

3D printing application in veterinary traumatology

INTRODUCTION

The creation of 3D models is a tool that is revolutionizing the medical field. In veterinary traumatology it offers various applications that allow, together, to enhance this specialty.

OBJECTIVES

- Have knowledge about the **characteristics** and **generalities** of 3D printing.
- Review **clinical cases** in which 3D printing has been used for its resolution.
- Inquire into the **latest developments**.

APPLICATIONS

The main applications are:

- **Anatomical models** for preoperative study.
- Creation of **scaffolds** to repair bone defects.
- In situ bioprinting using **Biopen**¹.
- Manufacture of prostheses and **surgical guides**.
- **Educational** field.

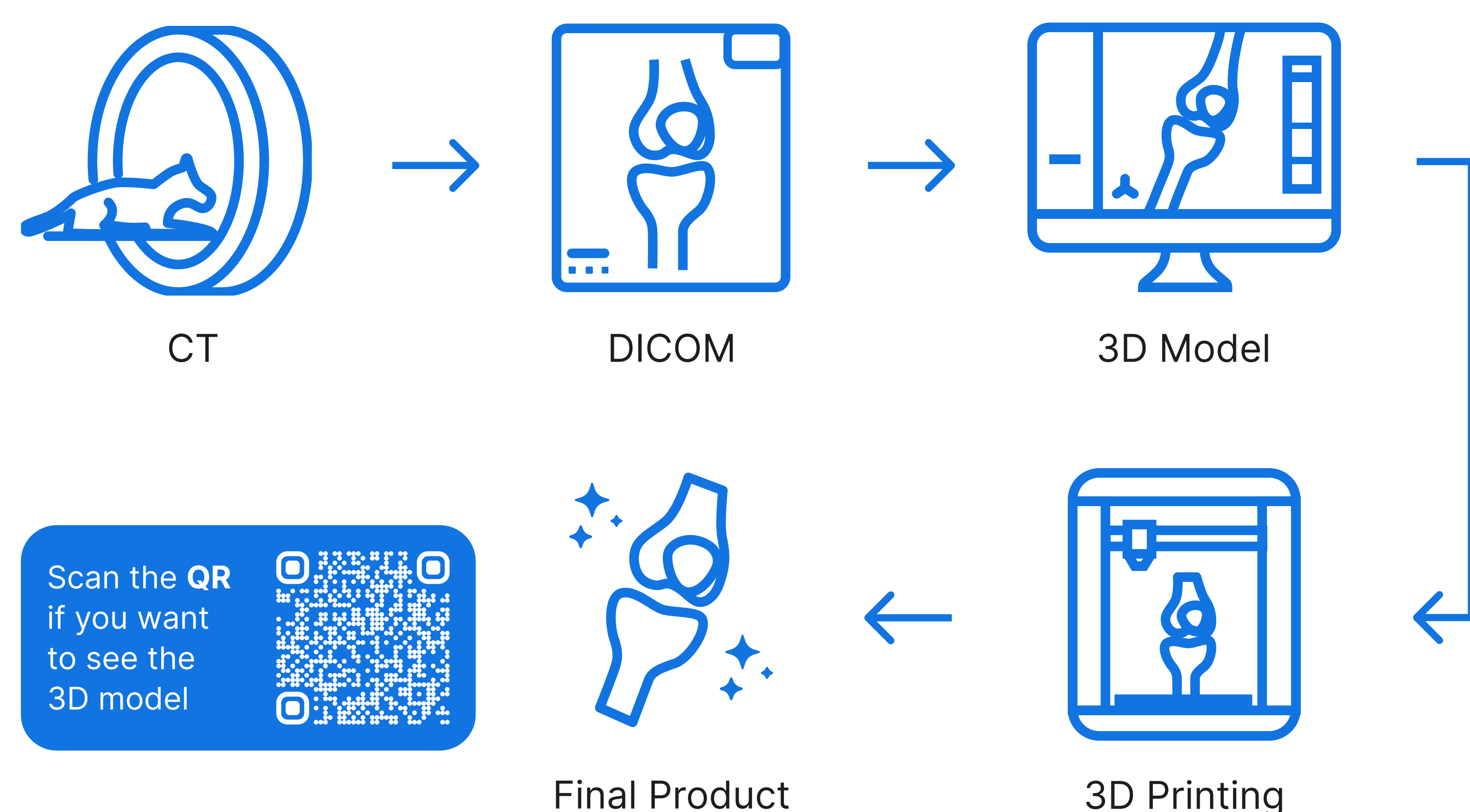


Figure 1. Diagram of the process followed to obtain the printed bone.

