Comparison matrix tranducer 6-15 Mhz / hockeystick 8-18 Mhz / L10-22-RS 10-22 MHz

Results presented for the participants:

Lene Terslev, Richard Wakefield, Hilde Hammer, Heidi Siddle, Ruth Wittoek, Kate Smith, Etienne Qvistgaard, Lene Jensen, Lars Juul, Marion Kortekaas and Karen Ellegaard

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Comments

First, thank you for your kind participation. Your input has been of great value. Several of you have commented the pictures and the setup and I have tried to answer your individual questions. I think it is appropriate to summon up your comments to the survey. Of course, there is a danger that I repeat myself to some of you:

Gain setting:

Both B-mode and Doppler settings were fixed during all examinations to try to isolate the performance of the probes. However, we struggled with matching the pre-set on the P9 machine (22 MHz probe) with the pre-set on the E9 (15 and 18 MHz probe). With a significant smaller footprint of the 22 Mhz probe the setting of the zoom was a real challenge. It also became evident that the grayscale picture on the P9 (22 MHz probe) became very dark and lost contrast when the Doppler function was turned on which impaired the image immensely. The P9 obviously don't have the same muscle as the E9 but the 22 MHz probe cannot be connected to the E9.

Probe position:

It was difficult to achieve the exact same probe position (especially in the radial and ulnar aspects) because the different physical dimensions of the probes (the Hockeystick being the most convenient to work with). Furthermore, the different size of the footprint was also an issue, but this is also an important factor in evaluating the quality of the different probes and I hope this factor has been taken into consideration in the overall evaluation of the images. The size of the footprint also had an influence on the depth, zoom and overview in the picture. The 15 Mhz probe provide a lot more information than the two other probes which we tried to compensate for in the pre-set and partly in setting up the pictures in the survey. The much larger footprint of the 15 MHz probe was also the reason why part of the nail was visible in some of the ulnar and radial aspects.

Doppler activity:

Even though most of the pictures are acquired from PsA patients we decided that we did not require patients with active inflammation for evaluating the Doppler quality of the probes. The anatomical vessels of the nail and the collateral arteries could serve as a comparator between the probes.

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Results

12 expert sonographers from 5 countries participated in the survey. The participants had a mean experience in musculoskeletal sonography of 12.75 years.

In the following the pictures are listed in the same order as in the survey. Beneath the pictures the type of probe is revealed, and the percentage of votes is presented.

The presentation of the results in this manor is not textbook scientific but allow you to compare your own evaluation of the pictures with the other experts in sonography and can hopefully lead to a higher consensus and agreement moving forward.

On the last page the all-time and undisputed winner of the survey is presented.

18-08-2018

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1. Patient 6. Picture 1. DIP 2 volar
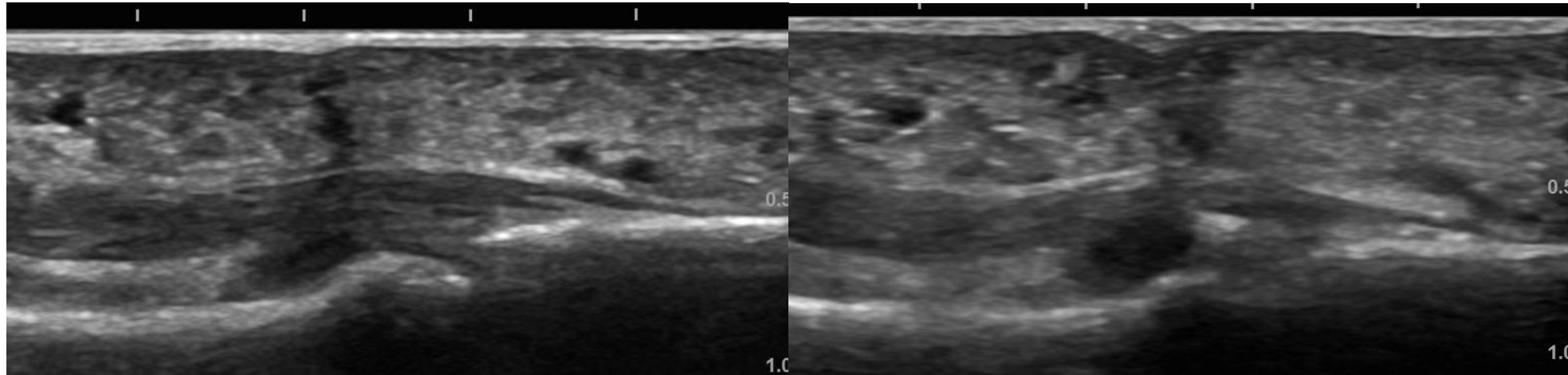
15 MHz: 58 %

18 MHz: 0%
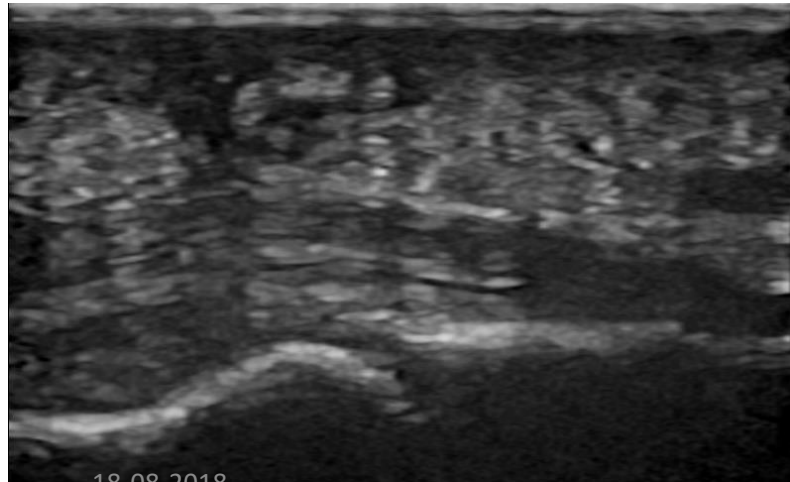
22 MHz: 42 %

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2. Patient 6. Picture 7. DIP 5 radial - Doppler
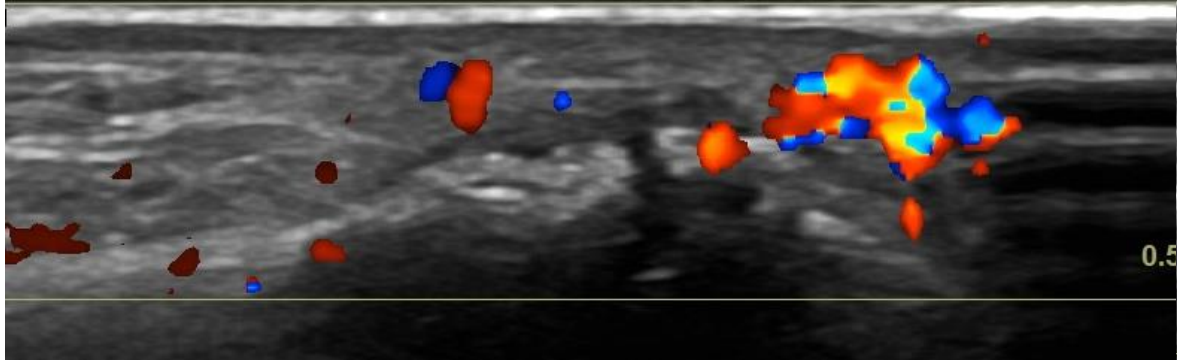
15 MHz: 33 %

