Laptops... and infertility? [1]

Dear Alice,

I have had a notebook (laptop) computer for three years now. I never use it on a desk, but rather surf the web with it sitting on my lap. Since I am only 18 years old, I worry that someday I may try to make a baby and fail. Could an electronic device such as this sitting above my testicles every day lead to infertility?

Answer

Dear Reader,

In one ejaculation, the number of sperm can range from 50 to 600 million. Why so many? Because sperm are sensitive! It doesn't take much to cut down their numbers and it takes very little to interfere with their motility (i.e., swimming ability). Though the effect of laptops on sperm is not fully known, research indicates that heat generated by a laptop computer may lead to what is referred to as "scrotal hyperthermia" or an elevation in testicle temperature. Turning the heat up on the testes has the potential to impact sperm structure and sperm motility. With that said, whether any of these could result in irreversible infertility is still unclear.

Testicles are about 5 to 7 degrees Fahrenheit cooler than the rest of the body because they are situated outside the body. An increase in the temperature of the testes may cause oxidative stress, slow the movement of sperm, kill sperm, and lessen their ability to fertilize an egg for weeks or months. Some fertility studies have shown that an increase in scrotum temperature by 2 to 3 degrees Fahrenheit can reduce sperm count by as much as 40 percent. Others have not found as dramatic of a reduction, but researchers believe that 2.5 degrees Fahrenheit (1 degree Celsius) is the threshold for the impairment of fertility.

More specific to the heat generated by a laptop, one study found that scrotal temperature of the participants changed within 30 minutes of seated laptop use and within 60 minutes, temperatures rose 3 degrees Celsius. Another study looked at whether different seated positions could alter laptop heat exposure. In all three seated positions investigated (seated with legs closed and laptop directly on lap, seated with legs closed and using a lap pad, and legs apart with a lap pad), scrotal temperatures rose. The researchers do note the potential association between higher scrotal temperatures and impact on semen function and production (despite not having analyzed the semen of the participants to confirm). On top of that, some researchers in this area are curious about exposure to electromagnetic waves with laptop use that may also impact male fertility. More research is needed to more clearly
determine what effects laptop computer use may have on male fertility.

To put this concern in perspective, though, it's good to be aware that multiple factors can contribute to male infertility, including:

- **Medical conditions and treatments**: Orchitis [2], for instance, is inflammation of the testicle. It can permanently damage one or both of the testicles [3], potentially leading to infertility. Some men may have genetic disorders like Klinefelter syndrome [4], which could lead to fertility issues. In addition, surgery like a vasectomy [5] could stop a person's sperm from entering the ejaculate, preventing fertility.

- **Environmental factors**: Industrial chemicals, exposure to heavy metals, high doses of radiation, overheating the testicles, and sitting for long periods may contribute to a lower sperm count.

- **Lifestyle**: Use of steroids, cocaine, marijuana, alcohol, tobacco, emotional stress, and obesity can all reduce the number and quality of sperm, resulting in fertility challenges.

All this to say, while raising the temperature of the testes is a noted concern in male infertility, it may take some time to know to what extent laptop computer use impacts semen quality. In the meantime, keeping your legs apart and sitting at a desk may help reduce the heat in your pants when surfin' the web for extended periods of time. If you're still concerned or would like to learn more about how to prevent the loss of fertility, you might consider talking with a health promotion professional or your health care provider.

Kudos to you for thinking about how the decisions you make now can impact your future health!

Alice!

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Published date:
Dec 02, 2011
Last reviewed on:
Oct 09, 2015