

# Muskuloskeletální MR protokoly

## 3 Tesla

FN Plzeň

J. Kastner  
R. Süß

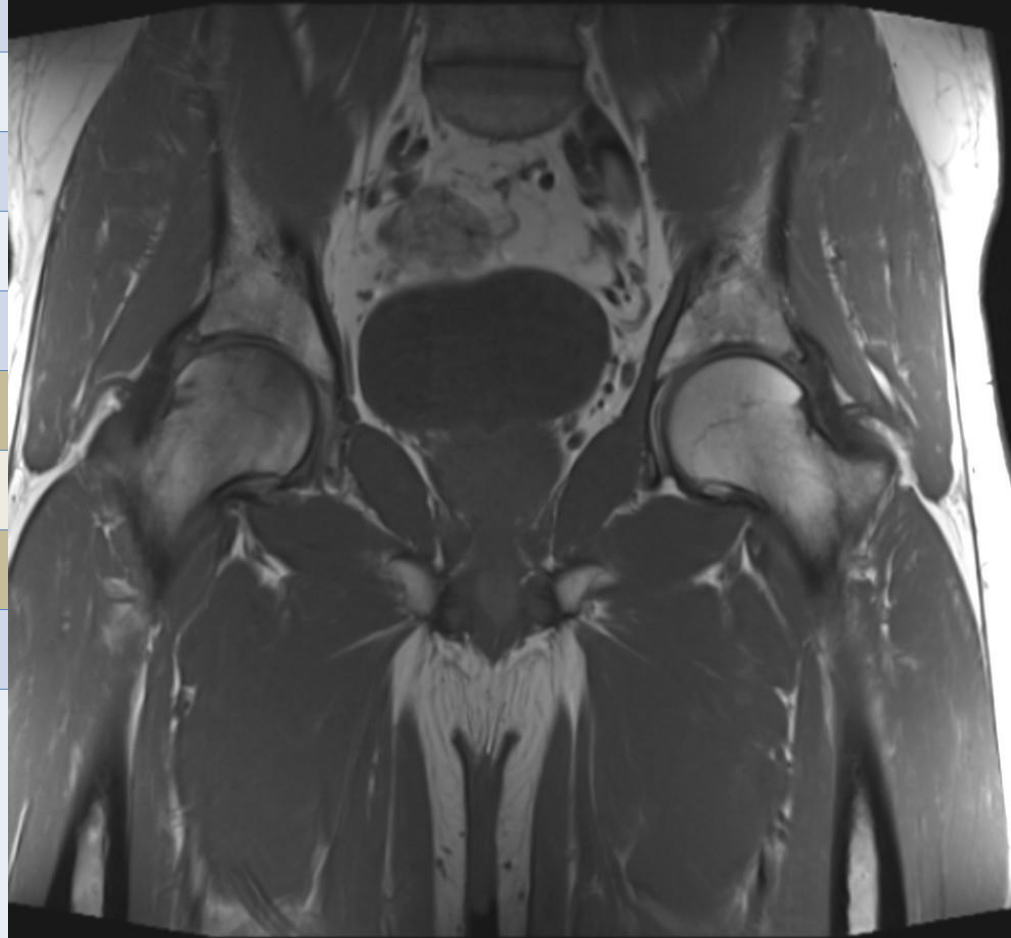
Siemens

Magnetom Skyra 3T

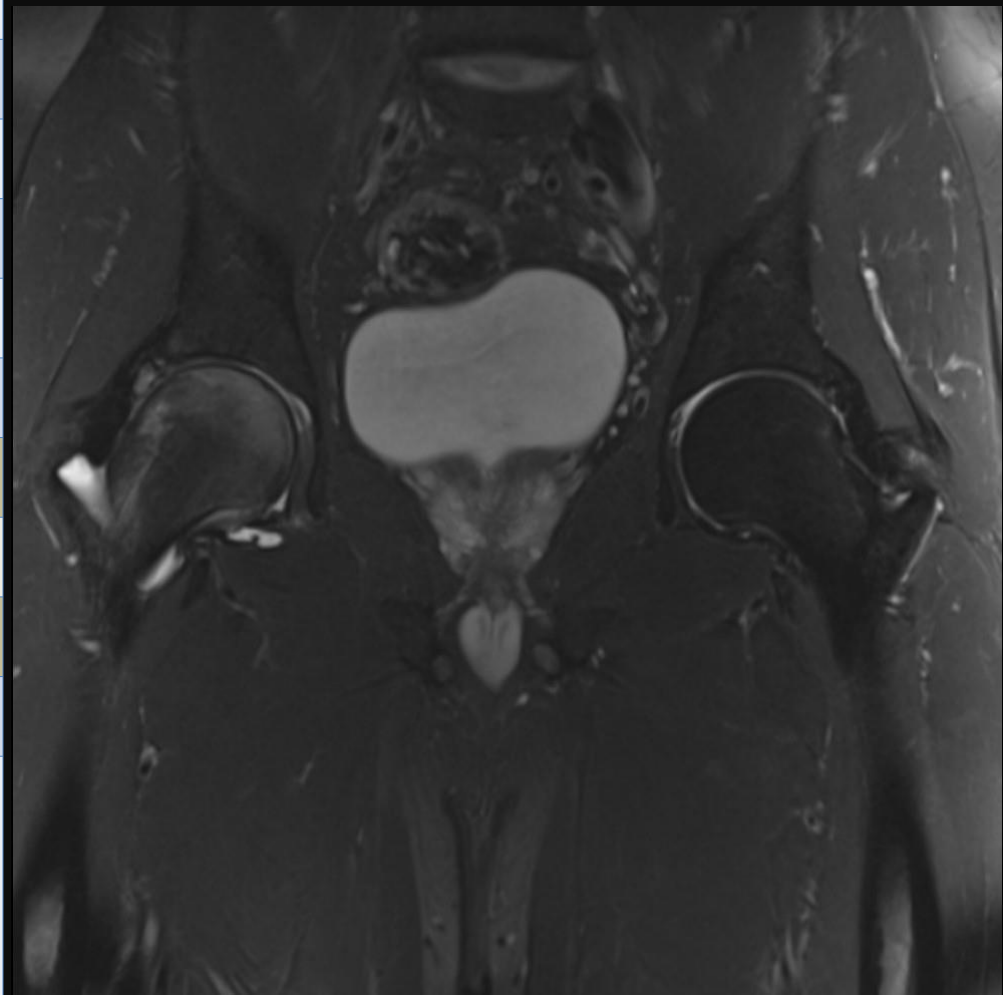
# MR kyčle

Jan Kastner, Radek Süss

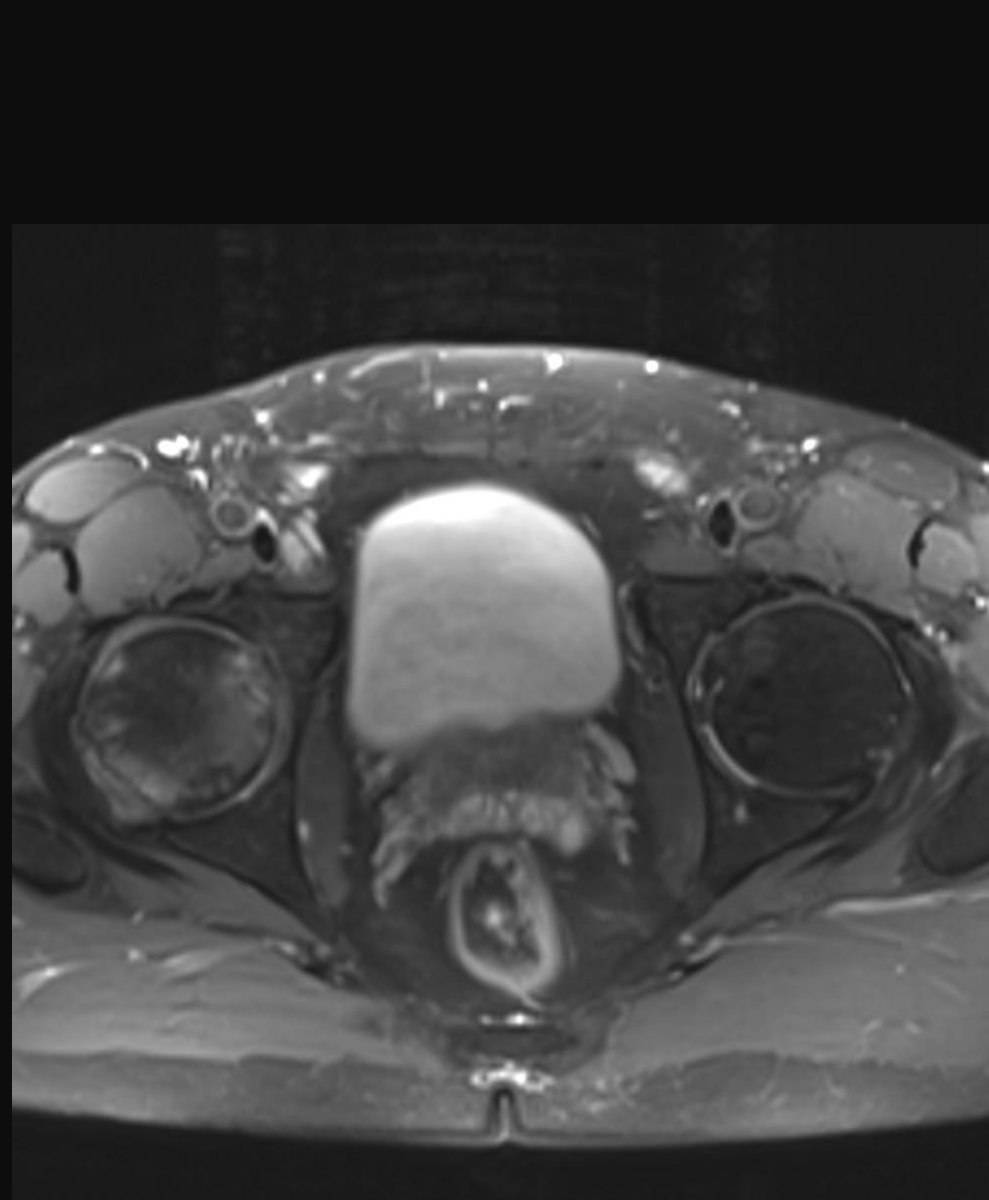
Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva	3/23 dist. 30%
FoV	380
Matrix	512 x 346
Fáze	H-F
PAT	2
TR	600
TE	20
ETL/turbo	78/4
Čas	3:10
Různé	Phase overs. 80% Avg 2 Conc 2 FA 150



