

Medi Quest BRS Hospital

A monthly News letter from BRS Hospital

Congenital Anomalies of Hand

Part I

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Congenital Anomalies occur in 1-2% of all neonates and of which 10% are upperlimb anomalies. They may be inherited, occur spontaneously or due to teratogens.



Fig.1 Congenital Anomalies of Hand



EMBRYOGENESIS

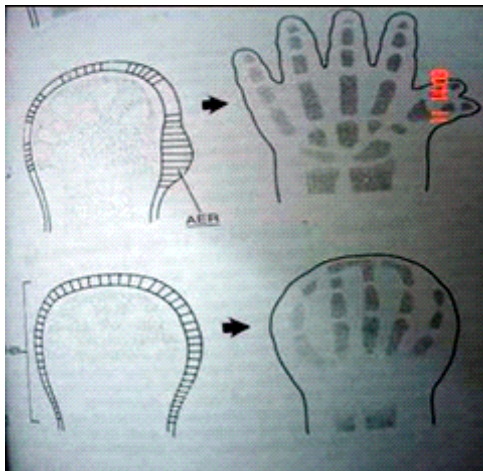
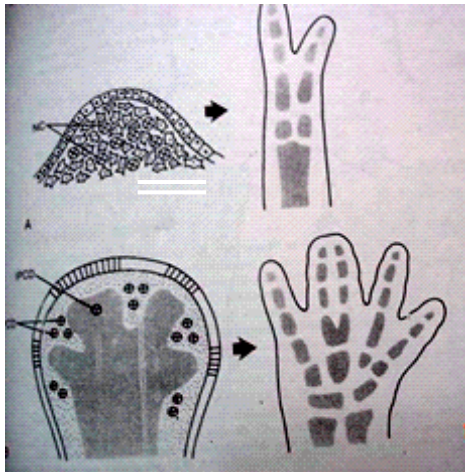


Fig.2 &3 Formation of Limb Bud

Limb bud is an Outgrowth from ventro-lateral body wall

Appearance: 30 days of gestation

Composed of mass of somatic mesoderm derived mesenchyme covered by ectoderm

33rd day- Blood circulation established

38th day- Formation of hand plate

40th day- Constriction demarcate arm from forearm

44th day- Five individual mesenchymal condensations

52nd day- Fingers are separated, 90 degree rotation of upper limb

By end of **2nd month**, Embryogenesis ends

Congenital limb Anomalies occur when the foetus is exposed to teratogenic factors between 30th day to 2 months of gestation

DYSMORPHOLOGY – Definition

Malformations : Poor formation of tissues

Deformities: Mechanical forces applied to a normally formed embryo

Disruption: Destructive forces or problems such as infection affecting normal embryo

Dysplasia: Abnormal arrangements of cell in tissues

PATHOGENESIS

Syndactyly: Failure of normal separation of



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digital rays. Due to normal inter-digital programmed cell death (APOPTOSIS)

Polydactyly: Prolonged ectodermal cells in the tip of the limb bud

Cleft Hand: Splitting of the hand plate

Mirror Hand: Implantation of Fibroblastic Growth Factor (FGF) or portions of Zone Of Polarising Activity (ZPA) on the anterior side of the limb

Transverse defects: Disruption of Apical Ectodermal Ridge (AER)

Longitudinal defects: Loss of cells in the mesenchyme

- Poland Syndrome : Unilateral diminished vascular flow
- Congenital Constriction Band Syndrome
- Result of intra uterine injury to a normally developed hand.
- Early amnion rupture sequence.
- Fingers are forced together.
- Amputation of fingers or toes, due to constriction of amniotic bands.

CLASSIFICATION

IFSSH Modification of Swansons

I. Failure of formation of parts

- II. Failure of differentiation of parts
- III. Duplication of parts
- IV. Overgrowth
- V. Undergrowth
- VI. Congenital constriction band syndrome
- VII. Generalized skeletal abnormalities

Congenital Anomalies of Hand – PART-II
Contd. In next issue of MEDIQUEST

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Republic Day - Flag Hoisting Ceremony at BRS Hospital

26.01.2023



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