- ALL MINOR
 - VASOVAGAL REACTIONS
 - PAIN
 - HEADACHES

Infections: Hugo PC et. al. Sem MS Radiol 1998 - Newberg et. Al. Radiology 1985 (<0,003%)

MULTICENTER STUDY DIRECT MR-ARTHRO

(394 patients: shoulder, hip, knee)

PAINFUL MOTION

- 1. DAY: 252 (64%)
- 2. DAY: 165 (42%)
- 3. DAY: 123 (31%)

PRESSURE FEELING

- 1. DAY: 308 (78%)
- 2. DAY: 104 (26.5%)
- 3. DAY: 46 (11.5%)

→ NO COMPLICATIONS
→ NO SEVERE SIDE EFFECTS
→ HIGH PAT. TOLERANCE

ARTHRO-PROCEDURE LESS UNPLEASANT THAN FOLLOWING MR EXAM !!

▶ WRITTEN (SIGNED), INFORMED PATIENT CONSENT !

ADVANTAGES

INTRAARTICULAR CM

- ▶ CAPSULE DISTENSION
- ▶ DELINEATION / SEPARATION INTRAARTIC. STRUCTURES ABNORMALITIES (VARIANTS)
- ▶ PENETRATION / DIFFUSION ?
- ▶ ACCURATE/SIMPLIER DETECTION OF LESIONS
- ▶ EXACT DIAGNOSIS

FREQUENCY/INDICATIONS OF MRA's

- ▶▶▶ **SHOULDER**
 - INSTABILITY
 - LABRAL LESIONS
 - LIGAMENTOUS LESIONS
 -
- ▶ **HIP**
 - IMPINGEMENT ALTERATIONS
 - CAM -PINCER
 - LABRAL LESIONS
 - CARTILAGE LESIONS
- ▶ **WRIST**
 - TFC LESIONS
 - LIGAMENTOUS LESIONS
- ▶ **KNEE, ANKLE, ELLBOW**

SHOULDER

- ▶ ROTATOR CUFF LESIONS
PARTIAL VS COMPLETE TEAR
- ▶ LABRAL VARIANTS
- ▶ LABRAL LESIONS
- ▶ SLAP LESIONS
- ▶ LESIONS OF THE GLENOHUMERAL LIGAMENTS
- ▶ INSTABILITY !

MR ARTHROGRAPHY

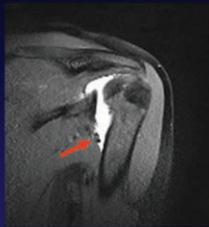
- 2 mmolar Gd-DTPA SOLUTION
10-15 ml CM INTRAARTIC.
- STERILE CONDITIONS
- FLUOROSCOPY (MRI ?)
- MONOCONTRAST: NO AIR !
SUSCEPTIBILITY ARTIFACTS !



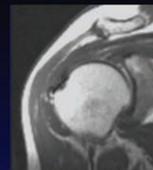
ABER POSITION



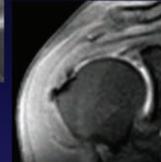
PREVENTION OF SUSCEPTIBILITY-ARTIFACTS (AIR)



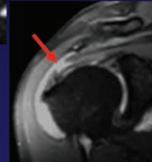
LOOS BODIES ?



fatsat T1 (MR-arthrogr.)

