
Use of Contrast Media in Hysterosalpingography: ESUR New Guidelines



Hysterosalpingography (HSG) is a radiological procedure primarily used to assess the uterine cavity and fallopian tubes, often in the context of infertility evaluation. In this procedure, iodine-based contrast media (CM) are used to enhance imaging quality. Controversy exists regarding which type of CM, water-based or oil-based, is optimal for HSG, primarily in terms of fertility outcomes and potential side effects. The European Society of Urogenital Radiology (ESUR) Contrast Media Safety Committee (CMSC) conducted a systematic review to address these controversies, focusing on pregnancy outcomes and complications and providing updated guidelines for HSG procedures. A recent paper published by European Radiology explores the findings of that review, discussing the advantages and disadvantages of using oil- versus water-based contrast media in HSG.

The Impact of Contrast Media on Pregnancy Rates

One of the review's main findings was that the type of contrast medium used in HSG plays a role in pregnancy outcomes. Oil-based CM, specifically Lipiodol Ultra Fluid (UF), provided approximately a 10% higher pregnancy rate than water-based CM. This increase was consistently observed across several studies, particularly in randomised controlled trials (RCTs) where one arm used oil-based CM and the other used water-based CM. The largest study included in the review reported a significant increase in ongoing pregnancies within six months for women who received oil-based CM. Another study conducted in China also demonstrated that live birth rates were higher with oil-based CM than with water-based CM.

However, it is important to note that while the pregnancy outcomes favoured oil-based CM, many of the RCTs reviewed used contrast media that are no longer available on the market. This limits the external validity of some findings, as the specific formulations and properties of the contrast media used in these trials may differ from those currently in use.

Safety Concerns and Side Effects of Oil-Based Contrast Media

While oil-based CMs appear to improve pregnancy rates, they also carry potential risks. The CMSC review identified several safety issues associated with using oil-based CM in HSG. These include:

- **Maternal Thyroid Function:** Oil-based CM can affect maternal thyroid function due to their higher iodine concentration and slower clearance. Subclinical hypothyroidism was found to occur more frequently after the use of oil-based CM, with one study showing it in 22.6% of women who underwent HSG with oil-based CM, compared to 9.5% in those using water-based CM. While most cases were self-limiting, the disturbance in thyroid function necessitates pre- and post-HSG monitoring of thyroid function for up to six months.
- **Peritoneal Inflammation and Granuloma Formation:** Oil-based CM are slowly absorbed by the peritoneum and may persist in the abdominal cavity for extended periods, leading to potential inflammation and granuloma formation. The long-term clinical consequences of these findings are unclear, but they warrant the cautious use of oil-based CM in HSG.
- **Venous and Lymphatic Intravasation:** There have been rare reports of oil-based CM leading to complications such as embolisation to the lungs, brain, or eyes due to passage from the uterine cavity into myometrial vessels and subsequent drainage. Though such cases are infrequent and the emboli are generally considered innocuous, they highlight the need for careful technique and monitoring during HSG.

Image Quality and Diagnostic Accuracy

Another aspect evaluated in the CMSC review was the effect of contrast media on image quality during HSG. Image quality is crucial for accurate diagnosis of uterine and tubal pathologies. The review concluded that oil-based CM provides significantly better image quality than

water-based CM. Oil-based CM allows for clearer visualisation of the fallopian tubes, fimbrial rugae, and peritoneal distribution, which is important for diagnosing abnormalities that may contribute to infertility.

It is worth noting that some older studies suggested water-based CM provided better image quality. However, these studies were conducted before significant improvements were made to oil-based formulations. Current evidence supports the superiority of oil-based CM in providing detailed imaging, which is a critical factor for clinicians when choosing the appropriate contrast medium for HSG.

The findings of the systematic review by the ESUR CMSC highlight a nuanced decision-making process for choosing contrast media in HSG. While oil-based CM appears to enhance pregnancy rates and improve image quality, it carries a higher risk of side effects, particularly related to thyroid function and potential inflammatory reactions in the peritoneum. Consequently, the updated guidelines recommend that maternal thyroid function should be tested before HSG with oil-based CM and monitored for up to six months afterwards. The choice of CM for HSG should be tailored to the patient, balancing the desire for optimal fertility outcomes with considerations for safety and individual health risks.

In summary, oil-based contrast media in HSG provide a higher chance of pregnancy and superior image quality but require caution due to their potential side effects. Clinicians are encouraged to carefully weigh these factors when planning HSG procedures for patients with infertility.

Source: [European Radiology](#)

Image Credit: [iStock](#)

Published on : Mon, 7 Oct 2024