

The bovine kidney as experimental model in urology: external gross anatomical contribution

Carvalho, FS.¹, Bagetti Filho, HJS.¹, Henry, RW.² and Pereira-Sampaio, MA.³

¹Colégio de Medicina Veterinária, Centro Universitário Serra dos Órgãos

²Department of Comparative Medicine, University of Tennessee

³Departamento de Morfologia, Universidade Federal Fluminense

Recently, the bovine kidney has been used as a model for urological techniques. The objective of this work was to obtain detailed and accurate measurements of the bovine kidney and to compare these new data with previous findings in humans. Thirty-eight bovine kidneys were used. The total number of lobes, along with the number of lobes located in the cranial polar, caudal polar and hilar regions was recorded. Several measurements of the kidneys were made and evaluated. The hilar region presents the greatest length (mean 76.87 mm) among the three renal regions of the kidney (cranial and caudal poles and hilus). This elongation of the bovine hilus is different from human kidneys where hilar length is proportional to polar region length¹. The larger area of the bovine renal hilus could make access to hilar structures easier than in the human kidney. Hence, the bovine kidney is likely not a satisfactory model for procedures in which dissection in the hilus is critical, because the hilus of the human kidney is much smaller, making manipulation of its contents difficult³. Results indicate only a 6 mm mean decrease in length of the left kidney from right kidney length, which was not statistically different. Similarly, no differences in length of the right and left pig kidneys have been found², which is different from human kidneys where the length of the left kidney is larger than the length of the right kidney¹. The number of renal lobes ranged from 13 to 35, with a mean of 20.62. The hilar region presents the highest number of lobes, while the cranial pole presents the lowest number of lobes. These data indicate that the adult bovine kidney can be used as a model for urologic procedures, but researchers must be concerned with some information reported in this paper, which points out some major differences between the adult bovine kidney and the kidney of man.

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References

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