CASE REVIEW

Arya is a 4.5-year-old male Yorkshire Terrier with bilateral **grade IV** patella dislocation.

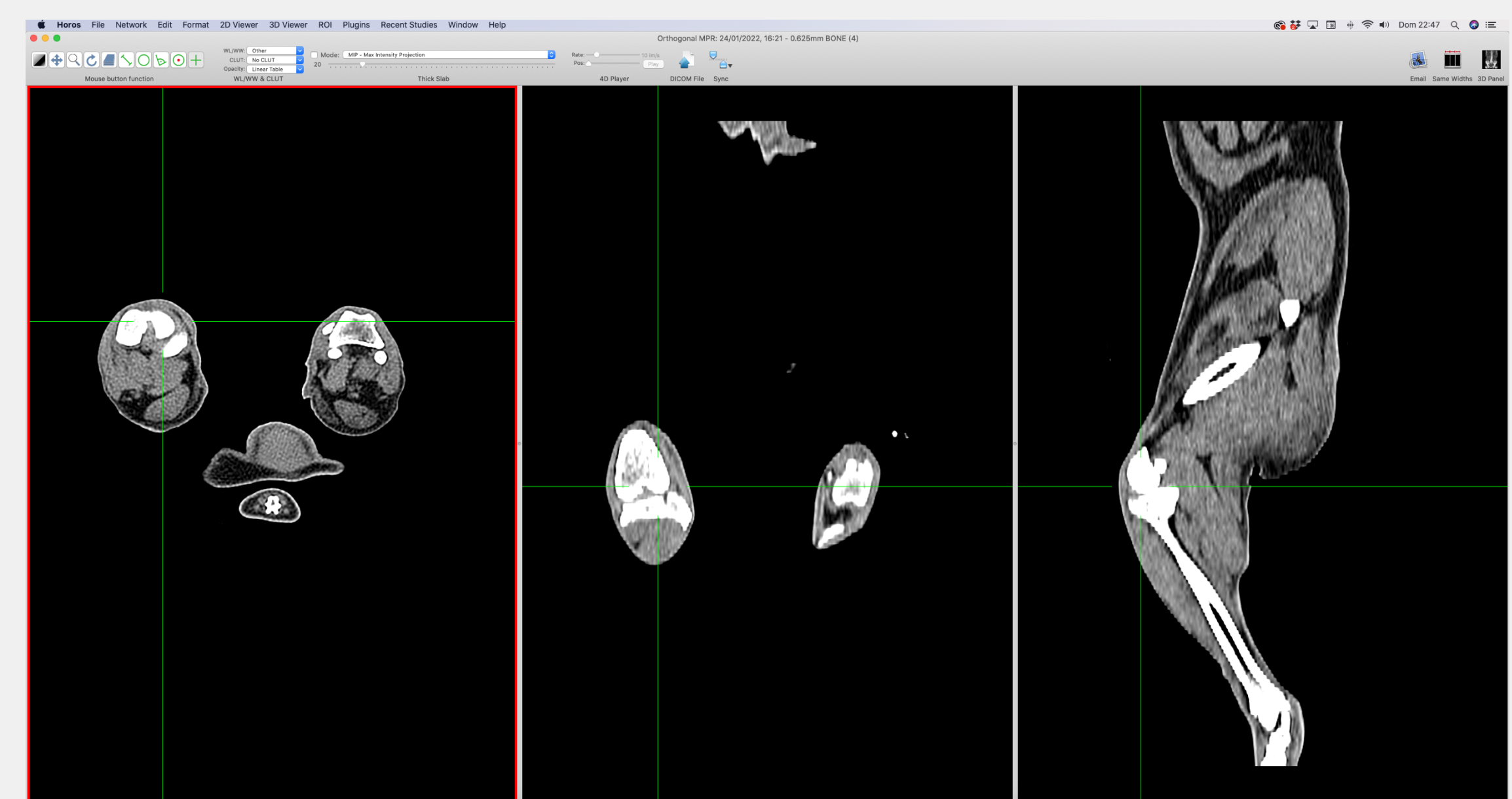


Figure 2. CT image of the patella dislocation displayed in Horos.

