

## Supplementary data

This supplementary material consists of radiographs and consensus decisions of 30 segments in 27 patients.

The evaluated radiographs are in ascending order (number of days after implantation). Patients no. 4, 8, 17 were the severe cases presenting with pain and identified radiographic

changes at 3 different centers within 7 weeks. All other radiographic changes at the telescoping interfaces were identified retrospectively, including patients 15 and 24 who presented with severe pain, which was relieved by hardware removal.

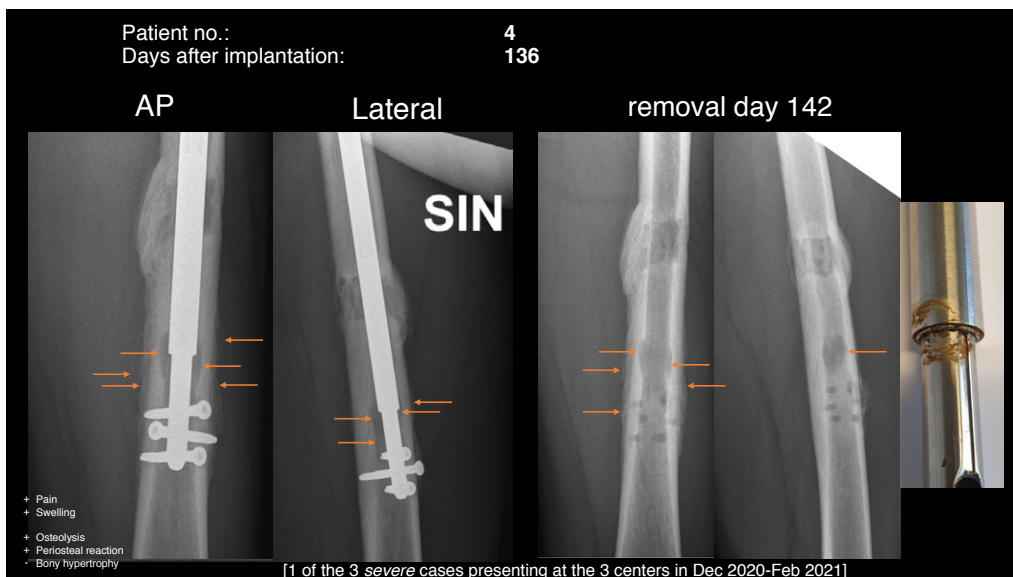
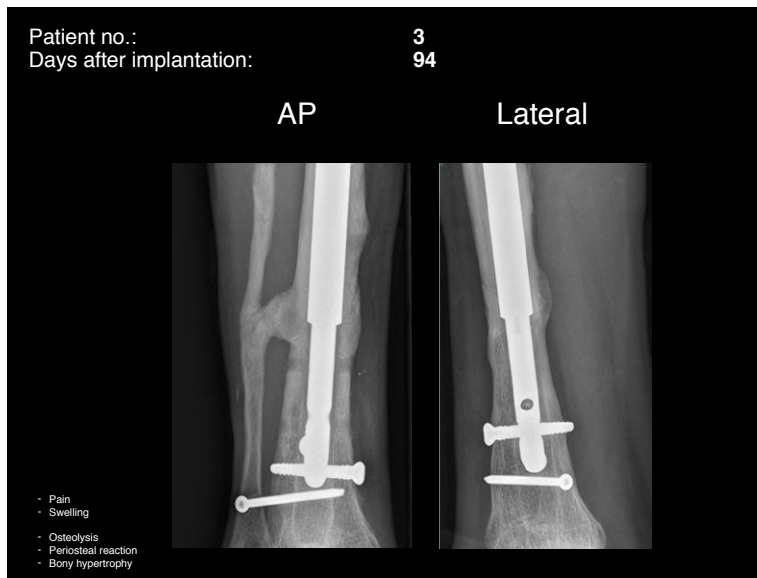
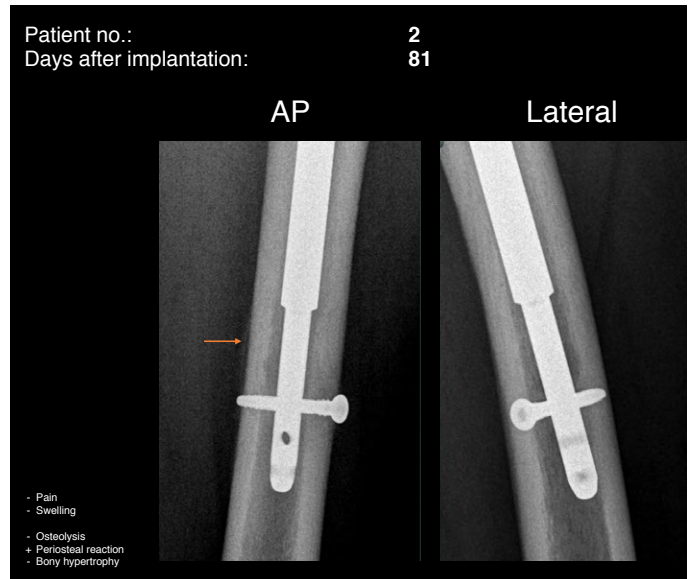
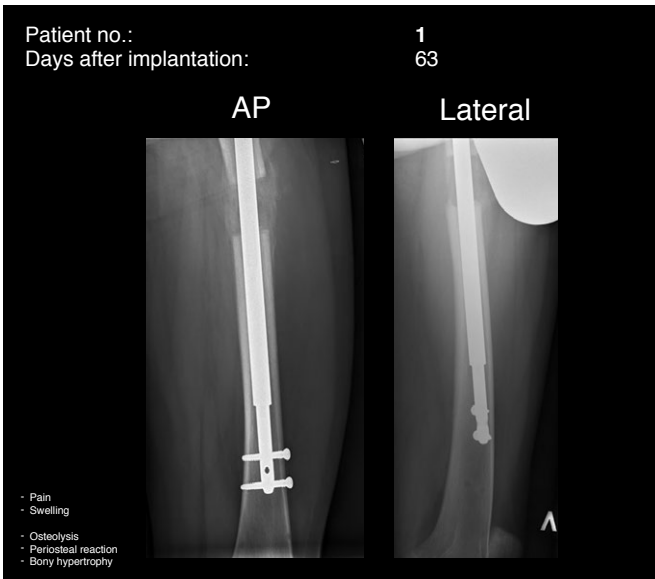
Bone segment	Patient number	Evaluated radiographs [days]	CLINICAL FEATURES			RADIOGRAPHIC CHANGES			
