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**Literature search results**

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**Search details**

Breast cancer reconstruction and function post-surgery

**Resources searched**

NICE Evidence; TRIP Database; Cochrane Library; AMED; CINAHL; EMBASE; MEDLINE; Google Scholar

**Database search terms:** ("reconstruct* breast*" OR "breast reconstruction"), (oncoplastic OR onco-plastic), exp MAMMAPLASTY, (mammaplasty OR mammoplasty), ("post operat*" OR postoperat* OR post surg* OR postsurg* OR post-surg*), (function* OR dysfunction*), (mobility OR immobility OR movement), (outcome* OR recover*), (rehabilitat* OR "physical therapy" OR physio* OR exercise*)

**Evidence search string(s):** ("breast reconstruction" OR oncoplastic) (function* OR outcome* OR recovery OR rehabilitation OR physiotherapy)

**Google search string(s):** ("breast reconstruction" OR oncoplastic) (function* OR outcome OR recovery OR rehabilitation OR physiotherapy)

**Guidelines and Policy**

**Association of Breast Surgery at BASO, BAPRAS and the Training Interface Group in Breast Surgery**


Mentions function throughout.

**British Association of Plastic Reconstructive and Aesthetic Surgeons**

**Oncoplastic breast reconstruction : guidelines for best practice**, 2012

Sections 4.6 and 4.7 discuss patient recovery.
Evidence-based reviews

Nothing found.

Published research – Databases

**The effect of intra-operative passive movement therapy on non-surgical site pain after breast reconstructive surgery: a preliminary study.**

**Author(s)** Bidd H, Dulai R, Edelman N, Giles J, Patel C

**Citation:** Anaesthesia, August 2014, vol./is. 69/8(872-7), 0003-2409;1365-2044 (2014 Aug)

**Publication Date:** August 2014

**Abstract:** Pain distant to an operative site is under-reported but sometimes more severe than pain from the surgical site. Intra-operative passive movement could possibly reduce this pain. This preliminary study was designed to assess the practicalities of conducting a randomised controlled trial of this therapy in anaesthetised patients. The study design was pragmatic. Forty-two patients undergoing breast reconstruction were randomly assigned to receive either intra-operative passive movement or standard care. Twenty-four hours after surgery, median (IQR [range]) morphine consumption was 33 (11-42 [0-176]) mg in the passive movement group compared with 74 (15-118 [0-238]) mg with standard care (p = 0.126), while participants reported median (IQR [range]) visual analogue scores in areas distant from the surgical site of 0 (0-4 [0-34]) mm in the passive movement group compared with 10 (2-30 [0-57]) mm in those receiving standard care (p = 0.002). A full trial of intra-operative passive movement therapy to reduce postoperative is feasible and warranted. 2014 The Association of Anaesthetists of Great Britain and Ireland.

**Source:** Medline

**Physical therapy after prophylactic mastectomy with breast reconstruction: a prospective randomized study.**

**Author(s)** Unukovych D, Johansson H, Johansson E, Arver B, Liljegren A, Brandberg Y

**Citation:** Breast, August 2014, vol./is. 23/4(357-63), 0960-9776;1532-3080 (2014 Aug)

**Publication Date:** August 2014

**Abstract:** INTRODUCTION: The rate of prophylactic mastectomies (PM) is increasing. Patients generally report high levels of health related quality of life and satisfaction after the procedure, whereas body image perception and sexuality may be negatively affected. The aim of the study was to evaluate the interest in physical therapy as a means of improving body image and sexuality in women after PM. PATIENTS AND METHODS: Patients undergoing PM at Karolinska University Hospital between 2006 and 2010 were eligible. The following patient-reported outcome measures were used at study baseline and 2 years postoperatively: the body image scale (BIS), the sexual activity questionnaire (SAQ), the short-form health survey (SF-36), the hospital anxiety and depression scale (HAD), and a study specific "pain/motion/sensation scale". RESULTS: Out of 125 patients invited to participate in this prospective randomized study, 43 (34%) consented and were randomized into the intervention (n = 24, 56%) or control (n = 19, 44%) groups. There were no statistically significant between-group differences found with respect to BIS, SAQ, SF-36, HAD, and "pain/motion/sensation". Two years postoperatively, more than half of the patients in both groups reported problems like feeling less attractive, less sexually attractive, their body feeling less whole, and being dissatisfied with their body. A majority marked a decreased sensation in breast area. CONCLUSION: The interest in a physiotherapy intervention was limited among women who had undergone PM. The intervention did not show any
substantial effects. A large proportion of patients reported specific body image related and pain/motion/sensation problems postoperatively. Copyright 2014 Elsevier Ltd. All rights reserved.

Source: Medline

The impact of obesity on abdominal wall function after free autologous breast reconstruction.

Author(s) Nelson JA, Fischer JP, Yan C, Fosnot J, Selber JC, Wu LC, Serletti JM, Kanchwala S

Citation: Microsurgery, July 2014, vol./is. 34/5(352-60), 0738-1085;1098-2752 (2014 Jul)

Publication Date: July 2014

Abstract: BACKGROUND: The functional impact of obesity on abdominal wall strength after abdominally based autologous reconstruction is unknown. The purpose of this study was to determine if obesity alters the postoperative abdominal wall strength profile after autologous reconstruction. METHODS: We prospectively examined abdominal wall strength and function following autologous breast reconstruction between 2005 and 2010. Enrolled patients completed functional testing [upper abdominal strength (UA), lower abdominal strength (LA), and functional independence measure (FIM)] and psychometric testing utilizing the short form 36 (SF36). Data were obtained at preoperative, early (<90d), and late (90-365d) follow-up visits. Obese patients were compared with non-obese patients in both unilateral and bilateral reconstructions. RESULTS: Overall, 167 patients were enrolled, with obesity noted in 34% of patients. Obese Unilateral reconstruction patients had lower preoperative UA strength (4.7 vs.4.2, P=0.05) and FIM (6.7 vs. 6.9, P=0.008) scores compared with non-obese patients. These scores significantly worsened in all patients from preoperative to early follow-up, yet scores did not differ at late follow-up between obesity cohorts. Obese bilateral reconstruction patients had similar preoperative functional scores; however, UA strength scores at early (2.5 vs. 3.2, P=0.008) and late (3.6 vs. 4.3, P=0.005) follow-up were significantly lower compared with non-obese patients. No differences in subjective health were noted in follow-up for unilateral or bilateral reconstructions. CONCLUSION: Obesity significantly impacts the abdominal function profile of autologous breast reconstruction patients; however, subjective physical and mental health differences are less notable. This is especially true for obese patients who undergo bilateral reconstructions. In these patients, a careful balance between optimizing flap perfusion, limiting donor site morbidity, and enabling functional recovery should be considered. 2013 Wiley Periodicals, Inc. Microsurgery 34:352-360, 2014. 2013 Wiley Periodicals, Inc.

