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Prepectoral Implant-based reconstruction after nipple sparing mastectomy in the breast cancer treatment: A single center experience**Gianluca Franceschini***Breast Unit - Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome - Italy*

Nipple-sparing mastectomy (NSM) with immediate prosthetic breast reconstruction (IPBR) is an oncologically accepted technique that allows to improve aesthetic results and patient quality of life. Traditionally, implant for reconstruction have been placed in a submuscular (SM) plane, beneath the pectoralis major muscle (PMM). Recently, prepectoral (PP) placement of prosthesis is increasingly used in order to avoid morbidities related to manipulation of PMM. The aim of this study was to compare outcomes between a personalized PP-IPBR using implants with micropolyurethane foam coated shell surface (microthane) without further coverage and a traditional SM-IPBR after NSM.

A retrospective review of breast cancer patients who underwent NSM followed by IPBR over a 2-years period (January 2018 – December 2019) was performed. The patients were divided into 2 cohorts for comparison based on the plane of implant placement as the primary predictor variable: PP-IPBR versus SM-IPBR. Data were recorded in order to evaluate operative details, major complications and oncological outcomes. Aesthetic results and patient quality of life were measured by a "QOL assessment PRO" survey; an analysis of economic performance was also performed.

Results: 177 patients who received IPBR after NSM were included in the study; implants were positioned in a SM plane in 95 patients and in a PP plane in 82 patients. The two cohorts were similar for mean age (44 years and 47 years in the SM and PP groups, respectively) and follow-up (20 months and 16 months, respectively). The mean operative time was 70 min shorter in the PP group. No significant differences were observed in length of hospital stay or overall major complication rates. Statistically significant advantages were observed in the PP group in terms of aesthetic results, chronic pain, shoulder dysfunction, and skin sensibility ($p < 0.05$), as well as a trend of better outcomes for sports activity and sexual/relationship life. Cost analysis revealed that PP-IPBR was also economically advantageous over SMIPBR.

Conclusions: Our preliminary experience shows that PP-IPBR using polyurethane-coated implant after NSM is a safe, reliable and effective alternative to traditional IPBR with excellent aesthetic outcomes and high patient quality of life; it is easy to perform, minimizes complications related to manipulation of PPM and reduces operative time while resulting also in a cost-effective technique.

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