18 MHz: 67 %
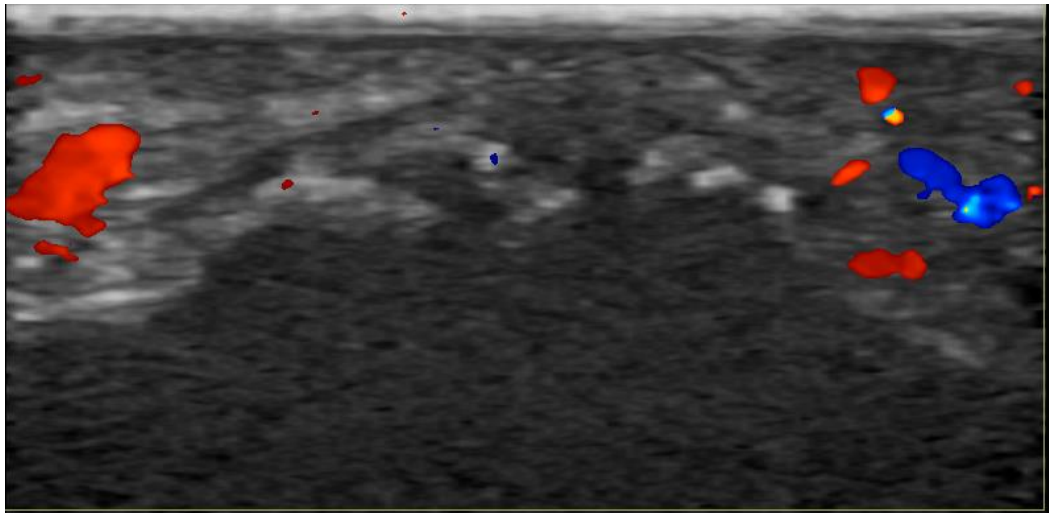
22 MHz: 0 %

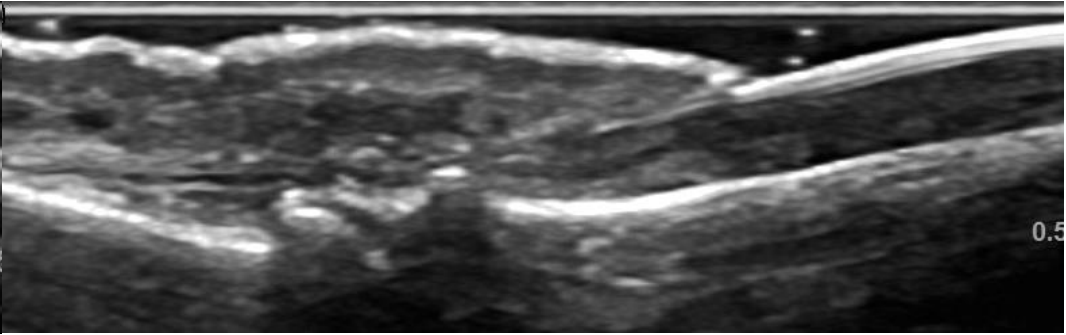18-08-2018   Jørgen Guldberg-Møller

3. Patient 5. Picture 6. DIP 4 dorsal
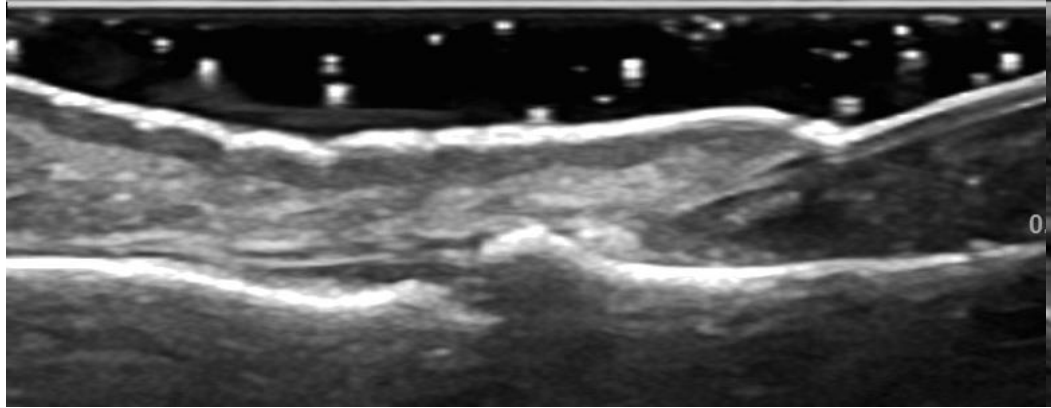
15 MHz: 75 %
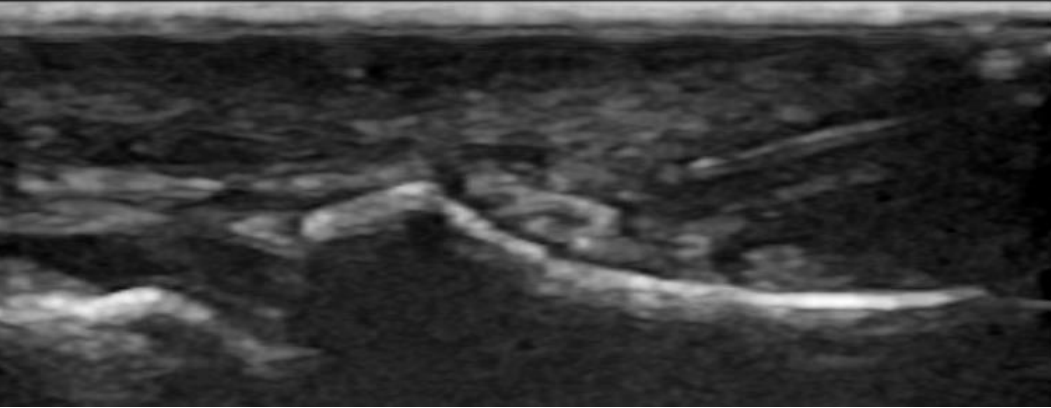
22 MHz: 25 %
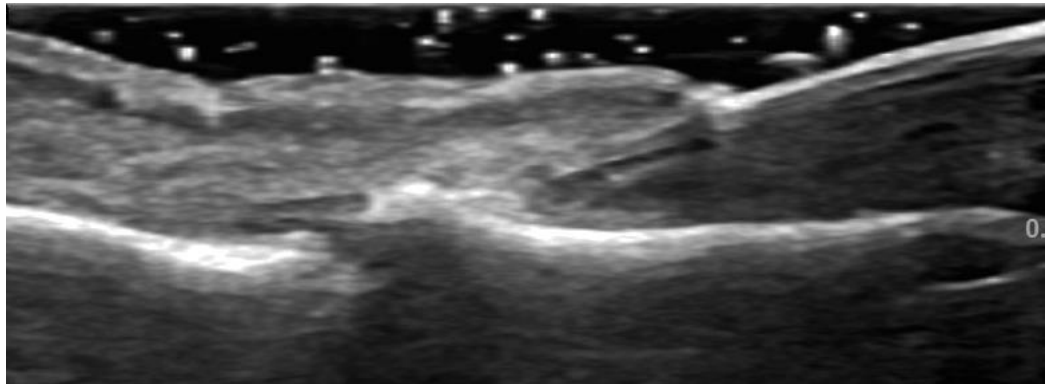
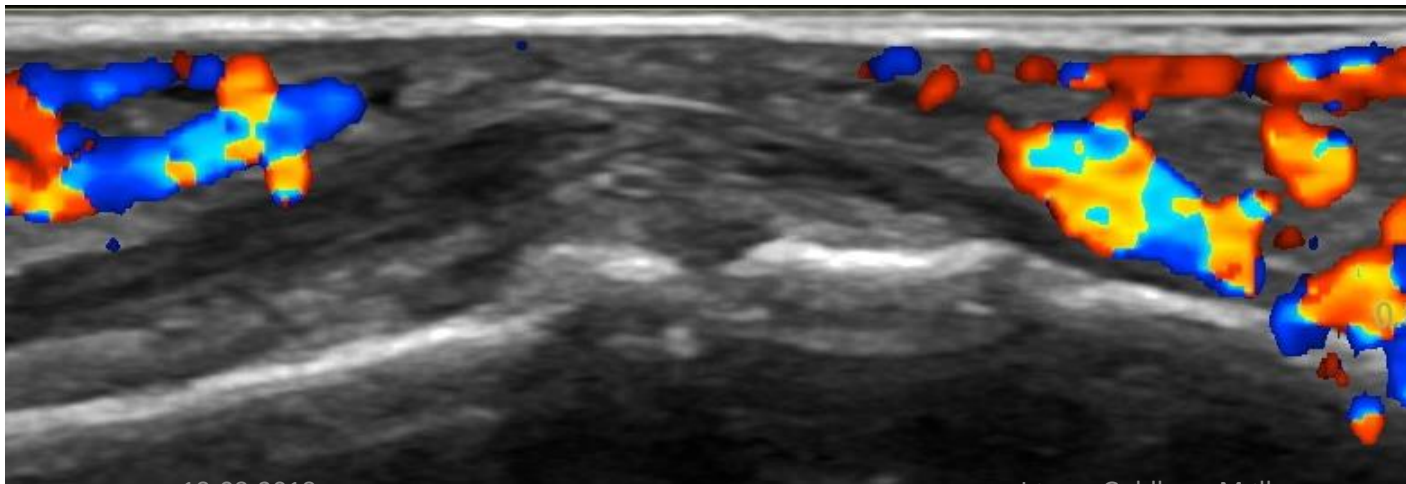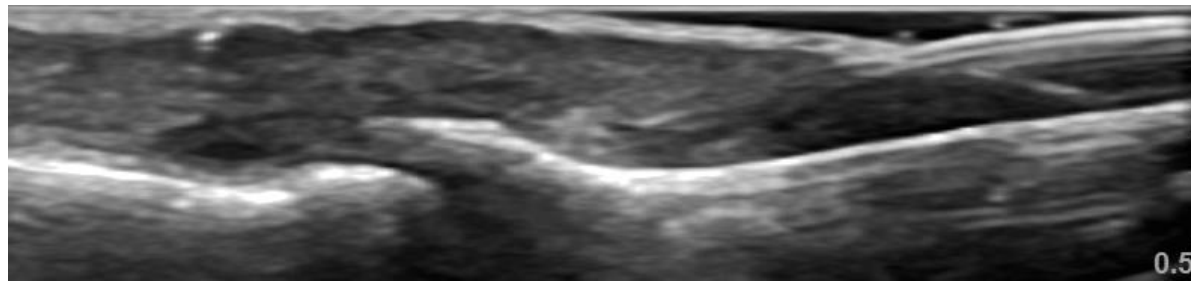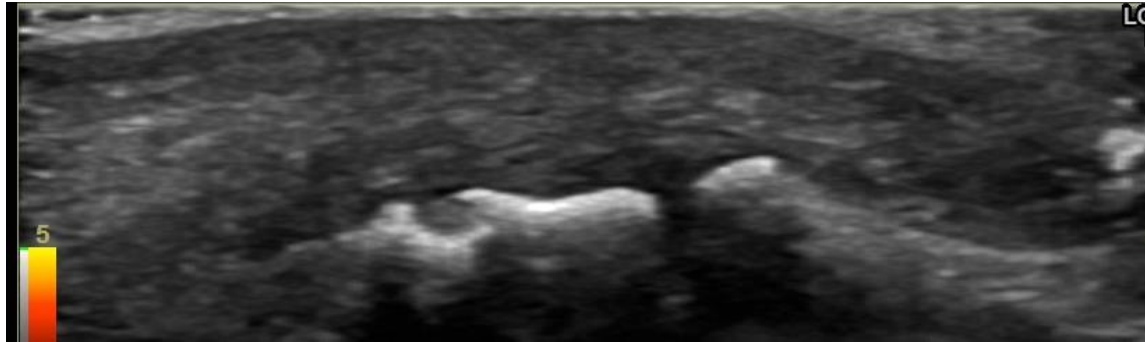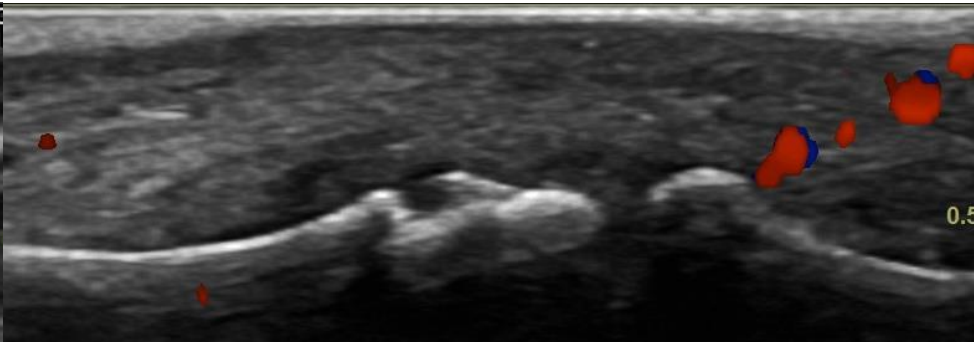18 MHz: 0 %

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4. Patient 2. Picture 4. DIP 3 dorsal - Doppler

18 MHz: 8 %
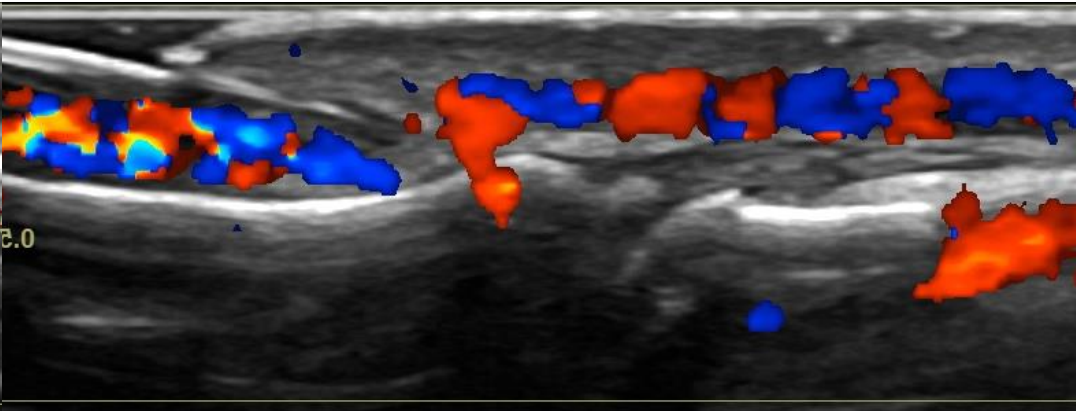
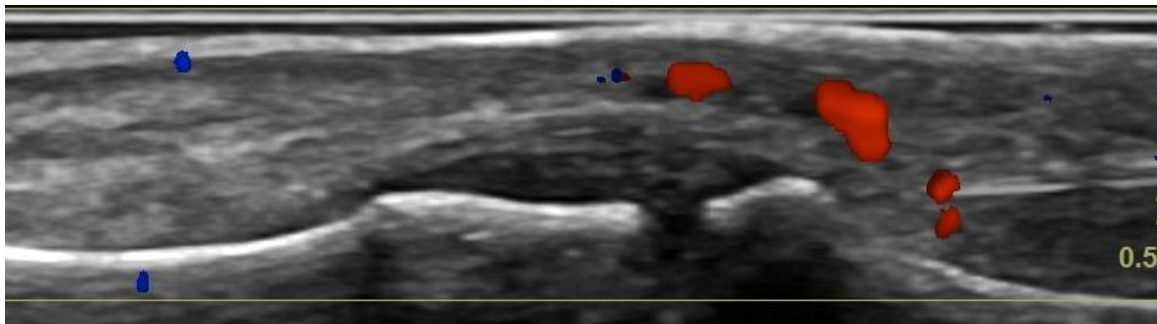15 MHz: 92 %
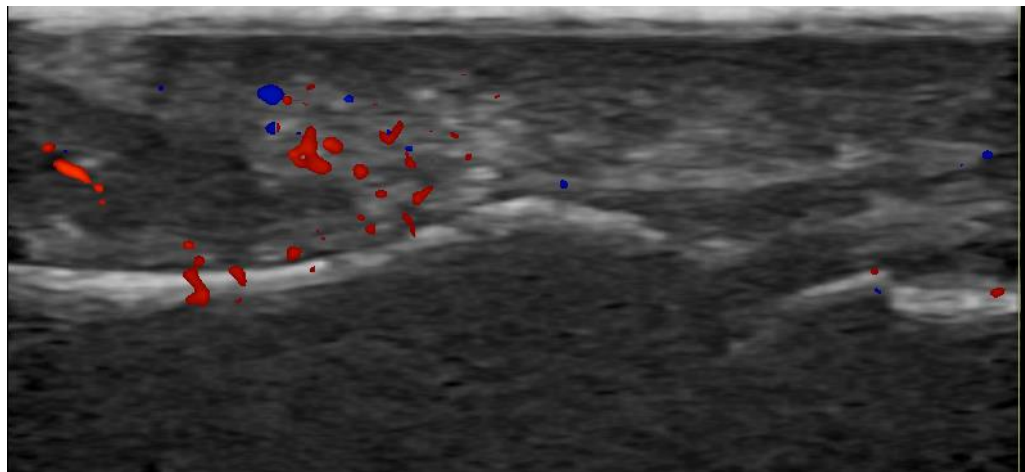
22 MHz: 0%