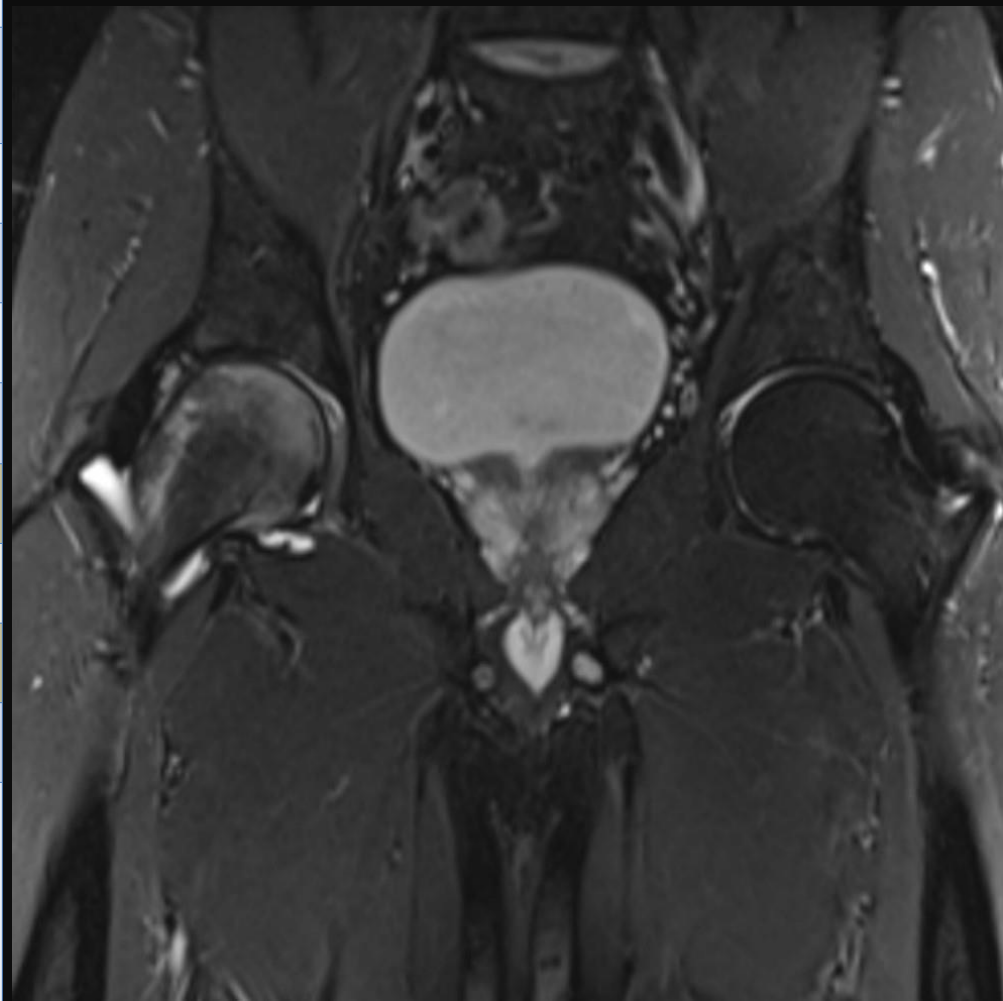
Typ	T2 FS
Sekvence	TSE
Rovina	COR
Vrstva	3/37 dist. 10%
FoV	380
Matrix	512 x 384
Fáze	H-F
PAT	off
TR	4500
TE	78
ETL/turbo	24/15
Čas	3:47
Různé	Phase overs. 80% Avg 1 Conc 2 FA 120



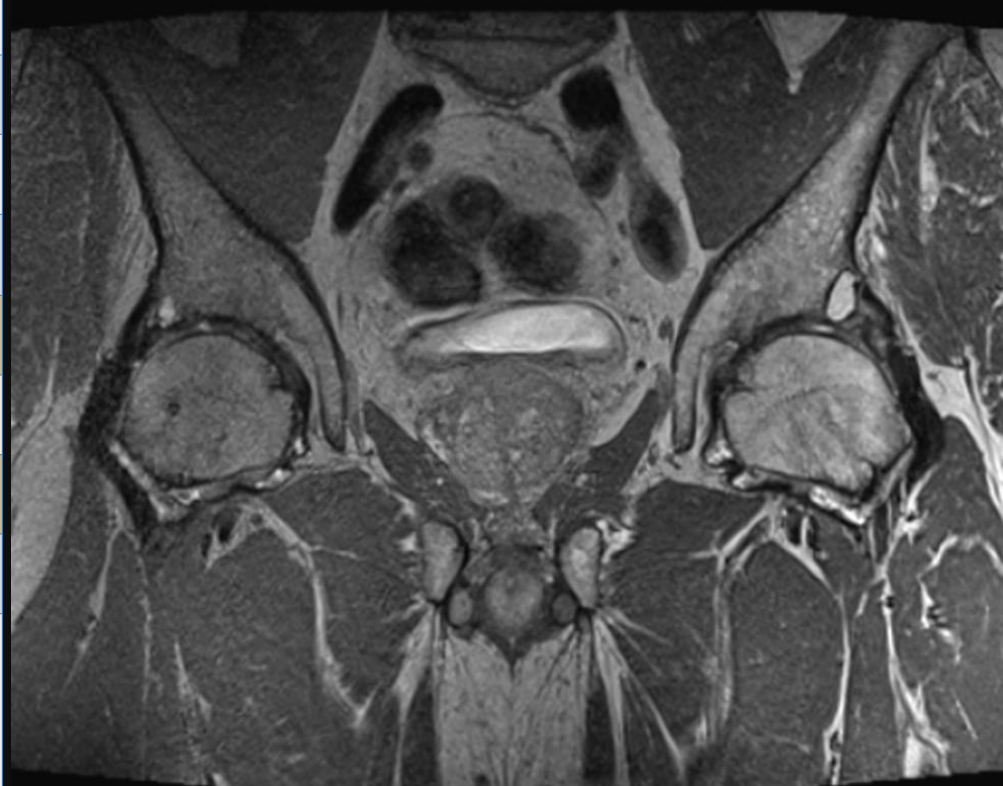
Typ	PD FS
Sekvence	TSE
Rovina	TRA
Vrstva	3/35 dist. 30%
FoV	380
Matrix	320 x 272
Fáze	A-P
PAT	off
TR	3000
TE	38
ETL/turbo	19/9
Čas	3:56
Různé	Phase overs. 20% Avg 2 Conc 2 FA 150



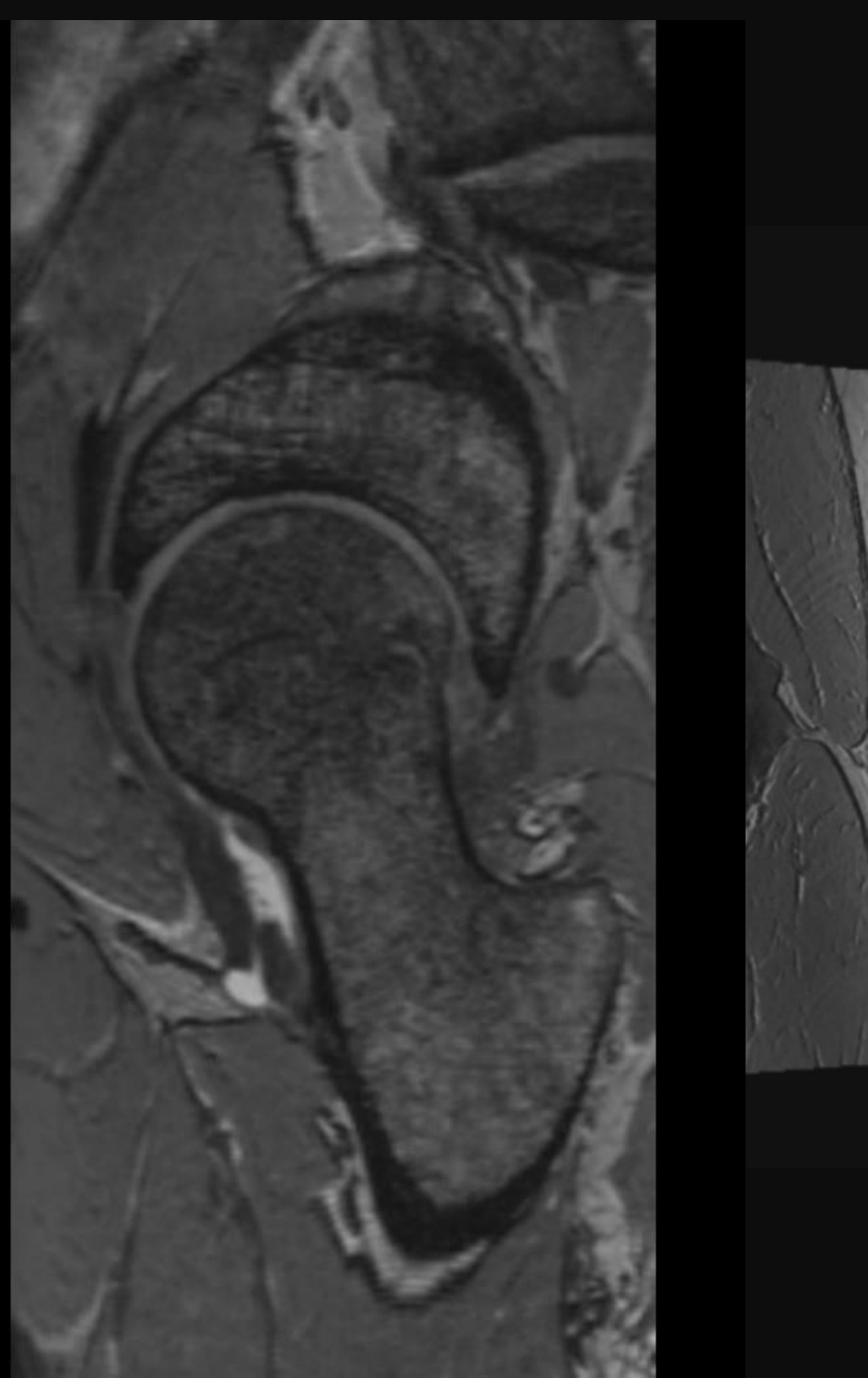
Typ	T2 TIRM
Sekvence	STIR
Rovina	COR
Vrstva <sub>mm</sub>	3/25
FoV <sub>mm</sub>	300
Matrix	256 x 256
Fáze	F-H
PAT	2 GRAPPA
TR <sub>ms</sub>	3300
TE <sub>ms</sub>	37
ETL/turbo	40/6
Čas	2:17
Různé	Conc. 1 Avg 1 Phase overs. 100% TI 220



Typ	PD spc
Sekvence	3D TSE
Rovina	COR
Vrstva <sub>mm</sub>	0,8/88/1 slab
FoV <sub>mm</sub>	400
Matrix	512 x 310
Fáze	F-H
PAT	2 GRAPPA
TR <sub>ms</sub>	1000
TE <sub>ms</sub>	48
Turbo f.	
Čas	7:15
Různé	0,8x0,8x0,8 Conc. 1 Avg 1,4 Phase overs. 50%

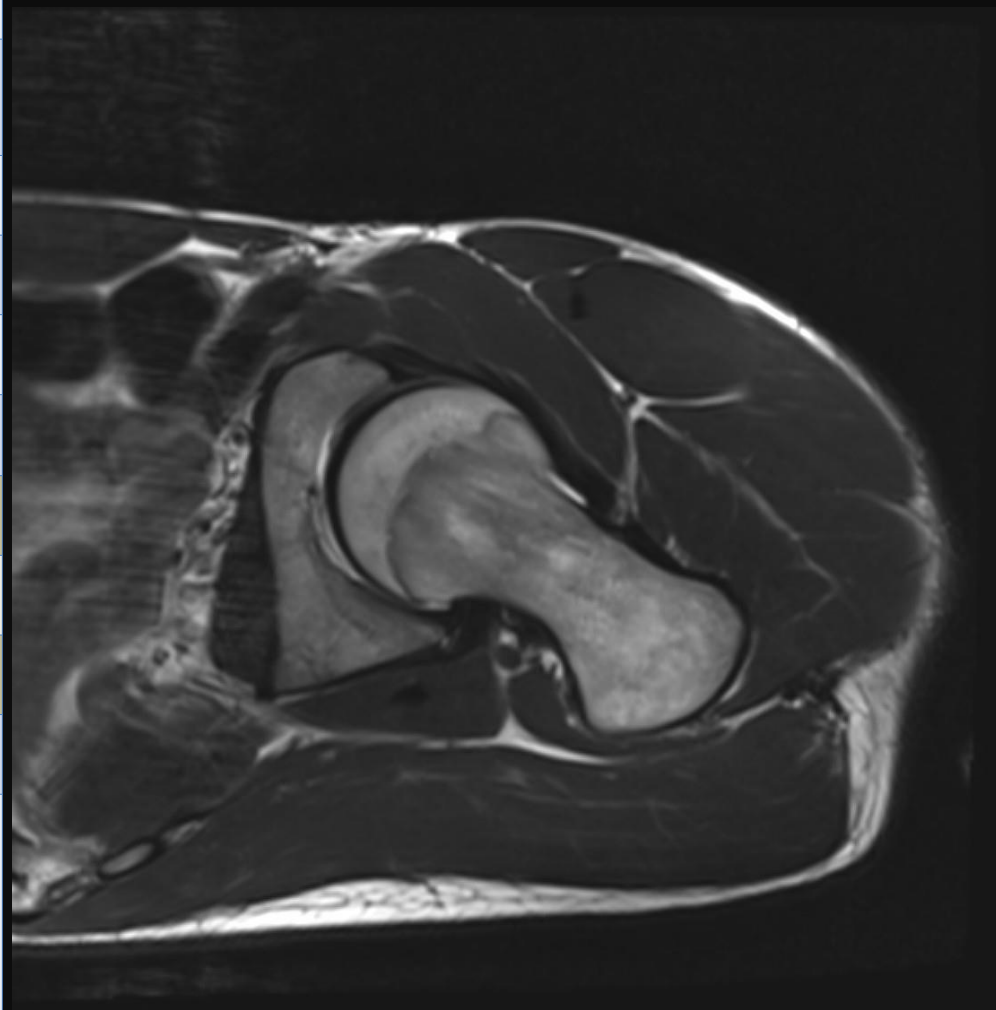


Typ	T2 GRE 3D iso
Sekvence	DESS 3D
Rovina	COR
Vrstva mm	0,7/104/1 slab
FoV mm	400
Matrix	576 x 338
Fáze	F-H
PAT	2 GRAPPA
TR ms	15,5
TE ms	5,1
Turbo f.	
Čas	6:53
Různé	0,7x0,7x0,7 Conc. 1 Avg 1 Phase overs. 80%