Source: Medline

The impact of complications on function, health, and satisfaction following abdominally based autologous breast reconstruction: a prospective evaluation.

Author(s) Lu SM, Nelson JA, Fischer JP, Fosnot J, Goldstein J, Selber JC, Serletti JM, Wu LC

Citation: Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS, May 2014, vol./is. 67/5(682-92), 1748-6815;1878-0539 (2014 May)

Publication Date: May 2014

Abstract: BACKGROUND: The impact of surgical complications following autologous reconstruction on abdominal strength, health, and satisfaction is not completely understood. We prospectively examined the effect of complications on these aspects in patients undergoing abdominally-based autologous reconstruction. METHODS: A prospective study of patients who underwent autologous breast reconstruction between 2005 and 2010 was performed at a single teaching hospital. Patients enrolled in the study completed an abdominal strength functional assessment, the Short Form 36 (SF-36), and a satisfaction survey. Data were obtained at preoperative, early (<90 d), intermediate (90-365 d),
and late (>365 d) follow-up visits. Patients who experienced surgical complications were compared with patients who did not. A subgroup analysis examined the specific impact of abdominal complications.

RESULTS: Overall, 97 enrolled patients had preoperative, early and intermediate follow up. Forty of these patients had late follow-up. Fifty-six (58%) experienced surgical complications. After reconstruction, the complications group had decreased upper abdominal strength and function scores through early (p = 0.009, p = 0.01) and intermediate (p = 0.01, p = 0.06) follow-up. SF-36 physical health (p = 0.053) trended towards being lower in the early follow-up period. The complications group was less satisfied with the overall cosmetic result (p = 0.01) and shape of breasts (p = 0.02) through intermediate follow-up. At late follow-up, both cohorts recovered to baseline values in all study aspects. Patients with abdominal complications alone followed similar trends, with decreased upper abdominal strength and FIM scores through intermediate follow-up.

CONCLUSIONS: Having a major postoperative complication can significantly impact early physical health, mental health, abdominal strength, and patient satisfaction. Beyond one year, recovery towards baseline may occur in the majority of patients.

Level of Evidence: Prognostic/Risk Study, Level II. Copyright 2014 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

Source: Medline

**Functional morbidity following latissimus dorsi flap breast reconstruction.**

**Author(s)** Smith SL

**Citation:** Journal of the Advanced Practitioner in Oncology, May 2014, vol./is. 5/3(181-7), 2150-0878;2150-0878 (2014 May)

**Publication Date:** May 2014

**Abstract:** According to the National Institutes of Health, more than 230,000 new cases of breast cancer will be diagnosed in 2014 alone. Following mastectomy, several reconstructive options exist for women with breast cancer. The timing and approach for reconstruction must be addressed rapidly. Although abdominal tissue transfer is described as the preferred method, it may not be best suited to all patients. The latissimus dorsi (LD) muscle flap is a widely available, proven, and reliable modality. The majority of studies support that shoulder functional morbidity is minimal, but this should be more accurately quantified to allow patients to assess the possible impact on their daily lives. A critical appraisal of the available evidence was undertaken to determine the incidence of new functional morbidity involving the ipsilateral arm following LD pedicled flap breast reconstruction. The process for identifying articles included preappraised and secondary literature sources published between 2005 and 2013. Randomized controlled trials, evidence-based practice, clinical guidelines, and systematic reviews were the quality filters applied. This literature review confirmed that LD muscle transfer does lead to measurable reductions in shoulder joint stability, strength, range of motion, and general functionality. However, these deficiencies resolve in the vast majority of women within 6 to 12 months. Ultimately, the consequences of shoulder function morbidity must be considered and discussed with patients prior to making a final decision.

**Source:** Medline

Available in *fulltext* from *Journal of the Advanced Practitioner in Oncology* at *National Library of Medicine*

**Yoga therapy for breast cancer patients: A prospective cohort study.**

**Author(s)** Sudarshan, Monisha, Petrucci, Andrea, Dumitra, Sinziana, Duplisea, Jodie, Wexler, Sharon, Meterissian, Sarkis

**Citation:** Complementary Therapies in Clinical Practice, 01 November 2013, vol./is. 19/4(227-229), 17443881

**Publication Date:** 01 November 2013

**Abstract:** Abstract: We sought to study the impact of yoga therapy on anxiety, depression and physical health in breast cancer patients. Stage I–III post-operative...
breast cancer patients were recruited with twelve 1-h weekly yoga sessions completed with an experienced yoga instructor. Before and after each module completion, assessments were obtained with the Hospital Anxiety and Depression scale (HADS), the Dallas pain scale and shoulder flexibility measurements. Fourteen patients completed the entire yoga session with 42.8% having a total mastectomy and 15.4% having breast reconstruction. Both right and left shoulder abduction flexibility significantly improved (p = 0.004; p = 0.015 respectively) as well as left shoulder flexion (p = 0.046). An improvement trend in scores for the HADS and Dallas questionnaires pre- and post-intervention was found, although it was not statistically significant. Our data indicates an improvement in physical function in addition to a consistent amelioration in anxiety, depression and pain symptoms after a yoga intervention.

Source: CINAHL

Definitive evidence of rectus abdominis preservation and function after bilateral DIEP breast reconstruction.

Author(s) Izaddoost S, Ellsworth WA, Gordley KP, Vennix MJ, Bullocks JM

Citation: Plastic & Reconstructive Surgery, April 2013, vol./is. 131/4(658e-61e), 1529-4242 (2013 Apr)

Publication Date: April 2013

Source: Medline

Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services' eJournal collection

A retrospective investigation of women's experience with breast reconstruction after mastectomy.

