

What happens during early embryo development that could possibly go wrong?

Did you know that a rudimentary male and female reproductive system are 'laid down during the first trimester of development? If mother nature goes according to plan, the presence or absence of the 'Y' chromosome, with steps activated at the right time, one reproductive system continues to develop while the other one ceases. Sometimes the proper steps are mistimed or omitted. Whether due to a genetic mutation, abnormal expression, internal and/or external exposure to stressors, toxins, hormone disruptors etc, various degrees of development among the rudimentary system may occur...and at various times in the humans life.

Did you know that all of the cells that make of the human body are derived from three rudimentary types of cells. These cells initially developed into three layers very early in the first trimester, before the rudimentary reproductive organs developed. Out of these layers (germ layers) arose the organs of the body. Some organs are derived completely from a single germ layer while others are formed through a combination of germ layers. These layers are: 'Endoderm', 'Mesoderm' and 'Ectoderm'.

Each layer (germ layer) evolves into specific tissues and organs. Tthe reproductive system is derived from the Mesoderm. Interestingly, nearly all areas of the body in which endometriosis lesions have occurred, are comprised whole or partial of Mesoderm tissue. In early development, among the mesoderm layer, cells 'jockey' for position to arrange in the same area as cells also destined to become the same specific organ. As 'organogenesis' proceeds, cells of one organ can be in very close proximity to organs that become remote once fully development is reached. For example, structures of the respiratory system lie in proximity to the reproductive organs during one stage of the process. Here begins the complexity. Despite the resience of our DNA, mistakes happen. Not all mistakes are good. Not all mistakes have been 'bred out'. We don't know all, or which variables cause what 'errors' to occur. Whether genetic, environmental or many more items, in combination or alone; nonetheless, cells may not always make it to their final organ destination. These misplaced cells then become incorporated with cells that are programmed for a specific organ. The possibility for the misplaced

cells to retain some of their 'preliminary orders for development'. Later, when a female undergoes adolescent changes, these lesions identify and react to circulating hormones. These hormones 'kick start' the misplaced cells into development of its original, programmed, destiny organ it was intended to become: *mullerianosis*.

Another theoretical possibility: When a tissue or organ becomes diseased or injured, the body sends out cells to repair and replace the dead cells. The cells will originate from stem cells from the same germ layer which the organs and tissues develop from.

Example: An injury to the lining of the abdominal and pelvic cavity occurs. New cells enter the area. As the peritoneum is derived from the mesoderm, replacement cells are also mesoderm (ie develop into muscles, the uterus, bones, liver, diaphragm, chest cavity, etc). The replacement cells, for factors yet to be identified, mis-develops into an endometriosis lesions and not 100% its intended composition and role of cells in the peritoneum. This is a rudimentary example and explanation of *metaplasia*.

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