

## PP-003

### Utilizing 3D solid modeling technique for pelvic reconstruction after malignant tumor resection

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**Introduction:** Because of the complex pelvic anatomy and generally large tumor masses; resection and reconstruction of malign pelvic tumors are challenging.

**Objectives:** We aimed to present our case of pelvic reconstruction with custom-made endoprosthesis utilizing 3D Solid Modeling Technique.

**Methods:** 24 year old female patient had undergone curettage and grafting surgery twice at another institute with the diagnosis of "fibrous dysplasia" at periacetabular region. With the onset of groin pain, she admitted to our institute and after imaging studies local recurrence was observed. We performed a tru-cut biopsy and it revealed fibrosarcoma based on fibrous dysplasia. After neoadjuvant chemotherapy, an anatomic model of her pelvis was made at our institute's Medical Design and Manufacturing Center utilizing 3D solid modeling techniques using her CT and MRI images. After determining safe surgical borders at MRI images, a special cutting guide for bone resection and custom made endoprosthesis was produced with laser sintering method. During this manufacturing process she suffered a pathologic right collum femoris fracture.

**Results:** We performed tumor resection and pelvic reconstruction using custom made pelvic and cementless total hip prosthesis. With the special cutting guide, we optimized and gained our preoperatively defined resection borders. Also with the custom made endoprosthesis we achieved the most anatomic reconstruction.

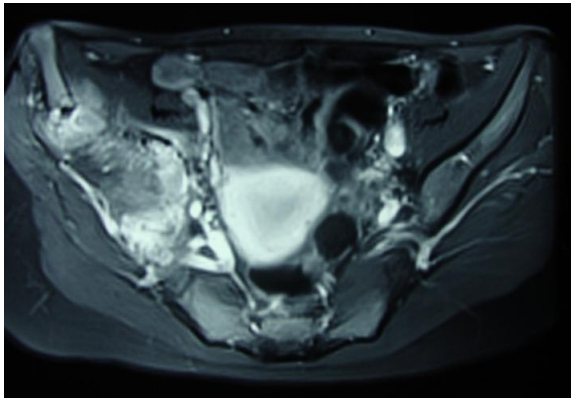
**Conclusions:** Pelvic reconstruction with custom made endoprosthesis after malignant tumor resection is a successful limb salvage surgical technique for chosen patients. Preoperative surgical planning can be optimized utilizing 3D solid modeling technique. With this technique, surgical outcomes and patient adaptation can be increased by custom-made implants.



**Figure 1.** Preoperative Xray



**Figure 2.** Preoperative Ct



**Figure 3.** Preoperative MRI



**Figure 4.** Postoperative Xray