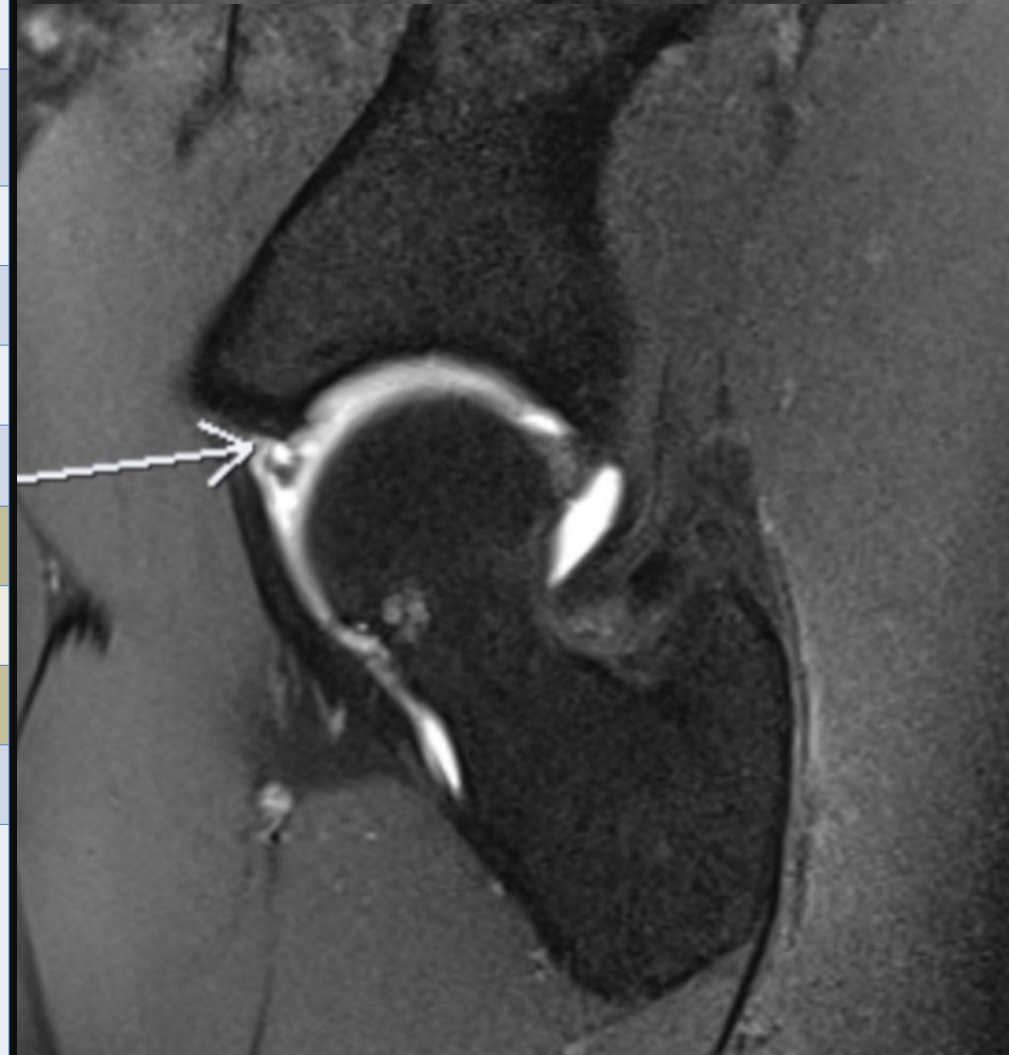
Typ	T2 uni
Sekvence	TSE
Rovina	SAG
Vrstva <sub>mm</sub>	3/27
FoV <sub>mm</sub>	220
Matrix	320 x 240
Fáze	A-P
PAT	Off
TR <sub>ms</sub>	4500
TE <sub>ms</sub>	85
ETL/turb	20/16
Čas	3:06
Různé	Conc. 1 Avg 2 Phase overs. 30% FA 140



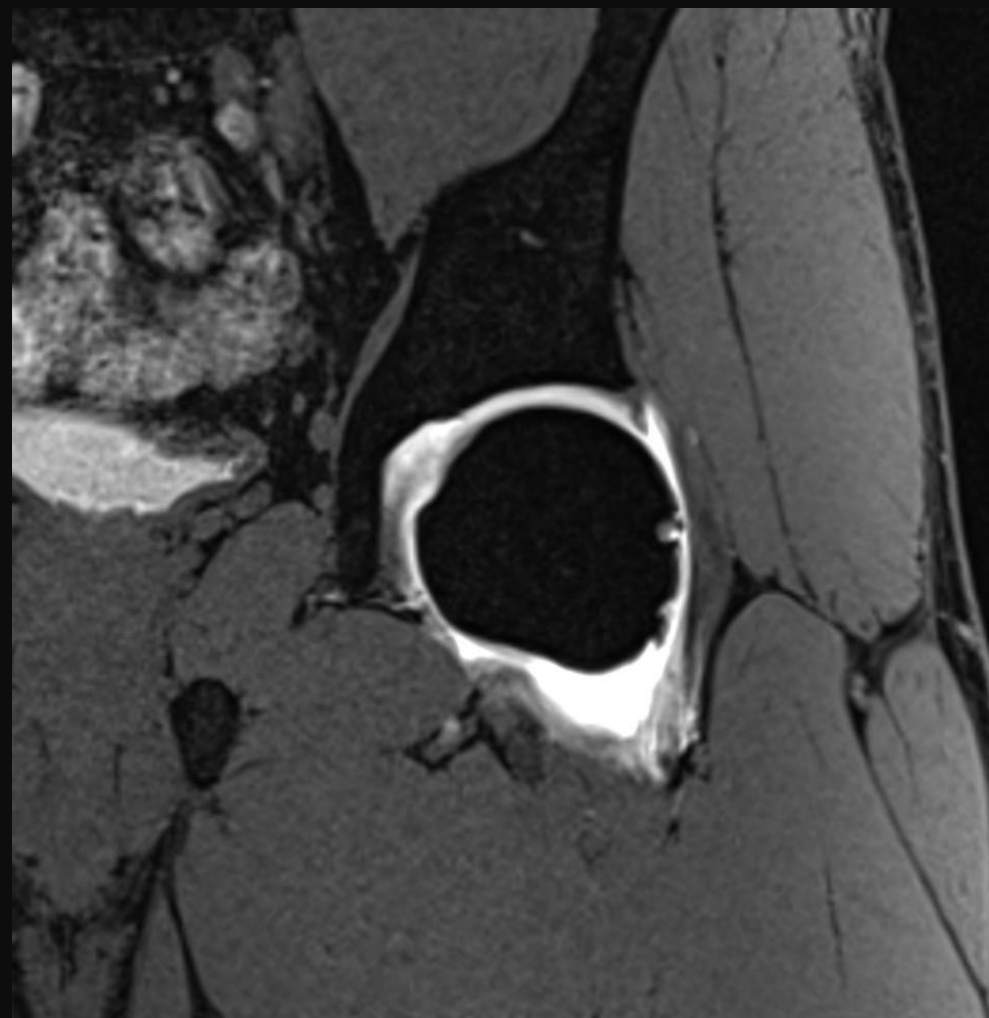
# MR artrografie kyčle

Jan Kastner, Radek Süss

Typ	T1
Sekvence	TSE
Rovina	SAG
Vrstva mm	3/24
FoV mm	280
Matrix	512 x 410
Fáze	A-P
PAT	Off
TR ms	745
TE ms	20
ETL/turb	93/4
Čas	4:40
Různé	Conc. 2 Avg 2 Phase overs. 80% FA 150



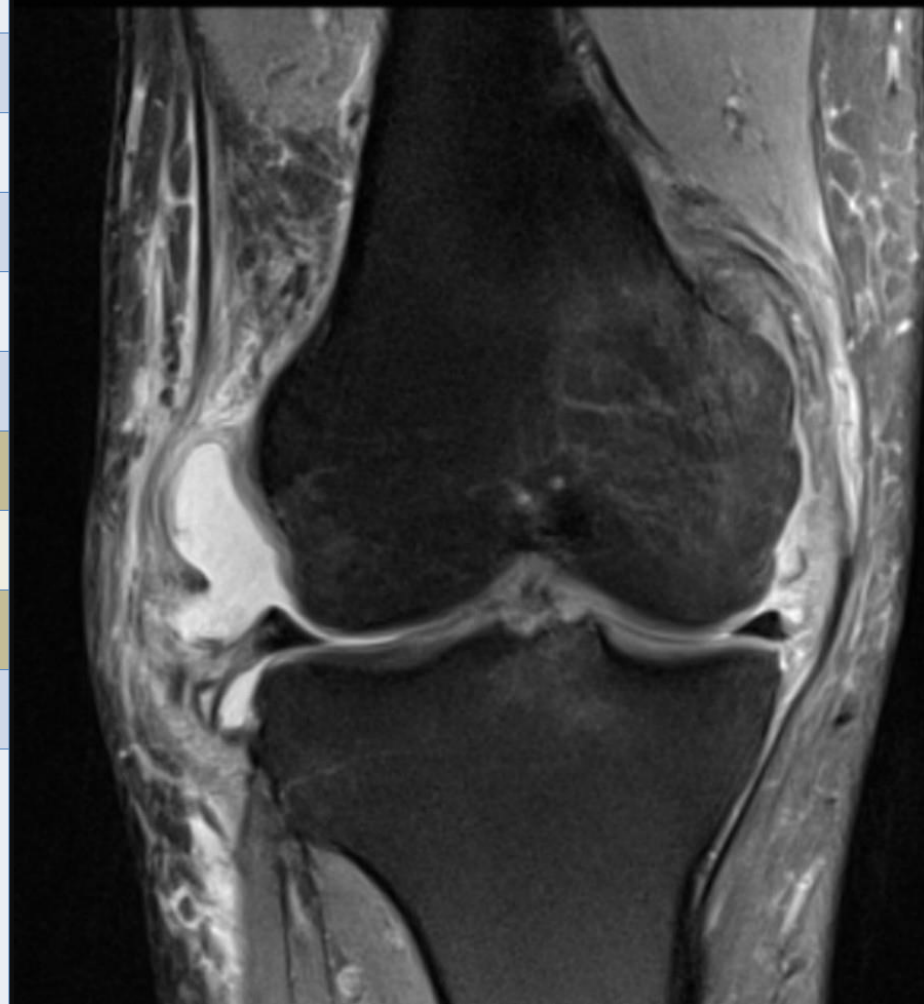
Typ	T1 3D GRE water excitation
Sekvence	VIBE
Rovina	COR
Vrstva mm	0,8/96/1 slab
FoV mm	400
Matrix	512 x 304
Fáze	F-H
PAT	2 GRAPPA
TR ms	10
TE ms	4,92
Turbo f.	
Čas	3:30
Různé	0,8x0,8x0,8 Conc. 1 Avg 1 Phase overs. 70%