Author(s) Ditsch N, Bauerfeind I, Vordermaier A, Tripp C, Lohrs B, Toth B, Himsl I, Graeser M, Harbeck N, Lenhard M

Citation: Archives of Gynecology & Obstetrics, March 2013, vol./is. 287/3(555-61), 0932-0067;1432-0711 (2013 Mar)

Publication Date: March 2013

Abstract: PURPOSE: A diagnosis of breast cancer is often accompanied by the fear of loss of previous body image and attractiveness. Hence, many patients opt for reconstructive surgery. This study evaluated the effects of different types of reconstructive surgery after mastectomy on the functional and psychological adjustment of patients.METHODS: In a cohort study, patients, who had breast reconstruction after mastectomy by means of four different allogenic or autologues techniques between 1999-2006 were retrospectively interviewed in person or by telephone. The questions addressed complication rates, physical complaints, functional impairments, body image outcomes, sexuality and patient satisfaction.RESULTS: Of 139 patients, 89 (64.7 %) completed the survey. 32 (35.9 %) patients experienced one or more postoperative complications like seroma, hematoma, infections or necrosis. 16 (20 %) and 13 (16 %) patients reported strong and moderate adverse effects on sexuality, respectively. 62 (70 %) patients indicated that they were actively included in the decision making process. Patient ratings of good or bad medical advice were associated with complication rates (p = 0.008). Patients, who evaluated their first preoperative counseling positively, reported higher consent rates when a re-reconstruction became necessary (p < 0.001). Satisfaction with the functional outcome after reconstruction and satisfaction with the cosmetic result was highly correlated (p < 0.001).CONCLUSIONS: A significant association of patient satisfaction with postoperative complications and the decision for a re-reconstruction was demonstrated. Furthermore, our results emphasize the importance of detailed preoperative counseling for women's adjustment to reconstructive surgery.

Source: Medline

Available in fulltext from Archives of Gynecology & Obstetrics at EBSCOhost
Immediate breast reconstruction with a Latissimus dorsi flap has no detrimental effects on shoulder motion or postsurgical complications up to 1 year after surgery.

**Author(s)** de Oliveira RR, do Nascimento SL, Derchain SF, Sarian LO

**Citation:** Plastic & Reconstructive Surgery, May 2013, vol./is. 131/5(673e-80e), 1529-4242 (2013 May)

**Publication Date:** May 2013

**Abstract:** BACKGROUND: Mastectomy negatively affects scapulothoracic and glenohumeral kinematics. Breast reconstructive methods such as the latissimus dorsi flap can result in anatomical modifications that may in theory further affect the shoulder apparatus. The purpose of this study was to examine the effects of latissimus dorsi flap reconstruction on the recovery of shoulder motion and other postsurgical problems during the first year after mastectomy.

METHODS: This was a prospective cohort study of 104 consecutive mastectomies (47 with immediate latissimus dorsi flaps). Shoulder range of motion was assessed before and at 1, 3, 6, and 12 months after surgery. Pain, tissue adhesion, scar enlargement, and web syndrome were assessed during follow-up.

RESULTS: There was a 30 percent decrease of shoulder range of motion 1 month after surgery, with gradual recovery over time. However, mean abduction and flexion capacities did not reach baseline levels and were on average 5 to 10 percent lower than baseline, even after 1 year. Over time, the latissimus dorsi flap was not associated with restriction of flexion or abduction. Scar enlargement (at the first month, \( p = 0.009 \)) and tissue adhesion (at month 12, \( p = 0.032 \)) were significantly less common in the latissimus dorsi flap group.

CONCLUSIONS: The authors’ study clearly suggests that the additional anatomical manipulation required for the latissimus dorsi flap procedure does not further affect shoulder kinematics and is associated with a lower incidence of tissue adhesion.

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, II.

**Source:** Medline

Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services’ eJournal collection

Early rehabilitation reduces the onset of complications in the upper limb following breast cancer surgery.

**Author(s)** Scaffidi M, Vulpiani MC, Vetano M, Conforti F, Marchetti MR, Bonifacino A, Marchetti P, Saraceni VM, Ferretti A

**Citation:** European journal of physical & rehabilitation medicine., December 2012, vol./is. 48/4(601-11), 1973-9087;1973-9095 (2012 Dec)

**Publication Date:** December 2012

**Abstract:** BACKGROUND: Breast cancer (BC) is currently the most frequent tumor in women. Through the years, BC management has evolved towards conservative surgery. However, even minimally invasive surgery can cause neuromotor and/or articular impairments which can lead to permanent damage, if not adequately treated.

AIM: To clinically evaluate upper ipsilateral limb function and the impact of certain post-surgical consequences arising after invasive or breast-conserving surgery for early BC, by intervening, or not intervening, with an early rehabilitation program. To investigate physical morbidity after sentinel (SLND) or axillary lymph node dissection (ALND) and after reconstructive surgery in the treatment of early BC.

DESIGN: Observational prospective trial.


POPULATION: Eighty-three females participated in the study: 25 patients did not begin physiotherapy during hospitalization (Group A), 58 patients received early rehabilitation treatment (Group B).

METHODS: The patients of Groups A and B were compared with respect to the following criteria: shoulder-arm mobility, upper limb function, and presence of lymphedema. All patients were assessed at 15-30, 60 and 180 days after surgery.

RESULTS: Statistically significant differences, in favor of Group B, were encountered at the 180-day follow-up visit, especially with respect to articular and functional limitation of the upper limb.

CONCLUSION AND CLINICAL REHABILITATION IMPACT: The results of the present study show that early assisted mobilization (beginning on the
first postoperative day) and home rehabilitation, in conjunction with written information on precautionary hygienic measures to observe, play a crucial role in reducing the occurrence of postoperative side-effects of the upper limb.

**Source:** Medline
Available in fulltext from *European Journal of Physical and Rehabilitation Medicine* at [Free Access Content](https://EuropeanJournalofPhysicalandRehabilitationMedicine)

Latissimus dorsi free flap harvesting may affect the shoulder joint in long run.

**Author(s):** Giordano S, Kaariainen K, Alavaikko J, Kaistila T, Kuokkanen H

**Citation:** Scandinavian Journal of Surgery: SJS, 2011, vol./is. 100/3(202-7), 1457-4969;1457-4969 (2011)

**Publication Date:** 2011

**Abstract:** BACKGROUND: The latissimus dorsi (LD) muscle or myocutaneous flap is one of the most commonly used flaps and is believed to result in minimal donor-side morbidity. The impact on shoulder function from LD removal is important due to the common nature of this procedure. Previous studies have been performed after relatively short follow-up time and mostly after breast reconstruction. The purpose of this study was to objectively evaluate shoulder function years after latissimus dorsi muscle free flap operation.

**METHODS:** Between 1998 and 2004, eight patients who underwent LD-free flap for lower limb (7) or head and neck (1) soft tissue reconstruction were enrolled in this study. Scar, shoulder pain, function, mobility, stability and strength were evaluated and measured by using the Patient Scar Assessment Questionnaire (PSAQ), the Scar Evaluation Scale (SES) score, the American Shoulder and Elbow Surgeons (ASES) form, goniometer and isokinetic tests. Measurements of the operated sides were compared to the non-operated sides.