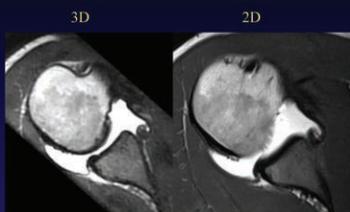


fatsat T2



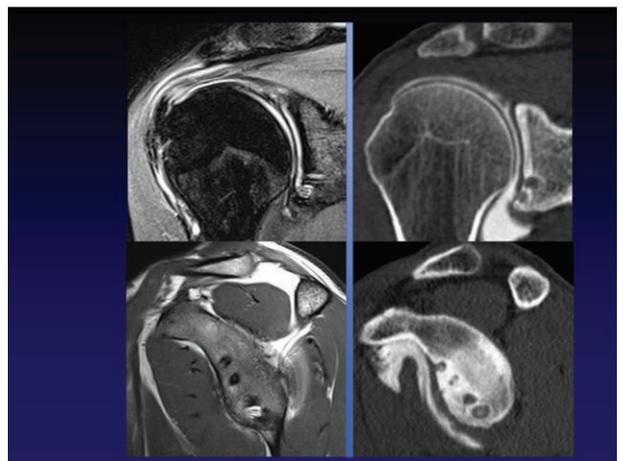
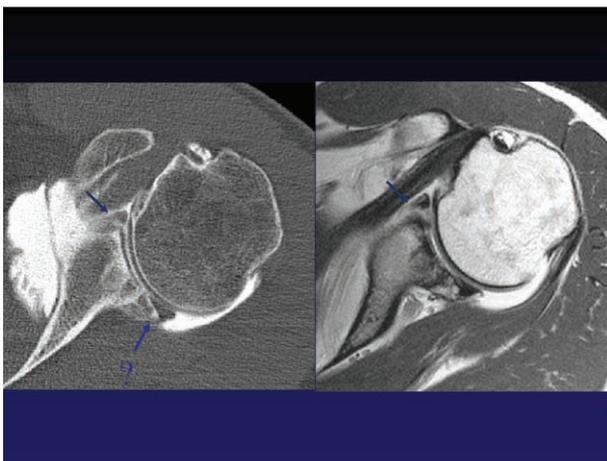
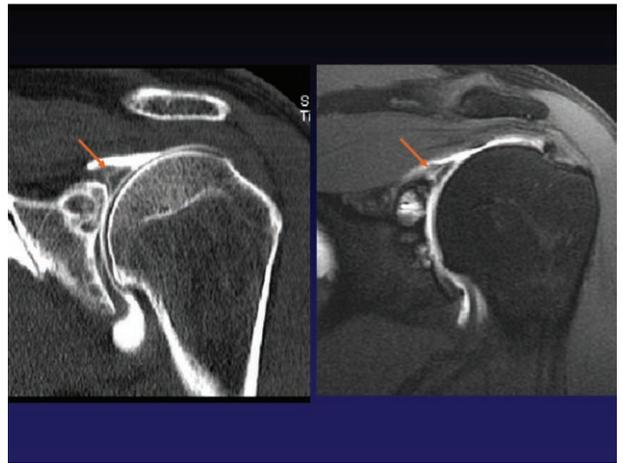
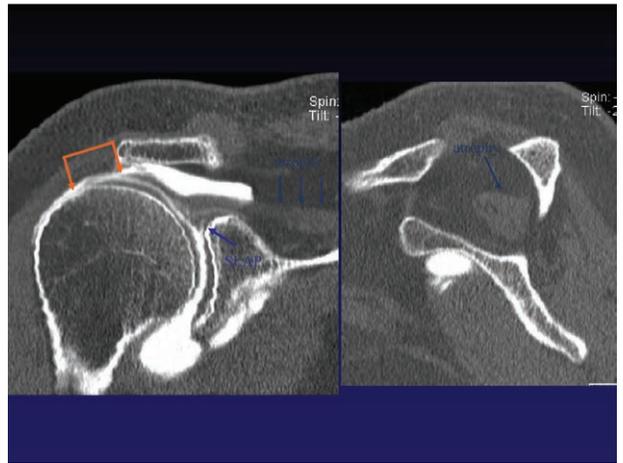
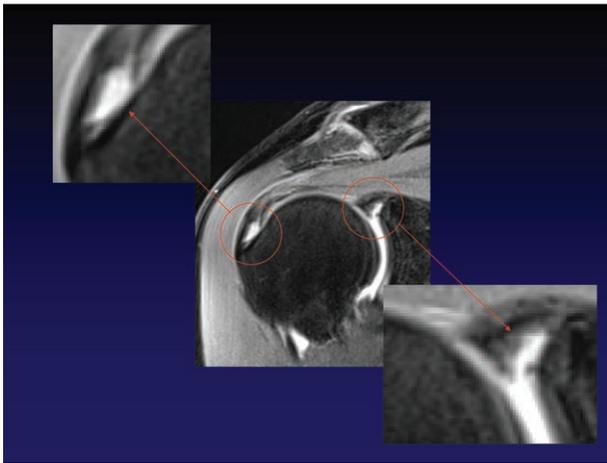
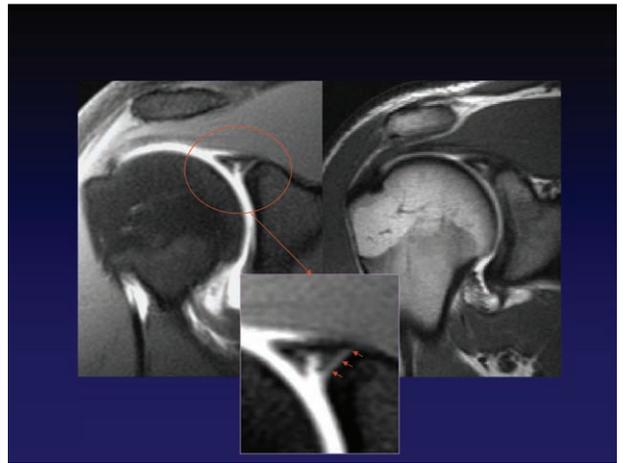
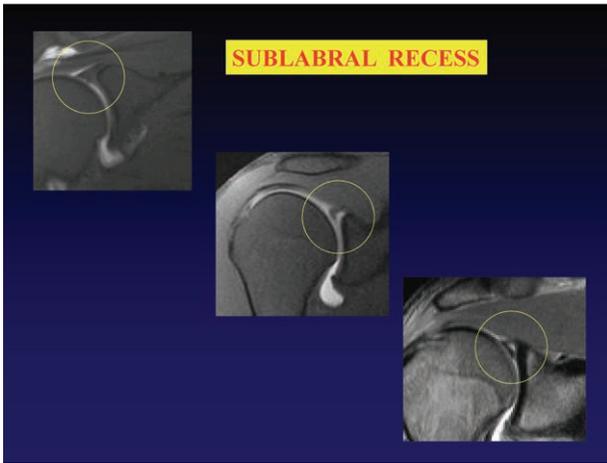
fatsat T2:
BME
FLUID (joint space, bursa)

