Purpose: To prepare all forms, establish criteria for dose volume histogram (DVH) for automatic plan optimization, and analyze various treatment planning approaches for the HDR - Contura multilumen balloon breast implant modality.

Methods: We established a strategy to increase our efficiency in planning and treating partial breast implants. We prepared in advance the checklist for the day of simulation, the list for second checking the plan, and the treatment delivery checklist. Also, we developed in-house software for plan second check. We generated a procedure for proficient contouring, and a set of optimization constraints to meet the DVH criteria. Templates were created in our TPS (Brachyvision 8.6) for structures, isodose levels, optimization constraints, and plan report. The vendor provided images for four anonimized patients with various levels of planning difficulty. For these cases we generated treatment plans using: a) central lumen only; b) the four peripheral lumens; and c) all five lumens. Although using either the central lumen alone or the four peripheral lumens could result in a good plan for cases of low and intermediate level of difficulty, we decided to load all five lumens for all future patients to increase plan flexibility.

Results: We knowledgeably used the approach and forms described above for our first five patients. For each case we checked for any balloon asymmetry, measured the balloon to skin and ribs distances, and contoured air and seroma to evaluate patient eligibility. We did all the contours following the guidelines we formulated. The established DVH criteria were successfully met for all plans. Second check was performed using our in-house software (discrepancy within 5%).

Conclusions: The work presented here helped us to gain experience and increased our efficiency in HDR breast planning and treatment. It may also help other groups to start such a program in their clinic.