**Case 1: Bone growth**

Ali, a 14 year old boy, attended the orthopedic clinic as his parents noticed an unequal length of both lower limbs. Which was more noticeable during the last few months. By discussing his history, the parents confirmed that they didn’t notice this variation except in the last few months. They gave a history of a fracture in the left leg two years earlier. They were advised to have an X-ray which showed a callus of bone tissue near the upper end of the left tibia indicating a healed fracture. The left leg was the shorter one.

1. Mention the type of ossification of long bones and their ossification centers. (Anatomy)

* Revise types of ossification of long bones
* Define the ossification centers of long bone and time ,site of appearance.

1. Describe the structure of a growing long bone.(Anatomy)
   * + Different parts of long bone during development.
     + Structure responsible for increase of length & width of bone
2. Explain the discrepancy in the length of both limbs.(Anatomy)

* Details of epiphyseal plate



**Photo of a child with a limb length discrepancy due to growth plate injury.**

An x-ray of a knee joint

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X-ray of a leg and a bone

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**Case 2: Immotile cilia syndrome**

A 27-year-old woman arrived at the infertility clinic, claiming to have been unable to conceive for two years. She has a history of tubal pregnancy, recurrent chest infection and chronic sinusitis. The initial assessment of infertility revealed normal hormone levels and normal pelvic ultrasound findings, The doctor suspected there may be an underlying genetic disorder influencing cilia function. Immotile cilia syndrome is confirmed by genetic testing.

1. Describe the anatomy of the fallopian tube. (Anatomy)

* Different parts of uterine (fallopian tube).

1. Explain how the above-mentioned syndrome can result in the case of infertility or tubal pregnancy. (Anatomy)

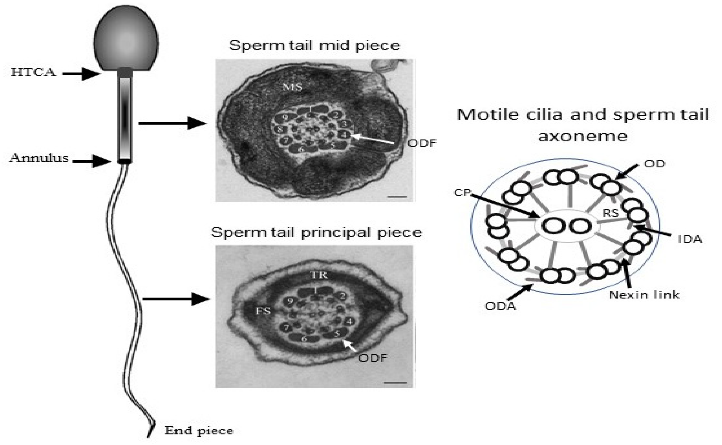
* Function of cilia within the fallopian tube.

1. Enumerate the types of cell apical modification with examples. (Histology)

* **Microvilli**
* **Stereocilia: (solid= non- motile)**
* **Cilia**
* **Flagella**

1. In cases of male patients, how this syndrome affect fertility? .(Histology)

Structure & function of sperm flagellum

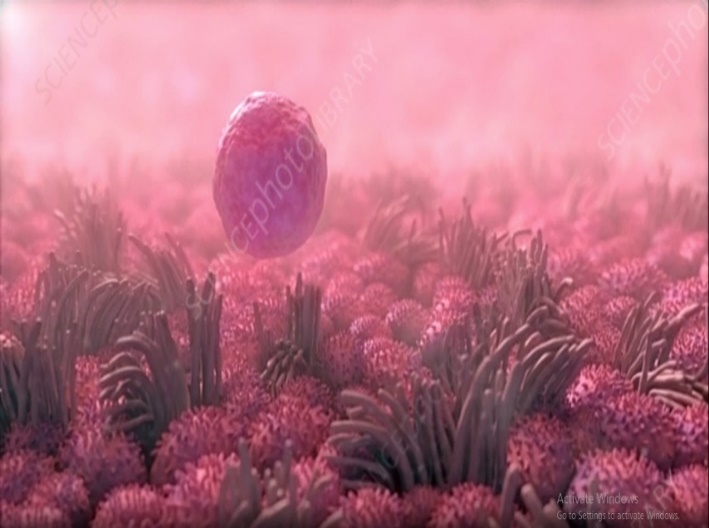
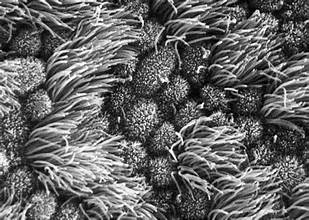
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**A diagram of a human body

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**A diagram of a human body

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**Cilia within the fallopian tubes**

**Case 3: Umbilical cord abnormalities**

A 28-year-old woman, 34 weeks gestational age, presents to the prenatal clinic for routine ultrasound examination. The obstetrician noticed an umbilical cord localized thickening around the umbilical vein. However, healthy fetal heart sounds and normal blood flow within the umbilical cord assured him that there is nothing to worry about.

1. What is the name of this condition? (Anatomy)

* Knots of umbilical cord

1. Enumerate the contents of umbilical cord. (Anatomy)

* 5 structures forming the content of umbilical cord

1. Mention the congenital anomalies of umbilical cord. (Anatomy)

* Abnormal length
* Abnormal attachment
* Interruption of blood flow within cord

1. Describe in detail the type of connective tissue in the umbilical cord. (Histology)

A close-up of a knot

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