3D – THIN SLICE THICKNESS



SLAP MIMICKING FINDINGS

- ➔ SUBLABRAL RECESS
- SUBLABRAL FORAMEN
- BUFORD COMPLEX
- CARTILAGE UNDERMINING LABRUM
- BICEPS - LABRUM INTERFACE

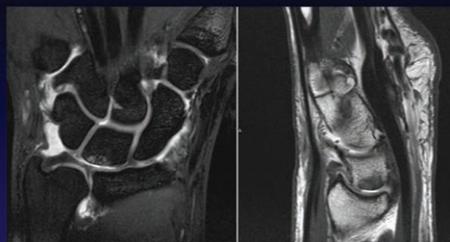
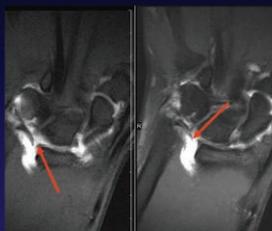


ELBOW

- ▶ UCL LESIONS ?
- ▶ OCD (IN CASE OF NO EFFUSION)
STABILITY ?
- ▶ LOOSE BODIES
- ▶ TFC LESIONS
- ▶ LIGAMENTOUS INJURIES

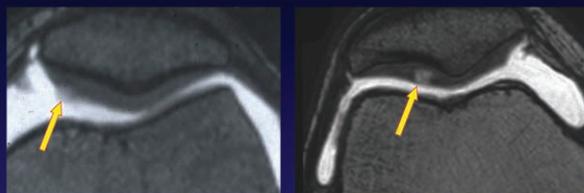
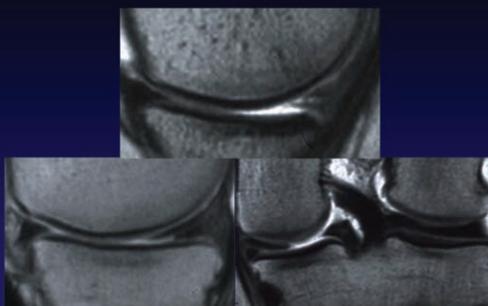