**RESULTS:** Mean age was 54 ± 21 years and mean follow-up was 92.5±36 months after surgery. Mean PSAQ was 73 (65%), mean SES score was 2±1. When comparing the operated sides to the unoperated sides, ASES score was significantly lower in the operated side (76 versus 93, p=0.008); The range of motion in active and passive endorotation, active extrarotation and active forward elevation were significantly reduced after surgery. Operated side revealed a significant joint instability (3.6 versus 1.2, p=0.007) using the ASES form. Isokinetic tests revealed that only intra-rotation strength was significantly reduced (35.74 Newton-metre versus 42.7 Newton-metre, p=0.03) in the operated side.

**CONCLUSION:** LD harvesting can affect the function of the shoulder joint in the long run. Reduced mobility, instability and weakness could be obtained with objective measurements. However, the results should be interpreted with caution because of the small sample size, internal controls and retrospective nature of this study.

**Source:** Medline

Available in fulltext from *Scandinavian Journal of Surgery* at [Free Access Content](https://ScandinavianJournalofSurgery)

Recovery of sensation in immediate breast reconstruction with latissimus dorsi myocutaneous flaps after breast-conservative surgery and skin-sparing mastectomy.

**Author(s):** Tomita K, Yano K, Hosokawa K

**Citation:** Annals of Plastic Surgery, April 2011, vol./is. 66/4(334-8), 0148-7043;1536-3708 (2011 Apr)

**Publication Date:** April 2011

**Abstract:** In breast reconstruction, sensation in the reconstructed breasts affects the patients' quality of life along with its aesthetic outcome. Fortunately, less invasive procedures such as breast-conservative surgery (BCS) and skin-sparing mastectomy (SSM) have greatly contributed to the improved aesthetic outcome in immediate breast reconstruction. However, there are few reports on the recovery of breast sensation after BCS and SSM. We retrospectively reviewed 104 consecutive patients who underwent immediate breast reconstruction with the
The latissimus dorsi myocutaneous flap between 2001 and 2006 at our institution. The sensations of pain, temperature, touch, and vibration were examined at the nipple and skin envelope during the follow-up period (range: 12-61 months, mean: 31 months), and a stratified analysis was performed to determine the critical factors affecting the sensation recovery after BCS and SSM. We found that large breast size significantly impaired the recovery of sensation in the nipple and skin envelope after BCS as well as SSM. Older age and high body mass index value were the factors which negatively affected the sensation in the skin envelope after SSM. While all our BCS patients underwent postoperative radiation therapy, it did not negatively affect the recovery of sensation in SSM patients. On the basis of these findings, we could further improve the sensation of the reconstructed breasts after BCS and SSM. Especially after SSM, the use of innervated flaps is recommended in the patients with large breast, increased age, or obesity when the nipple-areola complex is resected.

Source: Medline

Immediate breast reconstruction with transverse latissimus dorsi flap does not affect the short-term recovery of shoulder range of motion after mastectomy.
**Author(s)** de Oliveira RR, Pinto e Silva MP, Gurgel MS, Pastori-Filho L, Sarian LO
**Citation:** Annals of Plastic Surgery, April 2010, vol./is. 64/4(402-8), 0148-7043;1536-3708 (2010 Apr)
**Publication Date:** April 2010
**Abstract:** Immediate breast reconstruction, depending on the surgical strategy, can result in anatomic modifications that may affect the shoulder apparatus. This study compares the recovery of shoulder range of motion (ROM), after mastectomy, in women with and without immediate breast reconstruction with latissimus dorsi flap (LDF). This was a prospective study with 87 women who underwent mastectomy (41 with LDF). Shoulder ROM was assessed with goniometry, with a universal full-circle manual goniometer, prior to surgery, and on a weekly basis during the first 4 weeks postoperatively. Reconstruction with LDF was not associated with a decrease in shoulder ROM (P = 0.84). By the end of the 4-week assessment program, women in both groups still had an average reduction of 30 degrees in their shoulder ROM compared with baseline. Factors significantly associated with a reduction in shoulder ROM during the recovery period were complete dissection of the axilla, current smoking behavior, and presence of painful axillary cords. It is likely that breast reconstruction with LDF has little or no effect on shoulder ROM in the immediate postoperative period. It is also possible that LDF effects (if any) are overridden by the major reduction (over 30% in the immediate postoperative period, subsiding partially during the first weeks postoperatively) in shoulder ROM caused by mastectomy.

Source: Medline

Breast sensation after breast reconstruction: a systematic review.
**Author(s)** Shridharani SM, Magarakis M, Stapleton SM, Basdag B, Seal SM, Rosson GD
**Citation:** Journal of Reconstructive Microsurgery, July 2010, vol./is. 26/5(303-10), 1098-8947 (2010 Jul)
**Publication Date:** July 2010
**Abstract:** Studies show some return of breast sensation after breast reconstruction; however, recovery is variable and unpredictable. Efforts are being made to restore innervation by reattaching nerves (neurotization). We sought to systematically review the literature addressing breast sensation after reconstruction. The following databases were searched: EMBASE, Cochrane, and PubMed. Additionally, the PLASTIC AND RECONSTRUCTIVE SURGERY journal was hand searched from 1960 to 2009. Inclusion criteria included breast reconstruction for cancer, return of sensation with objective results, and patients aged 18 to 90 years. Studies with purely cosmetic procedures, case reports,
studies with less than 10 patients, and studies involving male patients were excluded. The initial search yielded 109 studies, which was refined to 20 studies with a total pool of 638 patients. Innervated flaps have a greater magnitude of recovery, which occurs at an earlier stage compared with the noninnervated flaps. Overall, sensation to deep inferior epigastric artery perforator flaps may recover better sensation than transverse rectus abdominis myocutaneous flaps, followed by latissimus dorsi flaps, and finally implants. Women’s needs and expectations for sensation have led plastic surgeons to investigate ways to facilitate its return. Studies, however, depict conflicting data. Larger series are needed to define the role of neurotization as a modality for improving sensory restoration. Thieme Medical Publishers.

