# **Søgning L1**

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| **Informationskilde** | **PubMed** | **Søgedato** | **21.09.16** |
| **Inklusions- og eksklusionskriterier (Sprog, tidsinterval, population, publikationstype)** | | | |
| **Sprog:** Dansk og Engelsk  **Tidsinterval:** Alt  **Population:** -  **Publikationstype:** Helst tidsskrifter/ Journals  **Evt. overvejelser i forbindelse med udvælgelse af ”relevante hits”:** | | | |
| **Søgestreng** | | | **Hits/relevante hits** |
| Brystvolumen AND rekonstruktion | | | Brystvolumen ikke fundet.  0 hits |
| Bryststørrelse AND rekonstruktion | | | Bryststørrelse ikke fundet.  0 hits |
| Plastikkirurgi AND rekonstruktion | | | Plastikkirugi ikke fundet.  0 hits |
| Breast volume AND Plastic surgery | | | 875 Hits |
| Breast volume AND Plastic surgery AND Measurement | | | 59 hits/19 |
| breast volume AND measurement AND plastic surgury AND Impediments | | | 0 hits |
| breast AND volume measurement AND plastic surgury | | | 59 hits |
| Breast density AND measurements AND plastic Surgury | | | 6 hits / 1 |
| breast volume AND measurement AND plastic surgury AND problems | | | 0 hits |
| breast volume AND measurement AND plastic surgury AND issues | | | 0 hits |

## Artikler

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[**Objective Breast Volume, Shape and Surface Area Assessment: A Systematic Review of Breast Measurement Methods**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=74&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Xi, Wenjing; Perdanasari, Aurelia Trisliana; Ong, Yeesiang; et al.

[AESTHETIC PLASTIC SURGERY](javascript:;) 1.269  Volume: 38   Issue: 6   Pages: 1116-1130   Published: DEC 2014

[There are many methods of measuring the breast and their clinical applications are well described in the literature. However, there has been no attempt to compare these various methods to allow the user to have abroad overview of the subject. The authors have attempted to summarise all the available methods to measure the breast in this article to provide a useful reference for all.](javascript:;)

[A comprehensive literature search of PubMed was performed, and the resulting articles were screened and reviewed. The data regarding the methods' mechanism, reliability, time and cost were evaluated and compared.](javascript:;)

[A total of 74 articles dating from 1970 to 2013 were included in this study. All of the methods can be classified into those that measure (1) volume, (2) shape and (3) surface area. Each category consists of severalmethods that work through different mechanisms and they vary in their reliability and feasibility. Based on their mechanism, the volume measurement methods were further grouped into the natural shape methods, the stereological method, the geometrical methods and the mathematical modelling method.](javascript:;)

[More objective breast evaluation can be achieved if all three dimensions (volume, shape and surface area) are considered. In the volume measurements, 3D modelling and the MRI are the most reliable tools. Linearmeasurement (geometry) and mathematical modelling are less accurate but are more economical. In theshape measurements, besides the traditional linear measurement, 3D methods that can deliver colour-coded maps and Swanson's 2D photographic measurement system are capable of depicting and tracking breastshape changes after surgery. Although the surface area metric has not been used extensively, it has potential in clinical and research applications.](javascript:;)

**Times Cited:**[**5**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=S1qUFb9eWq2klx54pww&search_mode=CitingArticles&parentProduct=WOS&parentQid=74&parentDoc=1&REFID=478130037&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

[**Methods and importance of volume measurement in reconstructive and aesthetic breastsurgery**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=78&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Kunos Csaba; Gulyas Gusztav; Pesthy Pal; et al.

