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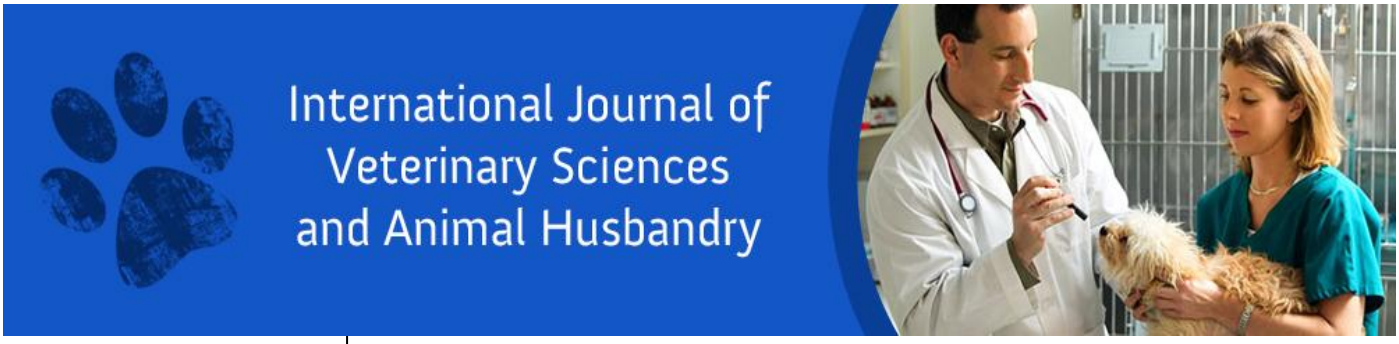

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Clinico-epidemiological study of bovine forestomach disorders

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Abstract
The present study was conducted to determine the clinico-epidemiological status of bovine forestomach disorders on 11,047 bovines which were presented during the period January 2021-December 2023 at Veterinary Clinical Complex, Junagadh (Gujarat). Among them, 2279 (20.63%) were suffering from different surgical diseases and out of these animals, 239 (2.16%) were diagnosed with different forestomach disorders. The age wise incidence revealed, highest incidence was recorded in the age group of 6 to 10 years (60.66%), followed by up to 5 years (26.77%), 11 to 15 years (10.87%) and 16 to 20 years (1.67%). Females (89.53%) were more affected as compared to male animals (10.46%) and breed wise distribution showed a higher number of cases in Jaffarabadi buffaloes (43.09%), followed by non-descript buffaloes (21.75%), Gir cattle (20.50%), non-descript cattle (8.78%), Kankrej cattle (5.43%) and Holstein Friesian cattle (0.41%). The different type of forestomach disorders recorded were traumatic reticuloperitonitis (27.61%), diaphragmatic hernia (20.92%), traumatic reticulopericarditis (20.92%), rumen impaction (16.31%), traumatic reticulitis (5.43%), omasal impaction (4.18%), reticular abscess (2.92%), rumen fistula (0.83%) and rumen hernia (0.83%).

Keywords: Bovine, incidence, forestomach, traumatic reticuloperitonitis, diaphragmatic hernia

Introduction
The bovine fore stomach includes rumen, reticulum and Omasum (Radostits *et al*., (2006) [11]. They play a very crucial role in the production losses of bovines. These disorders are characterized by similar set of clinical signs such as repeated bloat, anorexia, decrease in milk yield, dullness and depression which makes them difficult to differentiate from each other (Sharma *et al*., 2015) [17]. These conditions primarily arise from the consumption of foreign objects. Non-digestible materials such as plastic, leather, or ropes can lead to blockages (Priyanka and Dey, 2018) [10], while sharp metallic objects can result in inflammatory conditions of the reticulum and peritoneum. Factors that play role in ingesting these foreign bodies include indiscriminate feeding behavior, mineral deficiency diseases, improper management techniques and urbanization (Semieka, 2010) [16]. In the times of fodder scarcity feeding of dry feeds like hay and machine made wheat straw may lead to development of rumeno-omasal impactions (Hussain *et al*., 2013) [7]. Development of rumen fistula may be due to traumatic injuries (Abate *et al*., 2021) [1] and ventral herniation of rumen can be due to blunt injuries or progressive weakening of abdominal muscles. Forestomach disorders pose huge losses to dairy farmers such as production losses, economic losses and death of animals. Therefore, diagnosing and managing these disorders in early stages becomes prime importance. The present study was aimed to know the retrospective status of forestomach disorders and their influence on different factors.