18-08-2018

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5. Patient 2. Picture 3. DIP 2 ulnar - Doppler
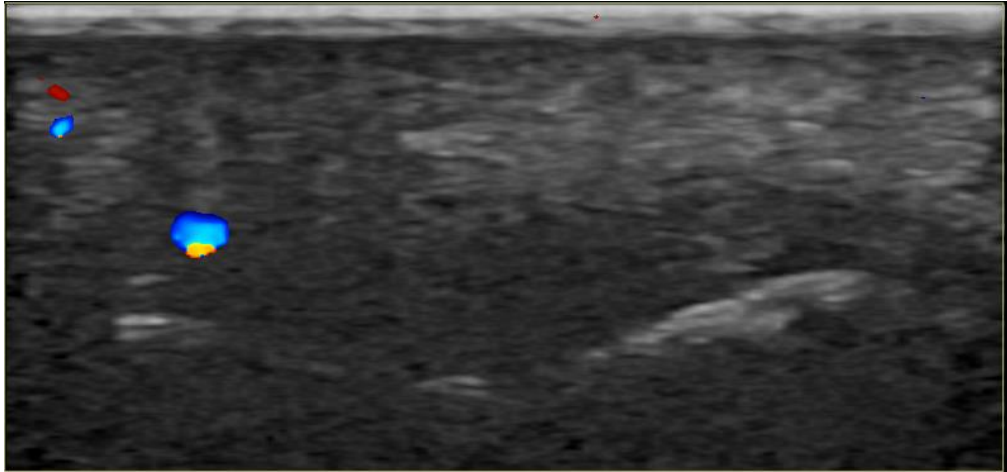
22 MHz: 0 %
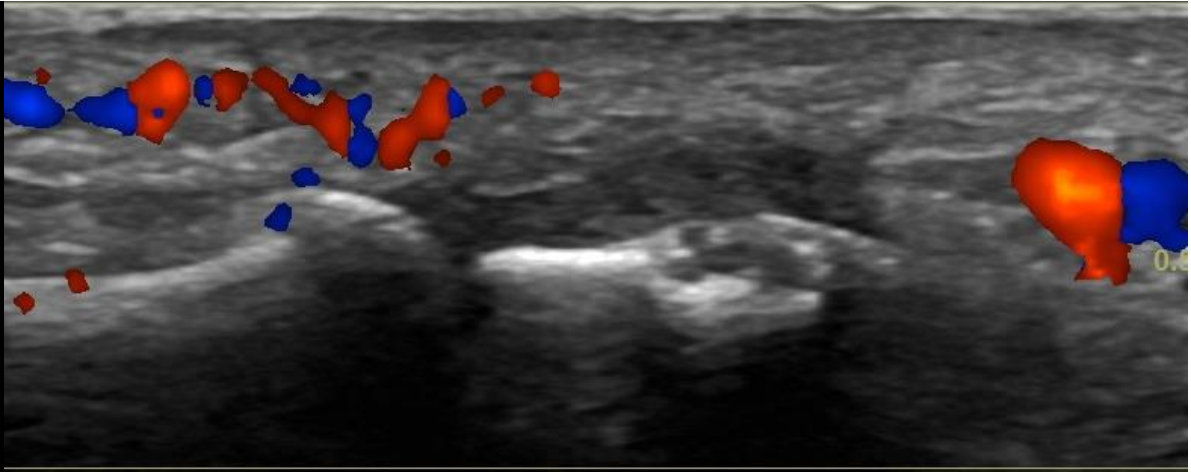
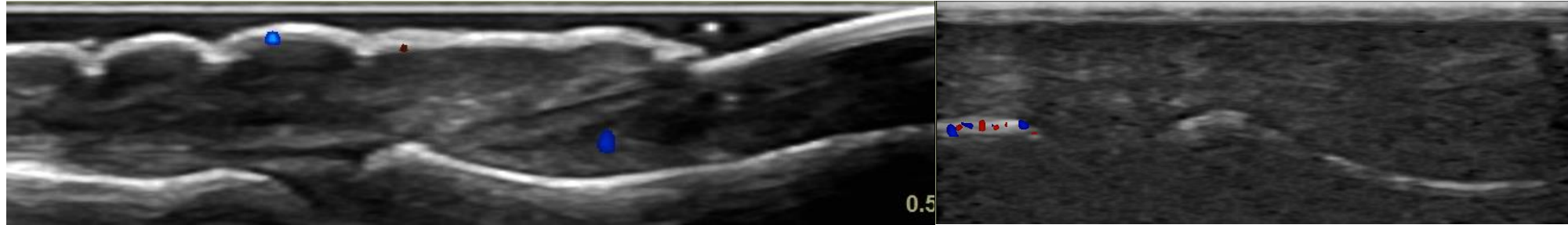18 MHz: 42 %
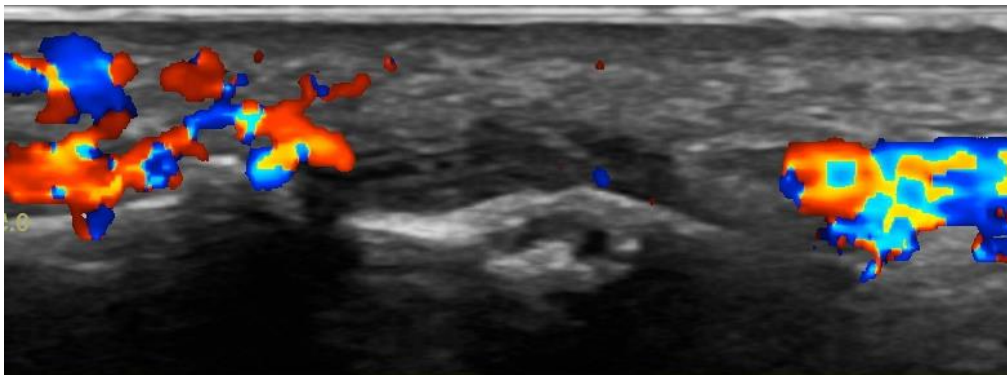
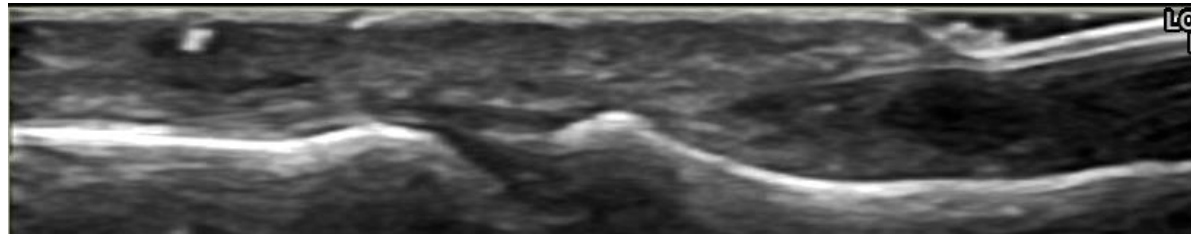15 MHz: 58 %

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# 6. Patient 2. Picture 9. DIP 5 dorsal - Doppler
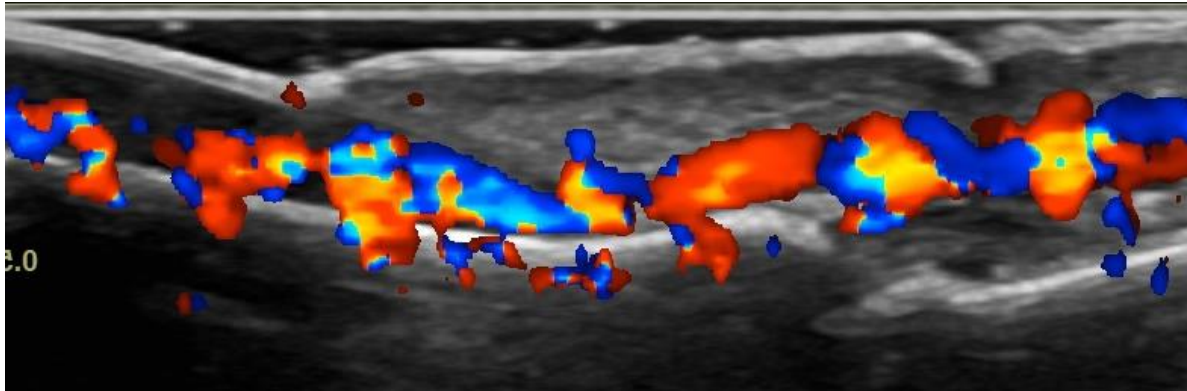
15 MHz: 33 %
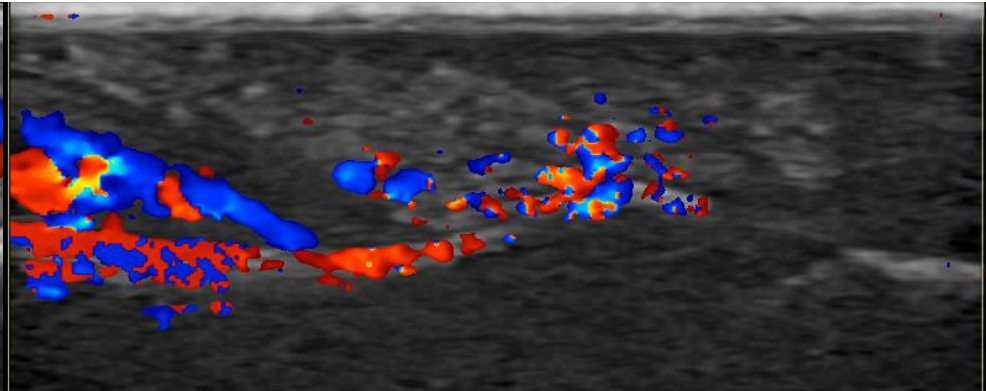
22 MHz: 0 %
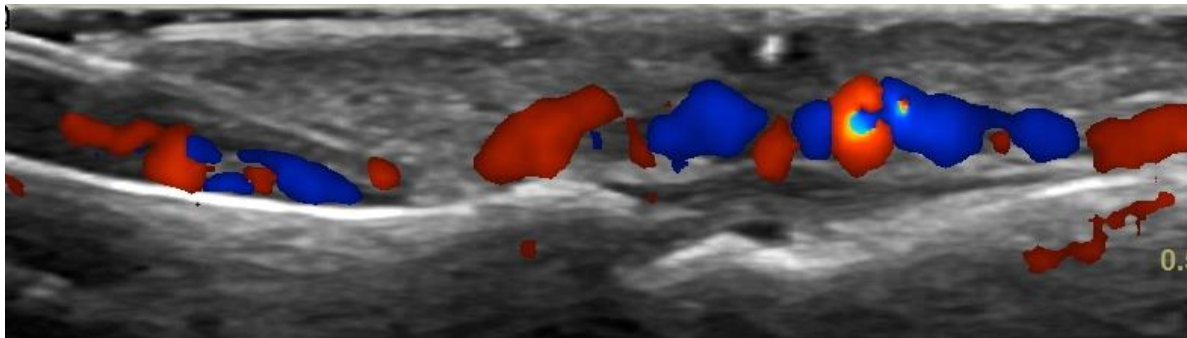
18 MHz: 67 %