**Source:** Medline
Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services’ eJournal collection

**Shoulder function after latissimus dorsi transfer in breast reconstruction.**

**Author(s)** Forthomme B, Heymans O, Jacquemin D, Klinkenberg S, Hoffmann S, Grandjean FX, Crielaard JM, Croisier JL

**Citation:** Clinical Physiology & Functional Imaging, November 2010, vol./is. 30/6(406-12), 1475-0961;1475-097X (2010 Nov)

**Publication Date:** November 2010

**Abstract:** BACKGROUND/AIMS: Latissimus dorsi (LD) transfer in the case of breast reconstruction remains frequently used because this muscle provides a good size source of tissue in reconstructive surgery. Given that, the consequences of the LD removal on shoulder function and the actual loss of maximal strength developed must be investigated.METHODS: Twenty women (50 + 7.5 years old) were evaluated before surgery, 3 and 6 months after an unilateral transfer of a pedicle flap of LD muscle used for breast reconstruction. Women performed a bilateral shoulder isokinetic assessment [for the internal rotators (IRs) and external rotators and for the abductor and adductor (ADD) muscles] allowing the establishment of bilateral muscular deficit status and the study of agonist/antagonist muscle ratios. The algofunctional and clinical status of the shoulders was analysed by the means of Constant score and specific shoulder clinical tests. The women did not perform any specific strengthening of muscle shoulder after surgery.RESULTS: The isokinetic assessment showed a muscle weakness 3 and 6 months after LD transfer, mainly on the ADDs (33 + 9% at 6 months) and on the IRs (16 + 11% at 6 months). The Constant score significantly decreased after surgery on the operated shoulder. Women with a Constant score impairment showed pain during specific shoulder clinical tests. We also found a correlation between Constant score impairment and internal rotators weakness or rotator muscle imbalance.CONCLUSION: Given those results, we could advocate a specific shoulder strengthening after LD transfer, focused mainly on the IRs and ADDs. 2010 The Authors. Clinical Physiology and Functional Imaging 2010 Scandinavian Society of Clinical Physiology and Nuclear Medicine.

**Source:** Medline
Available in fulltext from Clinical Physiology & Functional Imaging at EBSCOhost

**Comparison of morbidity, functional outcome, and satisfaction following bilateral TRAM versus bilateral DIEP flap breast reconstruction.**

**Author(s)** Chun YS, Sinha I, Turko A, Yueh JH, Lipsitz S, Pribaz JJ, Lee BT

**Citation:** Plastic & Reconstructive Surgery, October 2010, vol./is. 126/4(1133-41), 1529-4242 (2010 Oct)

**Publication Date:** October 2010

**Abstract:** BACKGROUND: The potential for donor-site morbidity associated with bilateral pedicled transverse rectus abdominis myocutaneous (TRAM) flap breast reconstruction has led to the popularization of deep inferior epigastric artery perforator (DIEP) flap reconstruction. This study compares postoperative morbidity
and satisfaction following bilateral pedicled TRAM and DIEP flap reconstruction.

**METHODS:** One hundred five women with bilateral pedicled TRAM flaps were compared with 58 women with bilateral DIEP flap reconstruction. Medical records were reviewed for complications and demographic data. Postoperative follow-up data were obtained through Short Form-36, Functional Assessment of Cancer Therapy-Breast, Michigan Breast Satisfaction, and Qualitative Assessment of Back Pain surveys.

**RESULTS:** The mean follow-up interval was 6.2 years in the bilateral TRAM group and 2.3 years in the bilateral DIEP group (p < 0.001). Demographic data were otherwise similar. Abdominal hernias occurred in three TRAM patients (2.9 percent) and in no DIEP patients, whereas abdominal bulges occurred in three TRAM patients (2.9 percent) and four DIEP patients (6.9 percent); these differences were not statistically significant. Fat necrosis occurred less frequently in the TRAM group (p = 0.04). Postoperative survey results revealed no significant difference in patient satisfaction, incidence of back pain, or physical function. The TRAM group scored higher in the Medical Outcome Study Short Form-36 subjective energy category (p = 0.01) and mean Functional Assessment of Cancer Therapy-Breast score (p = 0.01).

**CONCLUSIONS:** This study suggests no significant differences in donor-site morbidity, survey-based functional outcome, or patient satisfaction between bilateral TRAM and DIEP flap breast reconstruction. Although perforator flaps represent an important technological advancement, bilateral pedicled TRAM flap reconstruction still represents a good option for autologous breast reconstruction.

**Source:** Medline

Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services' eJournal collection

**Shoulder function following autologous latissimus dorsi breast reconstruction. A prospective three year observational study comparing quilting and non-quilting donor site techniques.**

**Author(s)** Button J, Scott J, Taghizadeh R, Weiler-Mithoff E, Hart AM

**Citation:** Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS, September 2010, vol./is. 63/9(1505-12), 1748-6815;1878-0539 (2010 Sep)

**Publication Date:** September 2010

**Abstract:** Latissimus dorsi harvest and axillary surgery can affect shoulder function. The effect of autologous latissimus dorsi flap (ALD) breast reconstruction and donor site quilting have been inadequately studied. A cohort of ALD flap breast reconstruction patients were assessed pre-operatively and at eight post-operative time-points (up to 3 years after reconstruction) using the self-administered Disabilities of the Arm, Shoulder and Hand (DASH) outcome measure, for which validated normative data is available. Patients with incidental shoulder conditions and bilateral reconstructions were excluded. This was a prospective, observational study with blinded data interpretation: 58 patients, 22 of whom had donor site quilting, were assessed. Groups were compatible demographically, in breast care management and in pre-operative DASH score (quilted 6.5, non-quilted 6.4; P=0.98). Scores were significantly increased at initial post-operative clinic review (mean 49, SD19; P<0.001), 6 week (29, SD20; P<0.001), and 3 month (19, SD19; P<0.01), thereafter remaining at a plateau value of approximately 15 (P>0.05). Seroma incidence was reduced in the quilted group (5% vs 70%). A strong, significant correlation was found between 3 month DASH score and long term function (r=0.66, P<0.0003); patients with DASH >20 fare significantly worse in the longterm (mean 20 point increase, SD5.0, P<0.001). Higher post-operative DASH scores correlated significantly with pre-operative DASH (r=0.58) and BMI (r=0.36). Adjuvant therapy had no effect on shoulder function. Axillary dissection had a weak correlation with a higher DASH score, but only at the 3-month post-operative time-point (r=0.32, P=0.03). ALD flap breast reconstruction generally results in a functionally insignificant increase (6.5 points) in longterm DASH score, although a small subset of patients do develop longterm impairment, and quilting does not
Comparison of quality of life, satisfaction with surgery and shoulder-arm morbidity in breast cancer survivors submitted to breast-conserving therapy or mastectomy followed by immediate breast reconstruction.