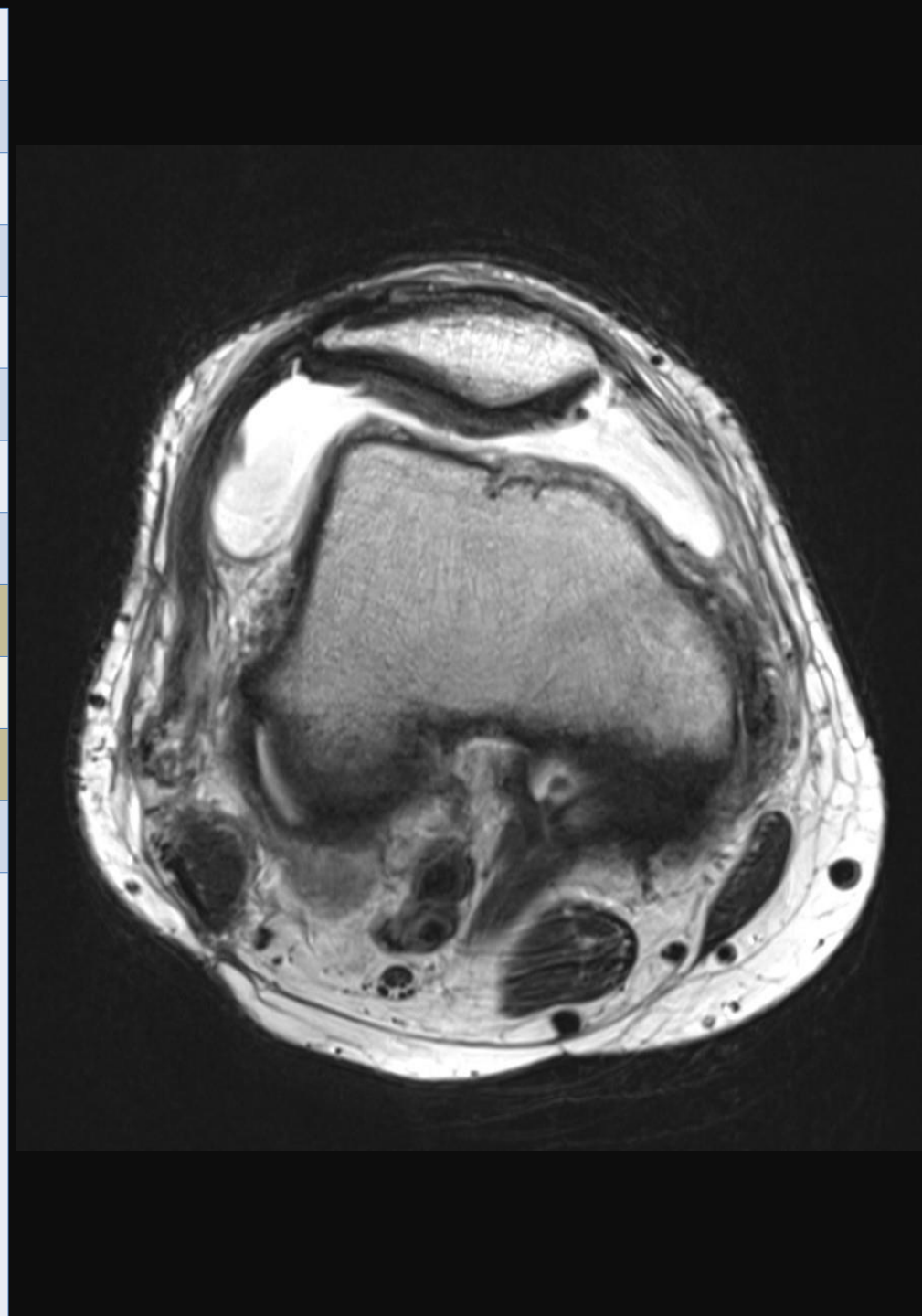
# MR kolene

Jan Kastner, Radek Süss

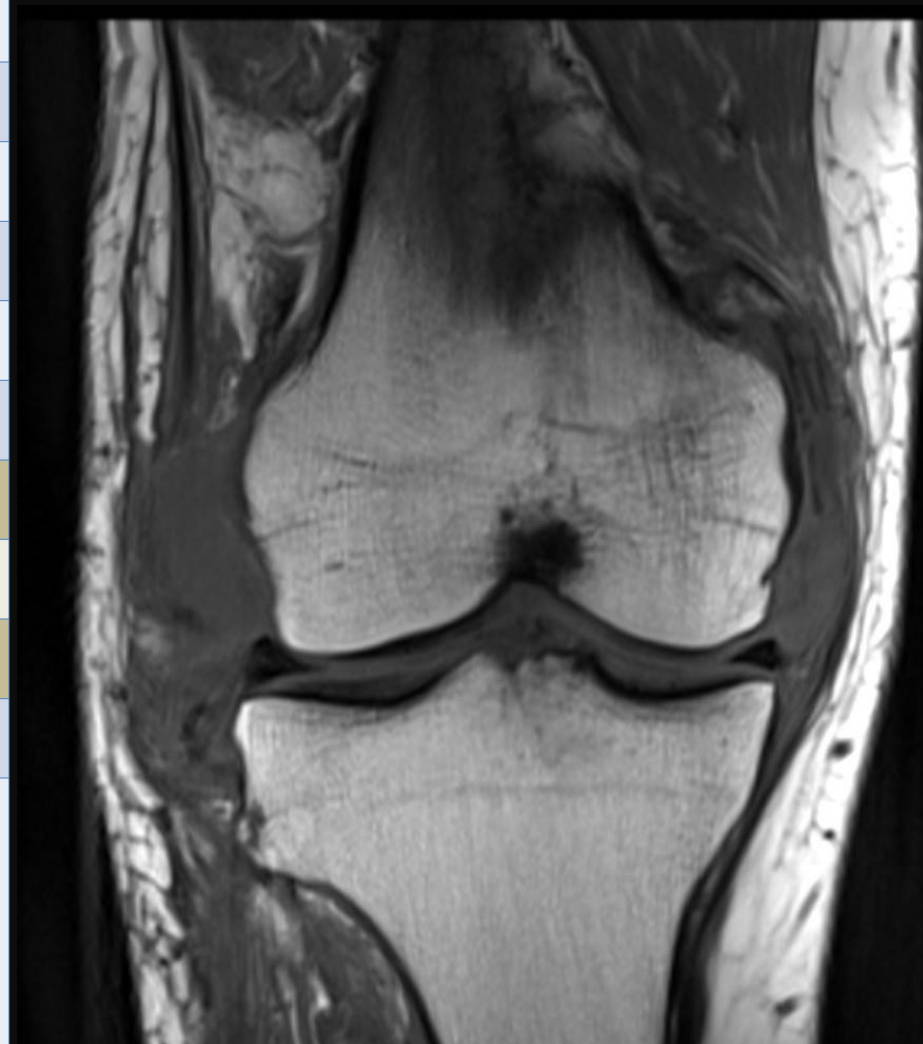
Typ	PD FS
Sekvence	TSE
Rovina	COR
Vrstva	3/25 dist. 10%
FoV	150
Matrix	320 x 320
Fáze	H-F
PAT	off
TR	3360
TE	33
ETL/turbo	64/10
Čas	3:43
Různé	Phase overs. 100% Avg 1 Conc 1 FA 134



Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva	3/29 dist. 10%
FoV	180
Matrix	512 x 358
Fáze	A-P
PAT	2
TR	5020
TE	80
ETL/turbo	13/14
Čas	2:17
Různé	Phase overs. 100% Avg 2 Conc 1 FA 145

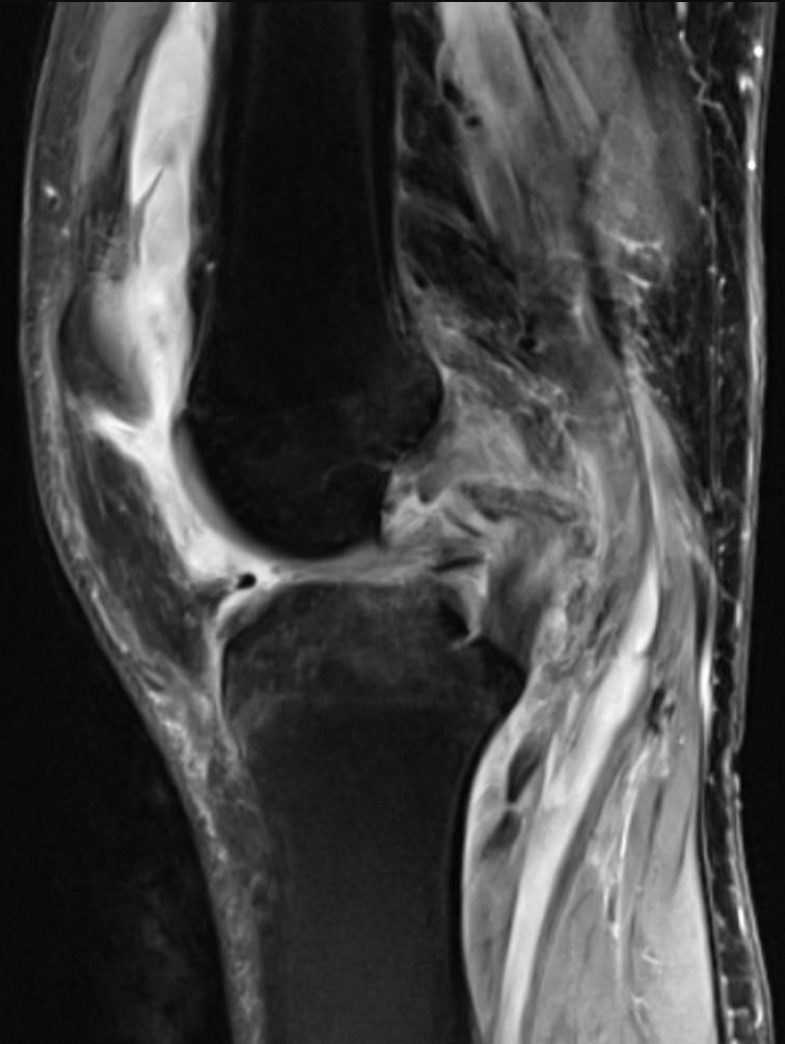


Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva	3/25 dist. 10%
FoV	150
Matrix	320 x 240
Fáze	H-F
PAT	off
TR	724
TE	21
ETL/turbo	240/2
Čas	2:56
Různé	Phase overs. 100% Avg 1 Conc 1 FA 150

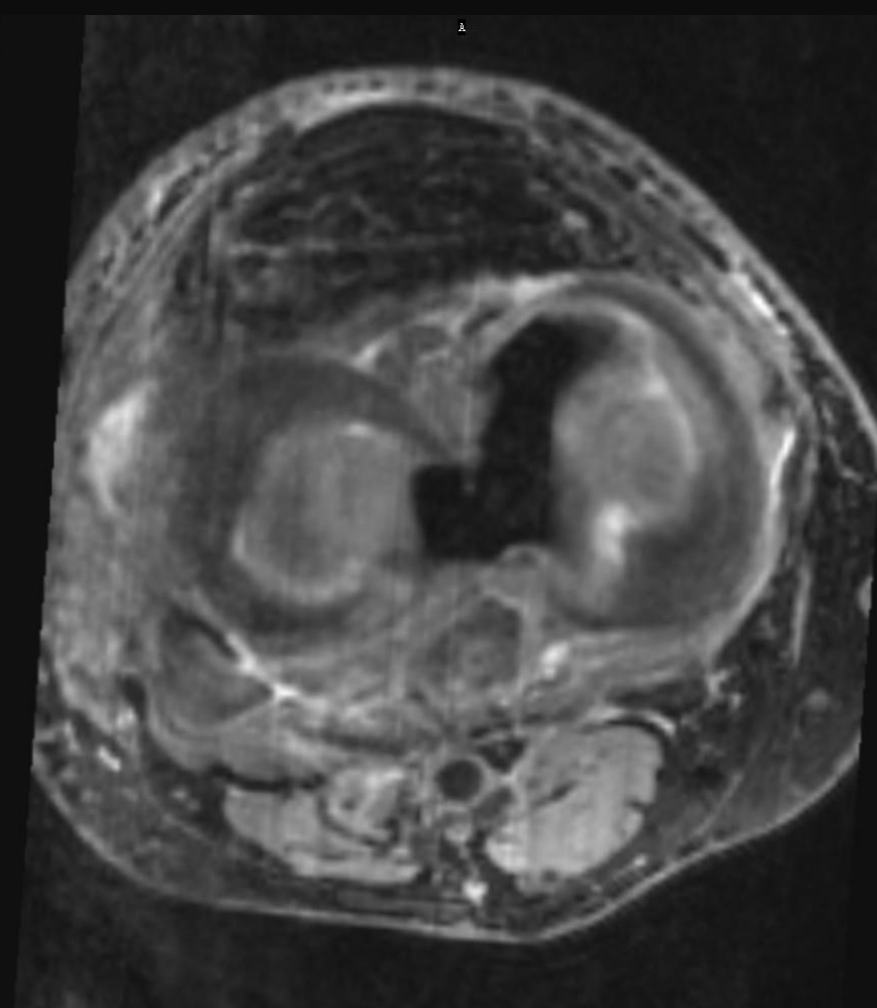




Typ	PD FS
Sekvence	TSE
Rovina	SAG
Vrstva mm	3/31
FoV mm	180
Matrix	384 x 384
Fáze	F-H
PAT	Off
TR ms	4250
TE ms	32
ETL/turb	73/10
Čas	5:20
Různé	Conc. 1 Avg 1 Phase overs. 90% FA 137



