Histological Microanatomy of the Broad-snouted Caiman Female Cloaca

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Introduction

Details of the female cloaca and male phallus interactions during crocodilian reproduction leading to fertilization are unclear. Evidence of female cryptic choice regulating crocodilian reproduction makes the study of female cloaca gross and microanatomy vital in understanding copulatory function.

Previous research shows that the intromitted and inflated male broad-snouted caiman phallic glans physically interacts with the female uroproctodeal folds and compresses the female clitoris while the inseminating glans tip projects toward the vagina openings (Fig. 1 A&B).

Therefore, we histologically studied these female structures to infer biomechanical properties and functions during copulation.

These results move toward a better understanding of crocodilian reproduction; knowledge that is crucial for conservation efforts in captivity and the wild.

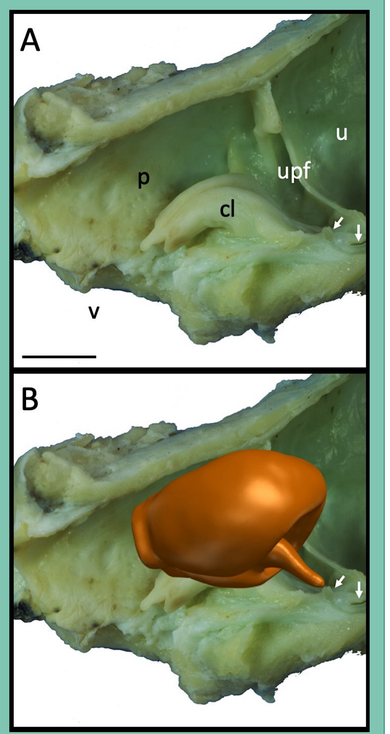
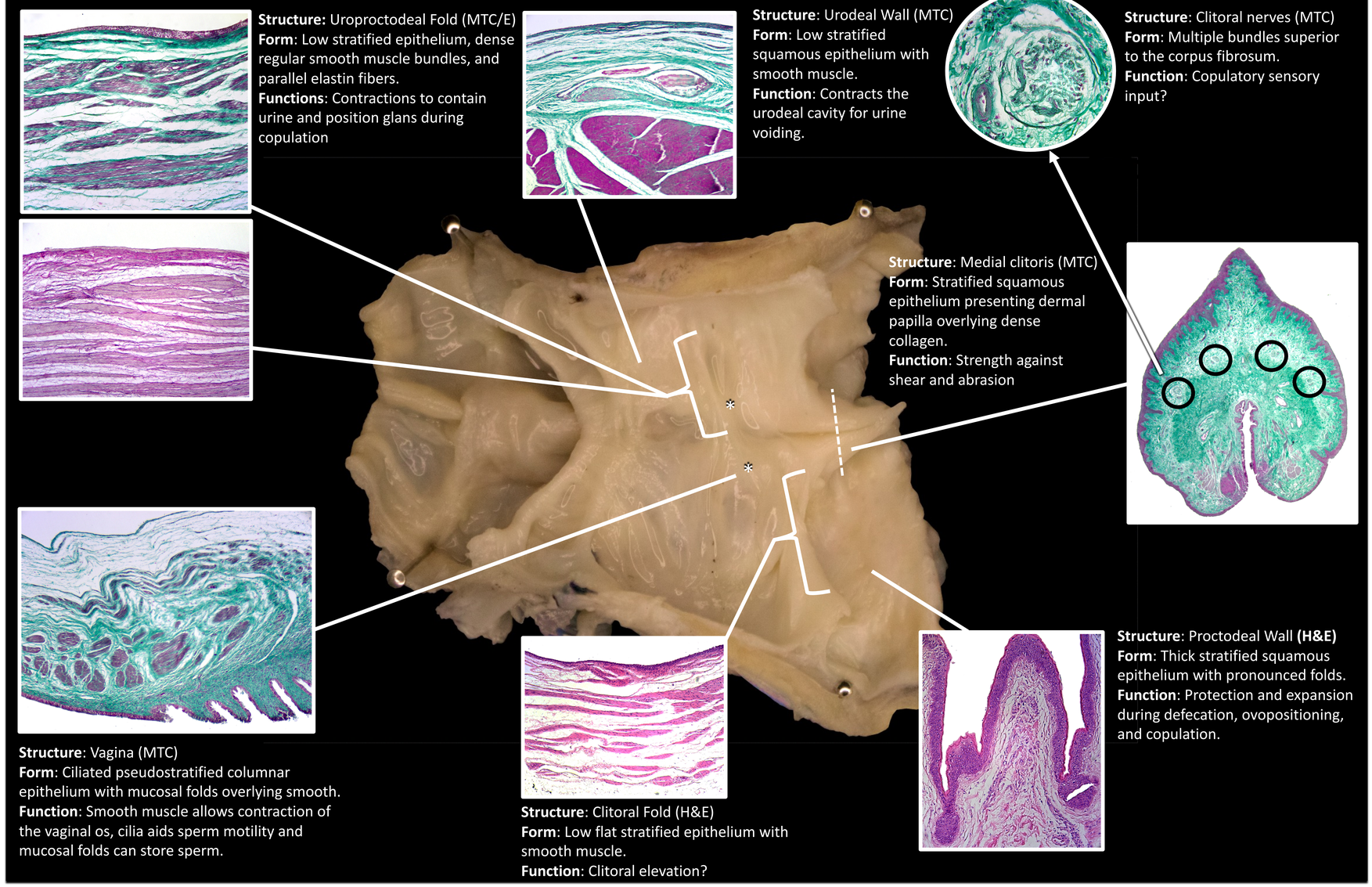


Fig. 1: A) Female cloaca. B) Cloaca with hypothesized male glans placement. upf=uroproctodeal fold, cl=clitoris, p=proctodeum, u=urodeum, v=vent

Methods

- Female *Caiman latirostris* cloacae were collected from two Argentinian facilities in May 2018. Necropsy occurred soon after routine farm slaughter and tissues were formalin fixed.
- Cloacal tissues were prepared via standard histological paraffin techniques and sectioned at 7 um.
- Slides were stained with either hematoxylin and eosin (H&E), resorcin fuchsin resulting in blue/purple elastin fibers (E) or Milligan's trichrome (MTC).



Conclusions

1. The clitoral and uroprocodeal folds are muscular and may contract to position the male glans during copulation.
2. Clitoral compression stimulates numerous nerve bundles and gives female sensory feedback during mating.
3. The vaginal opening are small and muscular allowing male phallic exclusion and impeding insemination.
4. Together, the observed morphology shows complex male female tissue interactions, female sensory interaction, and the ability of female cryptic choice.

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