

Understanding the Discrepancies Between External Genitalia and Internal Reproductive Organs in Both Female and Male (Hermaphroditism)

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Abstract: This review article presents a multifaceted Understanding of the Discrepancies Between External Genitalia and Internal Reproductive Organs in Both females and Male. Hermaphroditism or Intersex refers to human conditions in differences between the external genitalia and the internal reproductive organs. Intersex issues are sometimes known as sexual development disorders (DSDs). Such circumstances are quite rare in humans. Ovotesticular illness (also known as real hermaphroditism) occurs when a person has both ovarian and testicular tissue. Being a hermaphrodite is thought to increase the chances of solitary organisms reproducing because they can both give and receive gametes. This allows them to both share their DNA while at the same time having the chance to develop offspring of their own. However, True hermaphrodite is one of the rarest variety of disorders of sexual differentiation (DSD) and represents only 5% cases of all. A few cases of malignancies like dysgerminoma and gonadoblastoma have been reported in true hermaphroditism. Hence people with hermaphroditism will require close follow up to diagnose any malignancy arising in his remaining testis. Since the incidence of gonadal malignancy is low.

Keywords: hermaphroditism, external genitalia, internal reproductive Organs, disorders

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1. INTRODUCTION:

Hermaphroditism, commonly known as intersex, differs between the exterior and internal sexual and genital organs. It is classified as a disease of sex development, along with other disorders (DSD). Hermaphroditism is characterized by the presence of both male and female reproductive organs. Hermaphroditic plants, which include the majority of flowering plants or angiosperms, are referred to as monoecious or bisexual. Hermaphroditic creatures, which are generally invertebrates like worms, bryozoans (moss animals), trematodes (flukes), snails, slugs, and barnacles, are typically parasitic, slow-moving, or permanently linked to another animal or plant Mariotti, S., Jannini, E. A., & Martino, E. (2022).

Intersex refers to human situations that feature disparities between outward genitalia and internal reproductive organs. Intersex problems are also referred to as sexual development disorders (DSDs). In humans, such situations are exceedingly unusual. An individual with ovotesticular disease (also known as genuine hermaphroditism). The ovarian and testicular tissues may be distinct or united in what is known as an ovotestis. Affected people have male-female mosaicism on their sex chromosomes (where one individual possesses both the male XY and female XX chromosome pairs). The chromosome complement is usually, but not always, 46, XX, and in every such individual, there is evidence of Y chromosomal material on one of the autosomes. Walker, M. (2022).

Intersex treatment in humans is determined by the age at which the diagnosis is established. Historically, if identified at birth, the sex was determined (usually by parents) based on the state of the external genitalia (i.e., which sex organs predominated), after which so-called intersex surgery was undertaken to remove the opposing sex's gonads. The leftover genitalia were then rebuilt to look like the chosen sexes. Because female genitalia reconstruction was easier than male genitalia reconstruction, ambiguous persons were frequently modified to be female. Sarma, V. P. (2022).

Intersex surgery, on the other hand, has long-term effects for those who undergo it. Later in life, the person may be dissatisfied with surgery outcomes and may not identify with the assigned gender. As a result, patient permission has become an increasingly crucial aspect of intersex surgery, to the point that surgery may be postponed until adolescence or maturity, when individuals have had enough time to explore their gender and can make educated treatment decisions. Proper surgical treatments and hormone medication may reinforce the recognized gender in older adults. Jacobs, A. J. (2022).