			Pain	Swelling	<i>In total</i>	Osteolysis	Periosteal reaction	Hypertrophy	<i>In total</i>
			8/30 (27%)	3/30 (10%)		19/30 (63%)	12/30 (40%)	12/30 (40%)	
1	1	63	0	0	0	0	0	0	0
2	2	81	0	0	0	0	1	0	1
3	3	94	0	0	0	0	0	0	0
4	4	136	1	1	2	1	1	0	2
5	5	141	0	0	0	1	1	0	2
6	6	181	1	0	1	1	1	1	3
7	7	187	0	0	0	0	0	0	0
8	8 right tibia	229	1	1	2	1	1	0	2
9	8 left tibia	250	0	0	0	0	0	0	0
10	9	231	0	0	0	1	0	1	2
11	10	253	0	0	0	0	0	0	0
12	11	273	0	0	0	1	1	1	3
13	12	275	0	0	0	1	1	0	2
14	13	276	0	0	0	0	1	0	1
15	14	299	0	0	0	1	1	0	2
16	15	315	1	0	1	1	1	1	3
17	16	324	0	0	0	0	0	0	0
18	17	339	1	0	1	1	0	1	2
19	18	348	1	0	1	0	0	0	0
20	19	360	0	0	0	1	0	1	2
21	20	363	1	0	1	1	0	1	2
22	21	371	0	0	0	0	0	0	0
23	22	375	0	0	0	1	0	1	2
24	23	395	0	0	0	1	0	1	2
25	24 right femur	400	0	0	0	1	1	1	3
26	24 left femur	491	0	1	1	1	1	1	3
27	24 right tibia	593	1	0	1	0	0	0	0
28	25	545	0	0	0	1	0	0	1
29	26	609	0	0	0	1	0	0	1
30	27	610	0	0	0	1	0	1	2