18-08-2018
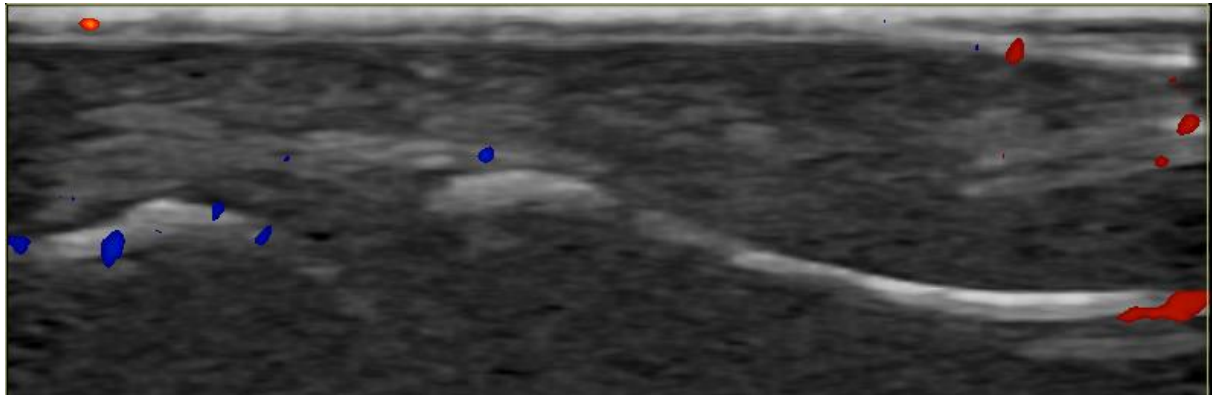
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7. Patient 3. Picture 4. DIP 2 dorsal
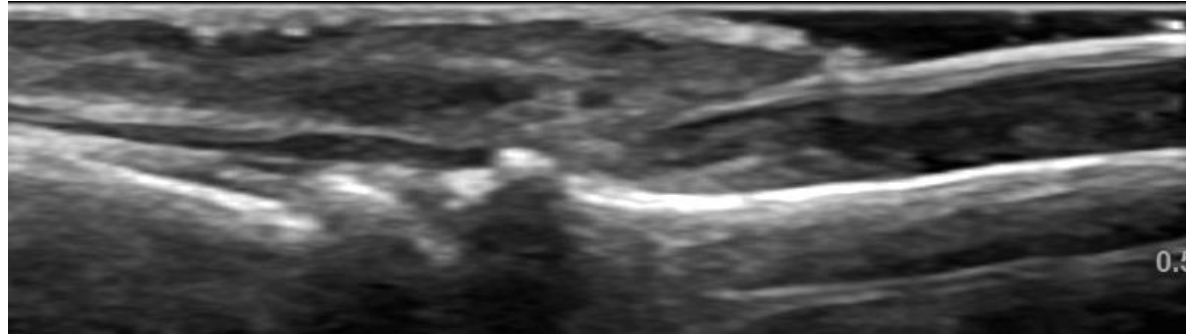
18 MHz: 17 %

15 MHz: 58 %
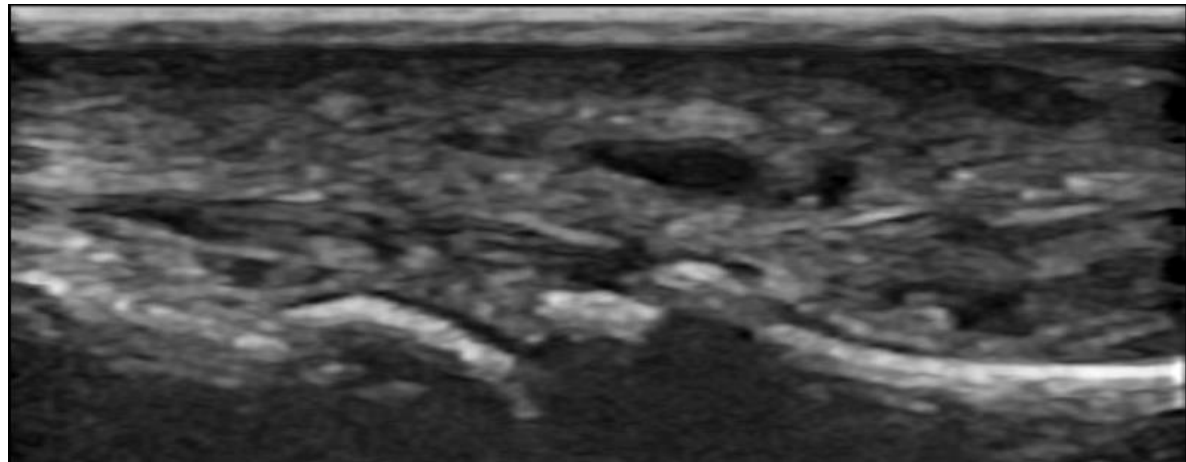
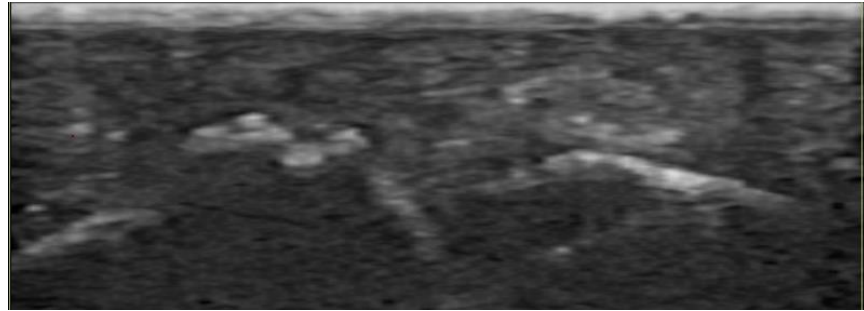
22 MHz: 25 %

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8. Patient 3. Picture 2. DIP 2 volar aspect
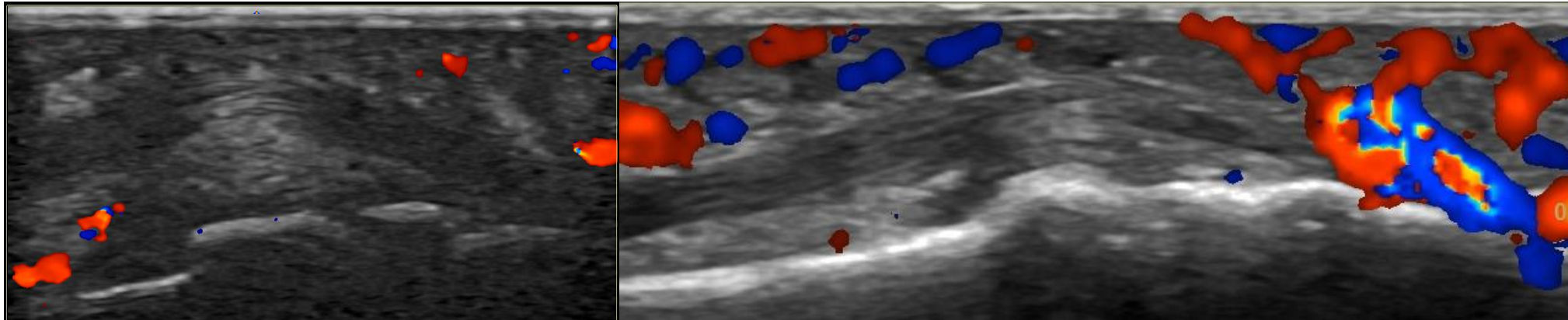
22 MHz: 0 %

18 MHz: 8 %

15 MHz: 92 %

9. Patient 3. Picture 5. DIP 5 dorsal aspect
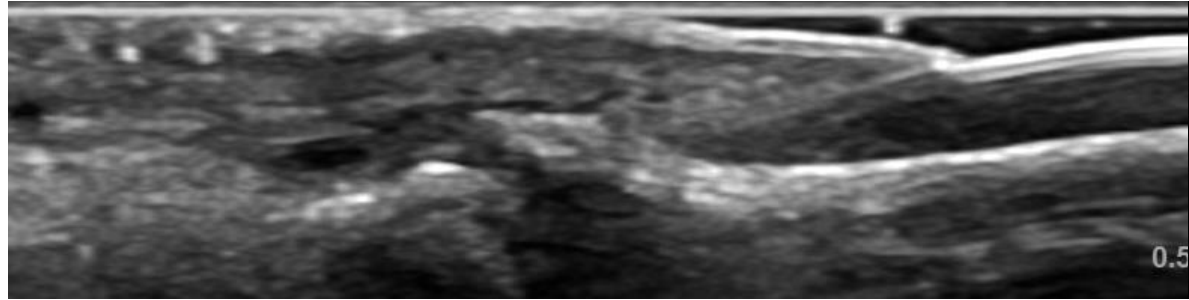
15 MHz: 33 %
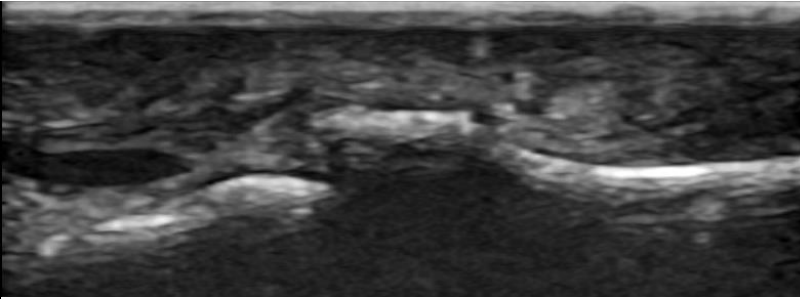
22 MHz: 33 %

18 MHz: 33 %

18-08-2018
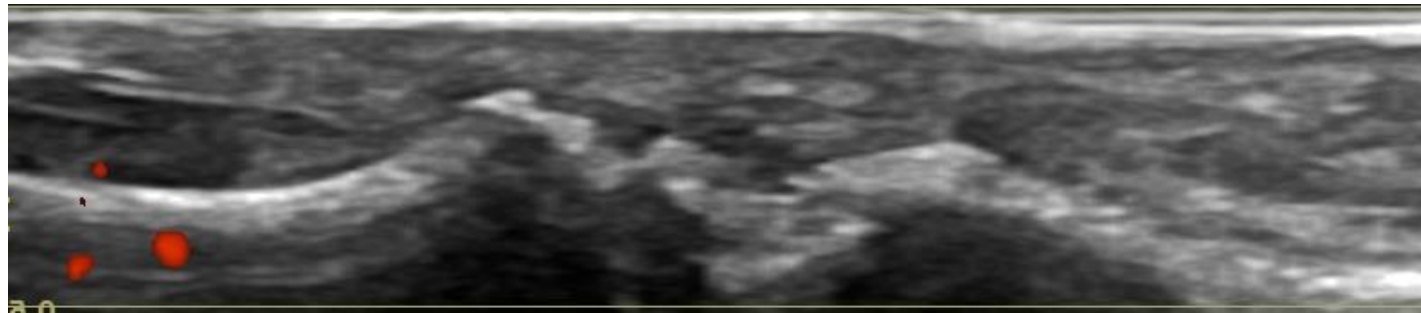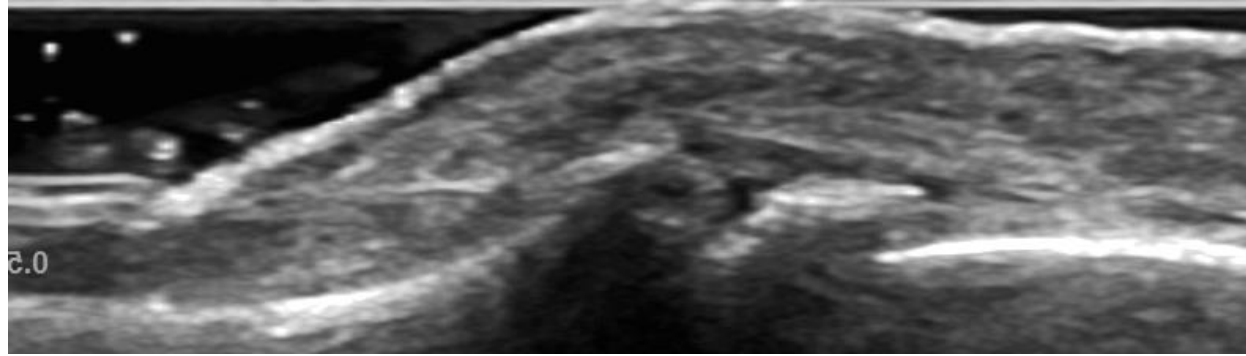
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10. Patient 4. Picture 1. DIP 2 radial aspect-Doppler