Author(s) Freitas-Silva R, Conde DM, de Freitas-Junior R, Martinez EZ

Citation: Clinics (Sao Paulo, Brazil), June 2010, vol./is. 65/8(781-7), 1807-5932;1980-5322 (2010 Jun)

Publication Date: June 2010

Abstract: OBJECTIVES: This study was designed to compare the prevalence of shoulder-arm morbidity, patient satisfaction with surgery and the quality of life of women submitted to breast-conserving therapy or modified radical mastectomy and immediate breast reconstruction. METHODS: This study was a cross-sectional study of women who underwent breast-conserving therapy (n = 44) or modified radical mastectomy and immediate breast reconstruction (n = 26). Quality of life was evaluated with the SF-36 Health Survey Questionnaire. RESULTS: No differences were found in the prevalence of lymphedema. The movements that were most commonly affected by these procedures were abduction, flexion and external rotation. When the two groups were compared, however, we only found a statistically significant difference for the prevalence of restricted internal rotation, which occurred in 32% of women in the breast-conserving therapy group and 12% of those in the modified radical mastectomy and immediate breast reconstruction group (OR: 7.23; p = 0.03 following adjustment for potential confounding factors). No difference in quality of life or satisfaction with surgery was found between the two groups. CONCLUSIONS: These data suggest that the type of surgery did not affect the occurrence of lymphedema. Breast-conserving therapy, however, increased the risk of shoulder movement limitation. No differences were found between the two surgical techniques with respect to quality of life or satisfaction with surgery.

Source: Medline

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Available in fulltext from Clinics at Directory of Open Access Journals

A systematic review of abdominal wall function following abdominal flaps for postmastectomy breast reconstruction.

Author(s) Atisha D, Alderman AK

Citation: Annals of Plastic Surgery, August 2009, vol./is. 63/2(222-30), 0148-7043;1536-3708 (2009 Aug)

Publication Date: August 2009

Abstract: Perforator flap breast reconstruction potentially offers patients greater postoperative abdominal strength compared with traditional TRAM techniques. Our purpose was to perform a systemic review of the published literature regarding abdominal wall function following breast reconstruction and compare outcomes between pedicle TRAM, free TRAM, and perforator flap procedures. We used the MEDLINE, EMBASE, CINAHL, the Cochrane Network, and HAPI databases from January 1966 through November 1, 2007 to identify potentially relevant studies. Inclusion criteria included studies that evaluated subjective or objective functional abdominal outcomes for postmastectomy patients receiving either pedicle TRAM, free TRAM, or deep inferior epigastric perforator (DIEP) flaps. All study designs were included in the review-prospective studies, cross-sectional studies, and retrospective case series. Our search yielded 20 studies on abdominal wall function after autogenous tissue breast reconstruction. Objective measures of abdominal wall function using isometric dynamometry revealed that pedicle TRAM...
patients experienced up to a 23% deficit, whereas free TRAM patients experienced up to an 18% deficit in trunk flexion. For trunk extension, pedicle TRAM patients experienced up to a 14% deficit, whereas free TRAM patients experienced minimal to no deficits. However, none of the comparative studies of pedicle and free TRAM procedures found significant differences in abdominal wall function between the 2 groups. Studies that compared free TRAM to DIEP flaps found significantly higher flexion abilities in the DIEP groups, with one study reporting an advantage in measures of extension for DIEP flaps. Functional deficits assessed by physiotherapy measures revealed that patients with pedicle TRAM reconstructions experienced the greatest deficit in rectus and oblique muscle function (up to 53%). Free TRAM groups experienced minimal deficit in rectus muscle function, whereas DIEP flaps returned to baseline for both rectus and oblique muscle function. Subjective measures of abdominal wall function were similar across unipedicle TRAM, free TRAM, and DIEP flap procedures. Patients with bilateral pedicle TRAM reconstruction suffered up to a 40% deficit in trunk flexion and up to a 9% deficit in trunk extension. Patients with bilateral pedicle or free TRAM reconstruction also experienced a significant decrease in the ability to perform sit-ups and a significant decrease in activities of daily living, recreational, and laborious activities. With the exception of those who had bipedicled TRAM or bilateral free TRAM procedures, most women reported return to their preoperative function without a decrease in their ability to perform activities of daily living. Although some studies report an objective advantage of DIEP flaps, this does not appear to translate to detriments in the performance of activities of daily living. However, the current data have limitations in study design and generalizability. A multicenter, longitudinal study is needed to assess objective and subjective outcomes in patients with pedicle TRAM, free TRAM, and perforator flaps using standardized and validated measures.

**Source:** Medline

**Recovery after transverse rectus abdominis myocutaneous flap breast reconstruction surgery.**

**Author(s)** Dell DD, Weaver C, Kozempel J, Barsevick A

**Citation:** Oncology Nursing Forum, March 2008, vol./is. 35/2(189-96), 0190-535X;1538-0688 (2008 Mar)

**Publication Date:** March 2008

**Abstract:** PURPOSE/OBJECTIVES: To assess pain and activity limitations and to determine realistic goals for recovery after a transverse rectus abdominis myocutaneous (TRAM) flap breast reconstruction in a standard rehabilitation and recovery program. Assessing patient satisfaction with educational information is a secondary objective. DESIGN: Before and after comparison. SETTING: A National Cancer Institute--designated comprehensive cancer center in the mid-Atlantic United States. SAMPLE: 16 women who had TRAM flap breast reconstruction. METHODS: Data were collected before surgery and four and eight weeks after surgery using an adapted Brief Pain Inventory, a recovery and rehabilitation assessment, and an evaluation of patient satisfaction. MAIN RESEARCH VARIABLES: Presence of pain; disruption of activities, relationships, and mood because of pain; pain relief measures; active range of motion; muscle strength; and satisfaction with educational information. FINDINGS: Pain and activity limitation scores were elevated four weeks after surgery and returned almost to baseline at eight weeks. Abdominal pain was significantly higher for women with free versus pedicled TRAM flap surgery, and women with previous back pain reported more lower back pain after surgery. Opioids, followed by nonsteroidal antiinflammatory drugs, were the most common pain relief method. Active range of motion and muscle strength showed no significant limitations at eight weeks. Patients were very satisfied with the educational information provided by nurses and physical therapists. CONCLUSIONS: Women can expect to have some pain and activity limitations four weeks after surgery but will be almost fully recovered at
eight weeks. Educational information on pain management and resuming an active lifestyle were useful. IMPLICATIONS FOR NURSING: Nurses and physical therapists can positively influence recovery from TRAM flap breast reconstruction by educating patients.