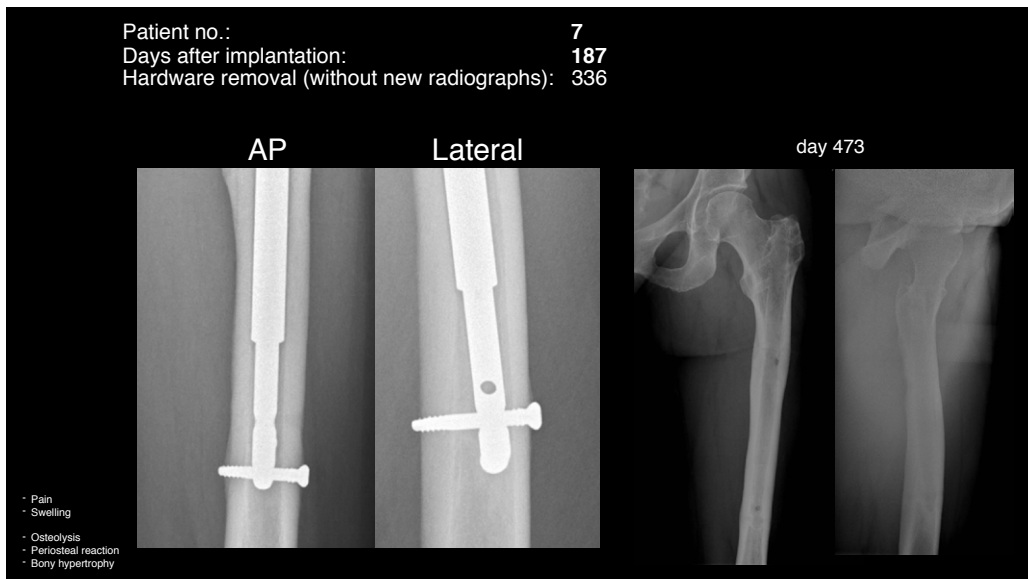
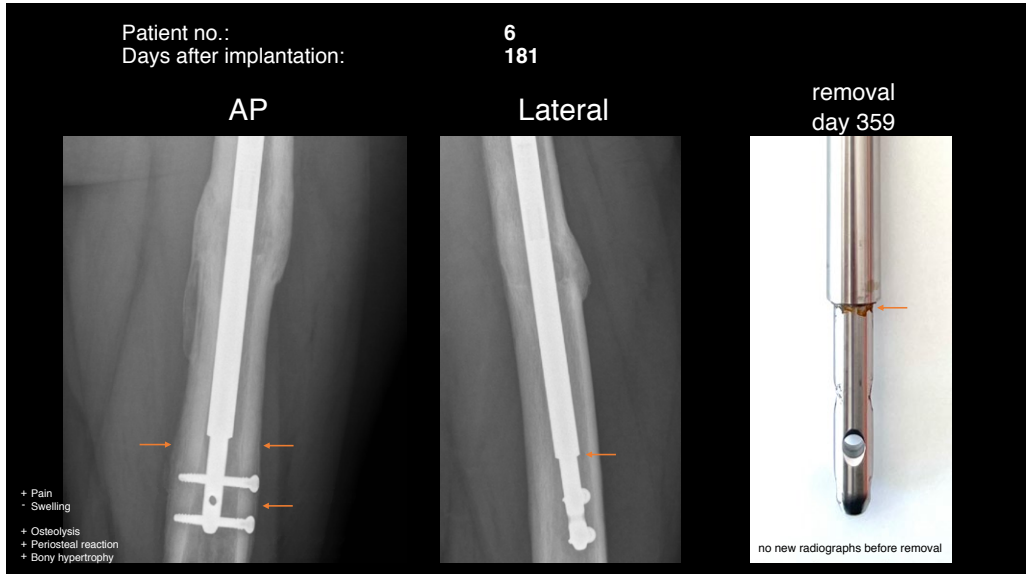
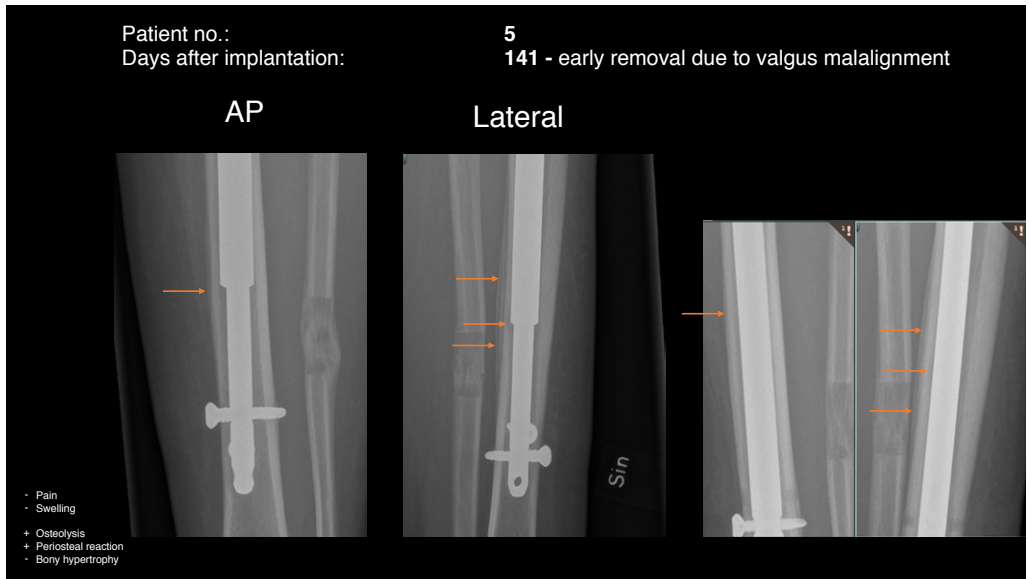
### Bone segments with pain and swelling