18 MHz: 17 %

15 Mhz: 83 %

22 MHz: 0 %

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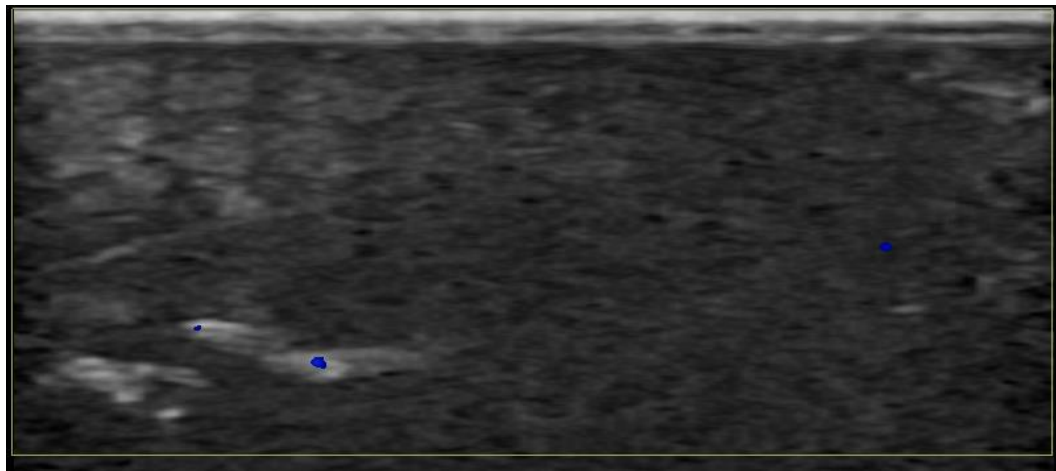
11.Patient 4. Picture 2. DIP 2 ulnar aspect - Doppler
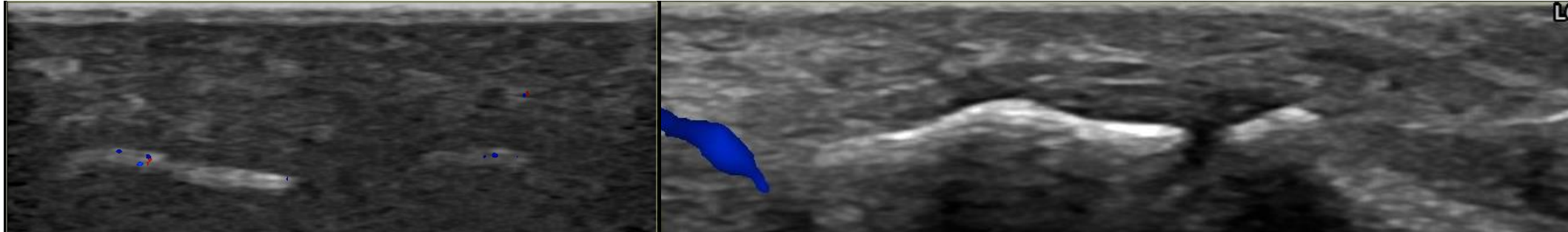
22 MHz: 0 %
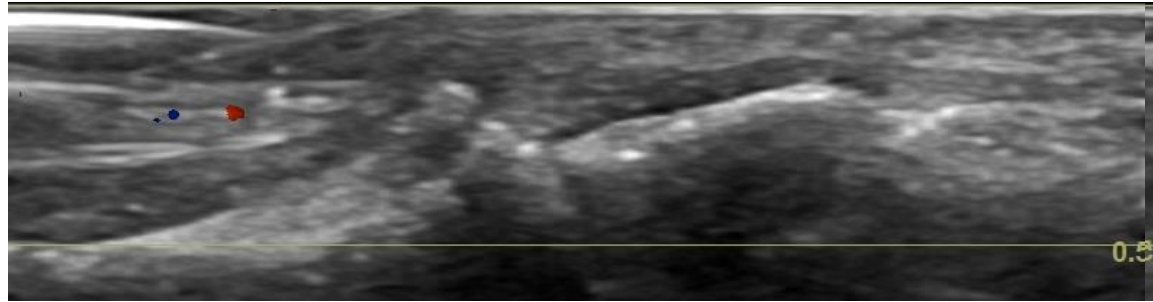
18 MHz: 0 %

15 MHz: 100 %

18-08-2018

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12. Patient 4. Picture 3. DIP 3 dorsal - Doppler

15 MHz: 75 %

22 MHz: 0 %
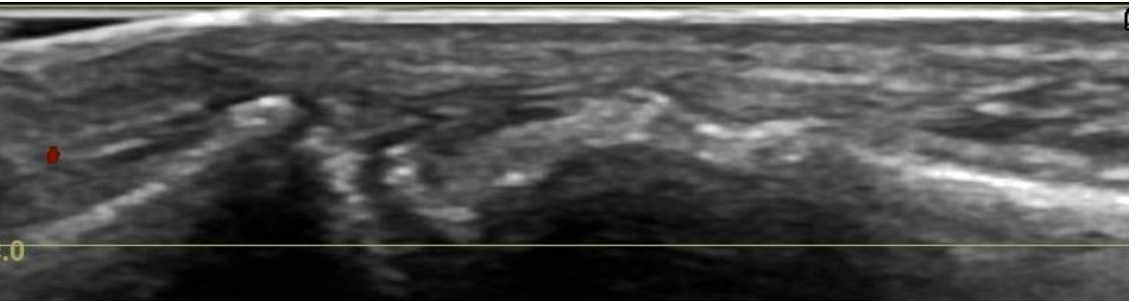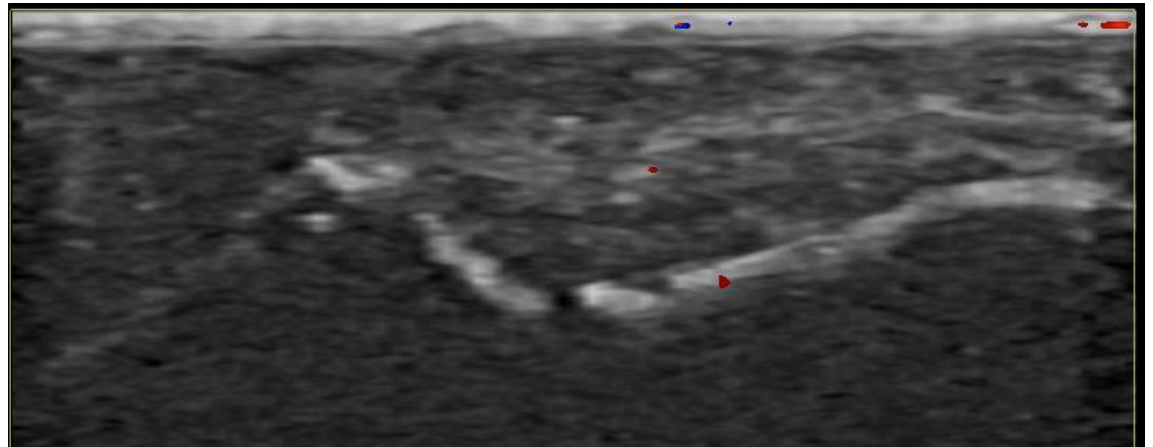

18 MHz: 25 %

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13. Patient 4. Picture 6. DIP 5 dorsal - Doppler
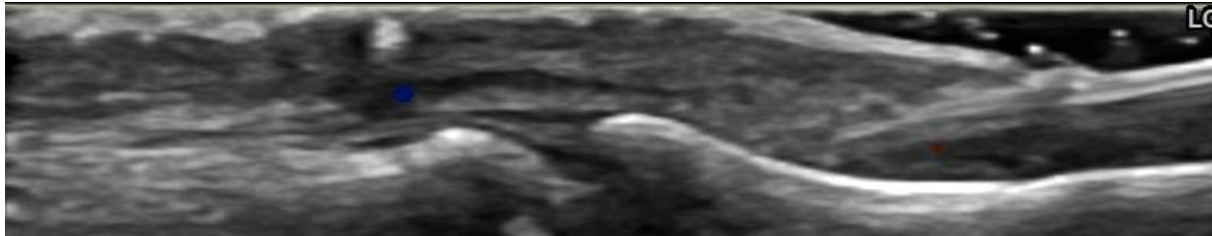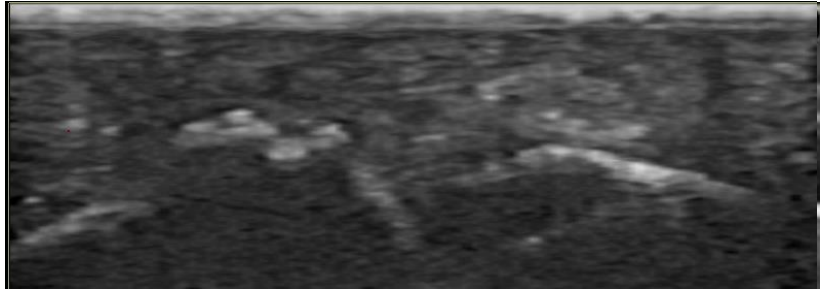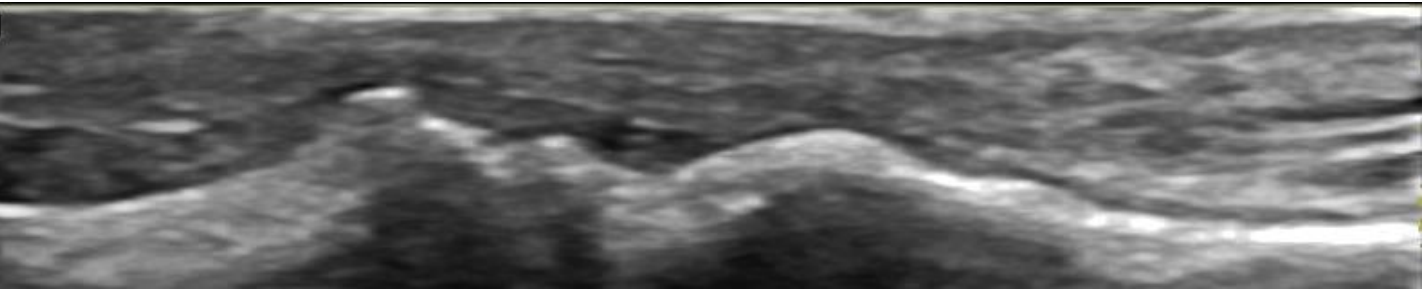

18 MHz: 50 %
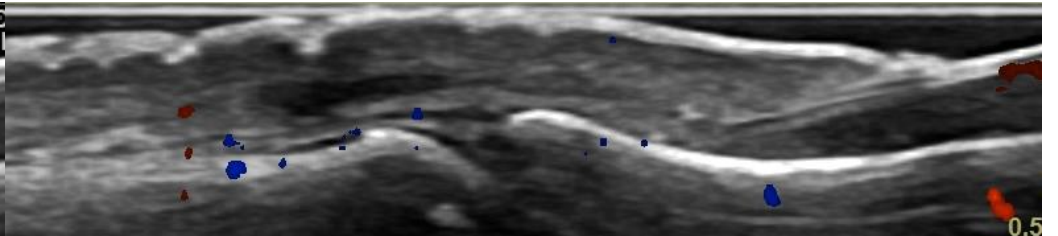
15 MHz: 50 %

22 MHz: 0 %

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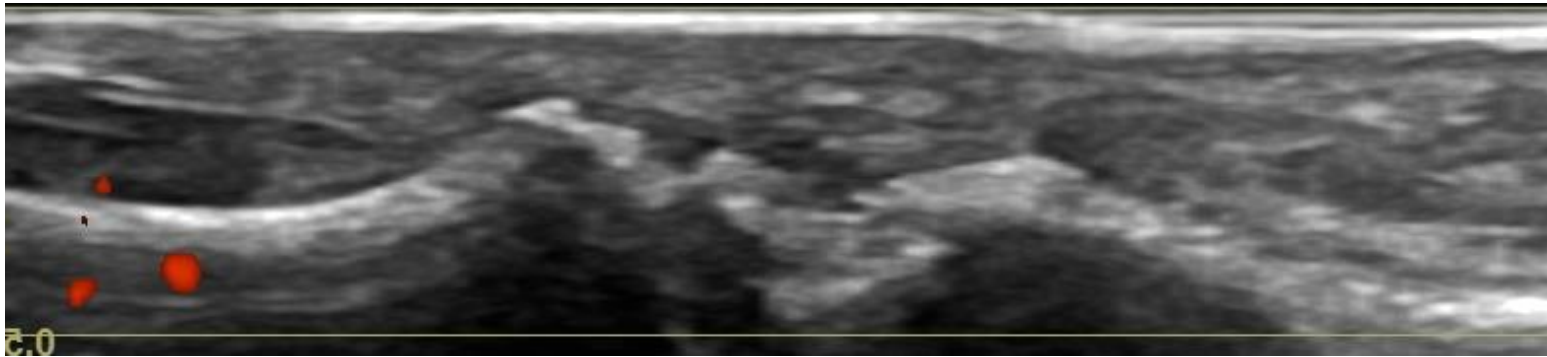
14. Patient 1. Picture 5. DIP 4 radial aspect - Doppler