Materials and Methods
The present retrospective study was carried out based on 11,047 bovines presented at the Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh, Gujarat, India during the period of three years

(January 2021-December 2023). Out of them, 2279 (20.63%) were suffering from different surgical diseases, of which 239 (2.16%) animals were diagnosed with different forestomach disorders. These confirmed cases were further analyzed based on age (up to 5, 6-10, 11-15 and 16-20 years), breed (Jaffarabadi, non-descript buffalo, Gir, non-descript cattle, Kankrej and HF cattle), sex (male and female) and types of forestomach disorders were recorded.

Results and Discussion

Age-wise distribution of affected animals

In the present study, higher number of cases were recorded in the age group of 6 to 10 years (60.66%), followed by up to 5 years (26.77%), 11 to 15 years (10.87%) and 16 to 20 years (1.67%), (Table 1).

Table 1: Age-wise distribution of affected animals (N=239)

Age groups	Number of cases	Percentage (%)
Up to 5 Years	64	26.77%
6 to 10 Years	145	60.66%
11 to 15 Years	26	10.87%
16 to 20 Years	4	1.67%

Higher frequency of the cases in the age group of 6 to 10 years may be attributed to the pregnancy and parturition of the animals. Descent of gravid uterus into the abdomen and its increasing size pushes rumen and reticulum which favours the penetration of foreign bodies into wall of reticulum (Sharma *et al*., 2015) [17]. Bouts of parturition increases the intra-abdominal pressure thereby producing more pressure on the internal organs and diaphragm leading to penetration of foreign bodies which subsequently tear of diaphragm (Singh, 2002) [18]. Deficiency of calcium and phosphorus due to high milk production predisposes for pica (Ghurashi *et al*., 2009) [6]. Similar findings were observed by Aref and Abdel-Hakiem (2013) [4] in a study of sharp foreign body syndrome; Hussain *et al*. (2013) [7] in cases of omasal impaction; Al-Abbadi *et al*. (2014) [2] in hardware disease, Rajput *et al*. (2018) in foreign body syndrome and Madan *et al*. (2018) [9] in traumatic reticuloperitonitis cases.

Sex-wise distribution of affected animals

During the present study, females (89.53%) were more affected as compared to males (10.46%), (Table 2). It may be attributable to the fact that, rearing of female animals is more as compared to males. Females are reared in abundance for milk production while very low number of males are kept either for breeding or agricultural purposes. Similar findings were observed by Sharma *et al*. (2015) [17] and Lakhpati *et al*. (2019) [8] in their studies.

Table 2: Sex-wise distribution of affected animals (N=239)

Sex	Number of cases	Percentage (%)
Female	214	89.53%
Male	25	10.46%

Breed-wise distribution of affected animals

In the present study, breed-wise distribution showed higher incidence in buffaloes than cattle. Incidence was highest in Jaffarabadi buffaloes (43.09%) followed by non-descript buffaloes (21.75%), Gir cattle (20.50%), non-descript cattle (8.78%), Kankrej cattle (5.43%) and Holstein Friesian cattle (0.41%) (Table 3). Buffaloes are more affected as compared to cattle, due to their pronounced indiscriminate feeding behavior than cattle. Similar findings were noticed by Ramprabhu *et al.* (2003) [13]; Anwar *et al.* (2013) [3] Sharma *et al*. (2015) [17]. In the present study, breeds like Jaffarabadi, Gir and Kankrej were more affected due to their higher population in the native region of Saurashtra. Jaffarabadi and Gir are used extensively in this area for milk production and Kankrej mainly for agricultural purposes.

Table 3: Breed-wise distribution of affected animals (N=239)

Breed	Number of cases	Percentage (%)
Jaffarabadi	103	43.09%
Non-descript (Buffalo)	52	21.75%
Gir	49	20.50%
Non-descript (Cattle)	21	8.78%
Kankrej	13	5.43%
Holstein Friesian	1	0.41%

Type of forestomach disorders (Figure 1 to 6)

In the present study, higher incidence of traumatic reticuloperitonitis was observed which was followed by diaphragmatic hernia, traumatic reticulopericarditis, rumen impaction, traumatic reticulitis, omasal impaction, reticular abscess, rumen fistula and rumen hernia.