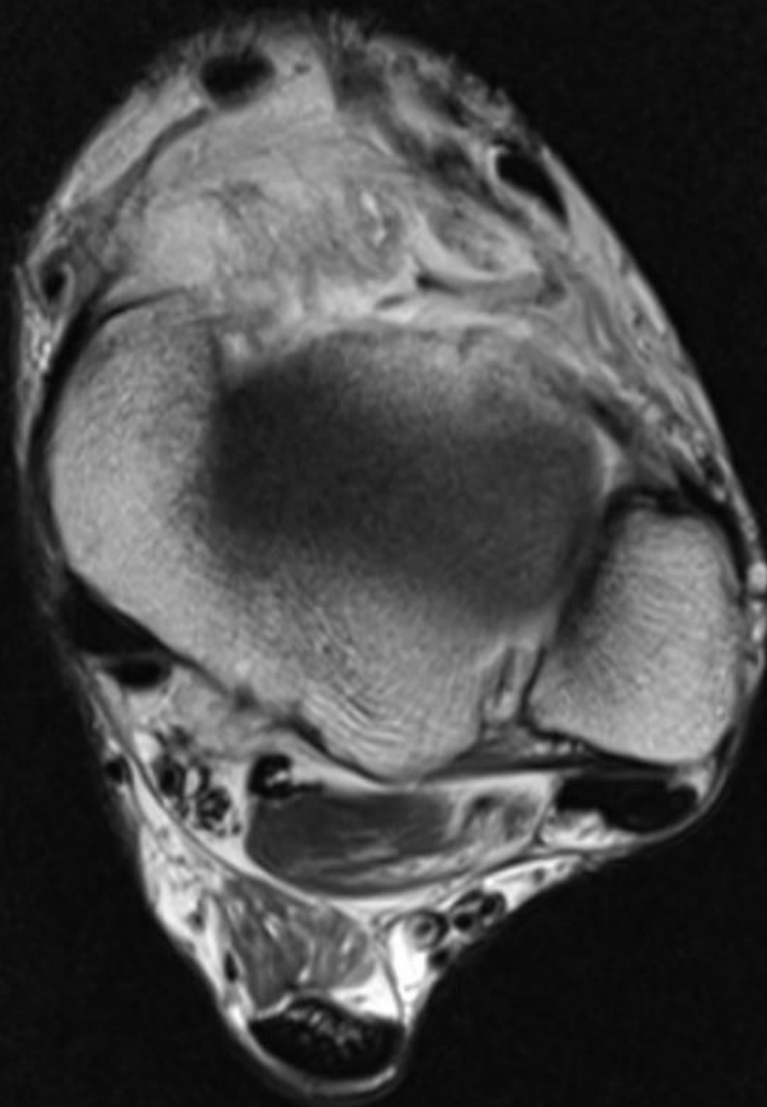
Typ	T2 GRE iso
Sekvence	DESS 3D
Rovina	SAG
Vrstva mm	0,7/160/1 slab
FoV mm	250
Matrix	256 x 240
Fáze	A-P
PAT	2 GRAPPA
TR ms	14,84
TE ms	5,04
Turbo f.	
Čas	3:43
Různé	0,8x0,8x0,7 Conc. 1 Avg 1 Phase overs. 0%



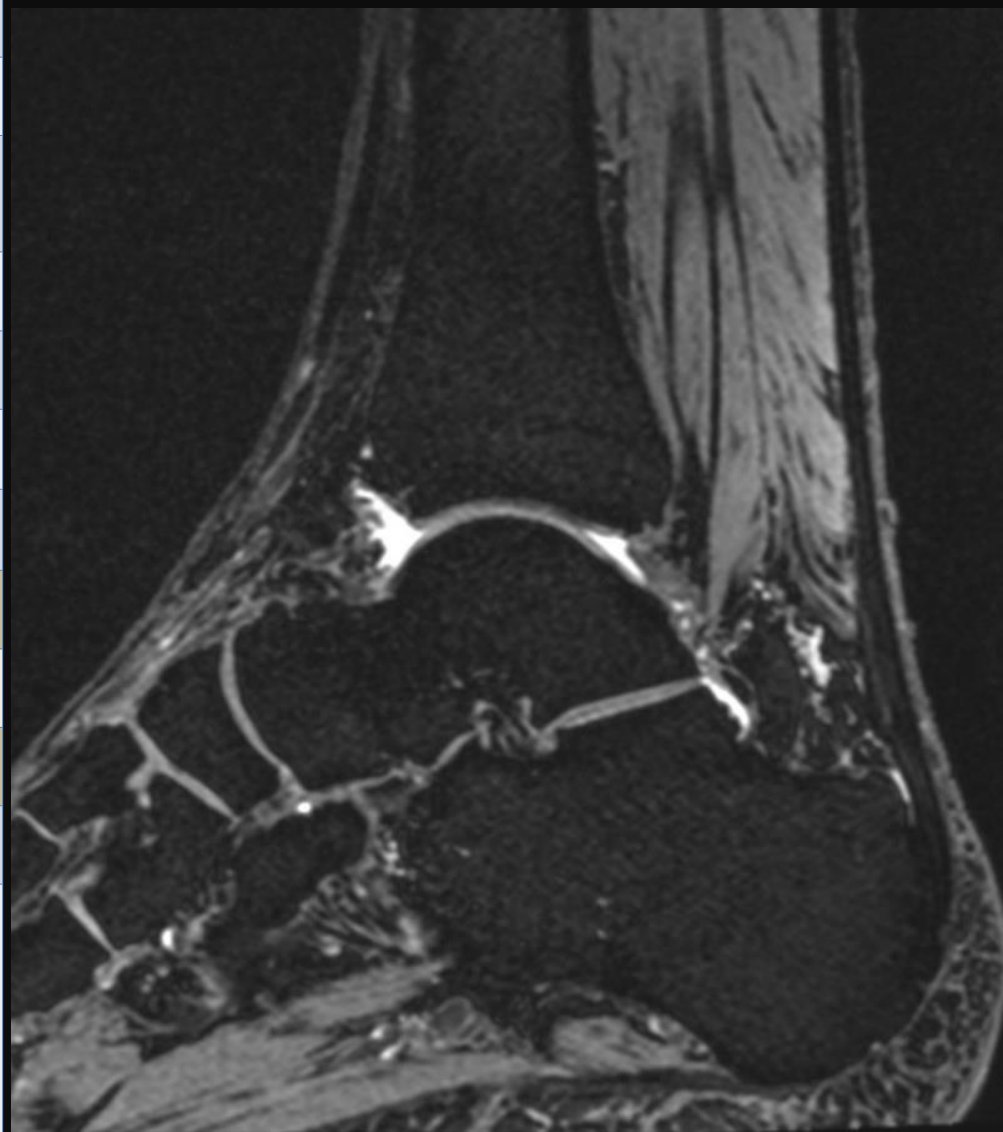
MR hleзна

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Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva	3/24 dist. 20%
FoV	150
Matrix	512 x 410
Fáze	A-P
PAT	off
TR	4000
TE	76
ETL/turbo	39/14
Čas	2:42
Různé	Phase overs. 30% Avg 1 Conc 1 FA 132



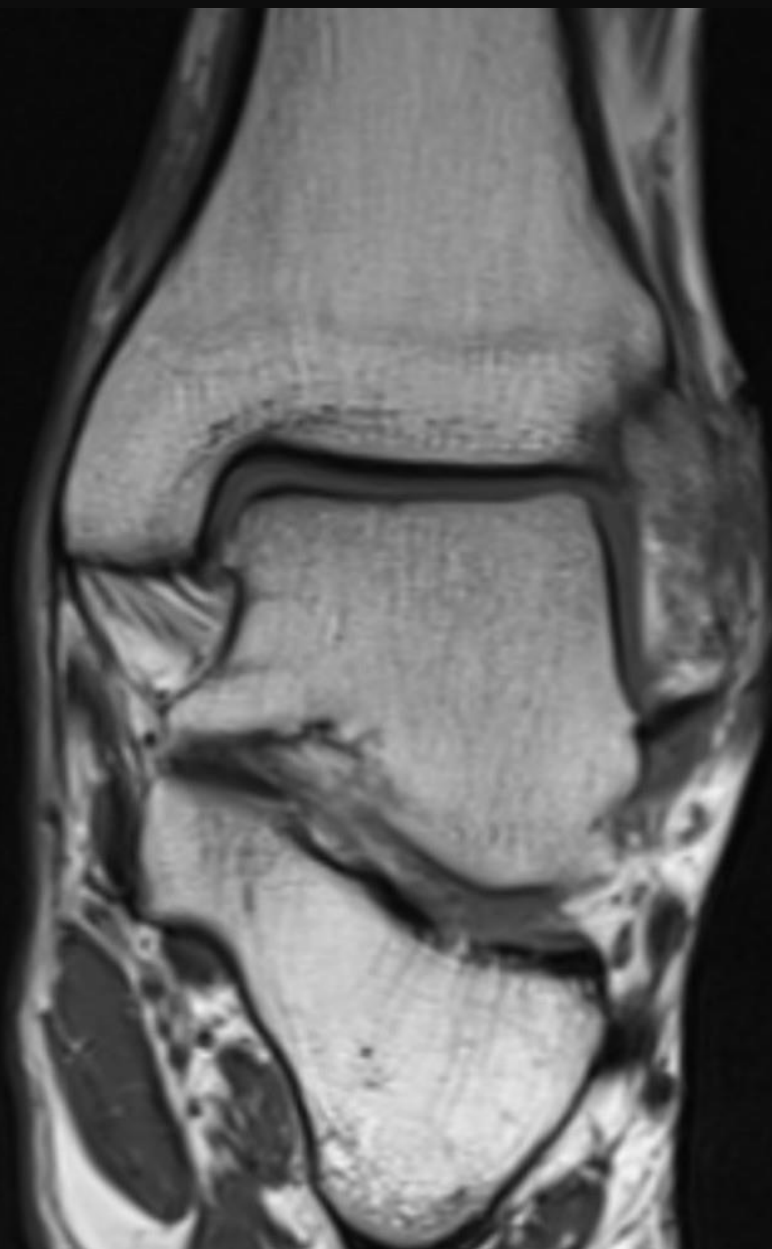
Typ	T2 GRE 3D
Sekvence	DESS 3D
Rovina	SAG
Vrstva mm	0,5/128/1 slab
FoV mm	150
Matrix	320 x 275
Fáze	A-P
PAT	2 GRAPPA
TR ms	03,48
TE ms	5,00
Turbo f.	
Čas	5:54
Různé	0,2x0,2x0,5 Conc. 1 Avg 1 Phase overs. 60%