neither	21 /30 (70%)
either / or	7 /30 (23%)
both	2 /30 (. 7%)

### Number of radiographic changes per segment

0	9 /30 (30%)
1	4 /30 (13%)
2	12 /30 (40%)
3	5 /30 (17%)





Patient no.: **8 (right tibia)**  
 Days after implantation: **229**

Radiograph day 229

+ Pain  
 + Swelling  
 + Osteolysis  
 + Periosteal reaction  
 + Bony hypertrophy

FDG PET CT day 238

removal day 239

soft tissue involvement day 240

MRI Doratem T1W SPIR

T2W mDIXON

[1 of the 3 severe cases presenting at the 3 centers in Dec 2020-Feb 2021]

Patient no.: **8 (left tibia)**  
 Days after implantation: **250**

AP Lateral

removal day 260

- Pain  
 - Swelling  
 - Osteolysis  
 - Periosteal reaction  
 - Bony hypertrophy  
 \* Reaming upon insertion of the nail.

Patient no.: **8 (right tibia)**  
 Days after implantation:

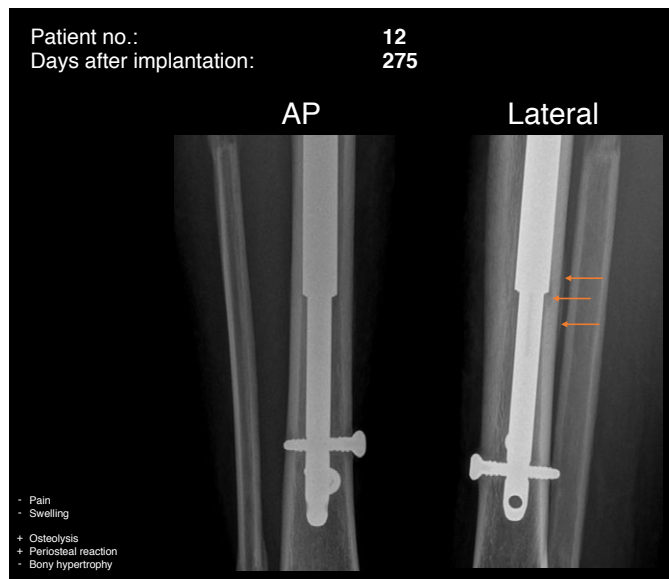
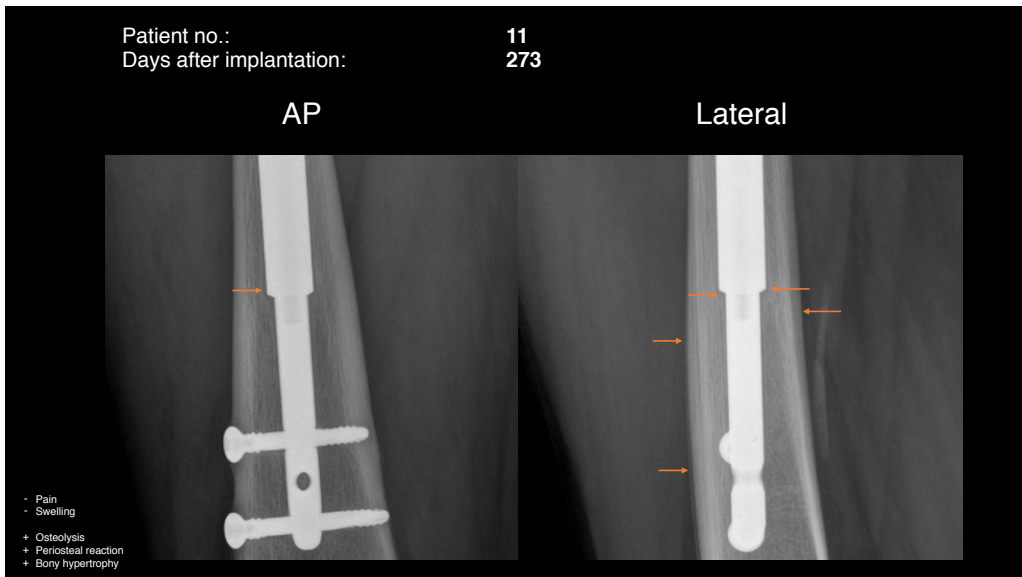
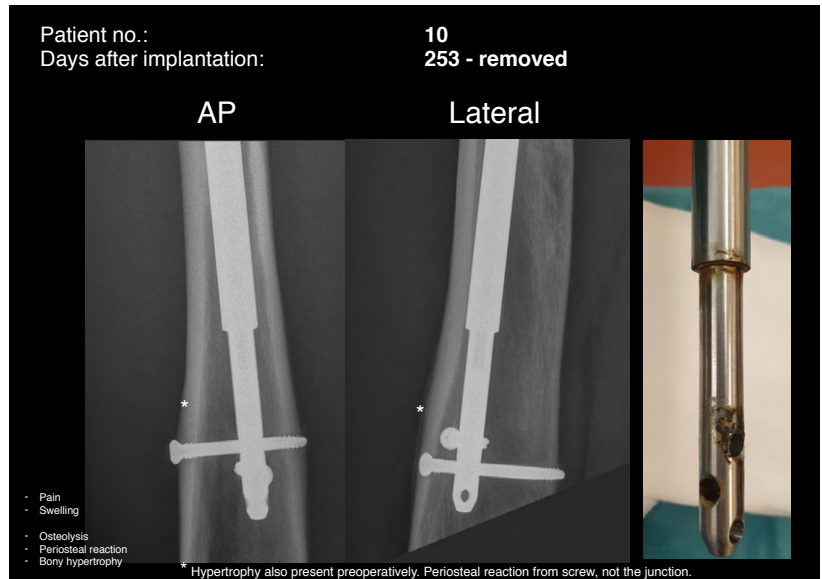
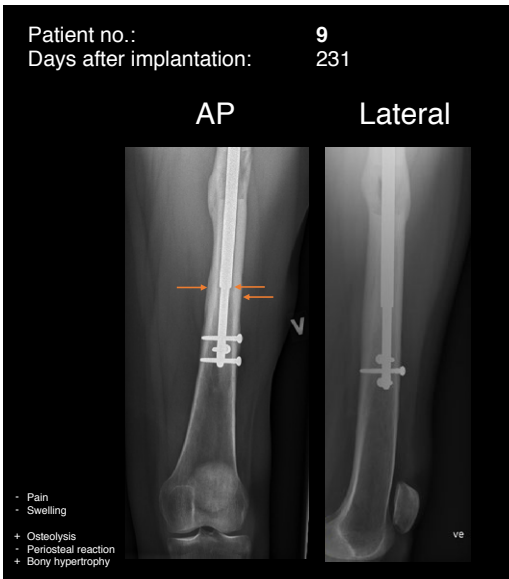
A: Perivascular accumulation of polymorphs, lymphocytes and plasma cells indicating focal acute and chronic inflammation.  
 B: Multinucleated foreign-body giant cells reacting to filamentous presumed metallic material surrounded by macrophages filled with brown hemosiderin.  
 C: Several macrophages containing varying black and grey metallic particles in addition to small amounts of hemosiderin.  
 D: Prussian blue staining of hemosiderin combined with larger amounts of negative black and grey metallic material.

