ABSTRACT BOOK ABSTRACTS



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## VASCULARIZATION OF RANDOM PATTERN SKIN FLAPS: IN VIVO PROSPECTIVE STUDY BY LASER SPECKLE CONTRAST IMAGING

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Background: Random flap viability depends on an adequate perfusion pressure, higher than a critical value below which the vessels of the dermal plexuses will collapse, inducing tissue necrosis. Laser speckle contrast imaging (LSCI) is a non-invasive, real time, in vivo, accurate and reproducible promising new tool to assess skin microvascular function.

Objective: The main objective was to develop a mathematical model able to estimate the expected variation of perfusion pressure along flap's length.

Materials and Methods: A prospective study was designed on patients submitted to random pattern skin flaps, mostly after tumour excision. The length to width ratio (LTWR) was calculated for each flap. Regions of interest were placed at fixed LTWR in all flaps, from the base to the tip, and three LSCI measurements of blood flux (in arbitrary perfusion units) were obtained for each flap during surgery: flap planned, flap undermined and flap sutured. Mean arterial pressure (MAP) was calculated immediately before each measurement, and LSCI measures of blood flux were divided by MAP to obtain cutaneous vascular conductance. Twenty-three patients were included: eleven submitted to a transposition skin flap, six to an advancement flap and six to a rotation flap.

Results: Perfusion values of the undermined and sutured flaps significantly decreased with the LTWR, well expressed in mathematical equations. Sutured flaps exhibited consistently lower perfusion values compared to undermined flaps.

Conclusions: As far as we know there are no studies in vivo and in real-time about microcirculation of skin flaps in humans. We concluded that microcirculation of flaps is impaired by the suturing, probably because of the movement of the pedicle and also because of the stiches, but we need a bigger sample to make those results and mathematical models more representative.





