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**A scoring system for lipomatous tumors--can we exclude malignancy?**

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**Abstract**

**Background:** Lipomatous tumors are common lesions and are often managed by general, orthopaedic and plastic surgeons. Decisions regarding the need for biopsy and/or referral to a musculoskeletal oncology service are based upon clinical information and MRI appearances.

**Purposes:** This study was undertaken to investigate the clinical and MRI features of benign versus malignant lipomatous tumors in order to construct a predictive scoring system.

**Patients and methods:** The MR images and clinical features of 66 patients with histologically verified malignant (n=32) and benign (n=34) lipomatous soft tissue tumors from 2004 to 2012 were retrospectively reviewed. Univariate analysis of thirteen features and multivariate logistic regression analysis of selected variables were conducted.

**Results:** The following factors were found to be independently associated with malignancy: male gender, size of lesion in maximum dimension, depth related to fascia, presence of a non-fatty thick septum (>2mm) or nodule (>=1cm) and internal cystic change. A scoring system was constructed based on these factors with weighting according to their relative importance. The cut off was chosen to give a negative predictive value of 100% (p-value<0.0001) and an overall discriminating power of 0.98

**Conclusions:** This scoring system aims to accurately differentiate benign lipomas that may be safely excised from possible liposarcomas requiring further investigation and management by a musculoskeletal oncology service. It requires further validation but may be a useful objective tool to guide surgeons regarding the necessity for referral and biopsy.