

Reproductive Medicine in Guinea Pigs, Chinchillas and Degus



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KEYWORDS

• Guinea pigs • Chinchillas • Degus • Reproductive medicine

KEY POINTS

- In-depth knowledge of the anatomy and physiology of the reproductive tract of hystricomorph rodents is important, as they are commonly presented as exotic pets in veterinary practice.
- Careful assessment and choosing the right anesthesia protocol is the key stone to a successful outcome of surgery. Procedures like spays and neuters, C-sections or mastectomies can be performed on a routine basis.
- Performing in depth diagnostics is helpful in making the decision, if a reproductive problem can be managed medically or needs surgical intervention.

INTRODUCTION

Guinea pigs, chinchillas, and degus are hystricomorph rodents originating from South America. A moderate climate and grassland vegetation have significantly influenced their development.^{1,2} Nowadays they are commonly presented as exotic pets in veterinary practice. A lot of data has been generated from their traditional use as laboratory animals.^{1,3} However, after purchasing or acquiring a rodent in a pet store, most clients do not consider seeing a veterinarian for a wellness examination right away.⁴ Preventive medicine is an area in which veterinarians have to provide a better client educational experience in the future. Objectively, anesthetic procedures in small mammals can be challenging and can be associated with the risk of complications,^{5,6} which may be why a lot of small rodents are intact.⁷ A recent study evaluating common diseases in guinea pigs shows that problems with the genital system are the third most common reason for presentation at a veterinary clinic.⁸ In the degu, reproductive problems are the fifth most common reason for seeing a veterinarian.⁹ This article

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provides a short review of common diseases of the reproductive system of the 3 species, including diagnostics and treatment.

Originating from South America these small rodents share several features when it comes to reproduction. These features include the following^{1,10,11}:

- Hystricomorph rodents are characterized by long gestation periods and estrus cycles (**Table 1**).
- Females have a vaginal closure membrane that resolves in healthy animals during estrus and parturition.
- A copulatory plug, a solid waxy mass, formed by coagulated ejaculate and sloughed vaginal epithelium can be found in the vagina after copulation.
- Males do not have a true scrotum; their testes are situated in a parascrotal sac inguinally or intra-abdominally.
- Their offspring are born with open eyes and are fully furred.

Guinea Pigs (*Cavia Aperea f. Porcellus*)

Reproductive behavior, or age of first conception, occurs at an average age of 2 months in female and 3 months in male guinea pigs.^{10,11,17} Guinea pigs are polyestrous, their cycle is 15 to 17 days long, and they breed all year round with spontaneous ovulation.^{11,18} Length of gestation is described to be between 59 and 72 days. On average they give birth to 2 to 4 cavies (**Fig. 1**). The birthing process should last no longer than 15 to 40 minutes. Guinea pigs have a unique form of gonadotrophin-releasing hormone (GnRH) that is different from mammalian GnRH. Guinea pig GnRH (GpGnRH) is the major neuropeptide in the guinea pig brain and it is characterized by a weaker binding affinity to GnRH receptors. Therefore, gpGnRh has a markedly lower activity to stimulate luteinizing hormone release.¹⁹

Male guinea pigs are characterized by their special reproductive anatomy. Like other hystricomorph rodents they have a prescrotal sac instead of a true scrotum. The open inguinal canal enables their testes to be intra-abdominal, inguinal, or located in the prescrotal sac. Their prominent testes are located bilaterally of the anus in connection with a large fat body. Their penis is stabilized by an os penis, which is situated dorsal to their urethra. The glans penis is spiculated (with little spikes on the surface) ventrally. Sebaceous glands are found bilaterally in the fold of perineal skin located next to the penis.³⁰

Table 1 Gestation periods of hystricomorph rodents (including guinea pigs, chinchillas, and degus) compared with other small mammals	
Species	Gestation Period (d)
Guinea pig (<i>Cavia aperea f. porcellus</i>)	59–72 ¹¹
Chinchilla (<i>Chinchilla lanigera</i>)	105–120 ¹²
Degu (<i>Octodon degus</i>)	90 ¹
Ferret (<i>Mustela putorius furo</i>)	41–43 ¹³
Black tailed prairie dog (<i>Cynomys ludovicianus</i>)	34–37 ¹⁴
Sugar glider (<i>Petaurus breviceps</i>)	15–17 ¹⁵
Golden hamster (<i>Mesocricetus auratus</i>)	15–18 ¹⁶
Gerbil (<i>Meriones unguiculatus</i>)	23–26 ¹⁶
White mouse (<i>Mus musculus</i>)	19–21 ¹⁶
Rat (<i>Rattus norvegicus</i>)	21–23 ¹⁶

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