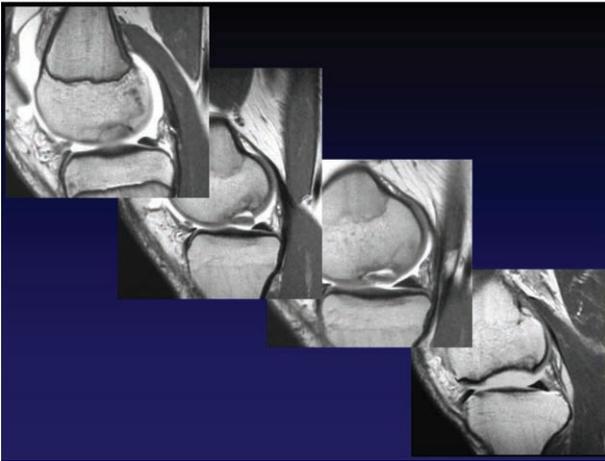
WRIST



KNEE JOINT

- ▶ POSTOPERATIVE MENISCUS
RECURRENT TEAR
SURGICAL REPAIR
- ▶ PLICA
- ▶ OCD - STAGING
- ▶ CHONDRAL LESIONS
- ▶ GANGLION OF CRUCIATE LIGAMENT





KNEE JOINT

POSTOPERATIVE MENISCUS

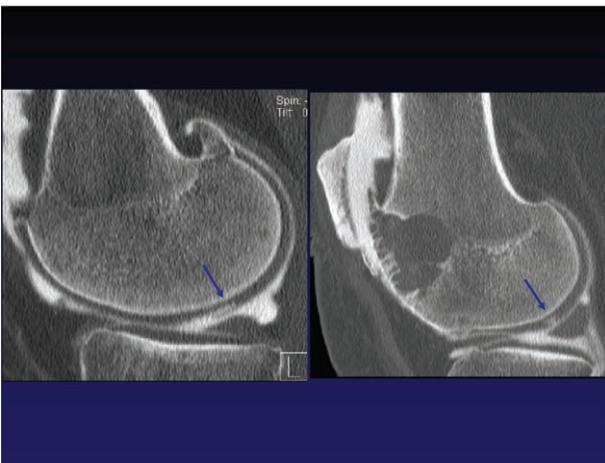
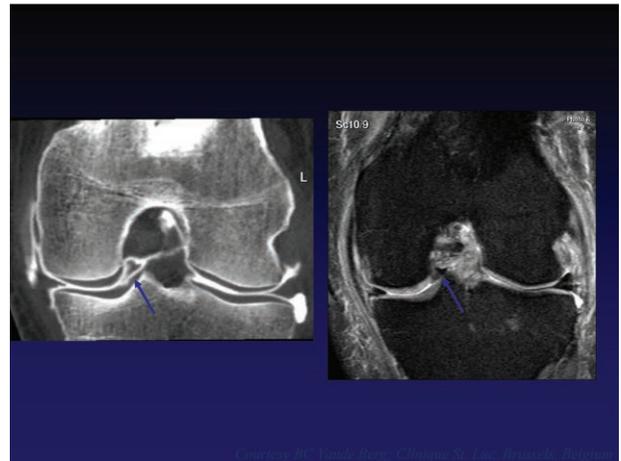
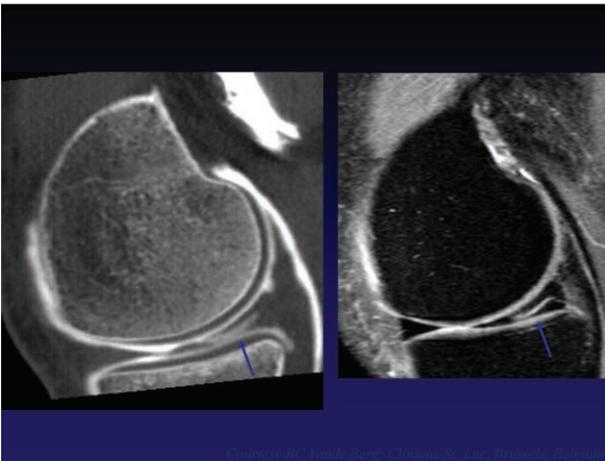
- ▶ RECURRENT TEAR
- ▶ SURGICAL REPAIR

?