22 MHz: 0 %

18 MHz: 58 %

15 MHz: 42 %

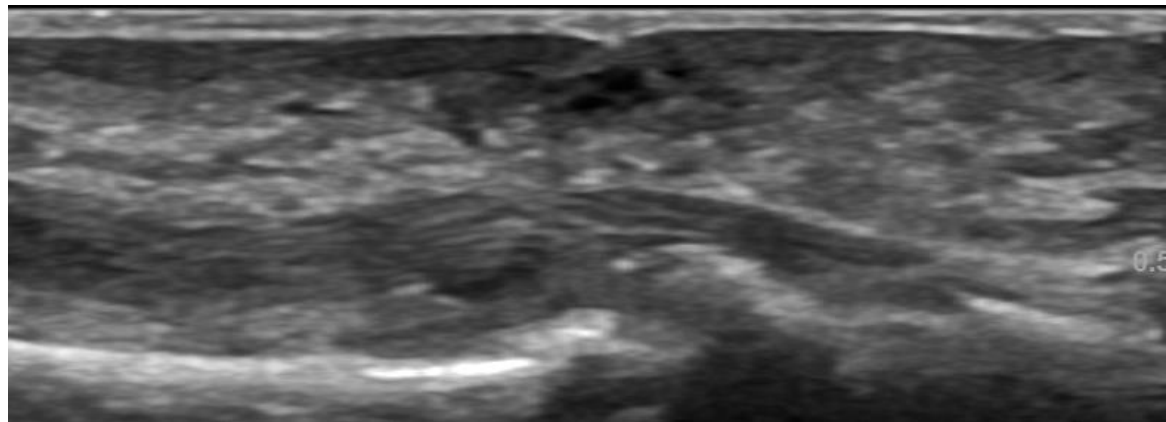18-08-2018   Jørgen Guldberg-Møller

15. Patient 1. Picture 2. DIP 3 dorsal

15 MHz: 67 %
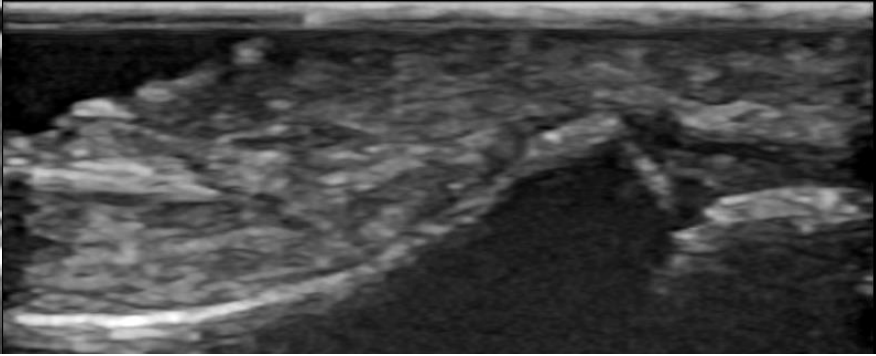
22 MHz: 25 %
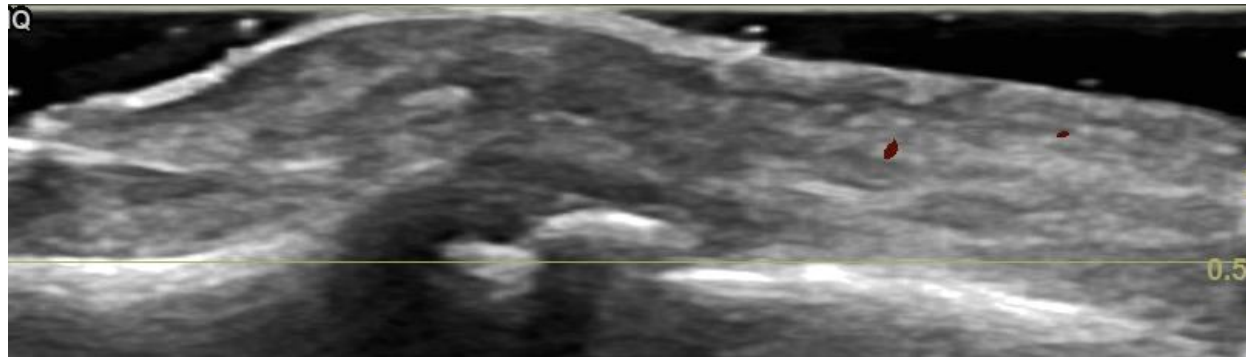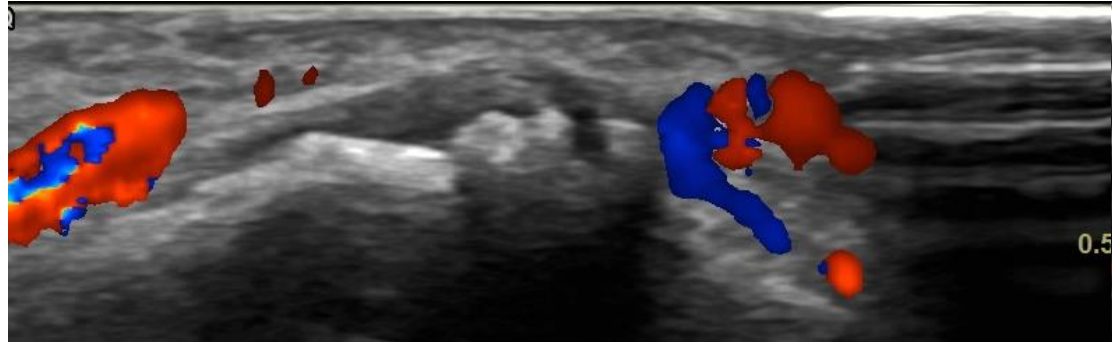

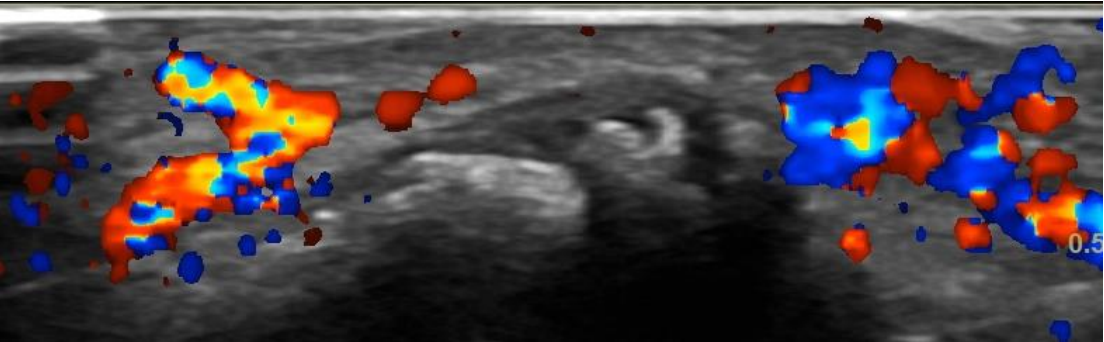18 MHz: 8 %

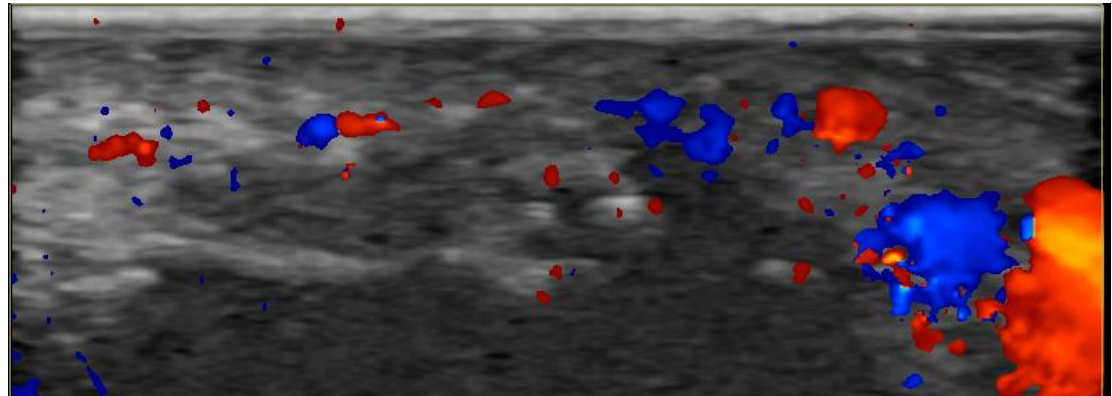18-08-2018   Jørgen Guldberg-Møller

16. Patient 1. Picture 6. DIP 4 ulnar aspect - Doppler

18 MHz: 50 %

15 MHz: 50 %

22 MHz: 0 %

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17. Patient 1. Picture 5. DIP 4 radial aspect - Doppler

22 MHz: 0 %

18 MHz: 42 %

15 MHz: 58 %

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18. Patient 6. Picture 2. DIP 3 volar aspect.
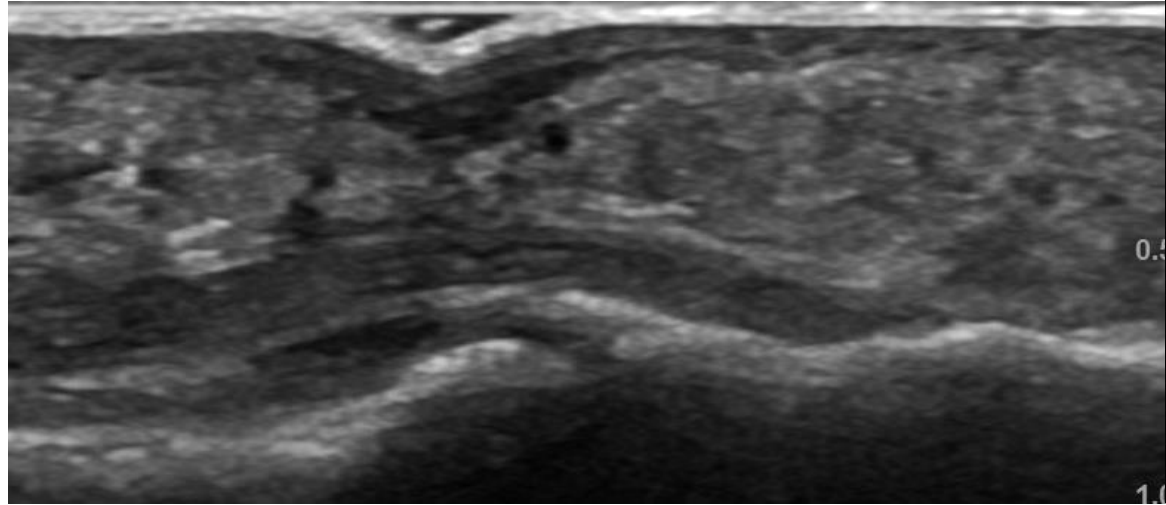
15 MHz: 92 %
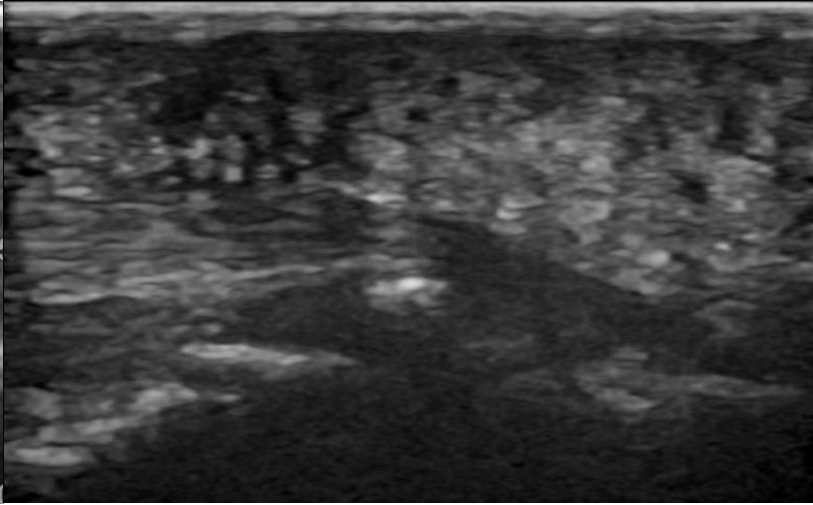
22 MHz: 0 %

