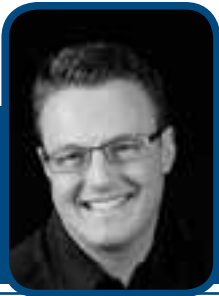


Global Experts Meeting on

PLASTIC AND AESTHETIC SURGERY

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A comparison of sensory outcomes in nipple areola complex reconstruction and nipple preservation

Background: Following skin-sparing mastectomy for breast cancer, nipple-areola complex reconstruction (NACR) usually represents the final step in the breast reconstruction process. Several reconstructive techniques have been developed to create a reconstructed nipple-areola complex that is similar to that of the native breast in terms of size, colour and projection. Adding this defining characteristic to the reconstructed breast mound makes a significant positive contribution to patient satisfaction, body image and psychological wellbeing. An alternative approach to skin-sparing mastectomy and NACR is sparing the nipple-areola complex during mastectomy (nipple-areola sparing mastectomy, NASM), which provides an excellent aesthetic outcome. While the presence of a nipple-areola complex does provide an aesthetically pleasing reconstructed breast, the function of the reconstructed or preserved nipple, especially in terms of sensation, often leaves much to be desired.

Objective: We sought to compare the degree of sensory function in preserved nipple-areola complexes to those reconstructed by various different techniques. We hypothesised that: 1) NASM would provide the best sensory outcome. 2) Nipple reconstruction from chest wall skin would provide the worst sensory outcome. 3) Retained areolar skin would prove superior to full thickness skin graft in areolar sensory preservation.

Materials and Methods: Approval for this study was obtained from the Human Research Ethics Committee of the University of the Witwatersrand (M170696). Female breast cancer patients who had undergone NACR following

a skin-sparing mastectomy, or NASM at the Netcare Milpark Breast Care Centre of Excellence in Johannesburg between 2009 and 2016 were eligible for inclusion. Four patient groups were identified: (A): Nipple reconstructed from chest wall skin and areola reconstructed by full-thickness skin graft (B): NASM (C): Nipple reconstructed by retained areolar skin and areola reconstructed by full-thickness skin graft (D): Nipple reconstructed by nipple sharing and areola retained. Sensory function was assessed in all quadrants of the nipple and the areola and compared to the supraclavicular notch as control. Light touch sensation was evaluated with a cotton wool swab and recorded as present /absent. Pressure sensation was evaluated using a set of Semmes-Weinstein hand monofilaments (Patterson Medical, UK) and the lightest degree of pressure appreciated by the patient was recorded. Good pressure perception was defined as a response to the 0.07g or 0.4g monofilaments. The groups were compared using Fisher's exact test and $p \leq 0.05$ was considered significant.

Results: Fifty-two patients participated in the study (N = 104 breasts). The contralateral (non-operated) breasts of 5 patients who underwent unilateral mastectomy were excluded (N = 99). The mean age of the participants in the study was 48 years and all patients were evaluated > 12 months after the NACR / NASM. In the 99 examined breasts, 16 (16.1%) nipples were preserved during NASM, 41 (41.4%) were reconstructed by double-opposing tab flap, 36 (36.4%) by Maltese cross and 6 (6.1%) by nipple sharing. Groups A, B, C and D consisted of 22, 16, 55 and 6 breasts, respectively.

Pressure sensation: Group A was less likely to experience good pressure perception than groups B, C or D ($p < 0.05$); however, comparison of groups B, C and D with each other

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yielded no statistically significant difference in pressure perception. Areolar retention (as in groups B and D) offered slightly better pressure perception than reconstruction by full thickness skin graft (as in groups A and C) ($p=0.05$).

Light touch sensation: Group B had the highest degree of light touch perception in the nipple of all 4 groups (56.3%), followed by groups D (50.0%), C (16.4%) and A (4.5%). As was observed with pressure perception, areolar retention (groups B and D) provided significantly better light touch perception as compared to the full thickness skin graft (groups A and C) ($p = 0.001$).

Limitations: 1) Small sample sizes in the NASM and nipple share groups. 2) Subjective component of sensory

evaluation – attempted to mitigate by using standardised monofilaments. 3) Variables that may influence sensory function (surgical technique, complications requiring multiple surgical procedures, time from reconstruction) - patients were well matched in terms of these variables.

Conclusion: Retention of the areola at mastectomy provides significantly better sensory function compared to areolar reconstruction by full-thickness skin graft. While nipple reconstruction using a flap created from chest wall skin clearly results in poor sensory outcomes, all of the other reconstruction / retention techniques appear to have equivalent sensory outcomes. The ideal, sensate reconstructed breast remains elusive.

Biography

Dr Charles Serrurier is a dedicated breast reconstructive and cosmetic plastic surgeon at the Netcare Breast Care Centre of Excellence, situated at Netcare Milpark Hospital. He is registered with the Health Professions Council of South Africa (HPCSA) as a plastic and reconstructive surgeon and is a member of the Association of Plastic and Reconstructive Surgeons of Southern Africa (APRSSA) and the International Society of Aesthetic Plastic Surgeons (ISAPS). Dr Serrurier obtained his medical degree from the University of the Witwatersrand (WITS) in Johannesburg and qualified as a plastic surgeon in 2008. Thereafter he headed the plastic surgery department at Helen Joseph Hospital for five years. During this time, he had a small private practice but concentrated on honing his breast reconstructive skills in the academic environment. Considered as one of the leading breast reconstructive surgeons in South Africa, Dr Serrurier has presented his breast reconstructive work at both local and international congresses. He remains involved with academic practice and lectures and trains plastic surgeons in advanced breast reconstruction.

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