

HOW MANY KIDNEYS DOES YOUR RAGDOLL HAVE?

Uterine Horn Segmental Aplasia & Ipsilateral Renal Agenesis in Ragdolls

I have been breeding Ragdolls under Vonimp prefix since 2007. In the first 10 years I was very lucky and I haven't had any major health issues. I have been DNA testing all my breeding cats for HCM and PKD since the very beginning, before it was mandatory to do so in order to register breeding cats with NZCF. Many will know how devastating HCM was for the Ragdoll breed, and development of the DNA test for the breed specific mutation has been a godsend.

Unfortunately, the breed has been hit with two other major genetic issues. One is a more recent issue: a breed specific dwarfism where kittens are in severe pain and die young. It is suspected that this issue happens when one specific cat is doubled up in the pedigree. Fortunately, the DNA test has now been developed for this issue and should become available soon. To read more about this issue please visit Scandinavian Ragdoll club website: <https://scandinavianragdoll.com/dwarfism-in-ragdoll/>

The other issue has been present for a long time unfortunately and it is what could be considered "omerta" in the Ragdoll breed. For many years, breeders were reporting kittens born with one kidney and one uterine horn. "This condition is congenital and is a result of a failure of embryonic development of the paramesonephric ducts.

Uterine aplasia and renal agenesis is a rare finding in cats but the prevalence in the ragdoll breed appears to be higher than in the general cat population" D. Dykeman. Segmental uterine aplasia and ipsilateral renal agenesis in a ragdoll cat. The Canadian Veterinary Journal. 2020; 61(4): 424-426.

This issue has been happening often enough that geneticists started collecting DNA samples as it seems this issue, which can indeed happen in any cat and any live being, was inherited in Ragdolls. I am not sure if we are seeing more cases today because breeders are more aware of the issue, or because it is present in the most popular lines today. Even though breeders today are more aware that the issue is present in the breed, not many are talking about their experience, or warning about lines that may carry the issue. Ragdoll breed has become one of the most popular breeds in the past years, and the price of kittens, both pet quality and show/breeder quality has increased significantly since I started breeding. Unfortunately, even affected cats are sometimes sold for breeding.

As I write this, a friend's female kitten is fighting for her life in Italy. The vet was not aware of the issue and kept searching for the second uterine horn, the operation lasted too long and possible damage was done to urethra.

I would like to share my experience with Ragdoll breeders and vets, as well as all other breeders with a plea to inform their vets about uterine horn segmental aplasia and ipsilateral renal agenesis in Ragdolls, as it could save lives, prevent second spay in females and ensure that at least no affected cats are used for breeding. The research for this issue is still ongoing and unfortunately we are not close to having a DNA test available any time soon. Anyone who wishes to send DNA samples of affected cats as well as their unaffected relatives can contact Dr Leslie Lyons directly at her lab at University of Missouri: Lyonsla@Missouri.edu

This is what you need to know as a Ragdoll breeder and also warn your vets:

- Affected kittens will have one kidney.
- Females will have one uterine horn BUT TWO OVARIES! Second ovary is attached to a broad ligament. It is very important to find the second ovary, otherwise the cat will come into heat and will need the second operation. If this happens, it is best to do the operation when cat is on heat and ovary is enlarged.
- Males will have both testes but sometimes one of them is not fully descended.

What I would like to advise all Ragdoll breeders is that they check ALL of their kittens for kidneys at birth. In newborn kittens, kidneys are large and they are really easy to feel.

If you gently hold our finger on one kidney, use your other finger to feel for the second one. You want to make sure you are gently touching TWO kidneys at the same time. Also ask your vets to palpate all your cats and kittens to make sure they have two kidneys. If your vet is unsure, please scan or X-ray them. Please remember, you may have never seen this issue, and I really hope you don't, but it is present in the breed and it can happen to you at any time. If you do get any cases, I would advise to tell new owners to feed them good quality wet food to make sure that one kidney is well hydrated and it is really important that the new owners and their vets are aware the kitten has only one kidney so they can keep monitoring it.

I had been breeding Ragdolls for nearly 10 years before I got my first renal agenesis/uterine horn aplasia case.

I focused on the chocolate carriers and those cats had outcrosses not too far in the pedigree. My type was not great, but my cats and kittens were healthy. As I strived to improve the type in my chocolate carriers, I started getting the cases. My breeding program plan was to keep selecting the chocolate carriers from my own breeding but keep importing the cats who are not chocolate carriers but have a strong type, so that eventually my chocolate carriers would improve the type. Some of those imports were from well-known and popular show winning lines.

My first case was born back in 2015. Dam was a cat I bred, a chocolate carrier from my previously imported lines, and dad was a new import. This was a repeat mating – the first mating was a successful litter with all healthy kittens. I have only had one case from this male, but I have had more cases in the second generation. To date, I have had seven cases born in my cattery and I have also imported an affected female from overseas. She comes from the most popular show lines, which are spread worldwide. Unfortunately, we have seen quite a few cases from those lines. Not all of my cases (or cases born from my cats) are closely related and it is likely I have imported three or even four carriers, and one affected cat.

I would like to remind everyone that any breed is a collective work, and that whatever good or bad happens in the breed, affects us all. I am personally not responsible for creating this issue, as I know the breeders who sold me possible carriers are not responsible for it. But I feel responsible to spread the awareness, and I also decided not to sell any more breeding cats till there is a test available, as there is no way of knowing which kitten may carry it. There was a lot of inbreeding at the beginning of the Ragdoll breed, and we know the issue was reported a long time ago in so called traditional lines. The issue is here in the breed today and it is upon us to act responsively, educate others and warn our vets to expect it may happen. We should keep fighting for the research to continue and we should not be silent about it. It is not ok for kittens to be born with missing vital organs.

The full case study by D'Arcey Dykeman can be found here: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7074123/?fbclid=IwAR0IRUvs1XUIRcS5em7Vouurg22jfgcy3q48VLd95cOT7SDAkGP0yzhZyks>

(I have been open about my cases from the beginning and anyone who wishes to see pedigrees of my cases can contact me. They should also be soon published on my website.)

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