Clinical Survey on Preputial Prolapse in Gir Bulls

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Abstract

A clinical survey was carried out to assess the etiopathology of preputial prolapse in Gir bulls at 41 Gaushalas of the Saurashtra region in Gujarat. A total of 202 Gir bulls under the breeding program were surveyed. The mean age of Gir bulls was recorded as 5.71 years, which ranged from 2.5 to 12 years. Preputial prolapse was diagnosed in all the surveyed Gir bulls. The first degree preputial prolapse was common in all the bulls because of the breed anatomical character. Out of the 202 breeding bulls, 30 (14.85%) bulls had pathological preputial prolapse, which varied between 2nd and 4th degrees. Among the 30 affected bulls, 12 (40%) bulls had preputial prolapse of 2nd degree, 6 (20%) bulls had 3rd degree of preputial prolapse and 12 (40%) bulls had 4th degree of preputial prolapse. Traumatic injury to prepuce, followed by its contamination, was the main etiology for the preputial prolapse and its aggravations in all the animals. All Gir bulls had common anatomical / structural deformities of the preputial sheath.

Keywords: Gir bull, Heredity, Preputial prolapse, Structural anatomy, Surveillance.

Introduction

Gir bulls are prone to the prolapse of the prepuce. Prolapse of the prepuce comprises a protrusion and eversion of the lining of its sheath with no tendency to return spontaneously (Arthur et al., 1996). A significant relationship seems to exist between a pendulous sheath and the tendency of habitual eversion of the prepuce. Chronic prolapse of prepuce has been commonly observed in Bos indicus bulls and particularly in Gir, Sahiwal, Sindhi, Tharparkar, and Deoni breeds (Karle, 2010). Lesions associated with prolapse of the prepuce include ulceration, gangrenous cellulitis, epidermoid cysts, local infection, irritation, and trauma. Affected animals are often of considerable economic value from breeding, health and treatment point of view. Additionally, the pathological conditions need to be corrected to relieve the structural and functional abnormality as well as to reconstruct the aesthetic appearance of the site. First-degree preputial prolapse is common in Gir breeding bulls. First degree preputial prolapse predispose bulls to preputial injuries. However, a prevalence of preputial prolapse between 2nd and 4th degrees has been reported around 22% in Gir bulls (Karle, 2010). Because of the above facts, a survey was designed to explore and document the etiopathology of preputial prolapse in Gir bulls.

Materials and Methods

A clinical survey was conducted at 41 different Gaushalas of the Saurashtra region in Gujarat to document and study the clinical affections of the prepuce with special reference to the preputial prolapse in Gir bulls. The etiopathology of preputial prolapse was studied by taking a detailed history regarding age, cause, occurrence, duration, degree of prolapse, preputial length and angle, the appearance of prolapsed mass, history of any trauma to prepuce, anatomical deformities of the prepuce, breeding activities and habits, etc. The pathology of prolapsed mass, viz., lacerations, mucosal damage, inflammatory changes, tone, vascularity, consistency, reducibility, etc. were recorded. The relevant signs and symptoms were summarized as mild to severe based on pain, adhesions, difficulties in urination, ability to extend penis out of the prepuce, and penile deviation if any. The categorization of preputial prolapse into different degrees, depending on the severity of symptoms, was done as per Prado and Morgan (2002). The information thus collected was subjected to selective photographic documentation, and the malady was categorized according to various pathological status.

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**Results and Discussion**

Preputial prolapse of varying degrees was diagnosed in all 202 Gir bulls surveyed. The majority of the bulls (172; 85.15 \%) had first-degree non-pathological preputial prolapse (Plate 1A), which was simple without laceration, edema, necrosis, and fibrosis. Karle (2010) also reported the 1\textsuperscript{st}-degree preputial prolapse in all the Gir bulls. Furthermore, the incidences of preputial eversion in Aberdeen Angus, Polled Hereford, Horned Hereford, Polled Brangus, Horned Brangus, and Charolais/Angus breeds of bulls were 79.9, 85.5, 69.8, 71.4, 70.9 and 50.0 \%, respectively.

