

The Use of Computerised Tomography (CT) Scans to Confirm Successful Cervical Dislocation

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Introduction

Euthanasia is described as a painless death. In the UK it's an acceptable means of euthanasia listed in schedule 1, of the Animal (Scientific Procedures) Act 1986. This technique does not require a license but requires a formal assessment of competency and the individual to be listed on the humane killing register.

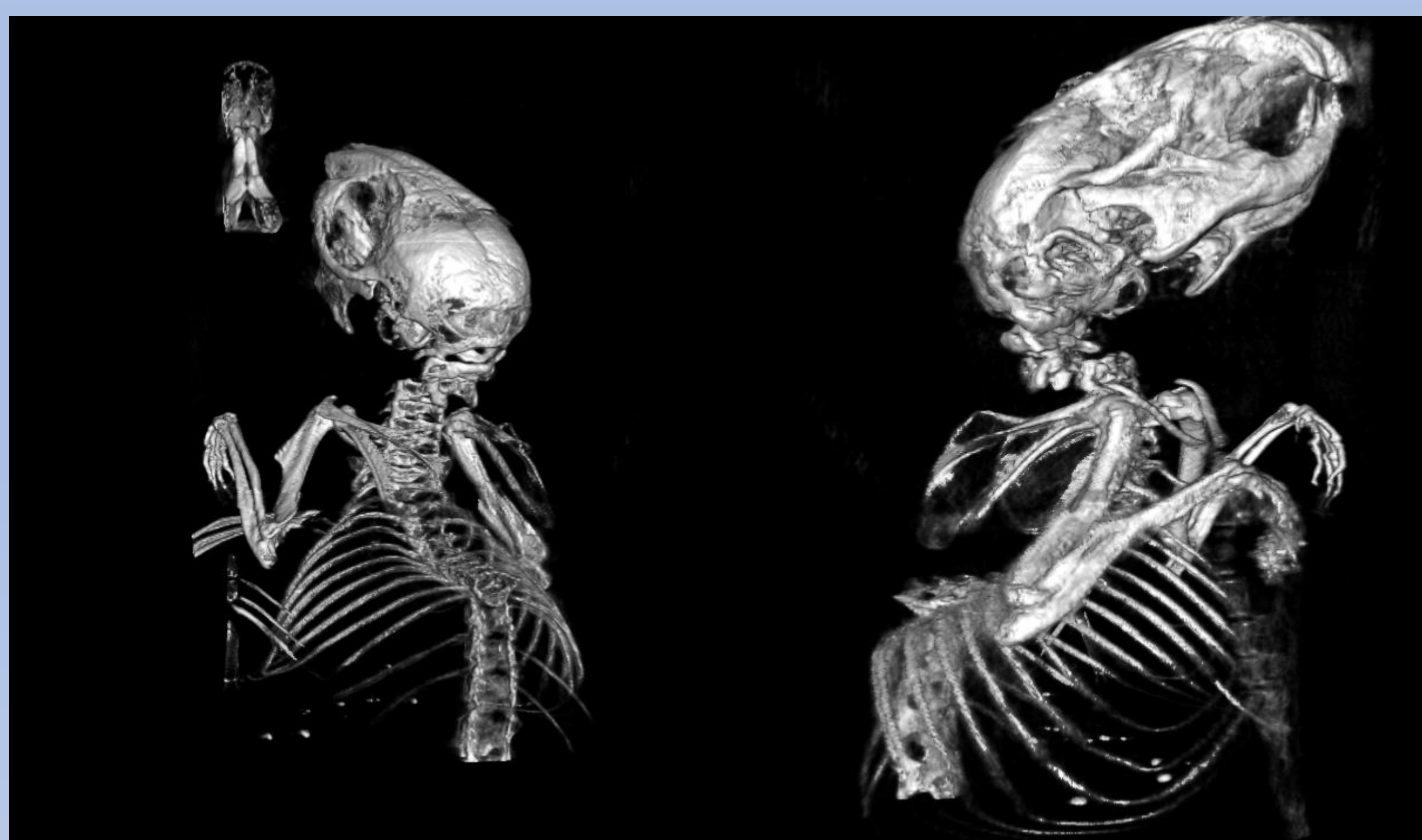
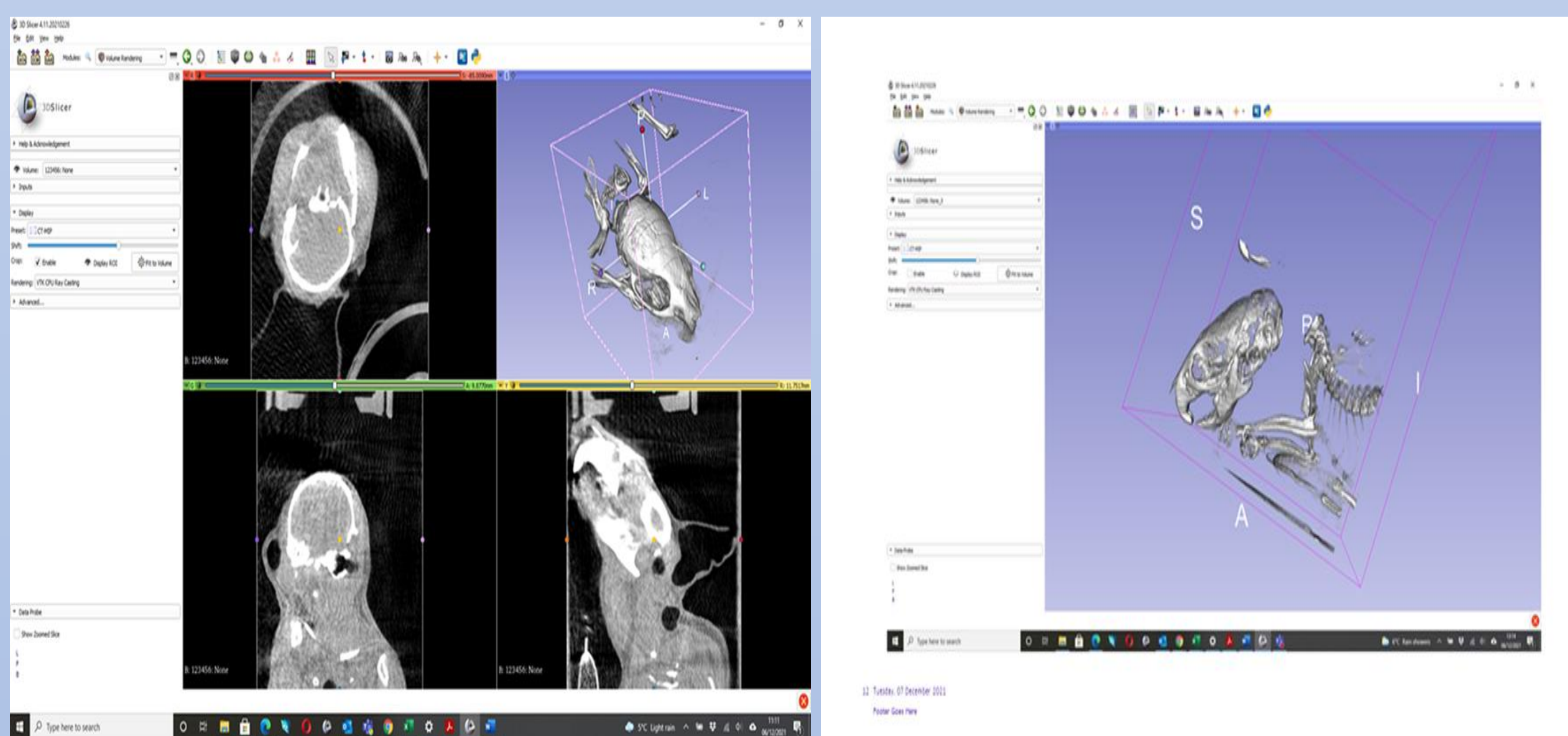
The NC3Rs website states "cervical dislocation raises welfare concerns because they can have high failure rates" with a failure rate quoted by Larry Cabone etc al as up to 20%.