Table 3: Type of forestomach disorders (N=239)

Disease	Cattle	Buffaloes	Total	Percentage
Traumatic reticuloperitonitis	21	45	66	27.61%
Diaphragmatic hernia	08	42	50	20.92%
Traumatic reticulopericarditis	17	33	50	20.92%
Rumen impaction	24	15	39	16.31%
Traumatic reticulitis	6	7	13	5.43%
Omasal impaction	4	6	10	4.18%
Reticular abscess	0	7	7	2.92%
Rumen fistula	1	1	2	0.82%
Rumen hernia	0	2	2	0.82%

Higher incidence of traumatic reticuloperitonitis (TRP) can be due to their earlier presentation of the suffering animals which if not treated may develop as diaphragmatic hernia or traumatic reticulopericarditis. Diaphragmatic hernia is commonly observed in buffaloes (Saini *et al.*, 2001) [15] but also rarely reported in pure and cross bred cattle (Saini *et al.*, 2007) [14]. Incidence of impaction of rumen and omasum increase with the age (Sharma *et al*., 2015) [17] and reticular abscess is also a complication of TRP or foreign body syndrome (Athar *et al*., 2010) [5] which occurs due to contamination by anaerobic microorganisms. Incidence of rumen fistula is less among animals but occurrence of rumen hernia is rare.

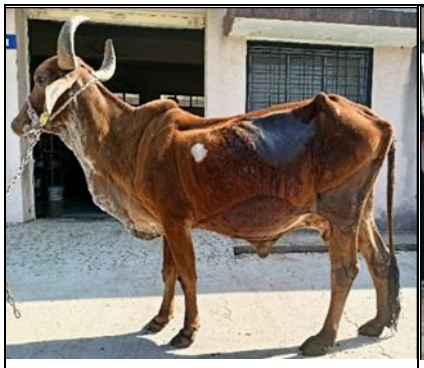

Fig 1: Rumen Impaction

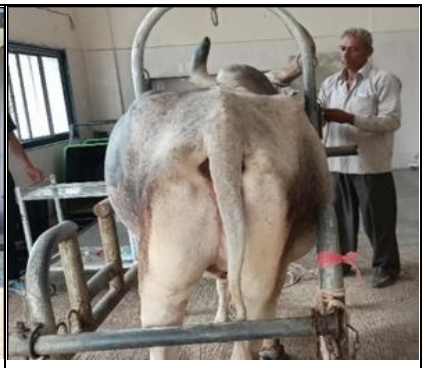

Fig 2: Traumatic Reticuloperitonitis

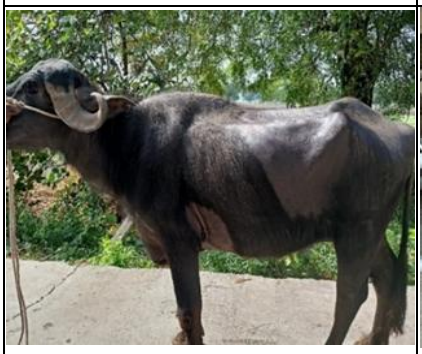

Fig 3: Reticular Abscess

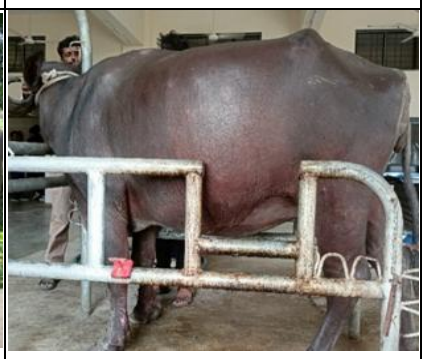

Fig 4: Diaphragmatic hernia

Fig 5: Rumen Fistula

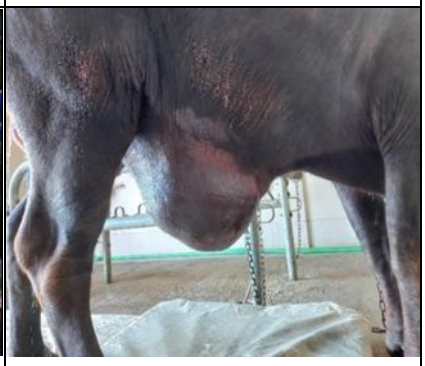

Fig 6: Rumen hernia

Conclusion

The present retrospective study highlights that forestomach disorders remain a major cause of clinical and economic losses in bovines, with the highest incidence occurring in animals aged 6–10 years, particularly females, due to their physiological stress from pregnancy, parturition and high milk yield. Buffaloes, especially Jaffarabadi, were more frequently affected than cattle, mainly because of their indiscriminate feeding behavior. Among all disorders, traumatic reticuloperitonitis was most common, followed by diaphragmatic hernia, traumatic reticulopericarditis, and rumen impaction, indicating the continued risk posed by foreign body ingestion and feeding-related complications. Early diagnosis and timely management are therefore essential to prevent complications, reduce mortality, and minimize production losses in dairy herds.

Conflict of Interest: Not available

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