removal day 239

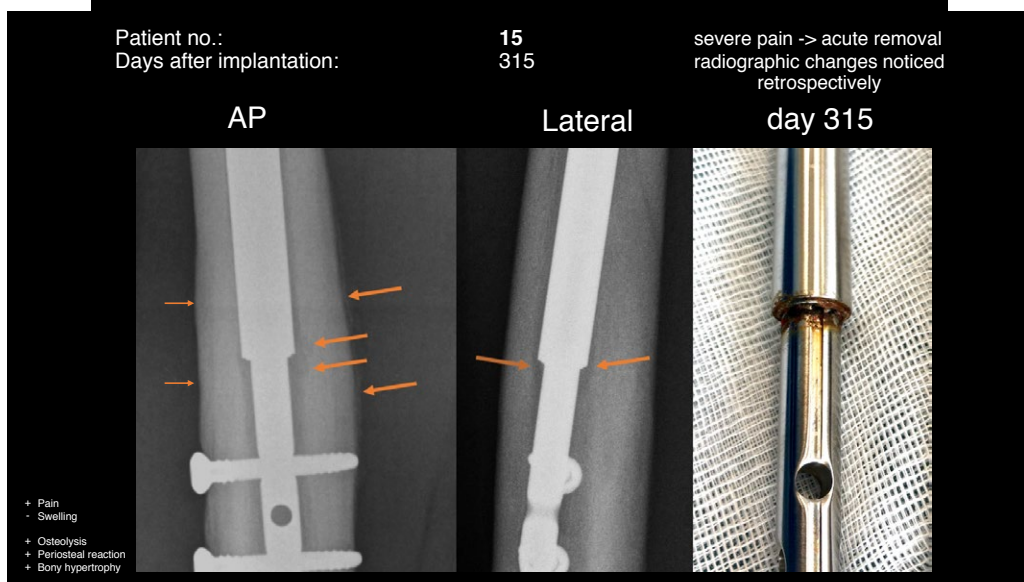
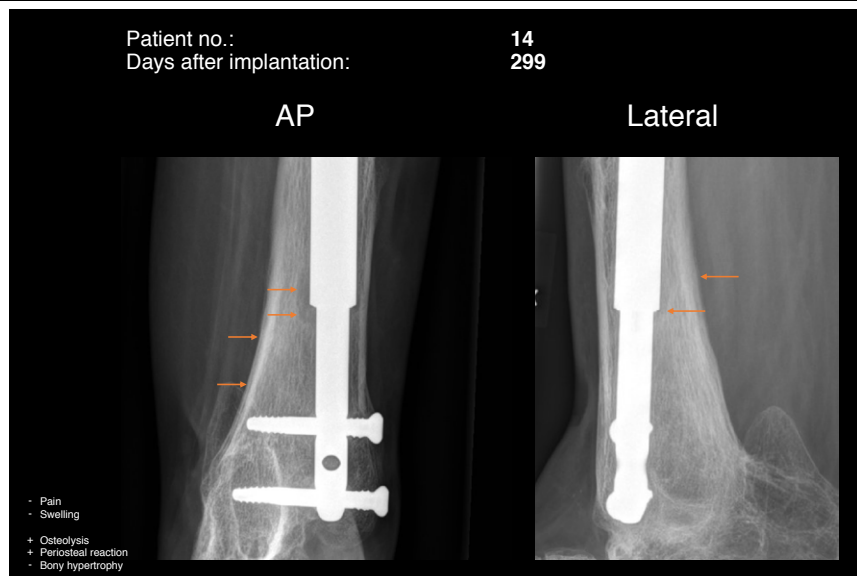
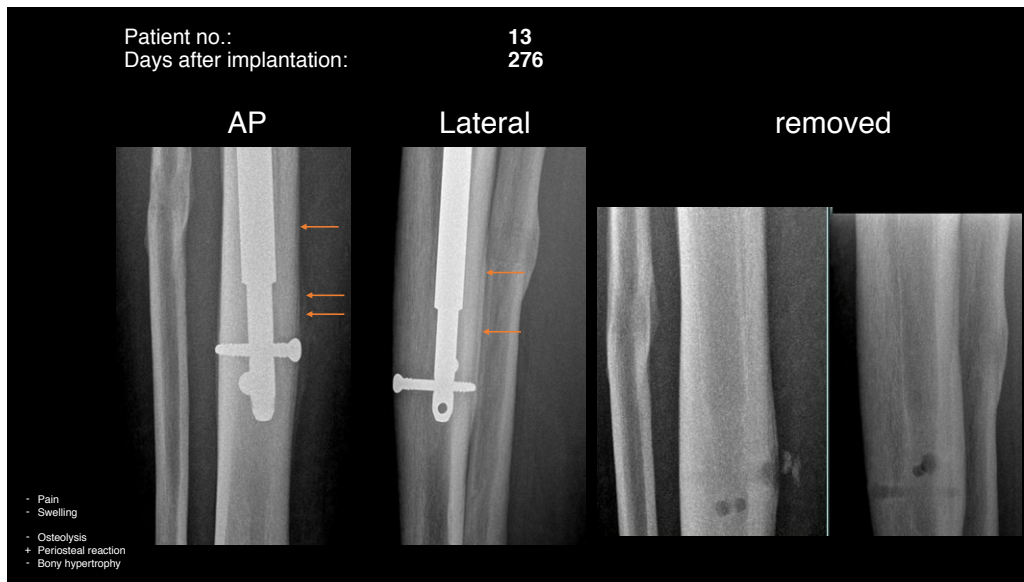
Biopsy from reaming the intramedullary channel