18 MHz: 8 % 03-08-2018   Jørgen Guldberg-Møller

19. Patient 6. Picture 5. DIP 3 ulnar aspect - Doppler
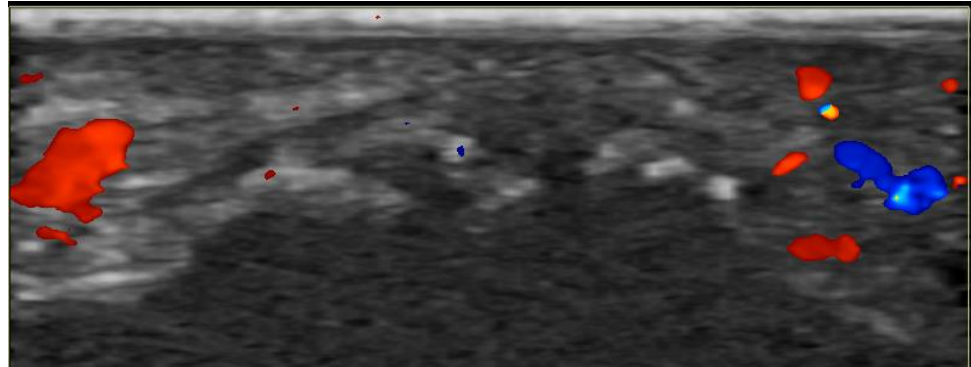

18 MHz: 17 %
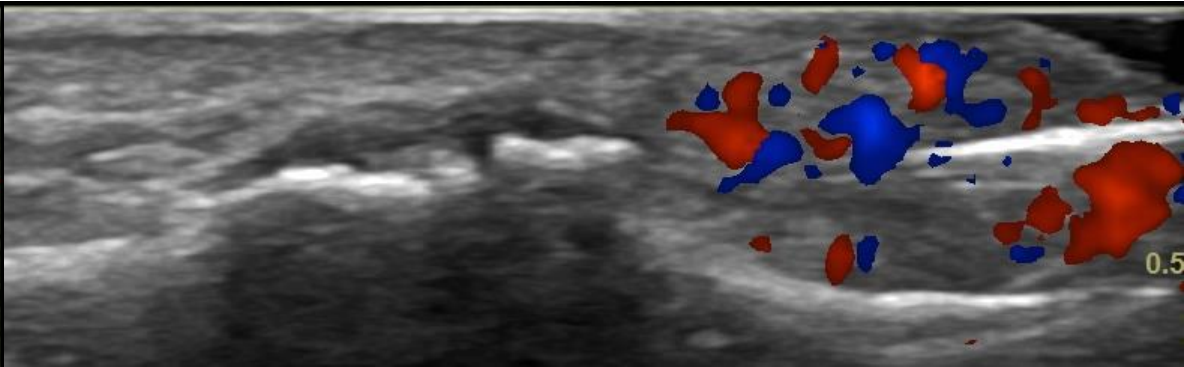
15 MHz: 83 %

22 MHz: 0 %
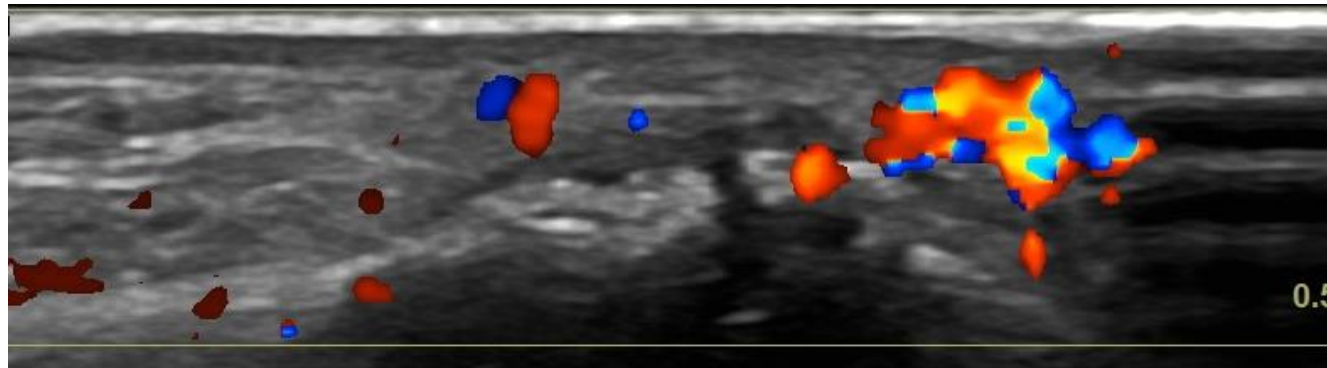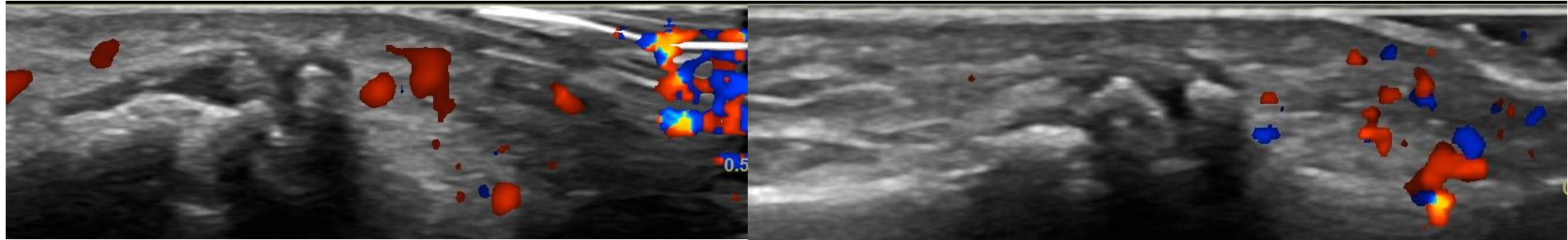
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20. Patient 6. Picture 7. DIP 5 ulnar aspect - Doppler

22 MHz: 0 %

18 MHz: 50 %

15 MHz: 50 %
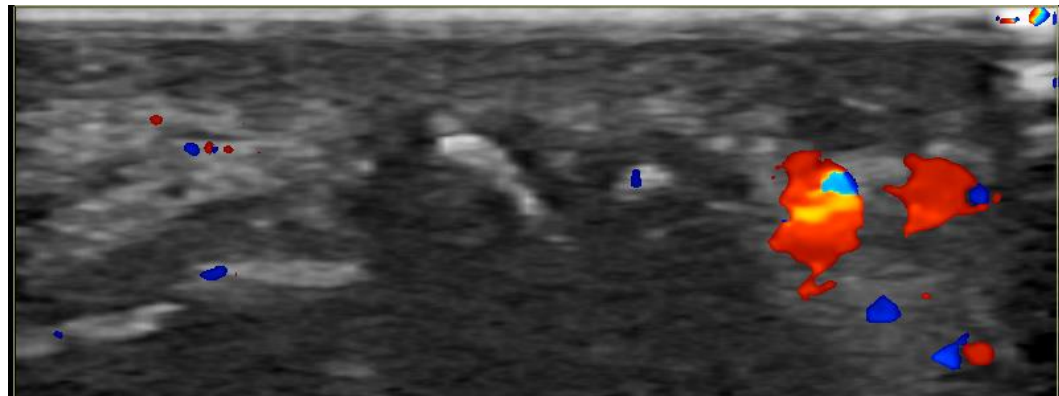
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21. Patient 6. Picture 3. DIP 2 ulnar aspect - Doppler
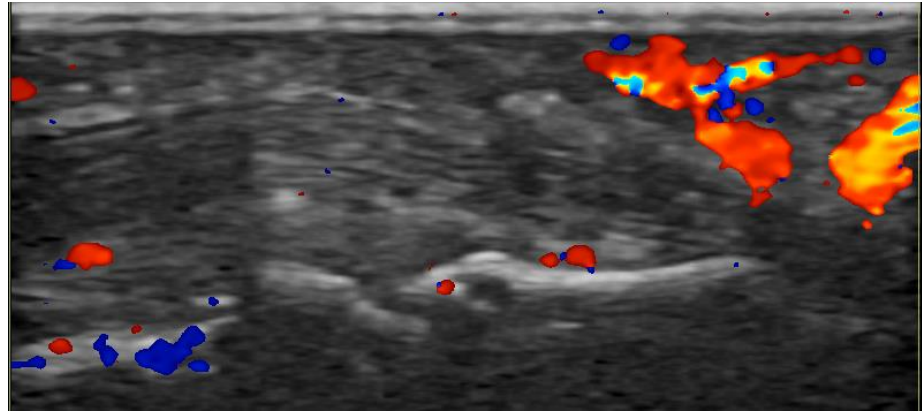

18 MHz: 50 %

15 MHz: 50 %

22 MHz: 0 %
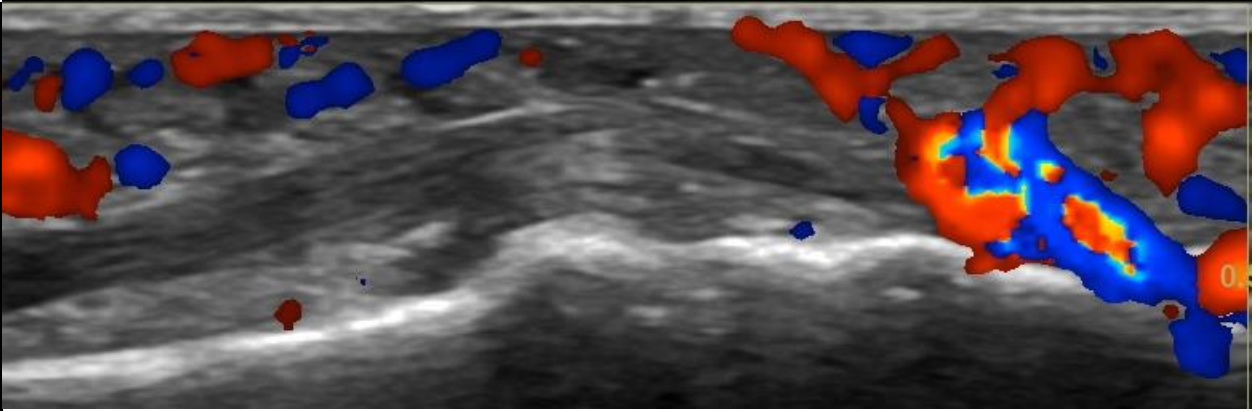
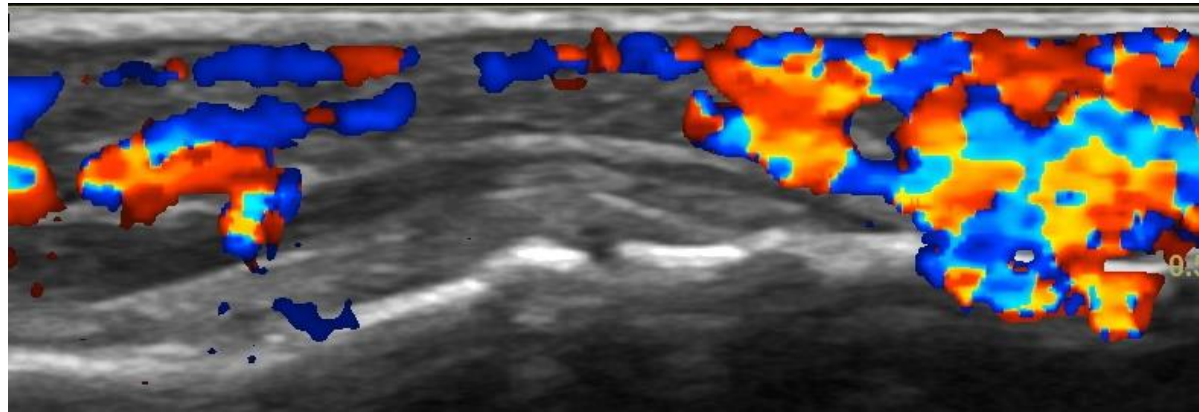18-08-2018   Jørgen Guldberg-Møller

