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Introduction

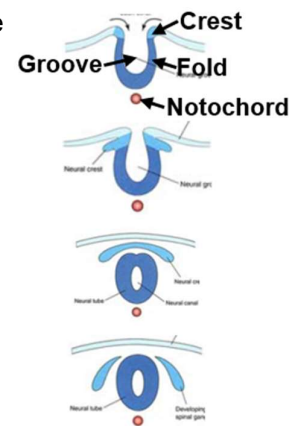
Development

Gastrulation

- **Notochord**
 - ❖ A longitudinal column of compacted **mesodermal** cells in the cranial midline
 - ❖ Function
 - Initiates the development of the NS primordium
 - Initiates the differentiation of the CNS
 - ❖ Regresses
- **Paraxial + Intermediate + Lateral** (somatic + splanchnic)

Neurulation

- **Neural Plate** – thickened **ectoderm** dorsal to the notochord: *neuroectodermal cells*
- **Neural Tube**
 - ❖ **Neural folds** extend dorsally above the **neural groove**, then fuse
 - ❖ Sinks into the mesoderm
 - ❖ Outcome
 - Wall – **CNS**
 - Lumen – ventricles
 - ❖ Problem – closed neural tube defect (NTD): *dermoid sinus*
- **Neural Crest Cells**
 - ❖ Neuroectodermal cells that migrate laterally into the mesoderm
 - ❖ Outcome – **PNS**



Brain

- The neural wall surrounds a large cavity
 - ❖ Wall – thickens: **brain**
 - ❖ Cavity
 - **Vesicles** form as the head fold develops and the rostral neuropore closes
 - Stages
 - ✚ 1° – forebrain + midbrain + hindbrain
 - ✚ 2° – prosen (telen + dien), mesen, rhomben (meten + myelen)
- Neural Crest Cells – **meninges**

Special Senses

Ear

- **Pinna** – mesenchyme of the 1st and 2nd PA
- **External Ear Canal** – 1st pharyngeal groove
- **Tympanic Membrane** – 1st pharyngeal membrane
- **Middle Ear**
 - ❖ Cavity – 1st pharyngeal pouch
 - ❖ Ossicles – mesenchyme of the 1st and 2nd PA
- **Inner Ear** – otic placode: depressed **ectoderm** → otic vesicle

Eye

- **Retina** – optic cup: outpocketing of the forebrain vesicle towards the surface ectoderm
- **Lens Vesicle** – lens placode: depressed **ectoderm**
- **Sclera & Choroid** – mesenchyme

Examination: Lameness

Aim

- Mechanical vs pain
- Single limb or generalised, bones / joints / muscles, abnormality

Steps

1) History

- ❖ Signalment
- ❖ Overall health
- ❖ Complaint – duration, onset, progression

2) Physical Exam

- ❖ Visual
 - Stance – deviation / deformity, posture, weight
 - Ambulation
- ❖ Palpation
 - Bones – prominences, size, shape
 - Joints – crepitus, heat, ROM
 - Muscles – atrophy, contractures, swelling

3) DDx

4) Diagnostic Tests and Trials

- ❖ Bones
 - Traumatic Hip Luxation – Thumb Test
 - Hip Dysplasia – Ortolani Test
- ❖ Joints
 - Synovial Fluid Analysis
 - Cranial Cruciate Ligament Rupture – Sit Test

5) Collate

Imaging

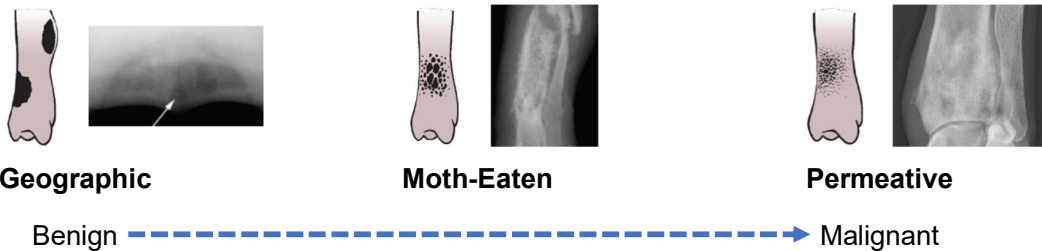
Bones

Reaction to Injury

Osteonecrosis

- Sharply defined bone with surrounding radiolucency
- Sclerotic involucrum

Bone Loss



Bone Production

- **Benign** – continuous periosteal reaction
- **Malignant** – interrupted periosteal reaction