We investigated the effectiveness of CT imaging to assess the success/failure rate of our techniques – that do not use the tail or 'tools' to complete the task but a 'finger roll' or 'pinch' methods

Methods

The investigation was approved and supported by our Institutes AWERB. We obtained 88 animals of mixed strains and ages from the research groups within our facility. All animals were in apparent good health and had not been used for experimentation and were scheduled to be culled due to colony management or considered inappropriate for other research projects. Mice were housed in a UK Home Office-approved facility. Each animal was randomly allocated to a volunteered operator

The skull, cervical and thoracic vertebrae were scanned with a nano Scan PET/CT system (Mediso Medical Imaging Systems, Budapest, Hungary) Image projections were reconstructed at 118 µm voxel resolution. Images were reviewed using '3DSlicer' <https://www.slicer.org/> that enabled images to be viewed as 3D images enabling both rotation and zoom functions



Discussion/Conclusion

Images show a difference in the amount and location of cervical separation which may be due to an individual's technique or how animals were handled/positioned for imaging post-mortem.

There may be a bias on those confident in carrying out the task as volunteering although we had staff that had not been signed off competent as volunteering during their training

We believe that CT scans are able to identify (in)correct Cervical Dislocation

We are currently preparing an article looking at the effectiveness of manual and tool methods of cervical dislocation euthanasia



3D Rotational Images of still

References

(<https://nc3rs.org.uk/3rs-resources/euthanasia>)

Larry Cabone etc al - Journal of American Association for the Laboratory Animal Science Vol 51 No 3 May 2012

Acknowledgements

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