

Do-It-Yourself (DIY) Workflow to Utilize 3D Printing for Acetabular Fracture Surgery*Bhavin Jadav, MBBS, MS; Mariana Rego, MD; Batur Hayat**Flinders Medical Centre, Adelaide, Australia*

Purpose: The use of 3-dimensional (3D) printing in the medical domain has increased exponentially in recent times, with many applications published in the literature such as anatomical models, custom prostheses, and operative guides. However, few studies have characterized the clinical application of these tools and commercial services are expensive and often delayed. Acetabular fractures are complex and difficult to access surgically, creating a niche capacity for the use of 3D printing. We present our experience and subsequently developed workflow template using anatomical 3D-printed models of acetabular fractures to precontour surgical plates, with the aim of reducing operative time and improving surgical planning.

Methods: Our workflow template has been used in the management of 3 cases with acetabular fractures at our institution, including 1 multitrauma patient who was 23 weeks pregnant. We used an Aldi printer and freeware software for creating 3D-printed models for preoperative planning and precontouring fixation plates. We report our system used to surgically manage these fractures, and the potential benefits of the tool.

Results: This short case series demonstrates a clinical use for 3D printing in what is often a challenging and time-consuming operation, which may be replicated in other centers at a low cost to the institution.

Conclusion: 3D printing is evolving as a popular adjunct to understanding fractures, but the true clinical potential of the technique has not been realized. Precontouring plates using a 3D replica of a patient's acetabulum may be a useful tool in the management of these complex fractures.



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