100 µm

Acknowledgement:  
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 Department of Pathology  
 Aarhus University Hospital







Patient no.: 16  
Days after implantation: 324

AP Lateral

removal  
due to broken nail, day 325  
Ø11.5, patient weight 55 kg

- Pain
- Swelling
- Osteolysis
- Periosteal reaction
- Bony hypertrophy

\* Hypertrophy not at the junction, but at the screws, which is frequently observed in intramedullary lengthening nails.

Patient no.: 17  
Days after implantation: 339

AP Lateral FDG PET CT

- + Pain
- Swelling
- + Osteolysis
- Periosteal reaction
- + Bony hypertrophy

[1 of the 3 severe cases presenting at the 3 centers in Dec 2020-Feb 2021]

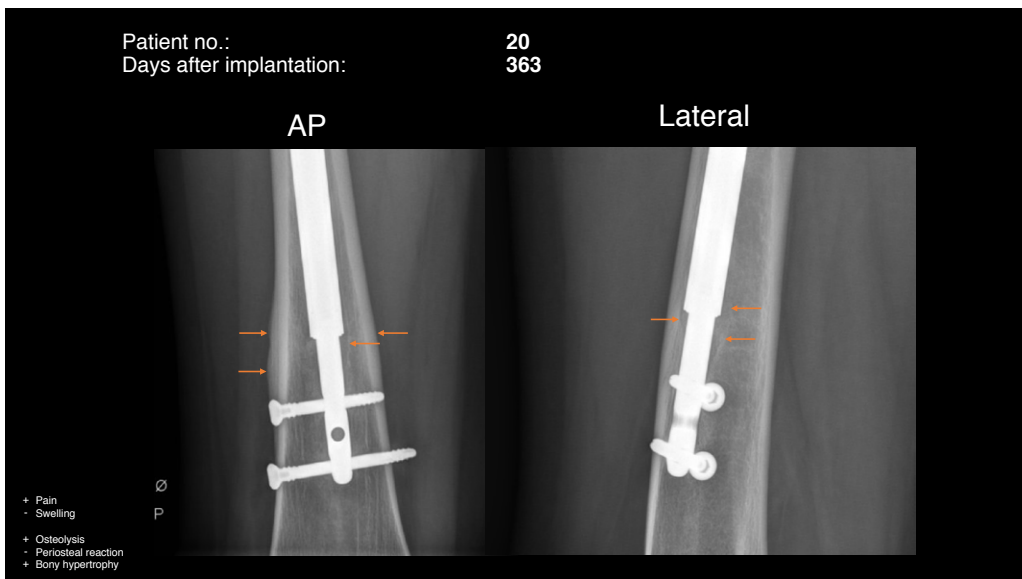
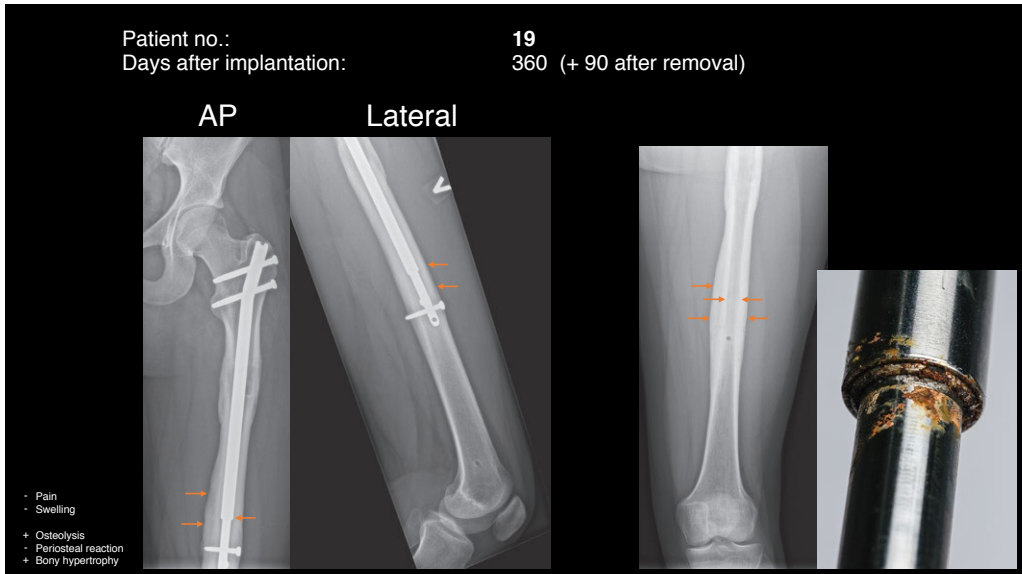
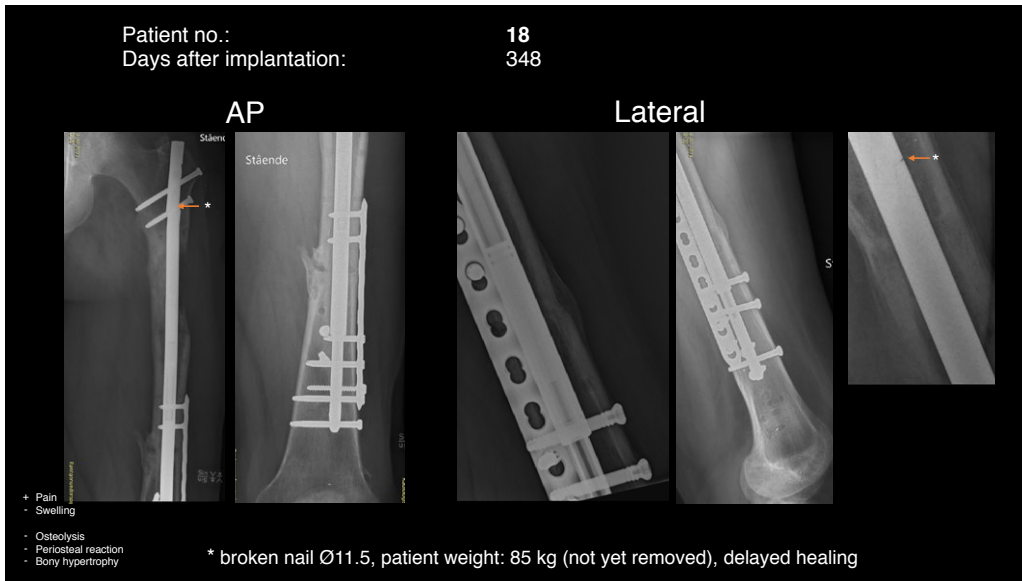
Patient no.: 17  
Days after implantation:

H&E stained section of an intramedullary biopsy of an osteolytic lesion.  
Inflammation including foreign-body giant cell and a foreign body are evident.

