Field study on cardiac anatomy/malformations

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Background

- Field observations
  - «new» cardiac malformations

- Cooperation with Pharmaq Analytic
  - Categorization and description of the most common cardiac malformations
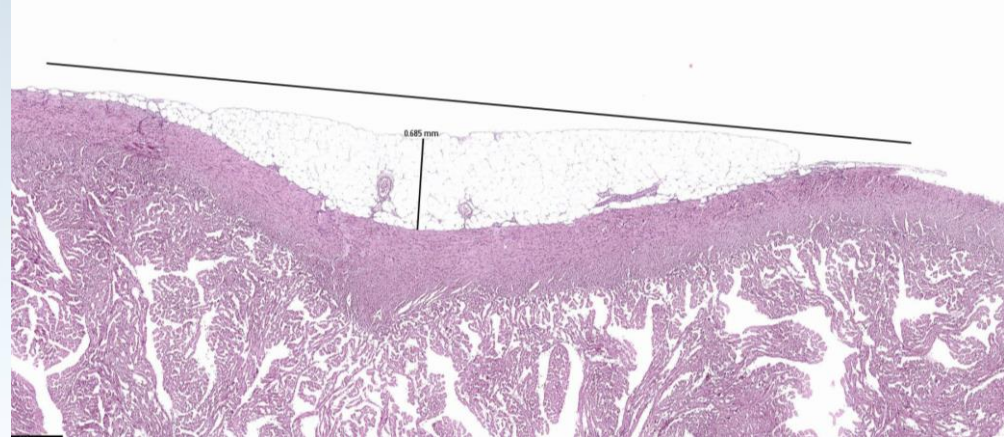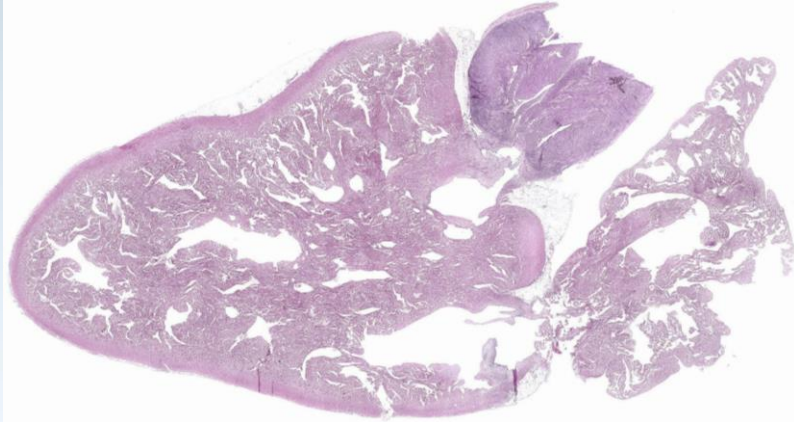
Material and method

- Hearts with different malformations collected by AQK

- The hearts were photographed and fixated in formalin before shipment to lab (PA)

- The fixated hearts were photographed and examined histologically by PA

- Data from 6 different sites
  - 6 hatcheries
  - 3 broodstock companies

Classification

- Fat deposition
- Deviant bulbus arteriosus
- Constricted heart
- «Raised shoulder»
- Small/narrow hearts
- Twisted hearts