Rest of the Gir breeding bulls in the present study (30; 14.85 \%) had pathological preputial prolapse, which varied between 2\textsuperscript{nd} and 4\textsuperscript{th} degrees. Thus, the prevalence of pathological preputial prolapse in Gir bulls in the present study was 14.85 \%. While Karle et al. (2011) reported the incidence of 22.45 \% pathological preputial prolapse in Gir bulls. In the present study, among the 30 affected bulls, 12 (5.94 \%) bulls had preputial prolapse of 2\textsuperscript{nd} degree (Plate 1B) with moderate-to-severe edema of preputial mucosa and superficial lacerations or slight necrosis, but no evidence of fibrosis. The 3\textsuperscript{rd} degree of preputial prolapse was observed in 6 (2.97 \%) bulls (Plate 1C) with severe edema, deep laceration, moderate necrosis, and slight fibrosis. However, 12 (5.94 \%) bulls had a 4\textsuperscript{th} degree of preputial prolapse (Plate 1D), which were chronic with severe edema, deep laceration, severe necrosis, and fibrosis with or without abscessation. In the present study, the first degree preputial prolapse with no pathological affection was common in all the bulls because of the breed’s hereditary anatomical/structural predilection. A pendulous sheath with loose genitalia is a breed characteristic of Gir bulls. Perhaps this is the reason that the Gir bulls are more prone to the preputial injury and preputial prolapse. Normal everted preputial masses are more prone to traumatic injury, secondary contamination, and infections, which may lead to the preputial prolapse because of edema and inflammation of the everted preputial mass. In the present study, the bulls were kept loose in the Gaushalas. So, it was difficult to diagnose the preputial pathology immediately after the traumatic injuries. Most were diagnosed after the contamination and infections of the everted preputial mass.

In the present study, traumatic injury to prepuce followed by its contamination and infection was the main etiology for the preputial prolapse in all animals. Preputial prolapse and trauma often occur in one of two ways. Bulls that frequently have some prepuce exposed may develop abrasions and lacerations of the prepuce from exposure to environmental factors. This may lead to edema, further prolapse, more trauma, abscessation, and eventually fibrosis of the preputial tissue. Second, a laceration of the prepuce during breeding may occur, which usually leads to preputial prolapse. These findings were following the observations of Karle (2010), Sangeeta et al. (2010), Bodh et al. (2017), Singh et al. (2017), and Padaliya et al. (2019).

All 202 breeding Gir bulls had common anatomical / structural deformities of the preputial sheath. Too pendulous and loosely attached sheath (prepuce below the carpus), too heavy and a large sheath, protruding prepuce, poor attachment of the sheath to the body in the navel region (low preputial angle), wide preputial orifice and agenesis or atrophy of the preputial retractor muscles were the predisposing factors for chronic preputial prolapse in these bulls. Rabelo et al. (2008), Karle (2010) and Padaliya et al. (2019) reported similar anatomical deformities of the preputial sheath, which predisposes prepuce to prolapse. The loose genitalia with the everted prepuce predispose for the trauma at the time of walking, standing and grazing. The environment of the Saurashtra region is hot and humid, which favors fly infestation and causes irritation of the everted prepuce. Because of the irritations, bulls rub irritated part with hard objects. Bulls also strike the everted prepuce with their tail due to irritation and fly infestation and cause further trauma. Breed differences in the incidence of prolapse of the prepuce indicate that heritability plays a role in the etiology of this condition or is associated with the predisposing mechanisms involved.

In the present study, the mean age of Gir bulls was recorded as 5.71 years, which ranged from 2.5 to 12 years. This finding was in accordance with Karle (2010), who reported preputial prolapse in 11 Gir bulls and a bullock, with the mean

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**Plate 1:** Bull With Different Degree of Preputial Prolapse

A: 1\textsuperscript{st} Degree Preputial Prolapse, B: 2\textsuperscript{nd} Degree Preputial Prolapse, C: 3\textsuperscript{rd} Degree Preputial Prolapse, D: 4\textsuperscript{th} Degree Preputial Prolapse
age of 5.75 years, which ranged from 3 to 10 years. In contrast, Memon et al. (1988) reported the age of affected bulls from 1 to 12 years, with a mean of 3.5 years in Angus, Beefmaster, Brahman, Brangus, Charolais, Limousin, Poll Hereford, Santa Gertrudis, Shorthorn and Simmental breeds. Similarly, Desrochers et al. (1995) reported the mean age of bulls having preputial injuries as 2.5 years, which ranged from 1 to 5 years in Angus, Brangus, and Simmental breeds. Padaliya et al. (2019) reported preputial prolapse in six Gir bulls aging 3 to 10 years. In the present study, the young bulls were affected because of inexperience and frequently mounting on the cows with or without estrus. Young bulls were more frequently mounting on the cows for the longer time which might predispose the bulls for the preputial injuries.

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References