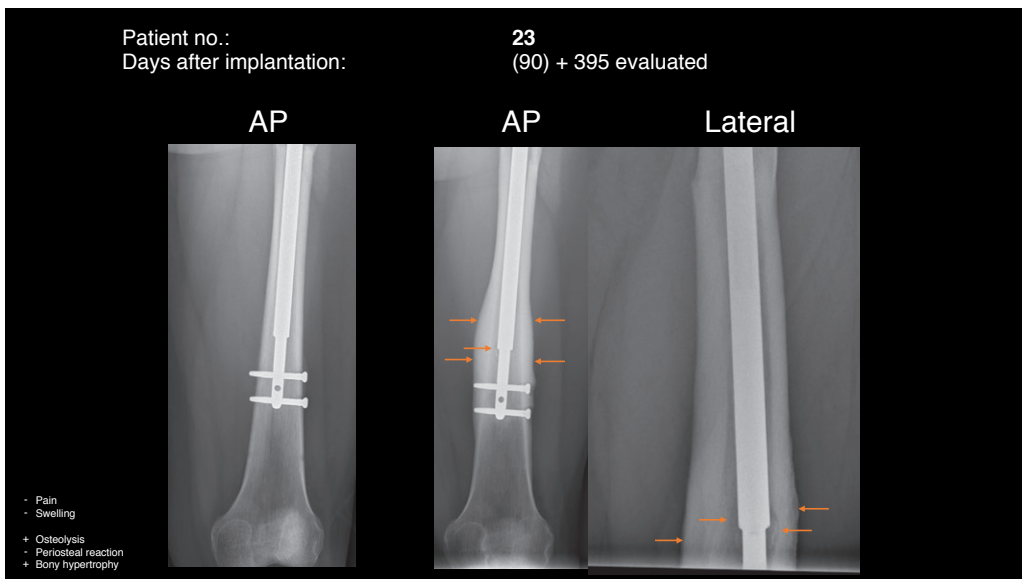
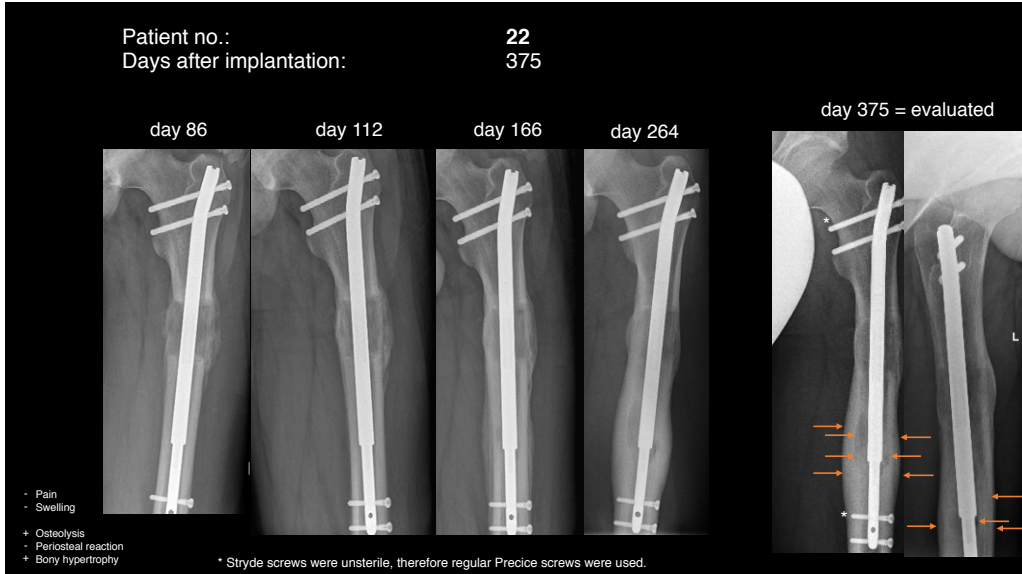
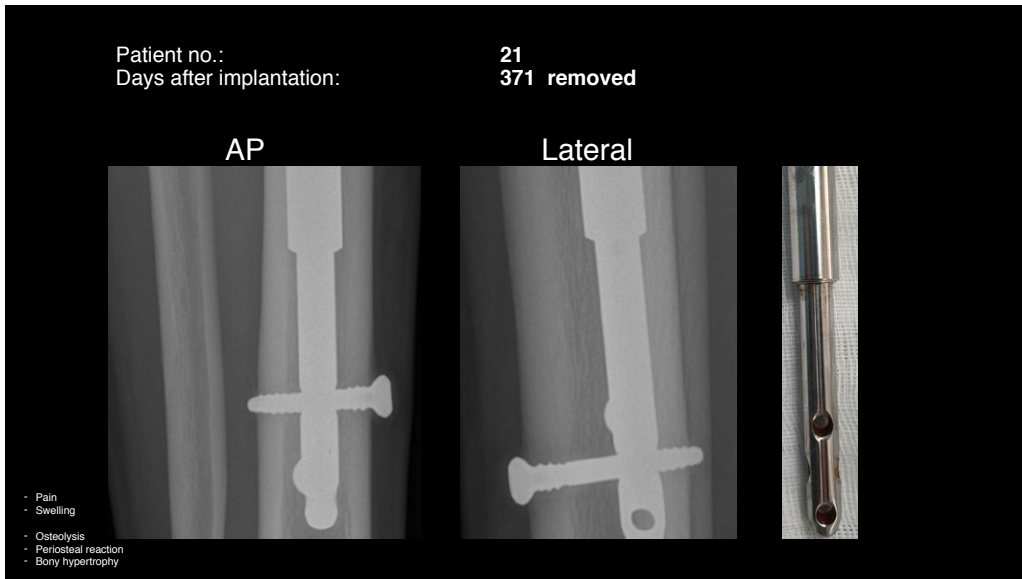
Biopsy from reaming the intramedullary channel

**Acknowledgement:**  
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[1 of the 3 severe cases presenting at the 3 centers in Dec 2020-Feb 2021]







Patient no.: 24 (left femur)  
Days after implantation: 491

AP Lateral

Clinical photo day 491

Soft tissue involvement?

- Pain
- + Swelling
- + Osteolysis
- + Periosteal reaction
- + Bony hypertrophy

Patient no.: 24 (right femur)  
Days after implantation: 400

AP Lateral

- Pain
- Swelling
- + Osteolysis
- + Periosteal reaction
- + Bony hypertrophy

Patient no.: 24 (right tibia)  
Days after implantation: 593

AP Lateral

severe pain = prodrome?  
removal day 609

- + Pain
- Swelling
- Osteolysis
- Periosteal reaction
- Bony hypertrophy

