

A SURVEY ON THE MANDIBLE OF BACTRIAN CAMEL (*Camelus bactrianus*) AND YAK (*Bos grunniens*): IMPLICATIONS FOR REGIONAL ANAESTHESIA OF THE MANDIBLE

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ABSTRACT

Mandibles of twenty adult bactrian camels and twenty yaks were utilised in this study. Radiographic features of the mandibular canal of the bactrian camel and yak were recorded. The position of the mandibular and mental foramina was studied radiographically. Some parameters in the mandible were measured. The information obtained is the clinically important and will aid in the regional anaesthesia of the mandible.

Key words: Bactrian camel, mandible, radiography, yak

The bactrian camel and yak are 2 typical domestic animals in the northwest highland of China. The fracture of the mandible is the most common affection in various disorders of head and neck regions (Singh and Nigam, 1982). The yak suffers from diseases, which would be first infected with the mandible, resulted from certain ticks. The knowledge of the normal radiography of the mandible is of great importance for surgical interferences or correction of pathological conditions. The radiography of the mandible was described in dromedary camel (Semieka *et al*, 2003), but reports lacked in the bactrian camel and yak. On the other hand, the importance of mandibular and mental foramina is evident as it helps in the regional anesthesia for the clinical cases. So radiographic pictures were made to elucidate the position of the mandibular and mental foramina of bactrian camel and yak on which no information was available.

Materials and Methods

Each of 20 mandibles of adult bactrian camels and yaks were collected. Ten of these were cleaned and separated from the mandibular symphysis to obtain 2 equal hemimandibles. Radiography was performed for all hemimandibles in lateral projection. The other 10 mandibles were macerated in accordance with the method described by Simoeas *et al* (1994) and Onar *et al* (1997). The measurements for 14 different

parts of the mandible were made by using the methods described by Semieka *et al* (2003) and Ozaki *et al* (2007). All investigated features are expressed as mean \pm SD.

The following measurements of the mandible were recorded (Fig 1.)

- 1 = Mandibular length
- 2 = Height of the mandibular body at the interalveolar space,
- 3 = Height of the mandibular body caudal to the last molar tooth,
- 4 = Height of the mandibular ramus,
- 5, 6, 7 = Distance between mandibular foramen and caudal, rostral, ventral border of mandibular ramus,

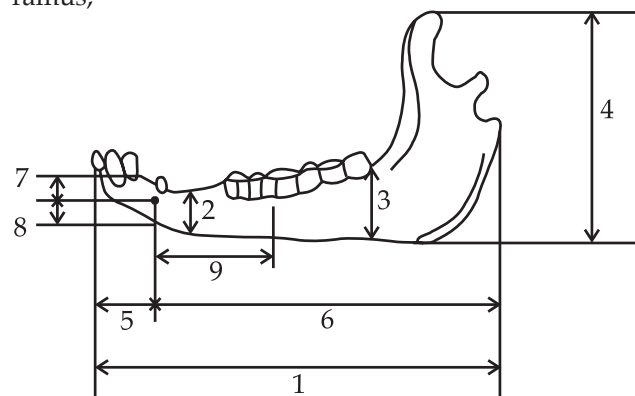


Fig 1. Schematic diagram of the mandible of bactrian camel (Lateral view).

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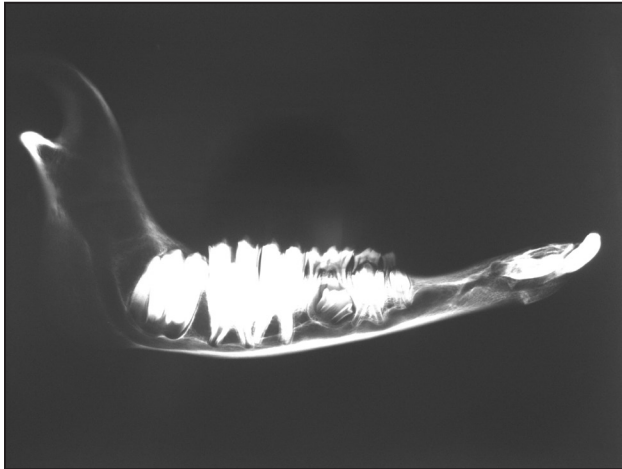


Fig 2. A radiograph of a half mandible of yak (Medio-lateral view).



Fig 3. A radiograph of a half mandible of bactrian camel (Latero-medial). Mental foramen (M), The accessory mandibular canal (arrow).

8, 9 = Distance between mental foramen and dorsal, ventral border of mandibular body,

10 = Distance between mental foramen and the lateral extent of the alveolar root of the mandible,

Results and Discussion

The radiographic appearances of the mandible of the yak and bactrian camel are shown in Fig 2 and Fig 3, respectively. The mandibles of the yak were more radiolucent than those of the bactrian camels. The mandibular canal started at the mandibular foramen and ended at the mental foramen. It was a tortuous radiolucent duct. The mandibular foramen showed a radiolucent appearance at the medial aspect of the mandibular ramus. Only in bactrian camel, the branch of the mandibular canal is called the accessory mandibular canal (Fig 3). It is directed rostrally to the alveolar border of the body. It was about 3.4 cm long, and opened in the caudal border of the last molar as a sulcus.

In bactrian camel, the mandibular canal opened under the first molar as the caudal mental foramen. It was the opening of the accessory mental nerve. Unlike in the dromedary camel, the bactrian camel may have 2 caudal mental foramina on one ramus of the mandible; the other ramus only one.

The mean±SD of the investigated features are presented in Table 1. It was observed that the interalveolar space is the narrowest part of the mandibular rami of the two animals, so it is predisposed to fracture than the other parts as seen in the dromedary camel (Semieka *et al*, 2003). The bone density of the mandible in bactrian camel was found higher than that of in yak radiographically. However,

the fracture of mandible in bactrian camel may occur more frequently than in yak. Bactrian camels suffer from the osteoporosis due to calcium and phosphorus deficiency and is more active in the rutting season than the yak.

The mandibular foramen in bactrian camel is situated 4.44 ± 0.169 cm from the caudal border of the ramus, 4.26 ± 0.169 cm from the rostral border of the ramus, and 8.10 ± 0.341 cm from the ventral border of the mandibular body. The same parameters in yak were 4.00 ± 0.133 cm, 3.49 ± 0.074 cm and 5.74 ± 0.610 cm, respectively. The mandibular nerve block could be used for the desensitisation of all the teeth in the mandible of the side of the block. The location

Table 1. The mean value of mandible measurements of the adult bactrian camel and yak (cm).

S.No.	Yak	Bactrian camel
1	30.48±1.349	38.28±2.720
2	2.14±0.136	3.95±0.234
3	5.84±0.524	8.36±0.365
4	16.52±0.754	21.18±0.358
5	4.00±0.133	4.44±0.169
6	3.49±0.074	4.26±0.169
7	5.74±0.610	8.10±0.341
8	1.63±0.042	2.12±0.135
9	1.21±0.095	0.91±0.057
10	1.49±0.154	1.92±0.105
11	1.99±0.219	1.89±0.098
12		2.84±0.032
13		2.04±0.245
14		13.86±0.312

of the mandibular foramen is clinically important information that will help the regional anaesthesia of this nerve (Hall *et al*, 2000). Injection of the mental foramen can desensitise the mental branch of the mandibular nerve leading to loss of sensation of lower incisors, premolars and lower lip on that side. These results obtained may prove clinically important landmarks for regional anaesthesia of the mandible.

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