[ORVOSI HETILAP](javascript:;) 0.291(2015) Volume: 155   Issue: 11   Pages: 407-413   Published: MAR 2014

[Volume measurment of the breast allows for better surgical planning and implant selection in breastreconstructive and symmetrization procedures. The safety and accuracy of tumor removal, in accordance with oncoplastic principles, may be imporved by knowing the true breast-and breast tumor volume. The authors discuss the methods of volume measurement of the breast and describe the method based on magnetic resonance imaging digital volume measurment in details. The volume of the breast parenchyma and the tumor was determined by processing the diagnostic magnetic resonance scans, and the difference in the volume ofthe two breasts was measured. Surgery was planned and implant selection was made based on the measuredvolume details. The authors conclude that digital volume measurement proved to be a valuable tool inpreoperative planning of volume reducing mammaplasty, replacement of unknown size implants and in cases when breast asymmetry is treated.](javascript:;)

**Times Cited: 0***(from Web of Science Core Collection)*

Jeg kunne ikke få fat I PDF´en!!

[**A Methodological Evaluation of Volumetric Measurement Techniques including Three-Dimensional Imaging in Breast Surgery**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=92&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Hoeffelin, H.; Jacquemin, D.; Defaweux, V.; et al.

[BIOMED RESEARCH INTERNATIONAL](javascript:;)  2.149  Article Number: 573249   Published: 2014

[Breast surgery currently remains very subjective and each intervention depends on the ability and experienceof the operator. To date, no objective measurement of this anatomical region can codify surgery. In this light, we wanted to compare and validate a new technique for 3D scanning (LifeViz 3D) and its clinical application. We tested the use of the 3D LifeViz system (Quantificare) to perform volumetric calculations in various settings (in situ in cadaveric dissection, of control prostheses, and in clinical patients) and we compared this system to other techniques (CT scanning and Archimedes' principle) under the same conditions. We were able to identify the benefits (feasibility, safety, portability, and low patient stress) and limitations (underestimation ofthe in situ volume, subjectivity of contouring, and patient selection) of the LifeViz 3D system, concluding that the results are comparable with other measurement techniques. The prospects of this technology seem promising in numerous applications in clinical practice to limit the subjectivity of breast surgery.](javascript:;)

**Times Cited:**[**1**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=S1qUFb9eWq2klx54pww&search_mode=CitingArticles&parentProduct=WOS&parentQid=92&parentDoc=1&REFID=465233337&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

[**Measurement of breast volume is a useful supplement to select candidates for surgical breastreduction**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=94&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Ikander, Peder; Drejoe, Jennifer Berg; Lumholt, Pavia; et al.

[DANISH MEDICAL JOURNAL](javascript:;) 1.098  Volume: 61   Issue: 1     Article Number: A4760   Published: JAN 2014

[INTRODUCTION: The indication for breast reduction in a public welfare or an insurance paid setting depends on the severity of the subjective symptoms and the clinical evaluation. The purpose of this study was toevaluate the use of breast volume as an objective criterion to establish the indication for breast reductionsurgery, thus establishing a standard decision basis that can be shared by surgeons and departments tosecure patients fair and equal treatment opportunities.](javascript:;)

[MATERIAL AND METHODS: A total of 427 patients who were referred to three Danish public hospitals withbreast hypertrophy in the period from January 2007 to March 2011 were included prospectively in the study. The patient's subjective complaints, height, weight and standard breast measurements were registered as well as the decision for or against surgery. Breast volume was measured using transparent plastic cups.](javascript:;)

[RESULTS: Cut-off values for breast volume were calculated based on whether or not the patients were offeredreduction surgery. Most patients (93%) with a breast volume below 800 cc were not offered surgery, while most with a volume exceeding 900 cc were offered surgery (94%). In the grey zone between 800 and 900 cc, the indication seemed to be less clear-cut, and additional parameters need to be included.](javascript:;)

[CONCLUSION: Breast volume can be used as an objective criterion in addition to the presently used criteria.Breast volume can easily be measured and has become appreciated by plastic surgeons dealing with patients with breast hypertrophy as a tool which facilitates their decision-making and patients' acceptance of the decisions made.](javascript:;)

**Times Cited:**[**2**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=S1qUFb9eWq2klx54pww&search_mode=CitingArticles&parentProduct=WOS&parentQid=94&parentDoc=1&REFID=467964960&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

[**Accurate Assessment of Breast Volume A Study Comparing the Volumetric Gold Standard(Direct Water Displacement Measurement of Mastectomy Specimen) With a 3D Laser ScanningTechnique**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=29&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Yip, Jia Miin; Mouratova, Naila; Jeffery, Rebecca M.; et al.