Source: Medline
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Rehabilitation of breast-cancer related functional deficits.
Author(s) Caban ME, Yadav R
Citation: Critical Reviews in Physical and Rehabilitation Medicine, 01 February 2008, vol./is. 20/1(1-23), 08962960
Publication Date: 01 February 2008
Abstract: Promoting functional and psychological well-being is a priority in the management of breast cancer patients. This review, encompassing Medline literature from 1990 to 2007, provides a conceptual framework for assessing the interrelations between breast cancer and its treatments, related anatomical structures, functional deficits, and rehabilitative services. Focuses include the description, diagnosis, and treatment in brief of seroma, adhesive capsulitis, lymphedema, and the postmastectomy pain, phantom breast, axillary web, and myofascial pain syndromes. Also discussed are breast reconstruction, bone pain, pathological fractures, cognitive dysfunction, weakness, fatigue, depression, and cardiovascular and pulmonary toxicities. This review should be of use to both clinicians and researchers in emphasizing function as an important outcome of breast cancer and its treatments.
Source: CINAHL

A retrospective analysis of outcomes using three common methods for immediate breast reconstruction.
Author(s) Spear SL, Newman MK, Bedford MS, Schwartz KA, Cohen M, Schwartz JS
Citation: Plastic & Reconstructive Surgery, August 2008, vol./is. 122/2(340-7), 1529-4242 (2008 Aug)
Publication Date: August 2008
Abstract: BACKGROUND: Breast reconstruction outcome studies typically evaluate satisfaction, complications, or aesthetic results. Some studies report better outcomes with autologous reconstruction, whereas other studies report no difference in outcomes across multiple reconstructive methods. METHODS: The authors retrospectively studied all patients undergoing immediate breast reconstruction over a 5-year period. Questionnaires were sent to all patients to assess satisfaction; preoperative bra size, height, and weight; smoking history; radiation history; length of stay; narcotic use; and recovery time. All charts were reviewed for complications. Four blinded reviewers performed aesthetic evaluations of patient results. RESULTS: One hundred eighty-six consecutive immediate breast reconstruction patients were surveyed. Charts and photographs were reviewed for complications. Four blinded reviewers performed aesthetic evaluations of patient results. The survey response rate was 42 percent, including 48 of 106 expander/implant patients, 13 of 28 latissimus patients, and 18 of 52 transverse rectus abdominis musculocutaneus (TRAM) flap patients. Patient satisfaction was rated as moderate or better for 93.8 percent of the expander/implant patients, 76.9 percent of the latissimus flap patients, and 83.3 percent of the TRAM flap patients. Expander/implant patients were significantly more satisfied than latissimus flap patients. Complication rates were 21.7 percent for expander/implant patients, 67.9 percent for latissimus flap patients, and 26.9 percent for TRAM flap patients. Reoperation rates were 11.3 percent for expander/implant patients, 10.7 percent for latissimus flap patients, and
5.8 percent for TRAM flap patients. Aesthetic scores were significantly higher for TRAM flap patients compared with expander/implant and latissimus flap patients. CONCLUSION: High satisfaction rates were seen across all three reconstructive groups, with the highest satisfaction levels seen in the expander/implant group, despite higher reoperation rates and lower aesthetic scores for this group.

Source: Medline
Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services' eJournal collection

A prospective assessment of shoulder morbidity and recovery time scales following latissimus dorsi breast reconstruction.

Author(s): Glassey N, Perks GB, McCulley SJ
Citation: Plastic & Reconstructive Surgery, November 2008, vol./is. 122/5(1334-40), 1529-4242 (2008 Nov)
Publication Date: November 2008

Abstract: BACKGROUND: The impact on shoulder function from removal of the latissimus dorsi muscle in breast reconstruction is important because of the common nature of this operation. Informed consent requires us to discuss the impact of surgery and likely recovery times. The literature already supports the absence of long-term effects from this procedure. However, all studies and subsequent reviews are based on retrospective studies, thus making it impossible to assess recovery time scales compared with preoperative values. In this prospective study, the authors set out to define the impact on shoulder function and, importantly, to assess recovery time scales compared with preoperative values.

METHODS: Shoulder range of motion, strength, function, and pain were assessed prospectively in 22 subjects who had latissimus dorsi muscle flap breast reconstruction. Assessments were carried out preoperatively and then at 6 weeks, 6 months, and 1 year postoperatively using standardized objective assessments.

RESULTS: The results demonstrate no significant loss of range of motion, strength, function, or pain at 1 year. However, strength, disability scores, neural glide, and discomfort were still abnormal at 6 months and then normalized at 1 year. It was noted that the extended latissimus dorsi flap tended to have poorer scores and recovery compared with a latissimus dorsi flap and implant.

CONCLUSION: The authors believe this information to be important to the patient, therapist, and surgeon in the assessment of postoperative recovery from this procedure.

Source: Medline
Available in fulltext from Plastic & Reconstructive Surgery at the ULHT Library and Knowledge Services' eJournal collection

Recovery after transverse rectus abdominis myocutaneous flap breast reconstruction surgery.

Author(s): Dell DD, Weaver C, Kozempel J, Barsevick A
Citation: Oncology Nursing Forum, March 2008, vol./is. 35/2(189-96), 0190-535X;1538-0688 (2008 Mar)
Publication Date: March 2008

Abstract: PURPOSE/OBJECTIVES: To assess pain and activity limitations and to determine realistic goals for recovery after a transverse rectus abdominis myocutaneous (TRAM) flap breast reconstruction in a standard rehabilitation and recovery program. Assessing patient satisfaction with educational information is a secondary objective.

DESIGN: Before and after comparison.

SETTING: A National Cancer Institute--designated comprehensive cancer center in the mid-Atlantic United States.

SAMPLE: 16 women who had TRAM flap breast reconstruction.

METHODS: Data were collected before surgery and four and eight weeks after surgery using an adapted Brief Pain Inventory, a recovery and rehabilitation assessment, and an evaluation of patient satisfaction.
RESEARCH VARIABLES: Presence of pain; disruption of activities, relationships, and mood because of pain; pain relief measures; active range of motion; muscle strength; and satisfaction with educational information. FINDINGS: Pain and activity limitation scores were elevated four weeks after surgery and returned almost to baseline at eight weeks. Abdominal pain was significantly higher for women with free versus pedicled TRAM flap surgery, and women with previous back pain reported more lower back pain after surgery. Opioids, followed by nonsteroidal antiinflammatory drugs, were the most common pain relief method. Active range of motion and muscle strength showed no significant limitations at eight weeks. Patients were very satisfied with the educational information provided by nurses and physical therapists. CONCLUSIONS: Women can expect to have some pain and activity limitations four weeks after surgery but will be almost fully recovered at eight weeks. Educational information on pain management and resuming an active lifestyle were useful. IMPLICATIONS FOR NURSING: Nurses and physical therapists can positively influence recovery from TRAM flap breast reconstruction by educating patients.

