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OUTCOME PREDICTION FOR TREATMENT OF KNEE OSTEOARTHRITIS WITH A TOTAL KNEE ARTHROPLASTY. DEVELOPMENT AND VALIDATION OF A PREDICTION MODEL FOR PAIN AND FUNCTIONAL OUTCOME USING THE DUTCH ARTHROPLASTY REGISTER (LROI) DATA

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Background: One of the main determinants of treatment satisfaction after total knee arthroplasty (TKA) is the fulfillment of preoperative expectations. For optimal expectation management it is useful to be able accurately predict the treatment result. Multiple patient factors that are obtained for registration in the Dutch Arthroplasty Registry (LROI) are associated with the treatment result. Therefore, these factors can potentially be utilised to estimate the most likely outcome on pain and functional outcome for an individual patient.

Objectives: The aim of the present study was to create and validate models that predict residual symptoms on 10 specific outcome parameters at 12-month follow-up for patients undergoing primary TKA for knee osteoarthritis.

Methods: Data was extracted from the LROI on TKA patients who had pre- and postoperative PROMs registered in the LROI registry. Multiple logistic regression analyses were performed to construct predictive algorithms for satisfaction, treatment success, and residual symptoms concerning pain in rest and during activity, sit-to-stand movement, stair negotiation, walking performance of activities of daily living, kneeling and squatting. Models were developed for men and women separately. We assessed predictive performance by examining measures of calibration and discrimination.

Results: Data of 7071 patients could be included for data analysis. Residual complaints on kneeling (77% / 59%) and squating (71% / 56%) were reported most frequently, and least residual complaints were scored for walking (16% / 12%) and pain in rest (18% / 14%). The predictive algorithms for residual symptoms concerning sit-to-stand movement, stair negotiation, walking, activities of daily living and treatment success showed acceptable discriminative values (AUC 0.68 – 0.74). The prediction models for residual complaints regarding kneeling, squatting, pain and satisfaction showed the least favourable results (AUC 0.58 – 0.64). The calibration curves showed adequate calibration for most of the models.

Conclusion: A considerable proportion of patients has residual complaints after TKA. The present study showed that demographic and PROMs data collected for the LROI registry, can be used to predict the chance for residual symptoms after TKA. The predictive models that have been developed can be useful for individual expectation management in patients planned for TKA for knee osteoarthritis.

Disclosure of Interests: None declared