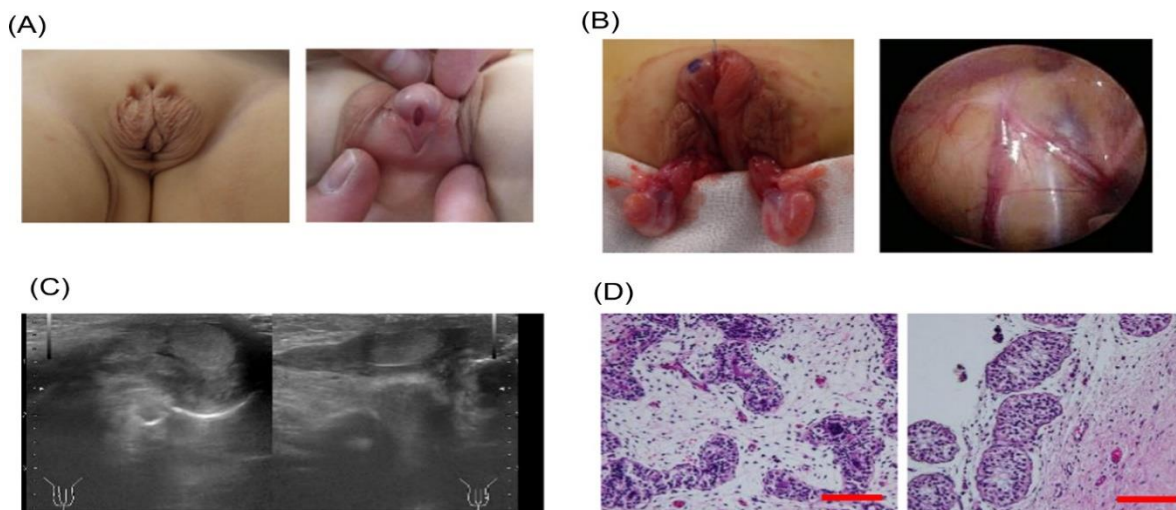
2. TYPES OF HERMAPHRODITISM

Even with the emergence of advanced diagnostic procedures, the aetiology of hermaphroditism in many children cannot be established. Complex or idiopathic hermaphroditism is the medical term for this condition. The following are the types of Hermaphroditism to know:

46, XX hermaphroditism

An individual with 46, XX hermaphroditism has two XX chromosomes and female ovaries but male external genitalia. This kind is frequently produced by the female fetus being exposed to too many male hormones in the pregnancy. The labia fusion occurs, and the clitoris enlarges to resemble a penis. The female sexual organs, such as the uterus and fallopian tubes, have a normal internal anatomy. Jacobs, L. E., Hammond, T. T., Gaffney, P. M., Curtis, M. J., Shier, D. M., Durrant, B. S., ... & Calatayud, N. E. (2021).

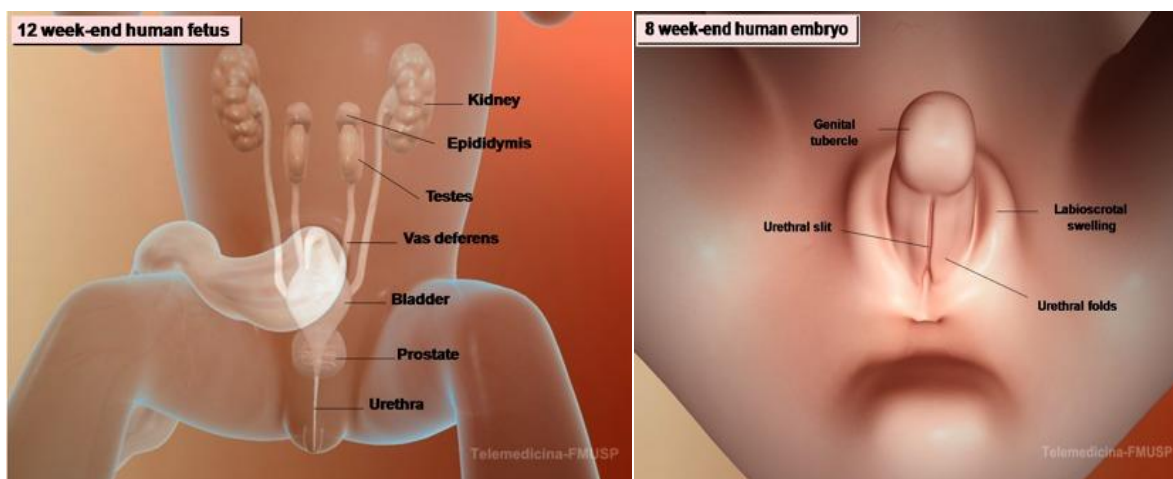
Fig 1: 46, XX hermaphroditism



46, XY hermaphroditism

Individuals with 46, XY hermaphroditism have one X and one Y chromosome, as observed in men, but their external genitalia are either not fully developed or resemble those of females. The internal sexual organs may be normal, partial, or nonexistent, depending on the circumstances. A hormonal imbalance between the sexes frequently causes this kind. It might be caused by aberrant testicular function, a decreased ability to make testosterone, or problems using the testosterone produced in the body. Hendawy, H., Yoshida, T., Ma, D., Takeuchi, A., Ozai, Y., Hamabe, L., & Tanaka, R. (2022).