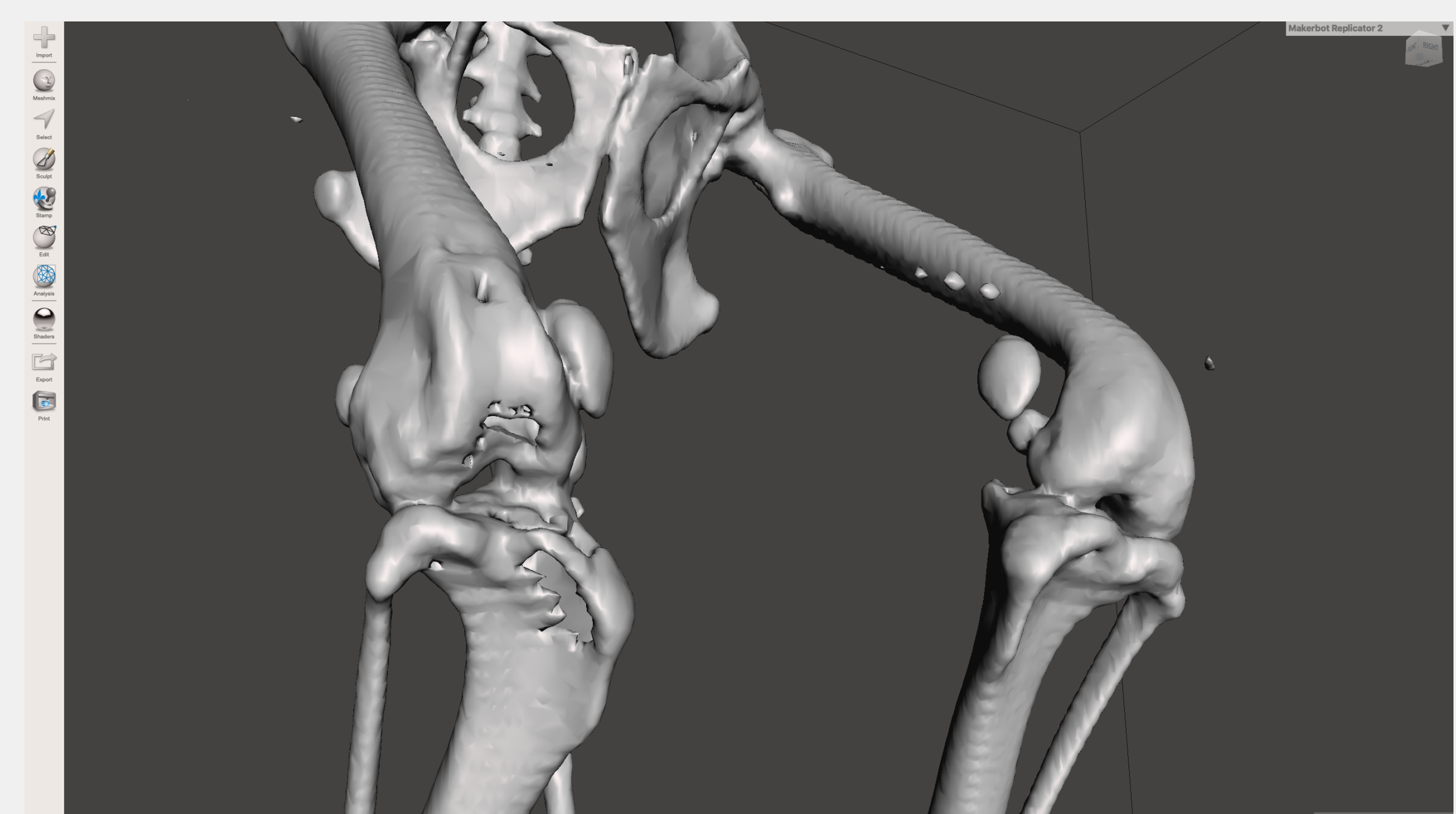


Figure 3. 3D model showing the imperfections of the CT.

CONCLUSIONS

3D printing allows to **repair bone defects** effectively, while **improving time** and **surgical success** by allowing the surgeon to study the case beforehand.

Currently there is still limited literature regarding 3D printing in veterinary traumatology, despite the fact that there is an **upward trend** in recent years. In addition, its application can be favored by the **lowering of manufacturing costs** and continuous technological advances.

Therefore, we can conclude that there are still efforts for this technology to **settle in veterinary medicine**.

Main references

1. O'Connell CD, di Bella C, Thompson F, Augustine C, Beirne S, Cornock R, Richards CJ, Chung J, Gambhir S, Yue Z, et al. 2016. Development of the Biopen: a handheld device for surgical printing of adipose stem cells at a chondral wound site. Biofabrication. 8(1).