Tips and Hints!

Faye Yarroll received her first cochlear implant in 2005 and her second in 2007. Today, Faye has bilateral cochlear implants and is an active member of the Cochlear Awareness Network in Australia. Faye shares her tips and hints to help other recipients.

MRI's and Cochlear Implants

Bilateral Freedom Implantee talks on her experience of having an MRI

Faye Yarroll talks on her experience of having Bilateral Freedom Nucleus Implants **(Faye is using the Nucleus Freedom with Contour Advance Electrode CI24RE(CA))** and undergoes an MRI scan at 1.5 Tesla . She explains what it is like. The purpose of this document is to inform other recipients of what to expect should they need to have an MRI in the future.

First of all, let's cover what is an MRI?

Magnetic Resonance Imaging (MRI) is an image technique that uses a very strong magnetic field and a Radio Frequency (RF) field to visualize soft tissues. The ability to image soft tissue obstructed by bone, as in the head, spine and joints, and the fact that no radiation is present (as with X-ray and CT scans) has made MRI the medical profession's diagnostic tool of choice for detecting abnormalities of the brain, spine and musculoskeletal systems.

Modern MRI machines typically operate between 1.5 Tesla and 4 Tesla, or 15000 to 40000 times the earth's magnetic field. In MRI, one of the basic principles of being able to obtain an image with high quality and resolution has to do with the magnetic field strength. The higher the field strength, the higher the signal and resolution can be. This translates into better image quality, and often a higher accuracy for exam interpretation.

What happens if I have a Cochlear Implant and I need an MRI scan?

There are two factors to consider when you require an MRI; the type of cochlear implant you have and the strength of MRI scan you require.

The internal (or implanted) part of a Cochlear Implant system includes a magnet which keeps the external processor in position to enable communication between the two parts. The type of implant you have dictates what strength of MRI scan you can have without this magnet being removed, or whether the magnet will need to be removed temporarily. For

example, Cochlear's Nucleus 24 Implant is approved safe for MRI scans up to 1.5 Tesla without removing the magnet, and up to 3.0 Tesla with the magnet temporarily removed.

What would happen if I had an MRI and did not have the magnet removed?

You MUST check on the type of Implant you have and your specific requirements first. Some implantees need to have the magnet removed and others do not.

Since the MRI uses magnetic fields, the magnet implanted in your head would be attracted to the magnetic field and the magnet could turn or try to tear out of your head.

Cochlear has created and distributed information about Cochlear Implants for Radiographers, advising how to identify which type of Cochlear Implant their patient has, and whether the magnet needs (or can) to be removed, based on the type of MRI scan that is required.

If at any time there are concerns, your ENT should be consulted.

So long as Cochlear's recommended procedures are followed, an MRI will not damage the electronics of the implant. During the Scan all external components must not be worn as the sound processor and the coil also contain magnetic components.

Faye's experience – What was it like to have an MRI?

Note: Faye has two Nucleus Freedom Implants which are compatible for MRI scan up to 1.5 Tesla with removal of the external speech processors and coils and then heavily bandaging her head before entering the MRI room.

"For years now when visiting the doctor and I have had a problem, I have always said 'Sorry, I can't have an MRI ..... as I have two Cochlear Implants' and we usually get by with arranging alternative CT Scans or X-Rays, or even a Nuclear Scan. These are much easier to have and are usually quick and simple.

However, I needed an MRI of my spine and I survived. This is my story.

"I contacted Cochlear Customer Services to ask for advice on having an MRI and they provided me with information to give to my Radiographer. This included information on how to correctly bandage my head to keep the internal magnet secure.

"I am glad Cochlear told me what to expect, otherwise it would be rather frightening for someone to go in unaware and not knowing. Having followed the instructions on the day, my head was so tightly bandaged I don't think the magnets could have moved even if they had tried.

"My MRI was performed at Sydney's RPA Hospital Specialist Magnetic Resonance Imaging Centre where the doctor and radiographers all paid special attention to get it right. I was the first Cochlear Implant Recipient to have an MRI at this centre.

“Now that the MRI scanning centre has the instructions from Cochlear, they fully understand and know what needs to be done to perform this scan safely. They know they MUST also check on the type of implant first before doing anything.

“After they bandaged me up and we were ready to go, I entered the MRI room and I was placed in the MRI machine feet first so my head was kept out of the machine as much as possible. The force of the magnet pulling on your head is rather explosive. (Remember I have Bilateral Implants with a magnet on both sides).

“As I underwent the MRI it sort of felt like my head was in a vice and being squeezed really hard but on the other hand it was like my head was going to explode and full of pressure. As I went into the machine the initial magnetic field is very strong for a few "long" seconds and then it evened out while I actually had the scan (which also seems to take forever). Once the main scan is in progress I could only really feel the vibrations of the scanner as it did its job. It’s quiet...and I couldn’t hear anything at all because I couldn’t wear my speech processors! Then at the end of the scan as I came out of the scanner and passed the main strength magnetic field it felt like my head was going to explode again and the pressure built up once more but only for a few seconds. The pressure is very strong and not necessarily a nice feeling but bearable. Having bilateral implants probably makes it a little bit worse as I had a force on both sides of my head at once.

“Once I was out of the machine and removed the bandages from my head, my ears and side of my head were all numb and red and hot. This was mainly because of the very tight bandage and not because of the MRI itself. Anyway, it did not take long to go away. I had a bit of a headache for a short while afterwards but I was fine very soon after. (The bandaging was really very tight and firm as it needed to be).

“Now I wait for good results – fingers crossed.

“So, to any Cochlear recipient considering having an MRI, this is just to let you know my experience, and if it is really necessary, then it is bearable if you know what to expect. It's not pleasant and not a nice feeling, but it is all over with fairly quickly (it was about 20 minutes in the scanner for me, but this depends on what part of the body is being scanned).

“I hope this helps others to understand what it is like to have an MRI should someone else need to have one. Best of luck!”

If anyone needs further information on **MRI for Nucleus® Implant Recipients Information for Radiographers** then please contact Cochlear Customer Services. customerservice@cochlear.com.au or Telephone (Aust): 1800 620 929

For more questions on Faye’s actual experience, Faye can be contacted on email: fayeyarroll@optusnet.com.au or Phone: (02) 9706 8007.