22. Patient 3. Picture 3. DIP 4 volar aspect - Doppler
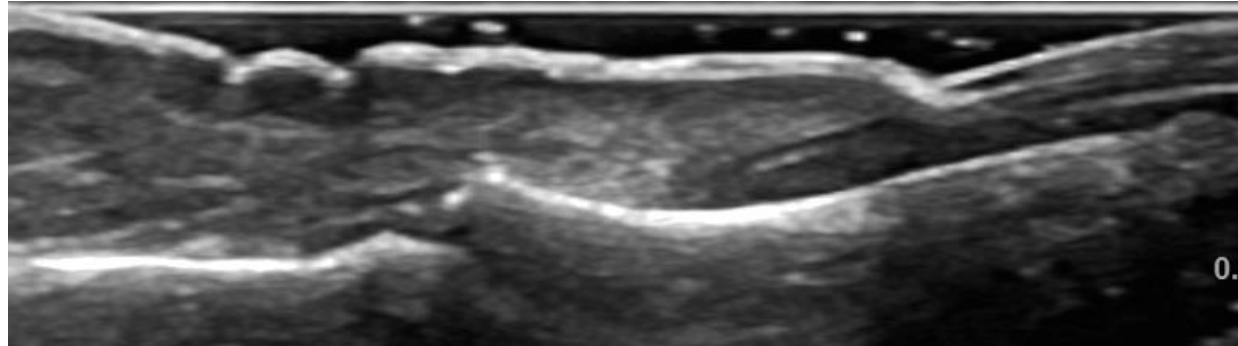

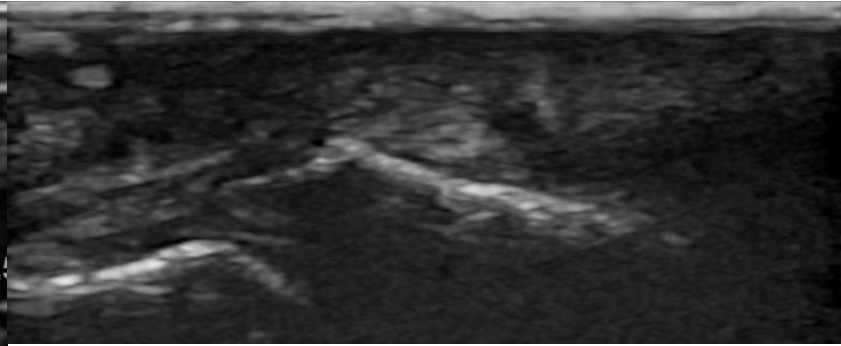22 MHz: 42 %

18 MHz: 17 %

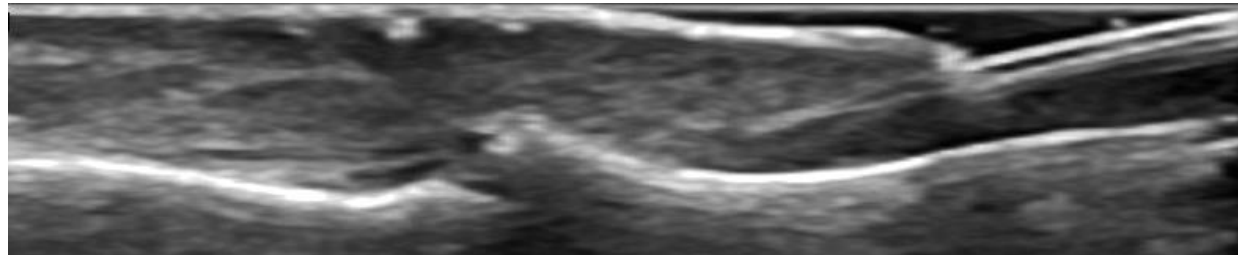15 MHz: 42 %

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23. Patient 5. Picture 7. DIP 5 dorsal aspect
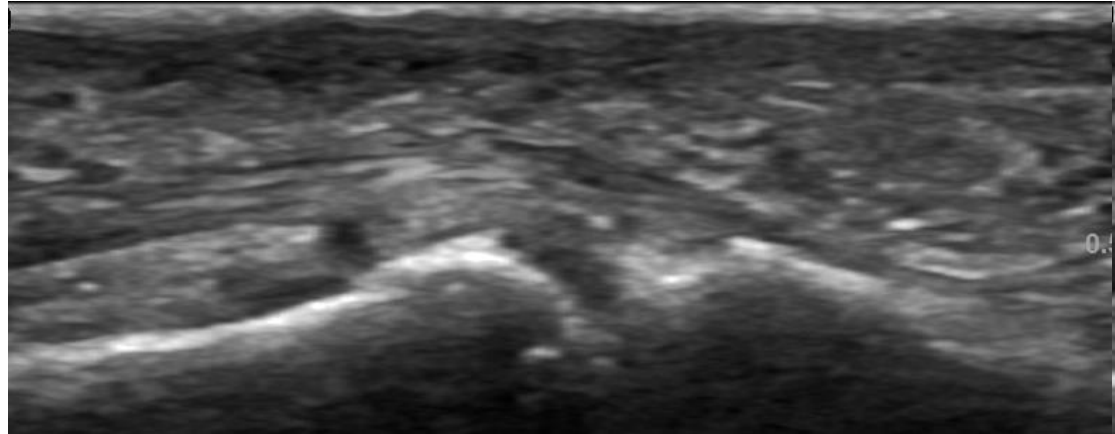

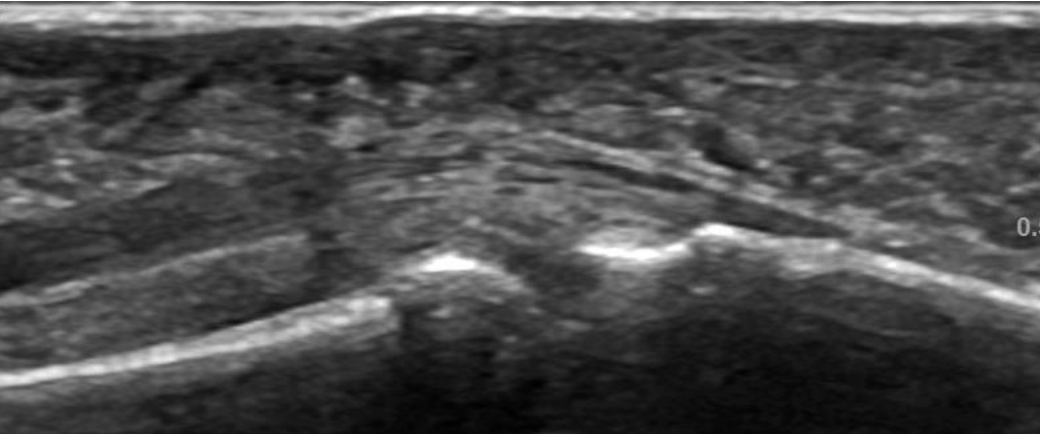15 MHz: 58 %

22 MHz: 8 %

18 MHz: 33 %

18-08-2018

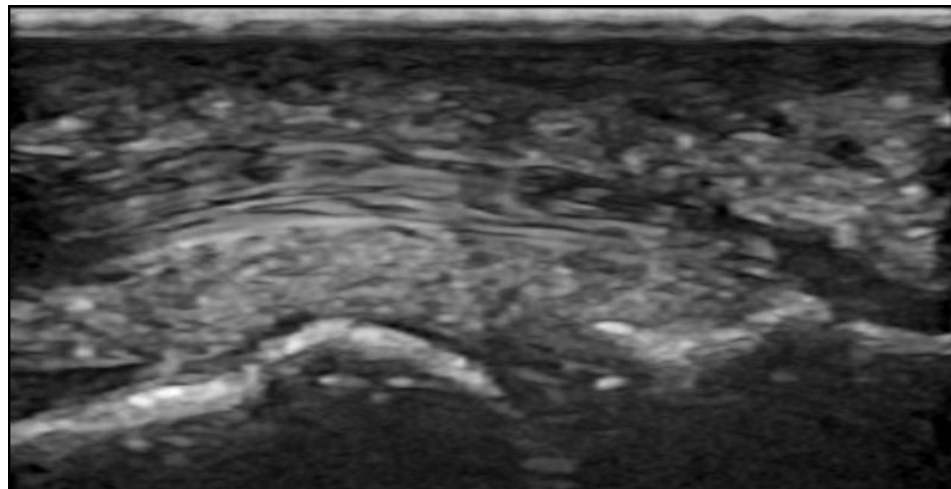Jørgen Guldberg-Møller

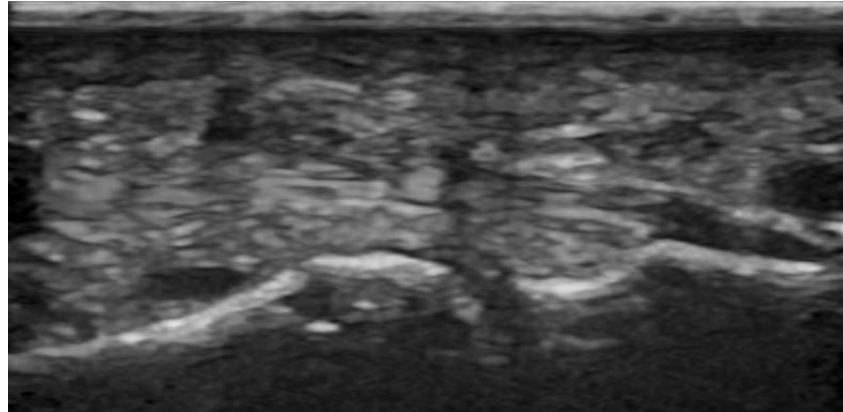# 24. Patient 5. Picture 2. DIP 3 volar aspect

18 MHz: 8 %
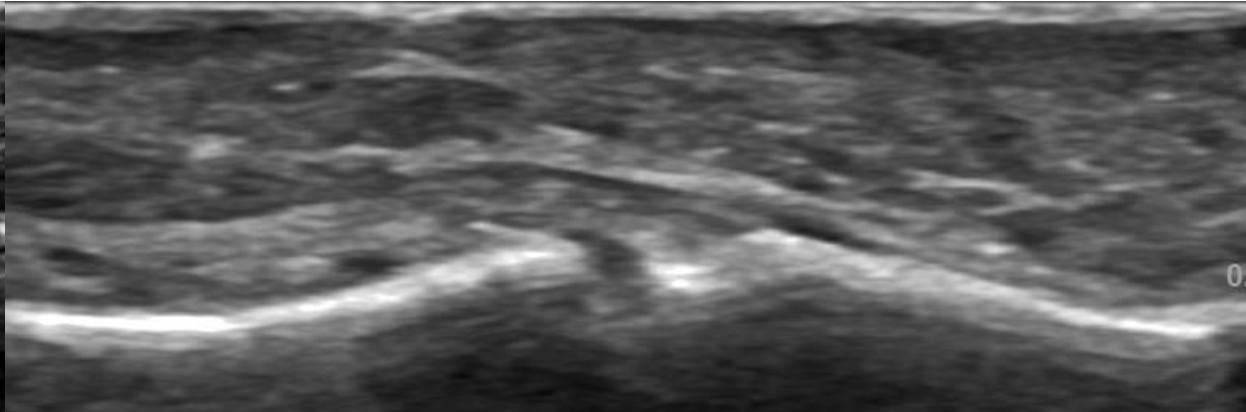

15 MHz: 75 %

22 MHz: 22 %
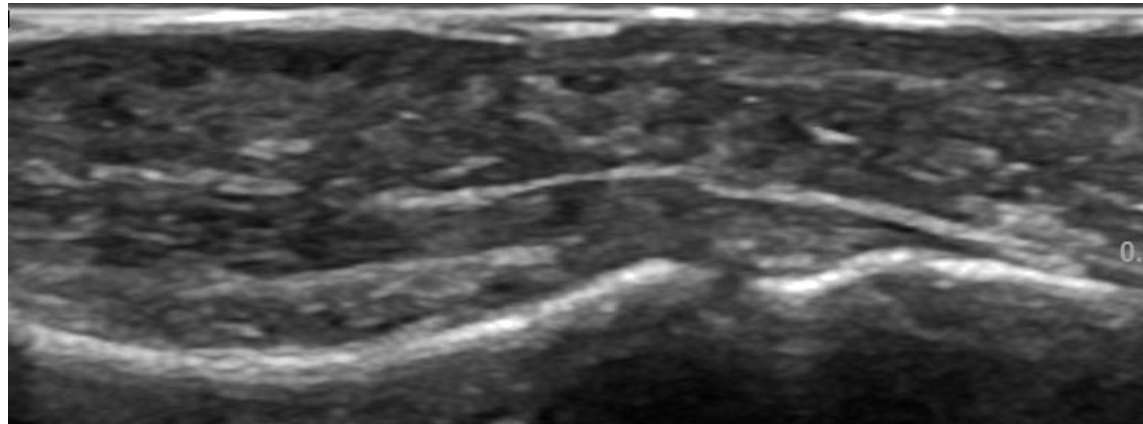
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25. Patient 5. Picture 4. DIP 5 volar aspect

22 MHz: 25 %

18 MHz: 17 %

15 MHz: 58 %

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The Probe with the most votes for best performance is:

Matrix tranducer 6-15 Mhz

Nominated for best picture 16 out of 25 times and tied for best picture 6 times.

18-08-2018

Jørgen Guldberg-Møller