[ANNALS OF PLASTIC SURGERY](javascript:;)1.535  Volume: 68   Issue: 2   Pages: 135-141   Published: FEB 2012

Citeret 16 gange

[Preoperative assessment of breast volume could contribute significantly to the planning of breast-related procedures. The availability of 3D scanning technology provides us with an innovative method for doing this. We performed this study to compare measurements by this technology with breast volume measurement bywater displacement. A total of 30 patients undergoing 39 mastectomies were recruited from our center. The volume of each patient's breast(s) was determined with a preoperative 3D laser scan. The volume of themastectomy specimen was then measured in the operating theater by water displacement. There was a strong linear association between breast volumes measured using the 2 different methods when using a Pearson correlation (r = 0.95, P < 0.001). The mastectomy mean volume was defined by the equation: mastectomymean volume = (scan mean volume x 1.03) -70.6. This close correlation validates the Cyberware WBX Scanner as a tool for assessment of breast volume.](javascript:;)

[**Comparison between breast volume measurement using 3D surface imaging and classicaltechniques**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=38&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Kovacs, Laszlo; Edera, Maximilian; Hollweck, Regina; et al.

Conference: Annual Meeting of the German-Association-of-Plastic-Surgeons (VDPC) Location: Munich, GERMANY Date: SEP 28-OCT 01, 2005   
Sponsor(s): German Assoc Plast Surg

[BREAST](javascript:;) 2.677 Volume: 16   Issue: 2   Pages: 137-145   Published: APR 2007

Citeret 91 gange

[Quantification of the complex breast region can be helpful in breast surgery, which is shaped by subjective influences. However, there is no generatty recognized method for breast volume calculation. Three-dimensionaL (3D) body surface imaging represents a new alternative for breast volume computation. The aim of this work was to compare breast volume calculation with 3D scanning and three classic methods, focusing on relative advantages, disadvantages, and reproducibility. Repeated breast volume calculations of both breasts in six patients (n = 12) were performed using a 3D laser scanner, nuclear magnetic resonance imaging(MRI), thermoplastic castings, and anthropomorphic measurements. Mean volumes (cc) and meanmeasurement deviations were calculated, and regression analyses were performed. MRI showed the highestmeasurement precision, with a mean deviation (expressed as a percentage of mean breast volume) of 1.56+0.52%](javascript:;)

[**Breast volume assessment: comparing five different techniques**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=42&SID=S1qUFb9eWq2klx54pww&page=1&doc=4)

By: Bulstrode, N; Bellamy, E; Shrotria, S

[BREAST](javascript:;)2.677  Volume: 10   Issue: 2   Pages: 117-123   Published: APR 2001

[Breast volume assessment is not routinely performed pre-operatively because as yet there is no accepted technique. There have been a variety of methods published, but this is the first study to compare thesetechniques.](javascript:;)

[We compared volume measurements obtained from mammograms (previously compared to mastectomy specimens)(1) with estimates of volume obtained from four other techniques: thermoplastic moulding, magnetic resonance imaging, Archimedes principle and anatomical measurements. We also assessed the acceptability of each method to the patient. Measurements were performed on 10 women, which produced results for 20 breasts.](javascript:;)

[We were able to calculate regression lines between volume measurements obtained from mammography to the other four methods: (1) magnetic resonance imaging (MRI), 379 +(0.75 MRI) [r= 0.48], (2) Thermoplastic moulding, 132 + (1.46 Thermoplastic moulding) [r = 0.82], (3) Anatomical measurements, 168 + (1.55 Anatomical measurements) [r = 0.83]. (4) Archimedes principle, 359 + (0.6 Archimedes principle) [r = 0.61] all units in cc.](javascript:;)

[The regression curves for the different techniques are variable and it is difficult to reliably compare results. A standard method of volume measurement should be used when comparing volumes before and after intervention or between individual patients, and it is unreliable to compare volume measurements usingdifferent methods.](javascript:;)

