

## Incidence of Wolf Teeth in Jeju Ponies and Jeju Pony Crossbreds

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**Abstract :** Wolf teeth have been reported with incidence rate of 13% to 31.9% in horses of both sexes. However, there is no report about the incidence of wolf teeth in pony breeds. In order to determine the incidence of wolf teeth in Jeju Ponies and Jeju Pony crossbreds, oral examination and palpation of the interdental space of ponies at the Jeju Race Park were performed from 2006 to 2010. Results of this study showed that a total of 90 (3.4%) of the 2,675 examined Jeju Ponies and Jeju Pony crossbreds had wolf teeth. Among 30 Jeju Ponies that had wolf teeth, 22 were male (73.3%) and 8 were female (26.7%). Among 60 Jeju Pony crossbreds that had wolf teeth, 25 were male (41.7%) and 35 were female (58.3%). In Jeju Ponies, wolf teeth were most common in 3-years-old, followed by  $\geq 4$ -years-old, then 2-years-old. For Jeju Pony crossbreds, wolf teeth were most common in 3-years-old, followed by 2-years-old, then  $\geq 4$ -years-old. In conclusion, the incidence of wolf teeth in Jeju Ponies and Jeju Pony crossbreds was considerably lower than what has been reported for horses in other countries.

**Key words :** incidence of wolf teeth, Jeju Ponies, Jeju Pony crossbred, Korea.

### Introduction

The canine and wolf teeth appear to have no function in the modern horse and are vestiges from a more primitive ancestor (6). Wolf teeth are the common term used to describe the first premolars. These teeth come in various shapes and sizes (2). Wolf teeth are often shed about the same time as the adjacent deciduous second premolar, but they can remain in place indefinitely (9).

The Jeju Pony is a Korean native horse (National monument number 347) and the Jeju Pony crossbred is a cross between a Jeju Pony and a Thoroughbred horse. Over the last two decades, the Jeju Pony and Jeju Pony crossbred have become very popular in the Korean racing industry. However, little research has been done on investigating the specific characteristics of these breeds. To the authors' knowledge, there is no report examining the incidence of wolf teeth in ponies in Jeju. The aim of this study was to investigate the incidence of wolf teeth in ponies and pony-crossbreds. The study was conducted from 2006 to 2010 and included 2,675 Jeju Ponies and Jeju Pony crossbreds ( $\geq 2$  years old). In sedation with chemical tranquilizers [Xylazine 1.0 mg/kg (Xyzine<sup>®</sup>, SF Ltd., South Korea) or detomidine hydrochloride 9 mg/pony, (Domosedan<sup>®</sup>, Orion, Finland)] and a gag, oral inspectional examination and palpation of the interdental space were performed in order to identify the presence of wolf teeth in the ponies and the pony crossbred at the equine hospital of Jeju Race Park.

The results of this study were that a total of 90 (3.4%) of

the 2,675 ponies were found to have wolf teeth (Fig 1). Among 30 Jeju Ponies which had wolf teeth, 73.3% were male (22 colts) and 26.7% were female (8 fillies) (Table 1). In addition, 16.7% were 2 years old, 63.3% were 3 years old, and 20.0% were 4 or more years old (Table 2). Among 60 Jeju Pony crossbreds with wolf teeth, 41.7% were male (25 colts) and 58.3% were female (35 fillies) (Table 1). Also, 27.7% were 2 years old, 60.6% were 3 years old, and 11.7% were 4 or more years old (Table 2). Wolf teeth were present either unilaterally or bilaterally in the maxilla. No mandibular wolf teeth were found.

Wolf teeth are usually found only in the upper jaw, but can also occur in the lower jaw (7). They should normally lie immediately in front of the second premolar. These teeth are rostrally or rostrolaterally displaced and also may be angu-

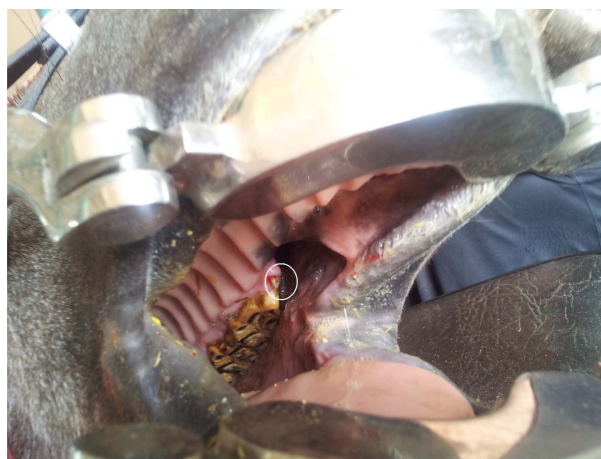


Fig 1. The upper left wolf tooth (within the white circle).

