ASSESSMENT OF TRUNCAL EDEMA FOLLOWING BREAST CANCER TREATMENT USING MODIFIED HARPENDEN SKINFOLD CALIPERS

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ABSTRACT

After initial treatment for breast cancer, lymphedema often affects the trunk as well as the arm. Evaluation of truncal swelling by the clinical "pinch test" of the posterior axillary fold is unreliable. Our aim was to develop an objective measurement, using modified Harpenden skinfold calipers.

Standard Harpenden skinfold calipers exert a pressure of 12.6 g mm\(^{-2}\), which rapidly squeezes edema fluid out of the skinfold. Springs were substituted to exert a lighter but relatively constant load (3.7 g mm\(^{-2}\)). Repeated skinfold thickness measurements on the same, normal subject then gave a relative standard deviation (r.s.d.) or coefficient of variation of 5%. The posterior axillary folds of 14 patients (age 56 ± 13 (s.d.) years) with an average 30% arm swelling were measured using the same procedure. Readings were taken at 10 s, and again after 60 s of sustained application to assess the rate of creep, or deformation with time, attributed to displacement of pressurized interstitial fluid.

Two patients had clinically observable axillary fold swelling. Eight patients, including the above two, showed axillary fold swelling by caliper measurement, defined as a 10% increase over the contralateral side (2 r.s.d.'s). Creep was greater on the affected side in all 14 patients. Thus, modified calipers can detect axillary fold edema, and thereby provide an objective method for assessing changes in swelling after lymphedema treatment.