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The Important Influence of Endometriosis on Tubal Transport

Study reveals endometriosis, a pro-inflammatory disease, negatively impacts fallopian-tube transport and fertility.

Importance of the Fallopian Tube in Human Fertility

Human reproduction requires a series of complex interactions perfectly designed to achieve pregnancy.

If one component of this system is not functioning properly then fertility issues will likely follow.

In terms of natural fertility, one of the most important roles belongs to the fallopian tube, which is inherently necessary for conception and the progression of early pregnancy.

The fallopian tube - in a way we still do not fully understand - facilitates the efficient transportation of both sperm and egg providing an important micro-environment for conception to occur.

Following conception, the fallopian tube provides the means necessary for the new pregnancy to progress from the uterine cavity to the endometrium (the lining of the uterus), and also facilitates the optimal timing of implantation - a critical stage of early human development.

Highlighting its obvious importance, natural conception and pregnancy cannot occur without a properly functioning fallopian tube, and there are known disease processes that can affect this important role.

Endometriosis Promotes an Inflammatory-Tubal Environment

Endometriosis is a benign, yet often aggressive and heightened-inflammatory gynecologic disorder where the cells composing the endometrium are located in abnormal locations

throughout a woman's body including the fallopian tubes themselves. In this case, endometriosis directly invades the healthy tube - distorting the tubal anatomy and impacting the ability of the tube to function appropriately.

This type of “direct” tubal endometriosis is a more rare occurrence. More commonly, it is the general presence of endometriosis within the female pelvis that drives inflammation thereby “indirectly” impacting the delicate fallopian tube micro-environment necessary for healthy conception and early pregnancy progression.

Several studies have evaluated the “indirect” inflammatory impact of endometriosis on the fallopian tube and the results are quite concerning - revealing an increase in inflammatory and immune-mediated cells within the tubal environment.

Specifically, these studies reveal an increased number of macrophages, cytokines, and prostaglandins within specific areas of the fallopian tube in women with pelvic endometriosis, which promote an inflammatory response within the tube itself.

Thus, it is not necessary for endometriosis to directly invade the tubal tissue in order for the disease to indirectly, and negatively, impact tubal function by facilitating an inflammatory-pelvic environment.

Endometriosis Impacts Fallopian Tube Transport and Pregnancy Chances

An important study performed by Kissler, et al. was performed to evaluate the potential impact endometriosis may have on healthy, fallopian-tube transport.

The study authors evaluated 56 women with infertility who had been previously diagnosed with endometriosis via surgical laparoscopy - the gold-standard method for the diagnosis of endometriosis.

Of note, the majority of patients evaluated were found to have mild endometriosis on surgical evaluation, and, quite importantly, all patients studied had confirmed tubal patency (open fallopian tubes) proven by chromopertubation at the time of their diagnostic laparoscopy.

Chromopertubation is a simple test utilized to determine the function of a woman’s fallopian tubes.

For this basic test, dye is administered into the uterine cavity and fallopian tubes, and the fallopian tubes are then evaluated via a camera placed within the pelvis through several small incisions. If the dye is seen spilling from the end of the fallopian tube then tubal patency is confirmed. If no dye is visualized, then it is assumed the tube is closed due to some physiologic issue.

Similar to chromopertubation, a less invasive and the most common test utilized to assess tubal function is a hysterosalpingogram (HSG). With this test, a contrast media is administered within the uterine cavity and the fallopian tubes are evaluated via pelvic imaging (as opposed to a surgical camera) to determine if the fallopian tubes are open or closed via the visualization of dye seen spilling from the end of the tubes.

For most couples undergoing a fertility evaluation, the confirmation of tubal patency via chromopertubation or HSG often leads to the conclusion that the presence of a true tubal concern is not present.

But while it is fundamentally important to determine whether or not a fallopian tube is open or closed, the determination of tubal function, in terms of natural fertility, does not end with patency confirmation.

In fact, what is seemingly just, if not more, important than a finding of tubal patency is the inherent ability of the fallopian tube to facilitate the healthy transportation of the sperm and egg in order for conception to occur (uterotubal transport).

And it is well documented that couples with diminished uterotubal transport have lower pregnancy rates - making this lesser-known component of tubal health an important one to address in any couple experiencing fertility challenges.

This then leads to the question of how a pro-inflammatory process like endometriosis, which is known to aggravate the tubal micro-environment may silently impact healthy uterotubal transportation.

This question was evaluated in the study performed by Kissler, et al., where fallopian tube function was evaluated via a test designed to assess uterotubal transport - hysterosalpingoscintigraphy (HSSG).

HSSG is a unique tubal test that accurately measures transportation between the uterus and the fallopian tube by utilizing a radiographic tracer element that allows for this type of data to be collected.

It is well documented that when an HSSG test reveals a failure in intact uterotubal transportation the ability to conceive is drastically reduced.

And the study authors found that patients suffering from endometriosis showed a significant reduction in uterotubal transport as evaluated via HSSG.

Importantly, women with endometriosis and decreased uterotubal transport had significantly diminished pregnancy rates even despite tubal patency - as confirmed via chromopertubation - and normal male sperm parameters.

True Health Matters Summary

Endometriosis is a pro-inflammatory disease that impacts human reproduction in multiple ways and in varying degrees including the promotion of an abnormal micro-environment within the fallopian tube.

Research indicates the presence of endometriosis, determined by laparoscopy, was directly-related to uterotubal-transportation issues within the fallopian tubes resulting in diminished pregnancy rates; despite a finding of normal tubal patency (as determined by chromopertubation) and normal male sperm parameters.

Thus, endometriosis and its lesser-known impact on uterotubal transport should be comprehensively addressed in couples experiencing fertility challenges.

References:

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