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**Table 1.** Number of incidence of wolf teeth by sex in Jeju Ponies and Jeju Pony crossbreds

Animals	Male	Female	Total
Jeju Ponies	22(73.3%)	8(26.7%)	30(100.0%)
Jeju Pony crossbreds	25(41.7%)	35(58.3%)	60(100.0%)

**Table 2.** Number of incidence of wolf teeth by age in Jeju Ponies and Jeju Pony crossbreds

Animals	2	3	4 ≤
Jeju Ponies	5(16.7%)	19(63.3%)	6(20.0%)
Jeju Pony crossbreds	16(26.7%)	37(61.6%)	7(11.7%)

lated (1). The wolf teeth usually erupt at 6-12 months of age, but this can be quite variable (4). They do not have a deciduous precursor. They have a reported incidence of 13% to 31.9% in horses of both sexes (1). Unerupted wolf teeth, referred to as blind wolf teeth, can cause oral discomfort and training problems in bitted horses (3). Some wolf teeth become loose or diseased and have been shown to be a cause of head shaking (4). Wolf teeth come in a vast array of positions, shapes and sizes, with the visible crown shape having no relation to the size or shape of the root. The clinical crown may emerge on the lateral aspect of the mandible or maxilla, or may be subgingival, and is a poor indicator of the size of the hidden clinical crown (8). The distance from the commissures of the lips to the rostral edge of the first cheek teeth also varies among horses. Furthermore, this distance will affect the ease with which one works on the rostral teeth and may also affect the comfortable positioning of the bit in a working horse (3).

In some 2 to 3-year-old horses, wolf teeth are shed concurrently with the second premolar caps. The large erupting permanent second premolar tooth often causes root resorption of a wolf tooth that is positioned close to the deciduous second premolar. These most likely accounts for the high percentage (80-90%) of horses less than 2 years old with wolf teeth and the lower percentage (15-20%) of adult horses with wolf teeth (2).

Most wolf teeth cause no problems for the horse. However, in the working horse, it is possible that they may interfere with the bit and cause discomfort to the horse. Therefore, wolf teeth are frequently a cause of concern for the trainer or

rider, and it is believed that they should be removed. Wolf teeth can cause pain even if they have not erupted through the gingiva. For example, unerupted wolf teeth are occasionally associated with gingival ulceration (2). If the wolf teeth do not fall out on their own, they should be removed by a veterinarian before the horse is put into training (5).

In this study, it was found that the incidence of wolf teeth in Jeju Ponies and Jeju Pony crossbreds was much lower than what has been reported for horses in other countries. The reason for this is unknown. However, we suspect that this difference is due to genetic variation. Further research is needed to investigate the reasons for this differing incidence of wolf teeth among different breeds and geographical locations.

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## 제주마와 제주산마에서 이리치아 잔존율

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**요 약** : 말(horse)의 이리치아 잔존율은 암수모두에서 13-31.9%라고 보고되었다. 그러나 포니(pony)의 이리치아 잔존율은 보고된 적이 없다. 저자들은 제주마와 제주산마의 이리치아 잔존율을 알아보기 위하여 2006년부터 2010년까지 제주경마공원의 경주마에서 시진 및 축진을 통하여 구강을 검사하였다. 검사결과, 2,675마리에서 90 마리(제주마 30마리, 제주산마 60마리)가 이리치아를 가지고 있었고 잔존율은 3.4%였다. 제주마의 잔존율은 30마리중 수말이 73.3% (22마리), 암말이 26.7% (8마리), 제주산마는 60마리 중 수말이 41.7% (25), 암말이 58.3% (35마리)였다. 나이별분석에서는 제주마는 3세마가 가장 많았고 4세이상마 그리고 2세마 순이었으나 제주산마는 3세마, 2세마 그리고 4세이상마순이었다. 그러나 2종류의 경주마에서 아래턱의 이리치아는 전무하였다. 결론적으로, 제주마와 제주산마의 이리치아 잔존율은 외국에 비해 매우 낮았다.

**주요어** : 이리치아, 잔존율, 제주경주마(포니), 한국