SAFETY OF USING IUDS WITH PEMFS

Long-acting reversible contraceptives (LARCs), such as intrauterine devices (IUDs) are in common use for pregnancy prevention. The percentages of use by age group are: ages 20–29 (13.7%), 30–39 (12.7%), 15–19 (5.8%) and 40–49 (6.6%).

Four IUDs are available in the United States, the copper-bearing IUD and three hormone releasing IUDs. Fewer than 1 woman out of 100 becomes pregnant in the first year of using IUDs (with typical use). IUDs are long-acting, can be removed, and can be used by women of all ages, regardless of history of pregnancy, and including adolescents.

A common question is whether using PEMFs in women with IUDs is safe. Three studies were found that looked at the question of the safety of doing MRI tests in the presence of IUDs. The only one that found any significant risk was for stainless steel -containing IUDs, which are not approved in the US.

Magnetic field interactions and potential adverse events were evaluated in 18 women using a questionnaire-based telephone survey. One woman reported a dislocation of the IUD after the MR test. All others had no signs of field interactions. The results were that MRI at 3.0-T can be used for women with copper-containing IUDs. (Berger-Kulemann) In another study, seven different types of copper IUDs were evaluated. Heating and dislocation of each IUD were investigated at two clinically relevant positions in 1.5 T and 3 T MR scanners. No significant heating of any tested IUD was detected during MR measurements. There was almost no temperature increase for all IUDs. No IUD movement was detected. They concluded that there was no significant risk of possibly harming a woman was determined with an implanted copper IUD. (Neumann) the third study evaluated MRI safety of clinically used IUDs composed of copper/gold and stainless steel at 1.5T and 3.0T for displacement force, torque effects, and heating of IUDs composed of copper/gold (western IUDs) and stainless steel (China) on 1.5 and 3.0T MRI systems. They concluded that standard copper/gold IUDs can be considered as MR conditional for MR safety at 1.5 T and 3.0 T. The stainless steel IUDs, can be potentially harmful to during MRI due to high magnetic dislocation forces and torque. As a result, stainless steel IUDs (which are not available in the US or Canada) are considered MR unsafe. (Bussman)

Plastic IUDs would have no risk with PEMFs, since they do not contain metals. Drug-eluting IUDs have not been studied relative to MRI effects on the potential for enhanced drug release.

Therapeutic PEMFs, even high intensity systems, are not MRI machines. MRI devices contain both radiofrequency magnetic fields as well as high intensity static magnetic fields. High intensity radiofrequency are somewhat although minimally equivalent to pulsed magnetic fields. It can generally be assumed that even in women using high intensity PEMFs, that since they are MRI conditional, the safety/risk profiles can be considered acceptable. A major difference between MRI and PEMF treatment, is that PEMF treatment may be continued on a regular basis, whereas MRI is usually a relatively unusual, not frequently repeated. In this case we are particularly interested in the use of MRI in the pelvic area, and not other areas of the body.

Whether or not an MRI/high intensity PEMF is used, there is always the potential for dislocation of the IUD. Copper/gold metals are minimally magnetically attractable so there would be no torque on them to cause displacement. Very limited heating of the tissue when using a high intensity PEMF to the pelvic area is a possibility as the magnetic field bends around the metal, possibly somewhat increasing magnetic field intensity, in a very limited area around the IUD. The risk of this happening is the greatest with radiofrequency magnetic fields. However, these studies indicate this risk is almost nonexistent.

Another risk not discussed in the studies is the possibility of increased vaginal bleeding, due to the PEMF effect of decreasing platelet stickiness and increased fibrinolysis. Increased vaginal bleeding, especially around menses, is a natural consequence of an IUD in any event and may not necessarily be attributed to PEMF treatment. IUDs create additional risks of inflammation of the uterus and secondary infections in the fallopian tubes, ie, pelvic inflammatory disease (PID). PEMF stimulation may temporarily increase inflammation and potentially increase discomfort. However, PEMFs have been found useful in helping women with PID, along with antibiotic therapy.

If there is significant concern, especially with magnetic field intensities in excess of 7000 – 8000 Gauss, the duration of exposure to the PEMF may be reduced or the intensity kept to at least a 50% level.

Dislocation of an IUD is always a possibility even without MRI or PEMF exposure. However, if there is a concern or gynecologic issues develop, gynecologic examination would be recommended, particularly to see if there is dislocation.

Summary

There is almost no risk of using PEMFs in women with copper IUDs based on evidence from MRI studies. Usual risks associated with the IUD are still present.

References

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