SMART28® PCFD

A CLEARER VIEW FOR FOOT & ANKLE PLANNING



Paragon28®

a ZIMMER BIOMET company

INTRODUCTION

SMART28® PCFD | 3 D Surgical Planning System

SMART28® PCFD is a cloud-based application for the diagnosis and surgical planning of Progressive Collapsing Foot Deformity. From a single weight-bearing CT series, the software automatically segments the foot and ankle, builds a three-dimensional model, and conducts shape analysis of the deformity. It then estimates post-operative alignment using virtual osteotomies, and suggests a combination of Medial Displacement Calcaneal Osteotomy, Lateral Column Lengthening, and Cotton Osteotomy to correct the patient's deformity. Planning runs in a browser through the SMART28® Case Management Portal, a single access point for use across SMART28® PCFD, SMART Bun-Yo-Matic℠, MAVEN® Total Ankle, Additive Orthopaedics® Customs with no software installation required.

System Overview

The system is built around automated three dimensional analysis, patient specific suggested correction, and surgeon control. Segmentation and shape analysis are performed automatically from the patient's imaging, producing the measurements that define the deformity across all three planes.

Bone movements and measurement changes are modeled on MDCO displacement and on LCL and Cotton graft or wedge geometry, so the estimated correction is tied directly to the sizes the surgeon will implant.

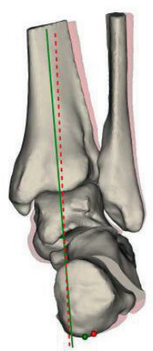
The software proposes the combination of these procedures that bring estimated post-operative alignment closest to reference population values. Software Suggested, Assisted, and Manual modes allow the surgeon to accept the suggested correction plan, adjust one operation while the engine re-optimizes the others, or define all three magnitudes directly.

Each case concludes in a reviewable, downloadable case report documenting the pre-operative state, the estimated correction, and the selected operation combination.

Preoperative Measurements

SMART28® PCFD automatically segments and conducts shape analysis of the weight-bearing CT images to show the preoperative and postoperative states in the posterior, axial, and sagittal views. The system shows key PCFD measurements, including the Hindfoot Movement Arm, Talonavicular Coverage, and Meary's Angle in both the axial and sagittal planes. Peritalar Distances and coverages are shown for analysis of the Subtalar facets within the application.

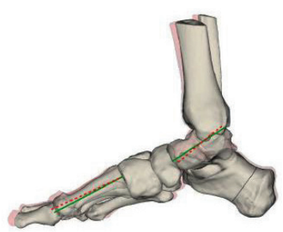
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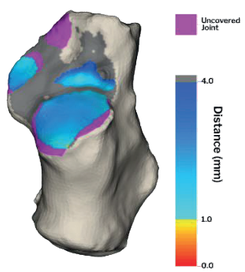
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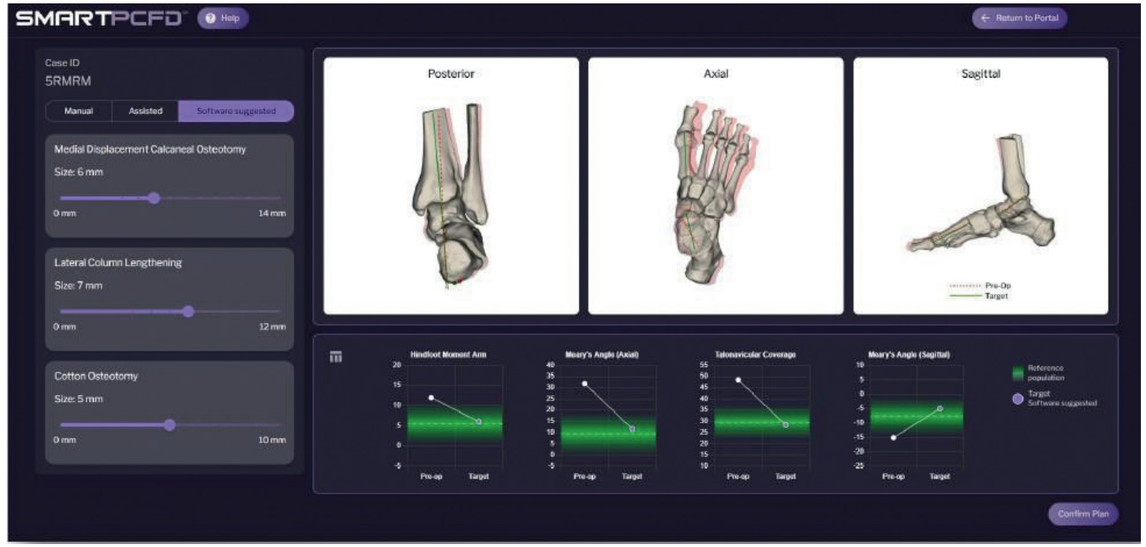
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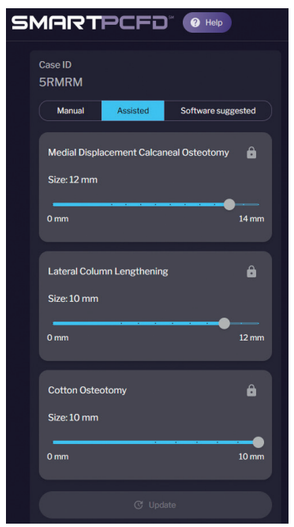