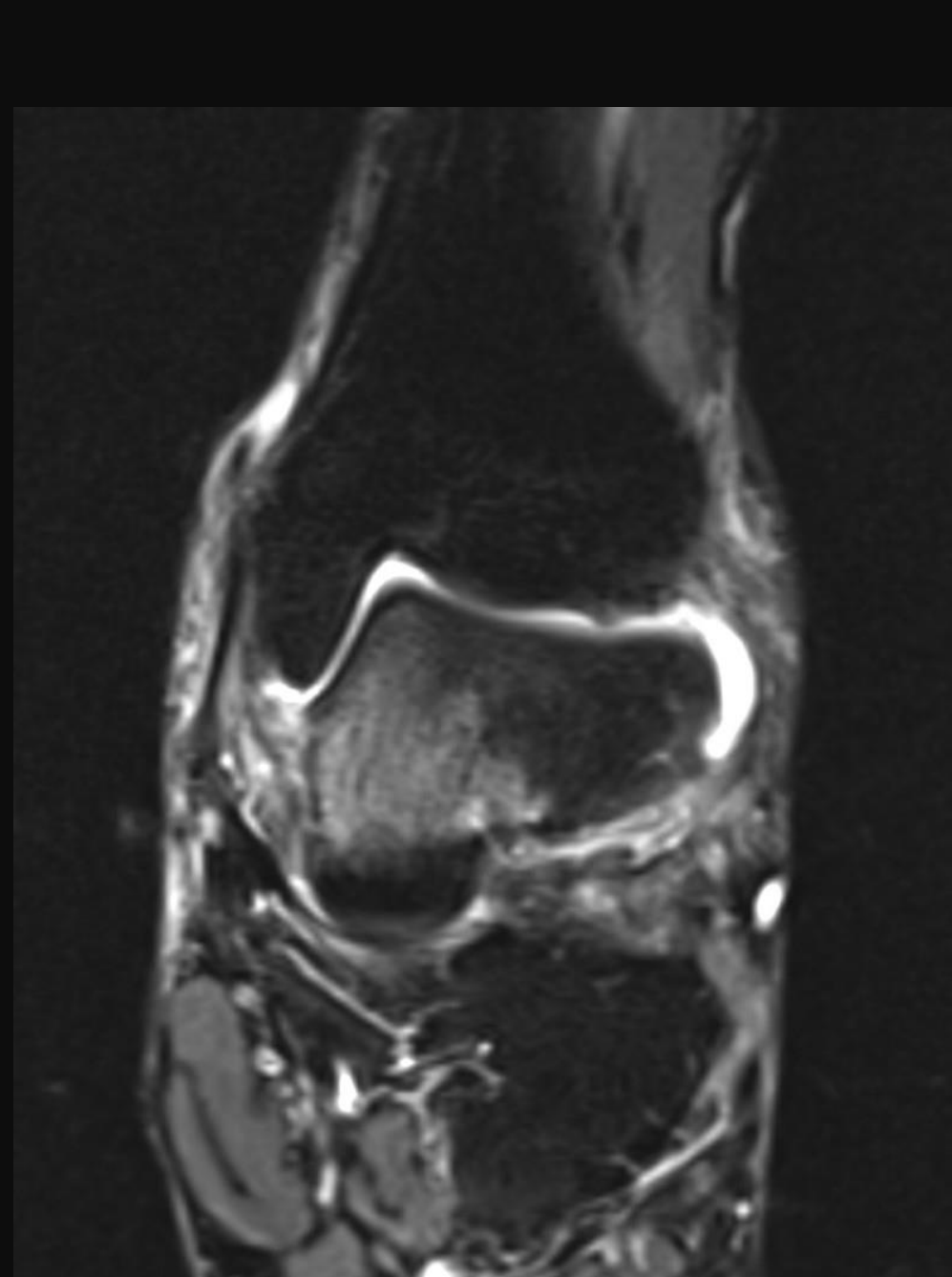
Typ	PD FS
Sekvence	TSE
Rovina	COR
Vrstva	3/29 dist. 20%
FoV	150
Matrix	448 x 358
Fáze	F-H
PAT	off
TR	3000
TE	30
ETL/turbo	77/8
Čas	3:59
Různé	Phase overs. 70% Avg 1 Conc 1 FA 150



Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva	3/25 dist. 20%
FoV	150
Matrix	384 x 307
Fáze	R-L
PAT	off
TR	996
TE	15
ETL/turbo	308/2
Čas	5:09
Různé	Phase overs. 100% Avg 1 Conc 1 FA 140

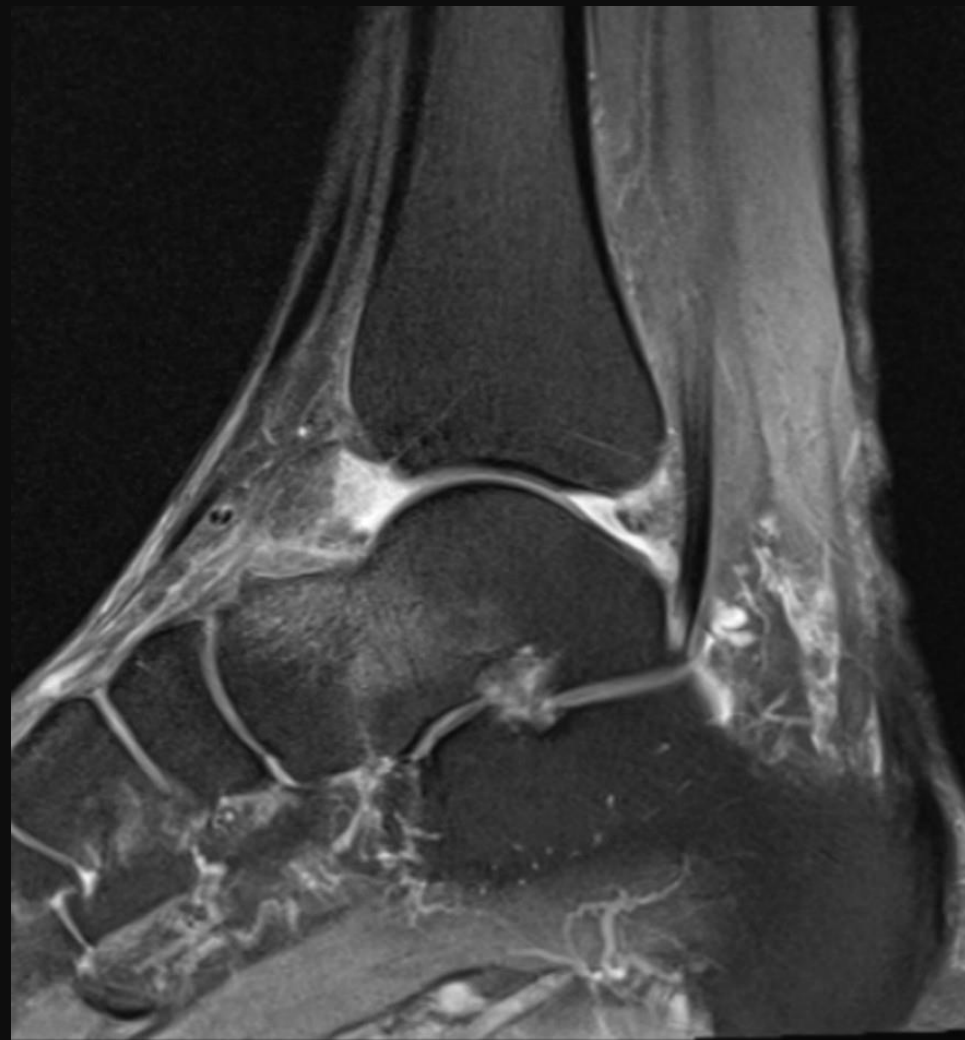


Typ	STIR
Sekvence	TIRM
Rovina	COR
Vrstva	3/25 dist. 20%
FoV	150
Matrix	320 x 256
Fáze	R-L
PAT	off
TR	4980
TE	32
ETL/turbo	22/12
Čas	3:46
Různé	Phase overs. 0% Avg 2 Conc 1 FA 132 TI 220





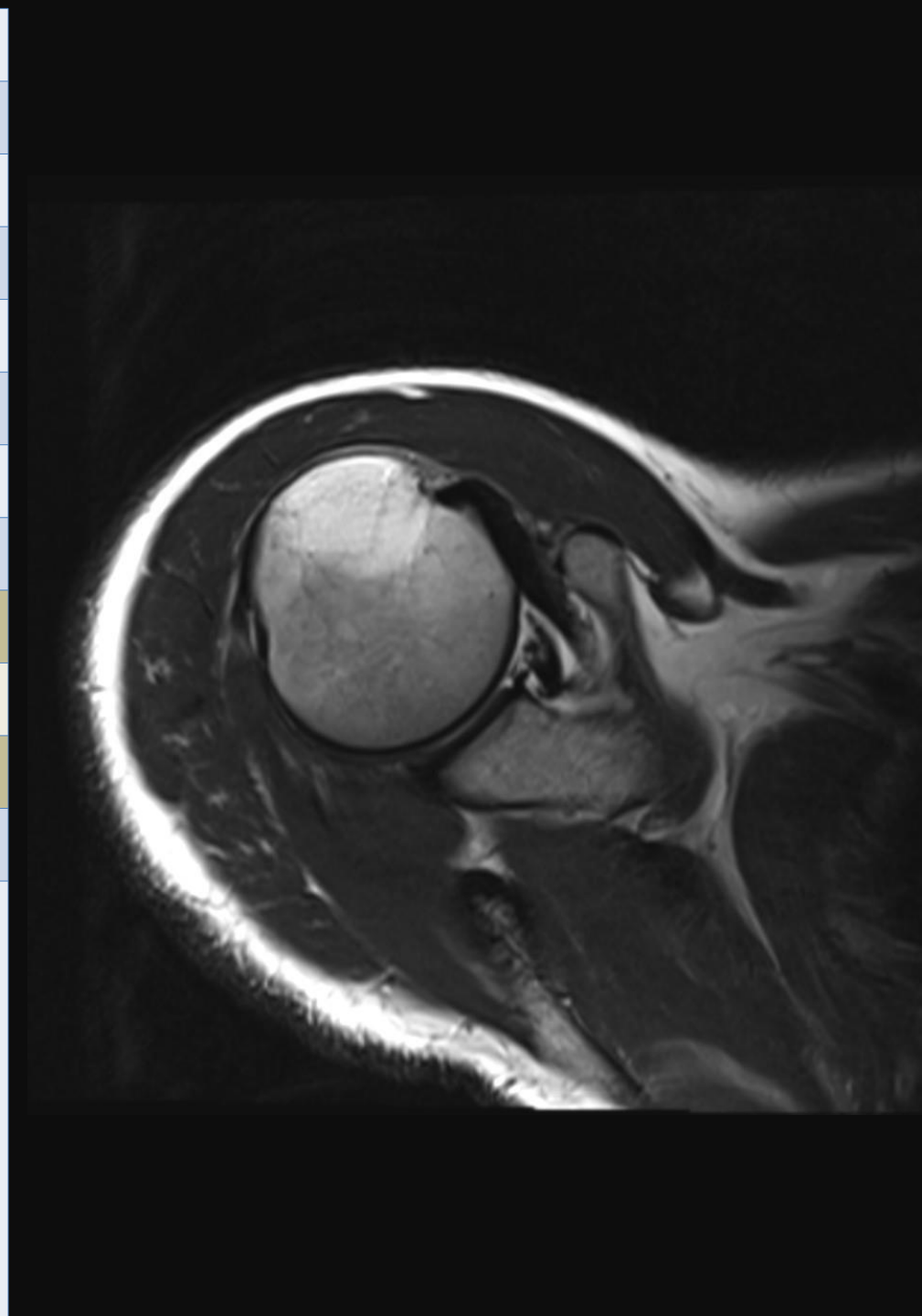
Typ	PD FS
Sekvence	TSE
Rovina	SAG
Vrstva mm	3/29
FoV mm	150
Matrix	448 x 358
Fáze	A-P
PAT	Off
TR ms	3000
TE ms	30
ETL/turb	77/8
Čas	3:59
Různé	Conc. 1 Avg 1 Phase overs. 70% FA 138