PLICA

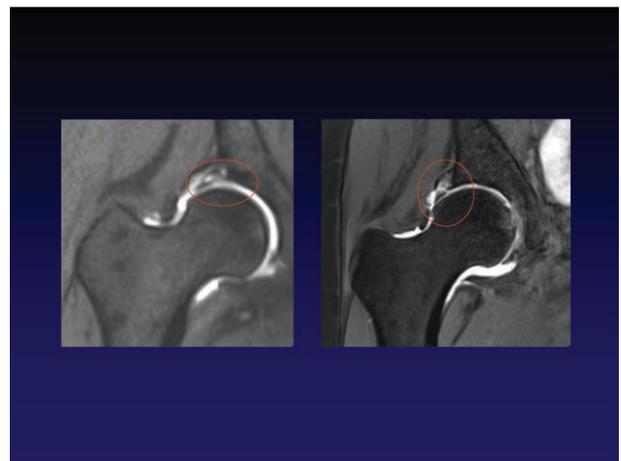
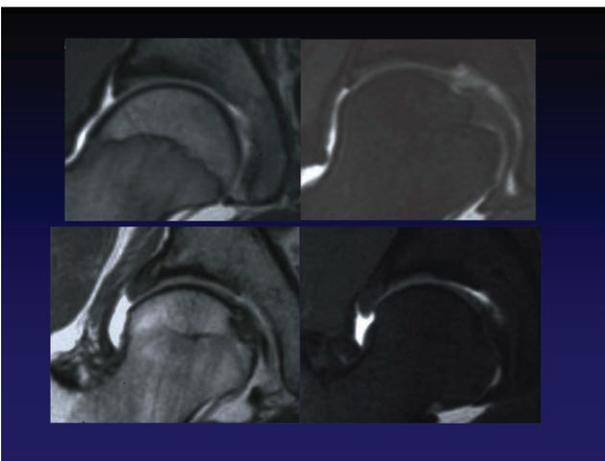
- ▶ OCD - STAGING
- ▶ CHONDRAL LESIONS
- ▶ GANGLION OF CRUCIATE LIGAMENT

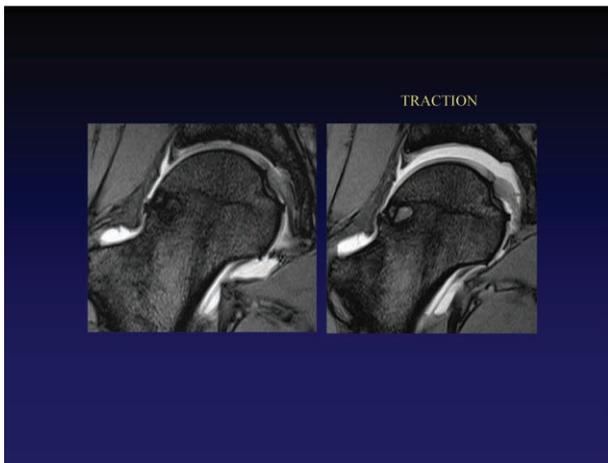
CTA ▶ **IF MRI NOT POSSIBLE !!**



HIP

- ▶ LABRAL INJURIES
- ▶ IMPINGEMENT
 - CAM
 - PINCER
 - CARTILAGE LESIONS

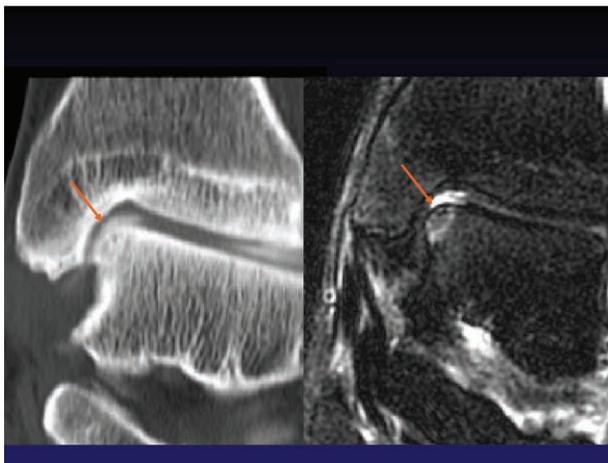




ANKLE

- ▶ LIGAMENTOUS LESION
- ▶ OSTEOCHONDRAL LESIONS - STAGING

?



PLAIN RADIOGRAPH

MRA/CTA SHOULD/"MUST" BE USEFULL

↓

VASTE OF TIME + COSTS !

QUESTIONES

ARE THESE INVASIVE EXAMS JUSTIFIED ?
(INDICATIONS !!)

ONLY AN IMAGING TOOL ?

→ **THERAPEUTIC CONSEQUENCES !!!!!**
(IMPINGEMENT IN A 70 YRS OLD PATIENT ?)