

PP-17

유방재건 환자의 BioBridge™ 삽입 및 혈관화 림프절 이식술 후 가정용 BIS 사용이 환자 순응도와 수술 결과에 미치는 효과: 증례 보고

The Impact of Home-Based Bioimpedance Spectroscopy Monitoring on Patient Compliance after Delayed TRAM Flap Breast Reconstruction with Vascularized Lymph Node Transfer and BioBridge™ Implantation: A Case Report



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Purpose:

Outcomes after physiologic lymphedema surgery such as BioBridge™ insertion and vascularized lymph node transfer (VLNT) depend heavily on sustained self-management. Home bioimpedance spectroscopy (BIS) monitoring may promote adherence by providing objective feedback that influences patient behavior.

Methods:

A breast reconstruction patient with right upper extremity lymphedema underwent delayed TRAM flap reconstruction combined with BioBridge™ insertion and VLNT. Home BIS monitoring was performed serially between October 2025 and January 2026. Post-measurement behaviors were categorized as beneficial (bandaging, pneumatic compression, Mobiderm, compressive stocking, massage, rest) or potentially aggravating (golf, exercise, high-calorie intake).

Results:

A total of 75 home BIS measurements were recorded. The right arm extracellular water (ECW) ratio improved from 0.390 at baseline to a stable range of approximately 0.382–0.389 during follow-up without progressive deterioration. Behavioral analysis demonstrated a compensatory pattern: on days with aggravating activities (n=10), beneficial self management behaviors were recorded in 80.0% of measurements, compared with 38.5% on non-aggravating days (n=65). The mean number of beneficial actions recorded per measurement was higher on aggravating days (1.30 vs. 0.49), suggesting increased self-management response in the context of potentially aggravating exposure.

Conclusion:

This case suggests that home BIS monitoring may function not only as a surveillance tool but also as a behavioral reinforcement mechanism, coinciding with enhanced self-management responses and physiologic stabilization following BioBridge™ insertion and VLNT.

Table 1. Comparison of behavior-associated responses according to aggravating activities during home BIS monitoring.

| Variable | Total (n=75) | Aggravating days (n=10) | Non-aggravating days (n=65) |
|---------------------------------------------------|--------------|-------------------------|-----------------------------|
| RA ECW ratio | | | |
| Baseline | 0.390 | – | – |
| Follow-up range | 0.382–0.389 | – | – |
| Behavioral characteristics | | | |
| Days with any beneficial behavior, n (%) | 33 (44.0%) | 8 (80.0%) | 25 (38.5%) |
| Mean number of beneficial actions per measurement | 0.62 | 1.30 | 0.49 |

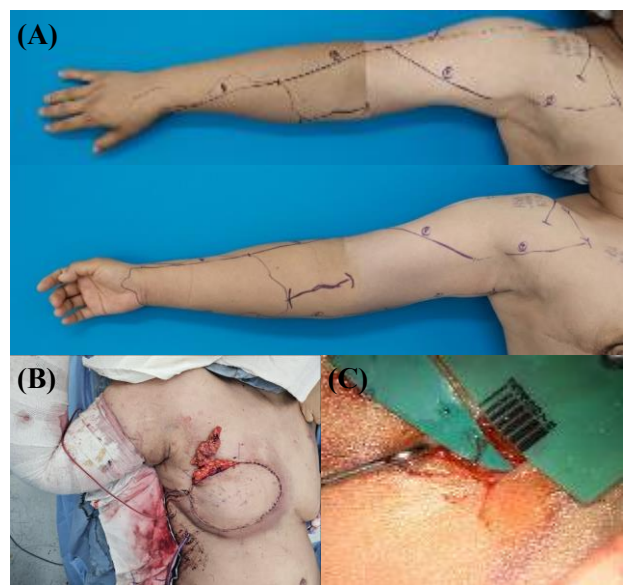


Figure 1. Three methods of lymphedema reduction used in the study. (A) Preoperative design for BioBridge™ insertion along the affected upper extremity. (B) Surgical design for VLNT along with TRAM flap. (C) Intraoperative view of LVA under magnification.

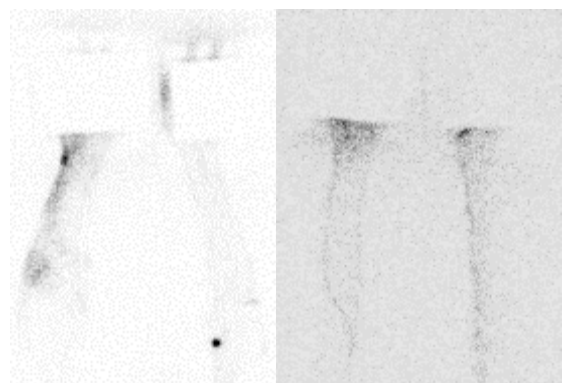


Figure 2. Preoperative (left) and postoperative 1 year (right) upper extremity lymphoscintigraphy. Compared with the preoperative findings, the 1-year postoperative study demonstrates a substantial improvement in lymphatic function, characterized by decreased dermal backflow and more efficient proximal tracer migration.