Fat deposition

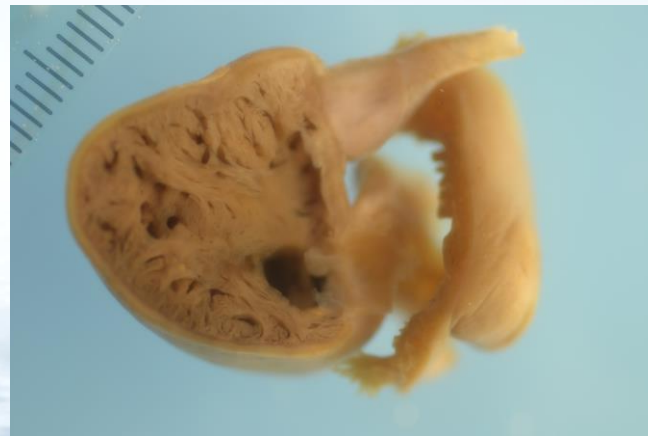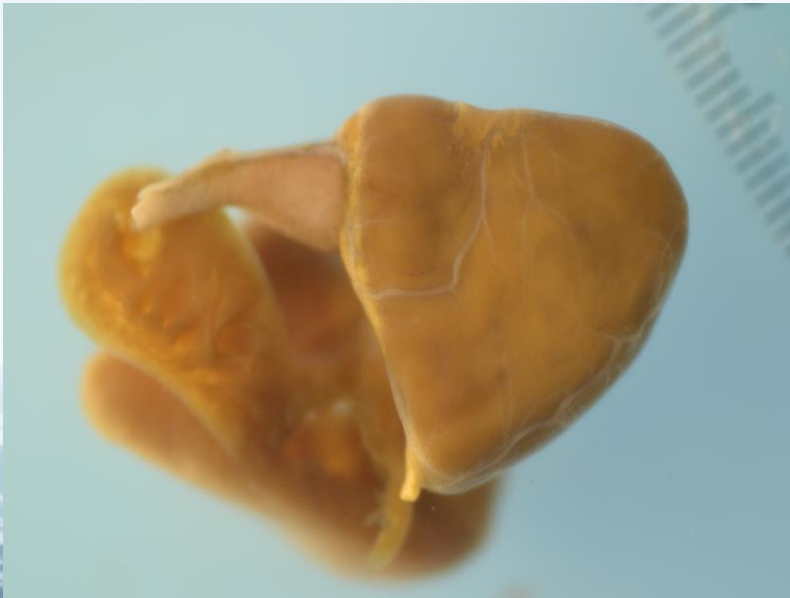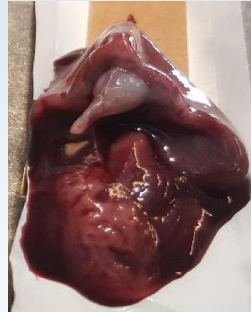
Fatty tissue replacement for muscle tissue?

Quantification and description of tissue placement. Common finding is fat surrounding the bulbus and «over the shoulders» + area 2 in the picture:

- Collar: transition between bulbus arteriosus – atrium – ventricle

- Ventrale arch
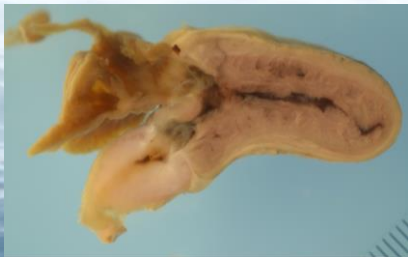
- Heart apex

- Around coronar vessels

Deviant bulbus arteriosus

- Constricted
- Angle/ bend

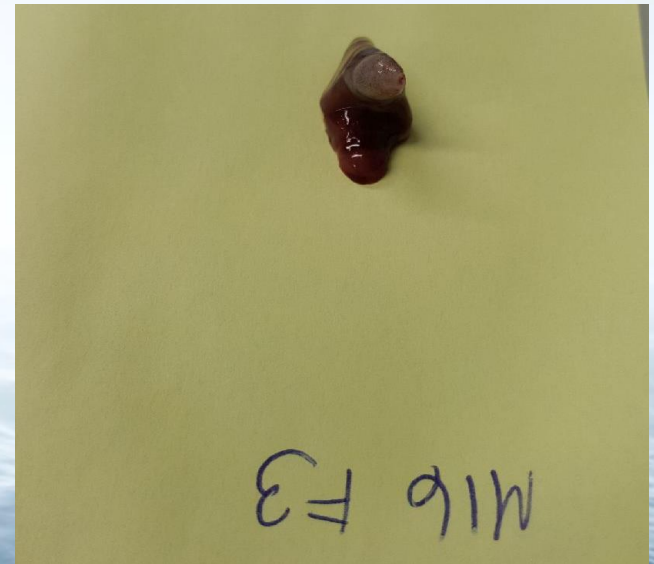**Resulted in enlarged and thin walled atrium and ventricle**

Constricted heart

En kartank...

«Raised shoulder» –different degrees

Small / narrow hearts

Twisted hearts

Cardiac health

- Increased focus on cardiac malformations the previous 2 years → increased prevalence?

- A standardized method to classify and monitor prevalence of the different anatomical deviations is needed
  - Degree of malformation/reduced performance?

- Limited tools available to measure function

«Shape and function»

Form
og
funksjon

Evaluation of cardiac capacity and pathological stress in the heart

- **Heart weight**

Description of organ function / state

- **Chemical biomarkers:**
  - Enzymes related to contractility
  - Enzymes that provide information regarding damaged cardiac muscle (CK)

- **Molecular biomarkers (RT-qPCR):**
  - ANP/BNP

Summary

- 6 different classifications of cardiac malformations:
    - Fat deposition
    - Deviant bulbus arteriosus
    - Constricted heart
    - «Raised shoulder»
    - Small/narrow hearts
    - Twisted hearts
- Further work needed:
    - Etiology
    - Correlation cardiac morphology/function
    - Biomarkers for cardiac capacity and state
- On-site risk assessment

Thank you for listening!