[Calculating the breast volume from mammography has previously been compared to mastectomy samples and shown to be reasonably accurate. However we feel thermoplastic moulding shows promise and should be further investigated as it gives not only a volume assessment but a three-dimensional impression of the boast shape, which may be valuable in assessing cosmesis following breast-conserving-surgery. (C) 2001 Harcourt Publishers Ltd.](javascript:;)

**Times Cited:**[**40**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=S1qUFb9eWq2klx54pww&search_mode=CitingArticles&parentProduct=WOS&parentQid=42&parentDoc=4&REFID=17954334&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

[**Anthropomorphic breast measurement: Protocol and results in 50 women with aestheticallyperfect breasts and clinical application**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=54&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Westreich, M

[PLASTIC AND RECONSTRUCTIVE SURGERY](javascript:;) 3,514   Volume: 100   Issue: 2   Pages: 468-479   Published: AUG 1997

[This paper presents a simple protocol for the measurement and evaluation of the difficult physiognomy of the female breast and the application of the protocol in clinical practice. The protocol includes measurement of the breast and its landmarks and their relevant position from fixed skeletal points. Volume was measured with the Grossman-Roudner device. The protocol provides a useful tool in the accurate evaluation of patients preoperatively and in the assessment of surgical results. The protocol is compared with the two previously reported protocols, The paper presents the anthropomorphic measurements of 50 women with aestheticallyperfect breasts utilizing this protocol. Aesthetically perfect was defined as a nonptotic breast in which no common aesthetic procedure would be considered appropriate (excluding augmentation) to enhance thebreast's form. Results were compared with those reported in the two previous studies. The paper presents theclinical correlation obtained by statistical analysis of the results of the measurements of the 50 women. Although the results of the measurements indicate the range and variance in the aesthetically perfect breast, there still was a statistically significant correlation of some of the parameters of the breast and torso shape tobreast volume. This correlation can be used preoperatively to predict desired breast shape and volume inbreast augmentation, reduction, and reconstruction. Clinical application of the concepts proposed will lead to better surgical goal orientation and improve evaluation of surgical results. A formula for calculating appropriatebreast size based on torso parameters is presented.](javascript:;)

**Times Cited:**[**109**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=S1qUFb9eWq2klx54pww&search_mode=CitingArticles&parentProduct=WOS&parentQid=54&parentDoc=1&REFID=790573&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

[**The accuracy of breast volume measurement methods: A systematic review**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=71&SID=S1qUFb9eWq2klx54pww&page=1&doc=1)

By: Choppin, S. B.; Wheat, J. S.; Gee, M.; et al.

[BREAST](javascript:;)2.677  Volume: 28   Pages: 121-129   Published: AUG 2016

[Breast volume is a key metric in breast surgery and there are a number of different methods which measure it. However, a lack of knowledge regarding a method's accuracy and comparability has made it difficult to establish a clinical standard. We have performed a systematic review of the literature to examine the various techniques for measurement of breast volume and to assess their accuracy and usefulness in clinical practice. Each of the fifteen studies we identified had more than ten live participants and assessed volumemeasurement accuracy using a gold-standard based on the volume, or mass, of a mastectomy specimen. Many of the studies from this review report large (>200 ml) uncertainty in breast volume and many fail to assess measurement accuracy using appropriate statistical tools. Of the methods assessed, MRI scanning consistently demonstrated the highest accuracy with three studies reporting errors lower than 10% for small (250 ml), medium (500 ml) and large (1000 ml) breasts. However, as a high-cost, non-routine assessment other methods may be more appropriate. (C) 2016 Elsevier Ltd. All rights reserved.](javascript:;)

**Times Cited: 0***(from Web of Science Core Collection)*

[**The cost effectiveness of three different measures of breast volume**](http://apps.webofknowledge.com/full_record.do?product=WOS&search_mode=GeneralSearch&qid=1&SID=N2KyGKyezX6CS3zbdCp&page=1&doc=3)

By: Caruso, MK; Guillot, TS; Nguyen, T; et al.