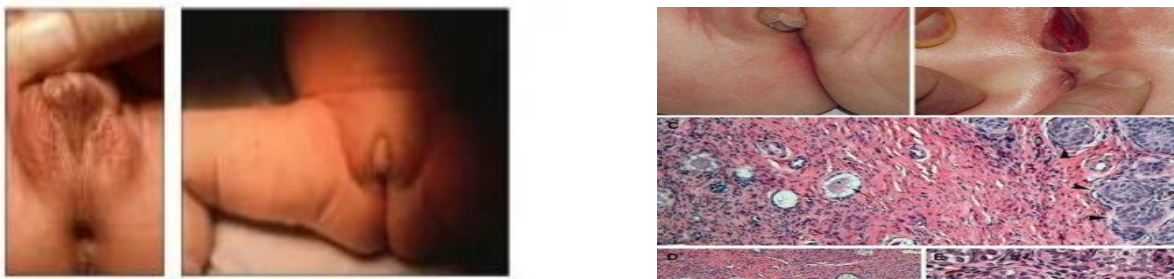
Fig 2: 46, XY hermaphroditism



True Gonadal Hermaphroditism

True gonadal hermaphroditism is the presence of both ovarian and testicular tissue in the same gonad (an ovotestis) or in one ovary and one testis. Some people with the condition have XX chromosomes, while others have XY chromosomes or a combination of the two. Similarly, the external genitalia can take on various forms, ranging from male to female to indeterminate. The exact aetiology of this form of hermaphroditism is unknown. Some animal research has revealed a relationship to agricultural pesticide exposure, but human studies have yet to confirm this. Mariotti, S., Jannini, E. A., & Martino, E. (2022).