Source: Medline
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**Current concepts in rehabilitation following breast reconstruction surgery.**

Author(s) Touhy SM
Citation: Rehabilitation Oncology, 01 June 2005, vol./is. 23/2(14-17),
Publication Date: 01 June 2005
Abstract: Mastectomies and axillary lymph node dissections are common surgeries in the treatment of breast cancer. Breast reconstruction surgery is a means to restore body image following mastectomy. There are numerous options available to women to create a proportionately sized and esthetically shaped breast postmastectomy. Due to close proximity of the breast tissue and axillary lymph nodes to the glenohumeral joint, shoulder and arm morbidity are often seen after surgery for breast cancer. Physical therapists and occupational therapists play an important role in preventing such morbidities in this patient population. Therapists work closely with surgeons to educate individuals on activity modifications and therapeutic exercises immediately following surgery. The purpose of this article is to present an overview of the reconstructive surgeries and physical rehabilitation interventions offered to individuals with breast cancer.
Source: CINAHL
Available in fulltext at Rehabilitation Oncology; Collection notes: On first login to a ProQuest journal you will need to select 'Athens (OpenAthens Federation)' from Select Region, and then 'NHS England' from Choose your Library.

**Physical therapy care for women status post breast cancer surgery -- a pilot survey.**

Author(s) Nuzzo NA, O'Brien K
Citation: Journal of Women's Health Physical Therapy, 01 March 2005, vol./is. 29/1(17-20), 15566803
Publication Date: 01 March 2005
Abstract: Once diagnosed with breast cancer, women often undergo a mastectomy procedure, which may involve breast reconstruction. Since both procedures are invasive and cause tissue and system imbalance, physical therapy intervention is appropriate yet not often utilized. PURPOSE: The purpose of this pilot study was to survey therapists in the American Physical Therapy Association (APIA) Section on Women's Health (SOWH) to determine the frequency of physical therapy care for women postbreast cancer surgery in their clinical practices.
SUBJECTS: A total of 2497 members are on record on the APTA website as
members of the SOWH. METHODS AND MATERIALS: A 4-question survey was sent by email to subjects. The survey collected data about the state/country location of the member's clinical practice, the type of clinical practice setting, and specific intervention information regarding physical therapy care for women who had undergone mastectomy and/or breast reconstruction. ANALYSIS: Information was tabulated using Microsoft Access Software. Data was described using qualitative analysis. RESULTS: 9.6% (239/2497) of the Section members filled out and returned the survey (16% came from the Northeast US, 32% from the South US, 34% from the Midwest US, and 18% from the West US). Most respondents practiced in an outpatient setting (82%). Sixty-five percent (155) of the respondents had treated at least one woman who had undergone a mastectomy procedure; however, 31% (48) of those therapists had seen 20 or more women throughout their career. Fifty-five percent (131) of the respondents had treated at least one woman who had undergone a mastectomy and breast reconstruction; however, 22% (29) of those therapists had seen 20 or more women. Therapeutic exercises were the most frequently used intervention for women who had undergone a mastectomy procedure while soft tissue mobilization was the most frequent intervention employed for women who had undergone breast reconstruction. CONCLUSION: This study suggests that most respondents from the APTA Section on Women's Health do not routinely provide care for women postbreast cancer surgery in their clinical practices. Those members that do, are in an outpatient setting. This may suggest that women postbreast cancer surgery are not frequently seen by physical therapists postoperatively and if they are in the care of a physical therapist it usually occurs after the development of postsurgical musculoskeletal complications.

Source: CINAHL

The role of physical therapy in the rehabilitation of patients with mastectomy and breast reconstruction.

Author(s) McAnaw MB, Harris KW
Citation: Breast Disease, 2002, vol./is. 16/(163-74), 0888-6008:0888-6008 (2002)
Publication Date: 2002
Abstract: Women faced with breast cancer may develop musculoskeletal impairments following mastectomy and breast reconstruction. The purpose of this review is to highlight physical therapy considerations with these surgeries. Our experience at a large medical center is described, and suggested exercise guidelines are provided. Close communication between physician and physical therapist is emphasized. Physical therapists facilitate patient education, skillfully evaluate and treat musculoskeletal dysfunctions, and provide individualized patient exercise prescriptions. Physical therapists also serve as valuable members of a multidisciplinary breast cancer team.

Source: Medline
Available in fulltext from Breast Disease at EBSCOhost

A retrospective comparison of abdominal muscle strength following breast reconstruction with a free TRAM or DIEP flap.

Author(s) Futter CM, Webster MH, Hagen S, Mitchell SL
Citation: British Journal of Plastic Surgery, October 2000, vol./is. 53/7(578-83), 0007-1226;0007-1226 (2000 Oct)
Publication Date: October 2000
Abstract: Abdominal weakness is a known potential complication of breast reconstruction with a pedicled or free TRAM flap. It has been presumed that the DIEP flap, which involves no muscle resection, does not compromise abdominal muscle strength but little objective research exists to substantiate this. The aims of this retrospective study were to compare abdominal muscle strength following free TRAM flap and DIEP flap, to compare both groups with a control group and to establish the effect of both procedures on functional activities. Fifty women (23 with
a DIEP flap, 27 with a free TRAM flap) plus 32 non-operated controls underwent assessment of their abdominal and back extensor muscle strength on a KIN COM isokinetic dynamometer. Two questionnaires were used to establish the impact on function. The TRAM flap group had significant weakness of the abdominal and back extensor muscles compared with the DIEP flap group and the control group. The trend was for the DIEP flap group to have weaker abdominal muscles than the control group. There was a higher level of abdominal pain and a greater number of reported functional difficulties in the TRAM flap group than in the DIEP flap group. This study demonstrates that whilst the DIEP flap can reduce the strength deficit caused by the free TRAM flap, abdominal weakness can still result from the DIEP flap. A randomised controlled trial is currently underway to investigate the effect of preoperative abdominal exercises in preventing/minimising postoperative abdominal muscle weakness in this group. Copyright 2000 The British Association of Plastic Surgeons.

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