[AESTHETIC PLASTIC SURGERY](javascript:;) 1.269  Volume: 30   Issue: 1   Pages: 16-20   Published: JAN-FEB 2006

[Background: Several methods including water displacement, casting, the Grossman-Roudner measuring device, photographs, mammograms, ultrasound, and magnetic resonance imaging (MRI) have been proposed for the measurement of breast volume. The most cost-effective method has not been determined.](javascript:;)

[Methods: This study compared breast volume measurements using the Grossman-Roudner measuring device (a piece of circular plastic with a cut along a radius line), plaster casting, and MRI. The Grossman-Roudner measuring device was formed into a cone around the breast, and the volume was read from a graduated scale on the overlapping edges. The volume of the cast was measured using a butter-sand Mixture and water displacement. The volume from the MRI slices was calculated using the ANALYZE bioimaging software. For five women with breast sizes AA, A, B, C, and D, the three volume measures were repeated three times. For a single volume measurement, the cost of the time and materials was $1 for the Grossman-Roudner cone, $20 for the cast, and $1 400 for the MRI. Using the mean and standard deviations of the measurements, a power analysis determined the number of subjects needed to detect a 5% change in volume. The number of subjects was multiplied by the price per test to determine relative cost.](javascript:;)

[Results: As compared with the cost for the Grossman-Roudner cone method, the cost for the volumemeasurements was 64 to 189 times more using the cast and 373 to 33,500 more using MRI.](javascript:;)

[Conclusion: The Grossman-Roudner cone was clearly the most cost-effective method for determining breastvolume changes in studies testing topical therapies to alter breast size.](javascript:;)

**Times Cited:**[**16**](http://apps.webofknowledge.com/CitingArticles.do?product=WOS&SID=N2KyGKyezX6CS3zbdCp&search_mode=CitingArticles&parentProduct=WOS&parentQid=1&parentDoc=3&REFID=64437906&excludeEventConfig=ExcludeIfFromNonInterProduct)*(from Web of Science Core Collection)*

**Five Methods of Breast Volume Measurement: A Comparative Study of Measurements of Specimen Volume in 30 Mastectomy Cases (Kan ikke findes på webognowledge, nok ikke så godt)**Ragip Kayar, Serdar Civelek, Murat Cobanoglu, Osman Gungor, Hidayet Catal and Mustafa Emiroglu Surgical Department, Izmir Tepecik Training and Research Hospital, Turkey. Corresponding author email: ragip\_kayar@yahoo.com

Abstract Background: To compare breast volume measurement techniques in terms of accuracy, convenience, and cost. Methods: Breast volumes of 30 patients who were scheduled to undergo total mastectomy surgery were measured preoperatively by using five different methods (mammography, anatomic [anthropometric], thermoplastic casting, the Archimedes procedure, and the Grossman-Roudner device). Specimen volume after total mastectomy was measured in each patient with the water displacement method (Archimedes). The results were compared statistically with the values obtained by the five different methods. Results: The mean mastectomy specimen volume was 623.5 (range 150–1490) mL. The breast volume values were established to be 615.7 mL (r = 0.997) with the mammographic method, 645.4 mL (r = 0.975) with the anthropometric method, 565.8 mL (r = 0.934) with the Grossman-Roudner device, 583.2 mL (r = 0.989) with the Archimedes procedure, and 544.7 mL (r = 0.94) with the casting technique. Examination of r values revealed that the most accurate method was mammography for all volume ranges, followed by the Archimedes method. Conclusion: The present study demonstrated that the most accurate method of breast volume measurement is mammography, followed by the Archimedes method. However, when patient comfort, ease of application, and cost were taken into consideration, the GrossmanRoudner device and anatomic measurement were relatively less expensive, and easier methods with an acceptable degree of accuracy. Keywords: breast density, mammography-negativity, macromastia, oncoplastic surgery, reduction mammaplasty

**Measurement of breast volume - comparison of techniques** (gammel artikel fra 1984) – omhandler grossmann device og MOLD teknik. Kunne ikke findes på webofknowledge.com