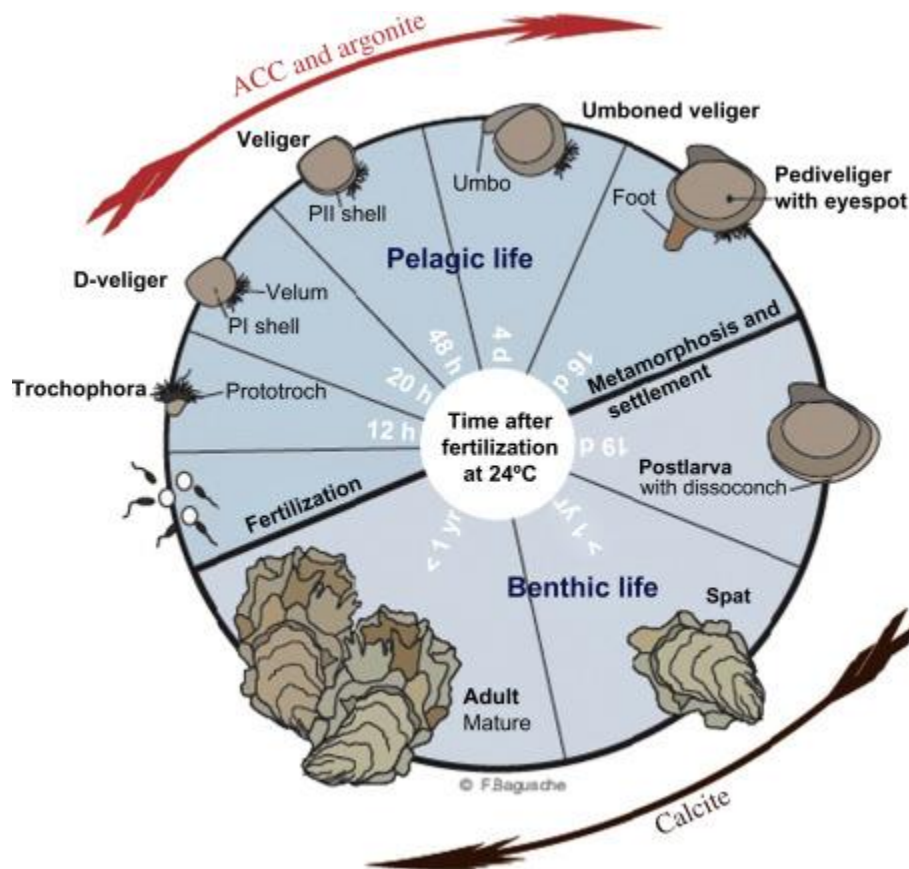
Fig 3: True Gonadal Hermaphroditism



Complex Hermaphroditism

Beyond basic 46, XX and 46, XY hermaphroditism, complex hermaphroditism includes various sexual development problems. These might be (1) 45, XO (2) 47, XXY (3) 47, XXX. This kind is not commonly related to a difference between internal and external genitalia. Instead, the person exhibits aberrant sex hormone levels and inadequate sexual development.

Fig 3: Complex Hermaphroditism



3. CLINICAL MANIFESTATIONS OF HERMAPHRODITISM

The Clinical Manifestations of hermaphroditism depend on the type of condition. They may include:

Table 1: Clinical Manifestations of hermaphroditism

4.	Ambiguous genitalia
5.	Micropenis
6.	Clitoromegaly
7.	Labial fusion

8.	Undescended testes
9.	Hypospadias
10.	Electrolyte abnormalities
11.	Delayed, absent or abnormal pubertal changes

4. DIAGNOSTIC FINDINGS OF HERMAPHRODITISM

Several diagnostic tests may play a role in identifying the condition and deciding upon the appropriate course of action. These may include:

Table 2: Diagnostic Tests of Hermaphroditism

1.	Analysis of chromosomes
1.	Blood tests to investigate hormone and electrolyte levels
4.	Hormone stimulation tests
5.	Molecular testing
6.	Endoscopic exam
7.	Ultrasound imaging
8.	Magnetic resonance imaging (MRI)

5. TREATMENT OF HERMAPHRODITISM

A multidisciplinary healthcare team is frequently required to meet the varied demands posed by a kid with hermaphroditism. There is also much dispute and stigma surrounding the treatment of hermaphroditism. Gender was formerly identified early in the treatment procedure, typically based on the external genitalia. As a result, surgery and hormone treatment were advised. However, the complexities of gender and sexuality have lately been recognized. As a result, patient care is becoming more personalized and less uniform. Hermaphroditism is a complicated issue, and the best way to cure it is unknown. Afflicted persons must have access to proper assistance in order to cope with any challenges that may arise as a result of the illness. Such support groups may also assist their family and friends. Xie, Q. P., Zhan, W., Shi, J. Z., Liu, F., Niu, B. L., He, X., ... & Lou, B. (2021).

6. CONCLUSION

The differences between girls' and males' external genitalia and internal reproductive organs are discussed in depth in this review article (Hermaphroditism). Hermaphroditism, also known as Intersex, is a disorder in which the external genitalia and the internal reproductive organs are not the same. Sexual development problems are another term for intersex difficulties (DSDs). In humans, such circumstances are infrequent. When a person possesses both ovarian and testicular tissue, it is called ovotesticular disease (also known as true hermaphroditism). Because hermaphrodites can both supply and receive gametes, they are considered to boost the odds of solitary creatures reproducing. The review study on Hermaphroditism has visualized the types of Hermaphroditism, complications, diagnostic tests and treatment of hermaphroditism. The study further recommended that every nation train a team to oversee this condition if such an issue is identified.

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Bio

Chukwuma Chinaza Adaobi is the founder of *Medicine Communication and Research Portals*, which provides news, consulting services and perspectives on health. She speaks nationally and internationally on topics related to health professionalization; she is a distinguished researcher; she received the Best Research Award for her contribution and Honorable Achievement in Innovative Research from the International Research Awards for New Science Inventions (NESIN 2021 Awards). The prize is given to recognize her outstanding contributions to scientific research and publishing. **Chinaza** research interests include Symptom Science, Clinical Judgment and Decision-making, Wellness, Self-Management, End-of-life, public health technology and Palliative Care.