SYSTEM FEATURES

Software Modes

The initial plan is generated automatically and displayed with the proposed combination of surgical operations, 3D visualizations, pre-op values, and target values. The MDCO, LCL, and Cotton procedures will all be included to start, with small combined procedures prioritized over individual large ones. There are three separate modes that the surgeon can choose between, including the initial software-suggested mode. Alternatively, the surgeon can use Assisted Mode or Manual Mode to fine-tune or alter the operative plan.





Software Suggested Mode

The initial plan is generated automatically and displayed with the proposed combination of surgical operations, 3D visualizations, pre-op values, and target values. All three operations are included, with small combined procedures prioritized over individual large ones.

Assisted Mode

The surgeon can unlock a single operation, set its magnitude on the slider, and the engine re-optimizes the remaining two so the combination brings estimated post-operative alignment closest to the pre-defined reference values.

Manual Mode

MDCO, LCL, and Cotton magnitudes can be set independently. Measurements and 3D visualizations update on demand. A notification appears if the MDCO magnitude would displace the calcaneus beyond half the bone's total width.

PLANNING OUTPUTS

Case Report

Every approved case produces a downloadable PDF documenting the preoperative state, peritalar distances and coverages, the estimated postoperative state, and the selected operation combination.

- Correction magnitude for MDCO, and implant selection for LCL and Cotton
- Fixation hardware listing for each osteotomy
- Whether the plan was software suggested or user-adjusted
- Shareable with the patient to make the pre-operative conversation concrete



GETTING STARTED

Case Workflow

1. Add a patient in the SMART28 Portal
2. Upload the weight bearing CT series (DICOM)
3. Plan the case in the preferred mode
4. Review, approve, and download

Associated Implants and Grafts



PRESERVE™ Evans Grafts



Titan 3-D™ Evans Wedges



PRESERVE™ Cotton Grafts



Titan 3-D™ Cotton Wedges

MDCO Fixation

Gorilla® Calc Slide Plate
Monster® Hindfoot Screws

LCL Fixation

PRESERVE™ Evans Grafts · Titan 3-D™ Evans Wedges
Gorilla® HEvans® Plate · Gorilla® BOW & ARROW® Plates
Monster® Screws

Cotton Fixation

PRESERVE™ Cotton Wedge
Monster® Screws
Titan 3-D™ Cotton Wedges

Learn More

Instructions for Use are available on the SMART28SM Case Management Portal Resources page.
To contact support, use the Contact Support option under the profile icon in the portal or on the software Help page, or email **smart28.support@paragon28.com**.

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BRMR-BRO-01 REV A
2026-07-31

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