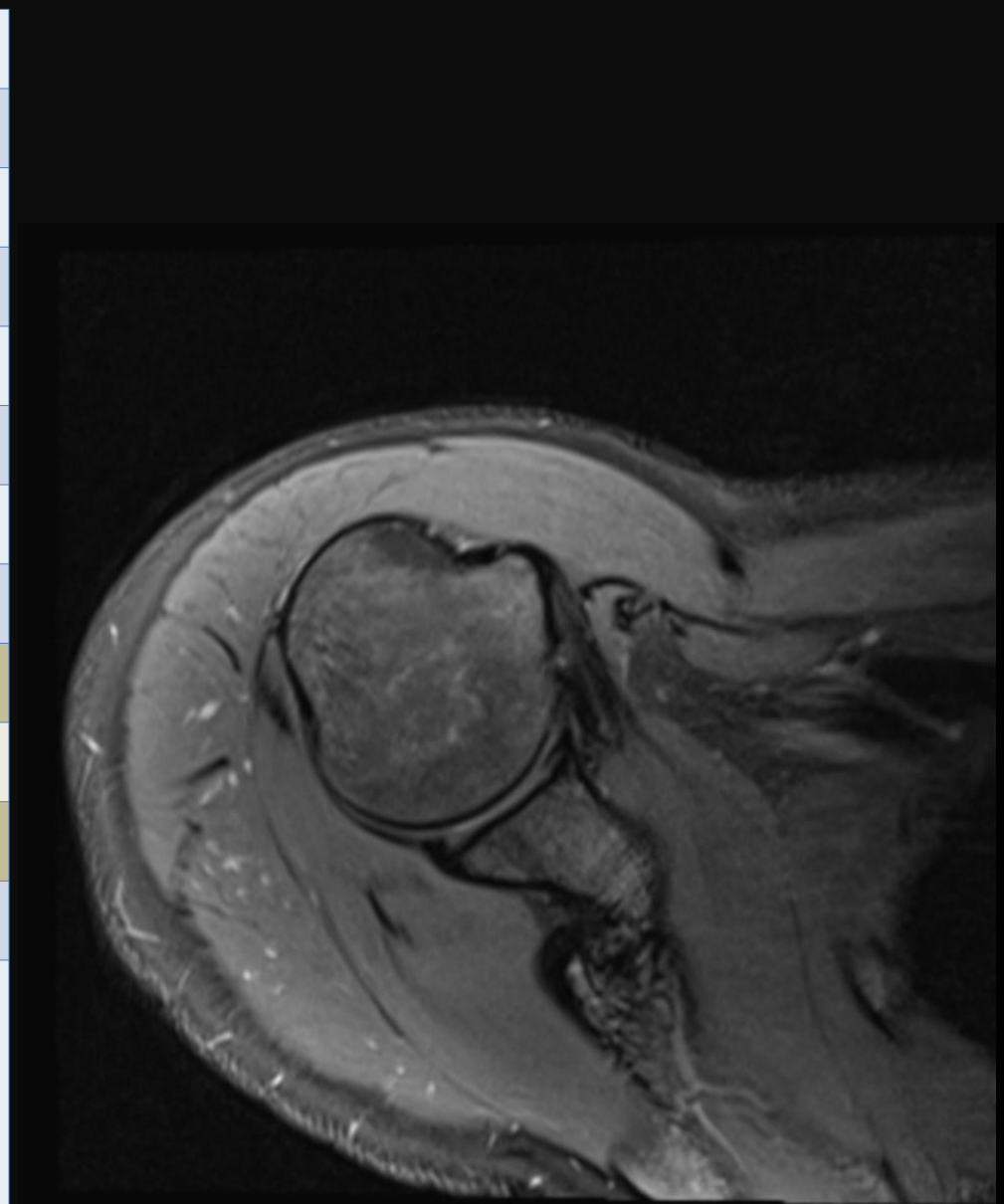
MR ramene

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Typ	T2
Sekvence	TSE
Rovina	TRA
Vrstva	3/25 dist. 10%
FoV	160
Matrix	320 x 224
Fáze	A-P
PAT	off
TR	4890
TE	87
ETL/turbo	26/15
Čas	2:14
Různé	Phase overs. 70% Avg 1 Conc 1 FA 150



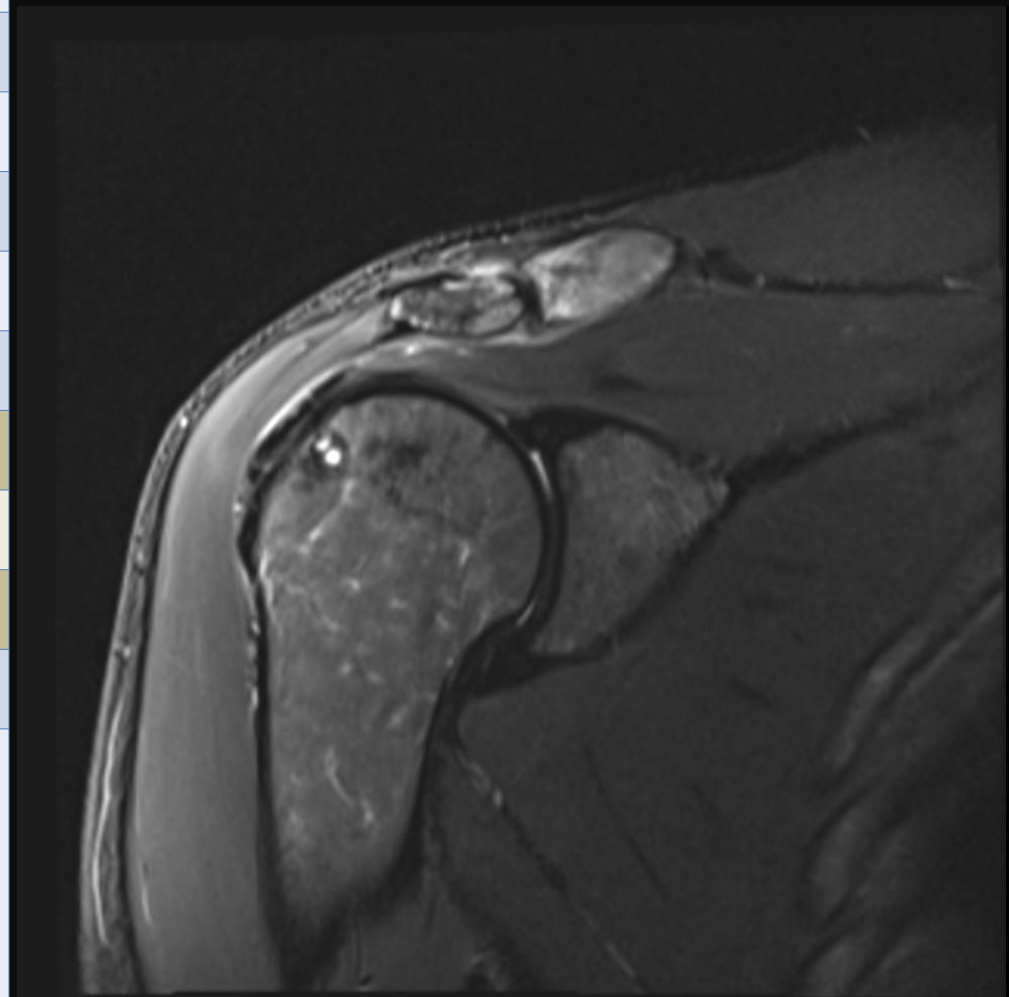
Typ	PD FS
Sekvence	TSE
Rovina	TRA
Vrstva	3/25 dist. 10%
FoV	160
Matrix	320 x 240
Fáze	A-P
PAT	off
TR	3100
TE	38
ETL/turbo	51/8
Čas	2:46
Různé	Phase overs. 100% Avg 1 Conc 1 FA 150



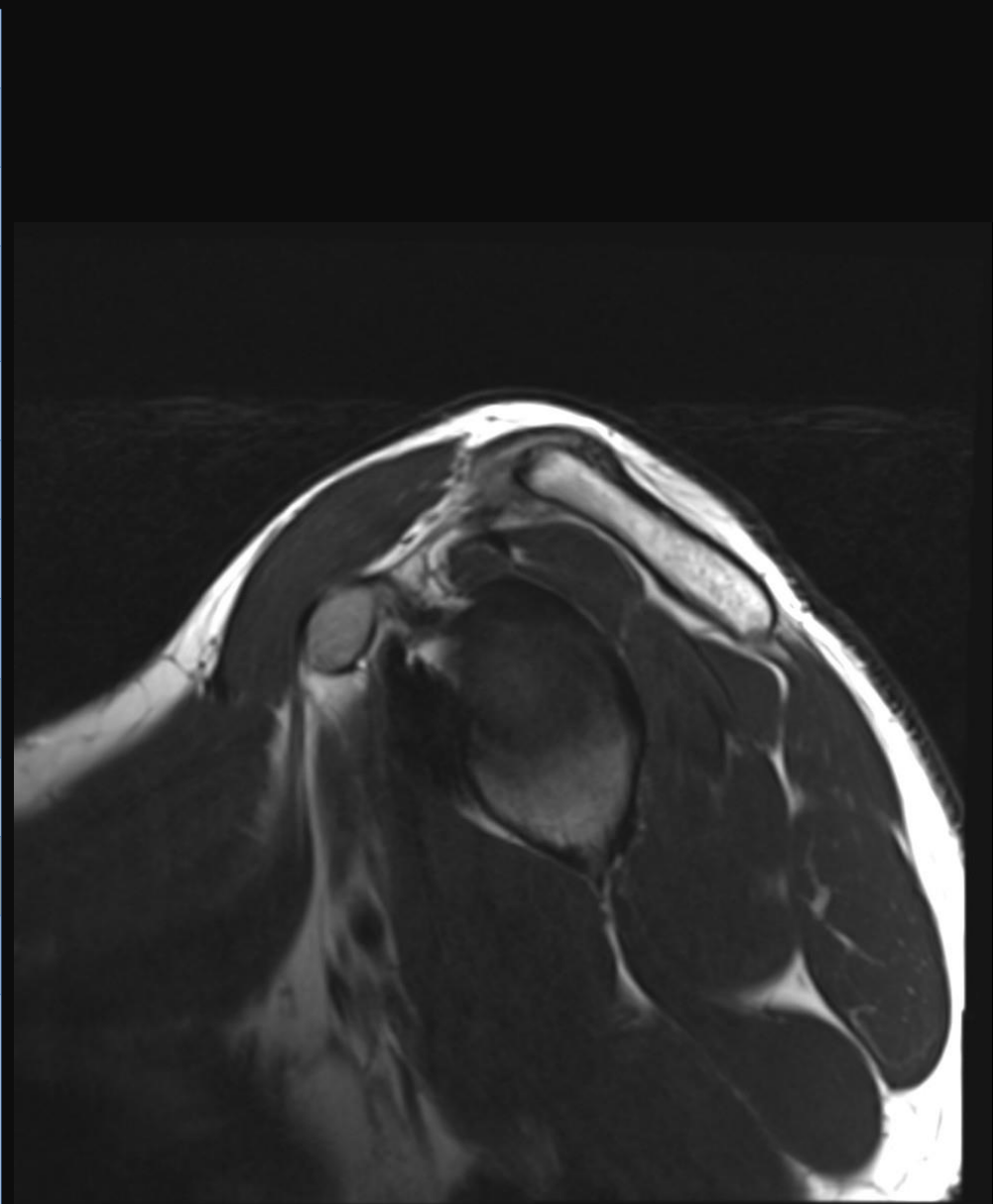
Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva	3/20 dist. 10%
FoV	160
Matrix	448 x 358
Fáze	R-L
PAT	2
TR	600
TE	24
ETL/turbo	90/4
Čas	3:39
Různé	Phase overs. 100% Avg 2 Conc 2 FA 150



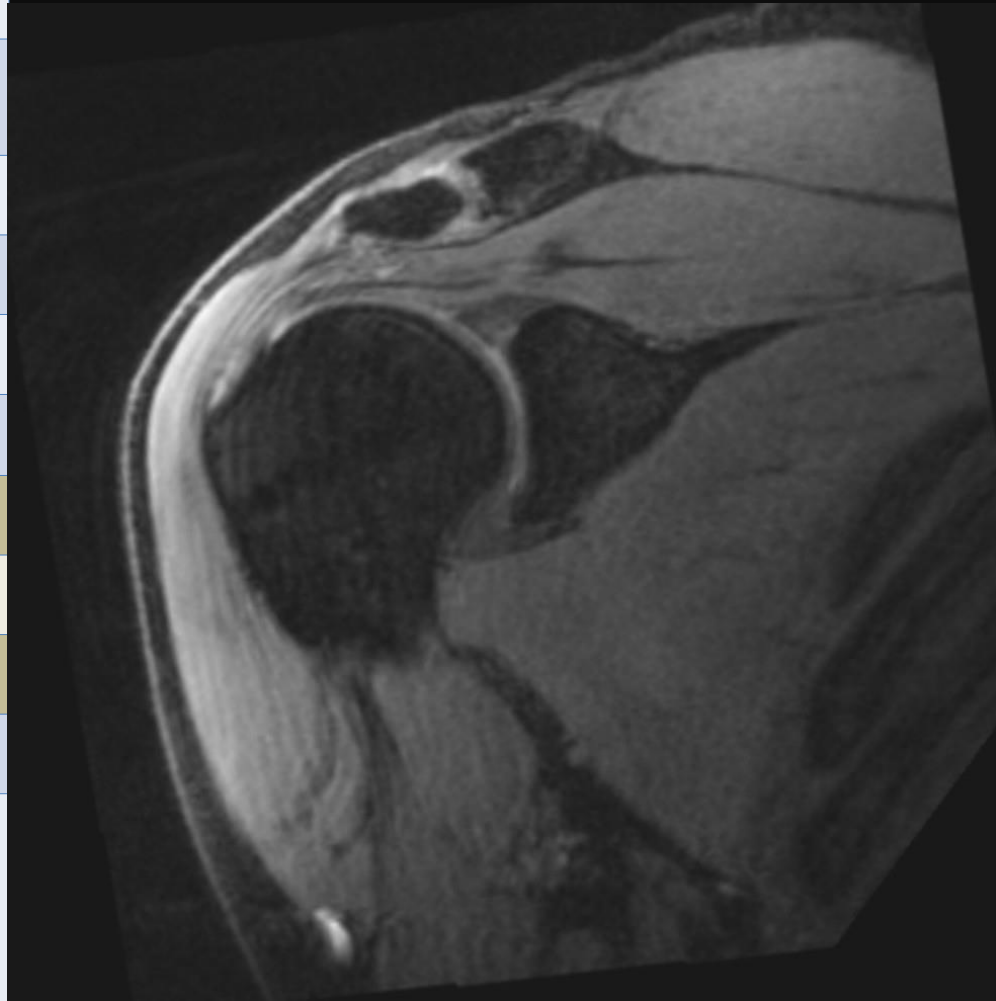
Typ	STIR
Sekvence	TIRM
Rovina	COR
Vrstva	3/20 dist. 10%
FoV	160
Matrix	320 x 224
Fáze	H-F
PAT	off
TR	4000
TE	32
ETL/turbo	41/11
Čas	5:34
Různé	Phase overs. 100% Avg 2 Conc 1 FA 140 TI 220



Typ	T2
Sekvence	TSE
Rovina	SAG
Vrstva mm	3/26
FoV mm	160
Matrix	320 x 256
Fáze	A-P
PAT	Off
TR ms	4000
TE ms	72
ETL/turb	37/14
Čas	2:34
Různé	Conc. 1 Avg 1 Phase overs. 100% FA 150



<b>Typ</b>	<b>T2 GRE 3D iso</b>
Sekvence	DESS 3D (de3d)
Rovina	COR
Vrstva mm	0,6/120/1 slab
FoV mm	160
Matrix	256 x 251
Fáze	R-L
PAT	2 GRAPPA
TR ms	15,85
TE ms	5,4
Turbo f.	
Čas	5:54
Různé	0,6x0,6x0,6 Conc. 1 Avg 1 Phase overs. 100%

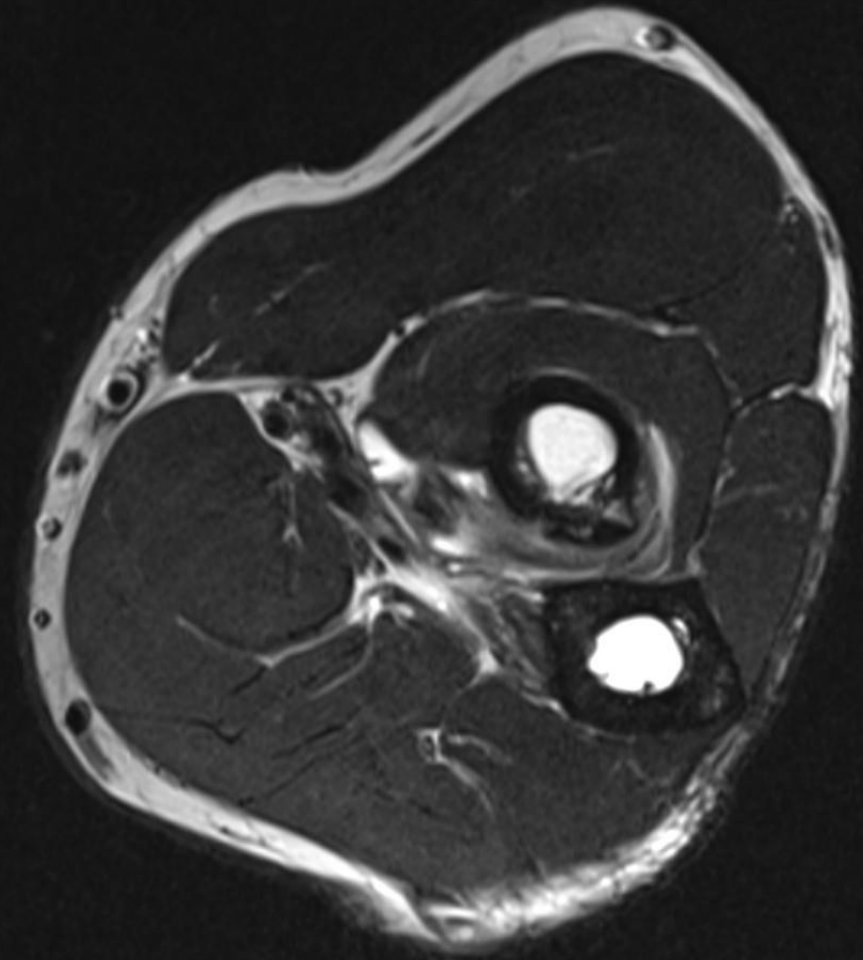




MR lokte

Jan Kastner, Radek Süss

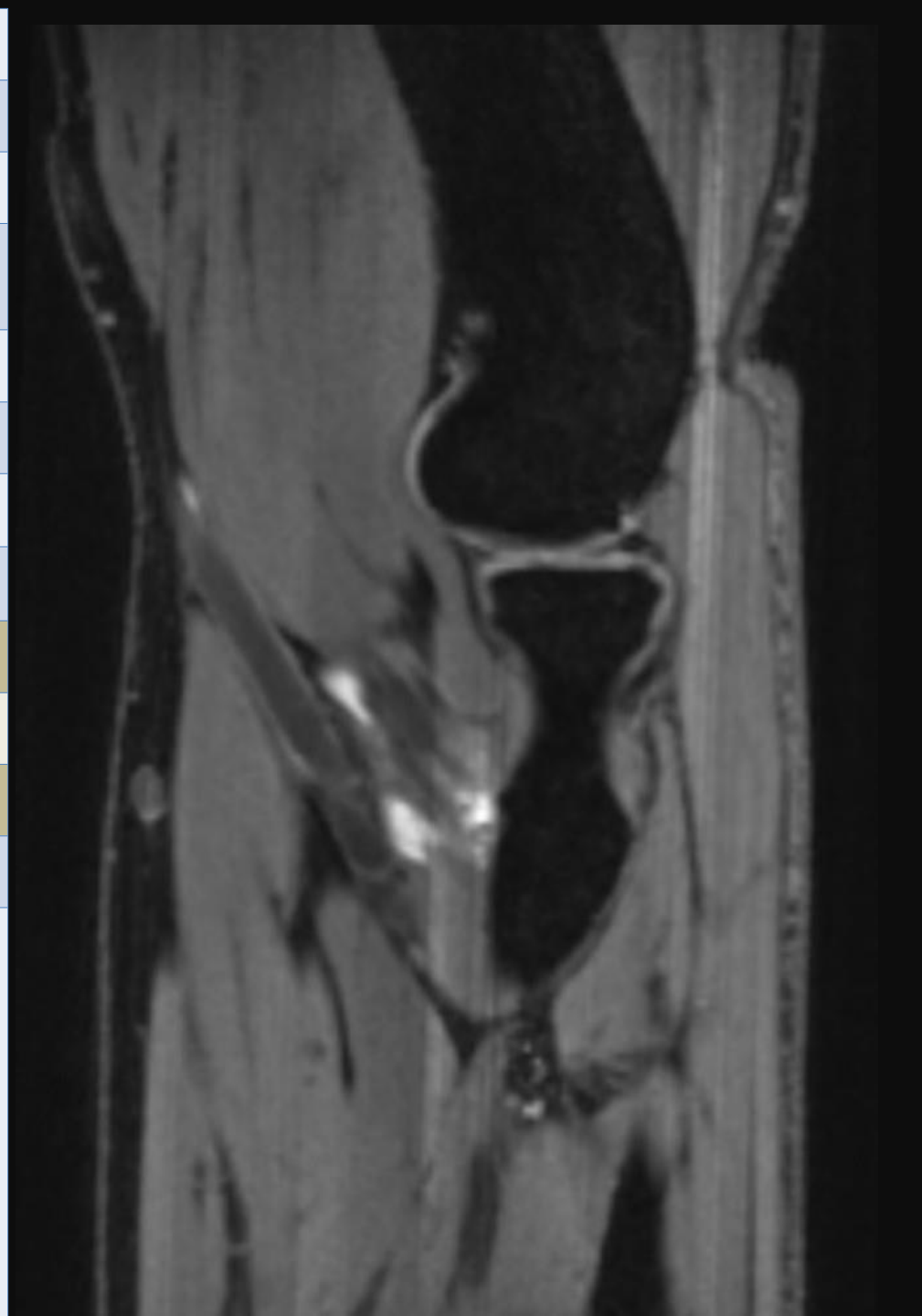
<b>Typ</b>	<b>T2</b>
Sekvence	TSE
Rovina	TRA
Vrstva	3/29 dist. 10%
FoV	180
Matrix	512 x 358
Fáze	A-P
PAT	off
TR	5020
TE	80
ETL/turbo	26/14
Čas	4:28
Různé	Phase overs. 0% Avg 2 Conc 1 FA 145



Typ	PD FS
Sekvence	TSE
Rovina	COR
Vrstva	3/25 dist. 10%
FoV	150
Matrix	320 x 320
Fáze	F-H
PAT	off
TR	3270
TE	33
ETL/turbo	64/10
Čas	3:37
Různé	Phase overs. 100% Avg 1 Conc 1 FA 134



<b>Typ</b>	<b>T2 GRE 3D iso</b>
Sekvence	DESS 3D (de3d)
Rovina	SAG
Vrstva mm	0,7/120/1 slab
FoV mm	160
Matrix	256 x 256
Fáze	A-P
PAT	2 GRAPPA
TR ms	14,84
TE ms	5,04
Turbo f.	
Čas	3:43
Různé	0,8x0,8x0,7 Conc. 1 Avg 1 Phase overs. 0%



Typ	T1
Sekvence	TSE
Rovina	COR
Vrstva	3/25 dist. 10%
FoV	150
Matrix	320 x 240
Fáze	F-H
PAT	off
TR	724
TE	21
ETL/turbo	240/2
Čas	2:56
Různé	Phase overs. 100% Avg 1 Conc 1 FA 150



Typ	PD FS
Sekvence	TSE
Rovina	TRA
Vrstva	3/25 dist. 10%
FoV	150
Matrix	320 x 320
Fáze	A-P
PAT	off
TR	3270
TE	33
ETL/turbo	64/10
Čas	3:37
Různé	Phase overs. 100% Avg 1 Conc 1 FA 134

