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“Will I have to get my other hip replaced as well”? Contralateral outcomes after hip arthroplasty from an information tool based on registry data

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BACKGROUND

The number of people undergoing total hip arthroplasty (THA) is on the rise. A common concern amongst prospective patients is whether, or when, the contralateral hip will need to be replaced. This has been poorly reported in the literature and shared decision-making tools including this information are non-existent.

OBJECTIVE

To inform the expectations of future patients considering an elective THA about the likelihood of a contralateral arthroplasty over 20 years following primary surgery based on registry data from previous patients “like them”.

METHODS

We surveyed patients’ and surgeons’ views about the risks and benefits of THA. Based on their views about their most important concerns, we retrieved relevant data from an institutional arthroplasty registry about patients receiving a primary elective THA between 1996 and 2019.
Two sets of patient clusters were generated representing groups with homogenous incidence of contralateral THA at different time periods: one set at 1-year post index THA reporting distinct percentages of contralateral THA, and a second set of clusters reporting distinct survival curves over 20 years after index surgery. A conditional Inference tree was used for clusters at 1 year, and a survival tree using the classification and regression tree method for the longitudinal analysis. Regression models were estimated based on 14 pre-specified baseline demographic, health-related, pain and function predictor candidates. Missing data were imputed using Multivariate Imputation by Chained Equations.

RESULTS

Clusters at year 1 were generated based on baseline Charnley score, WOMAC pain and function scores, diagnosis, age, and having private insurance or not (proxy for socioeconomic status). There were marked differences in terms of outcomes between clusters. For example, of those patients whose Charnley score indicated they only had one hip affected, only 1.2% had a contralateral hip arthroplasty within the first year after index surgery. This figure was 39% for patients who reported both their hips affected (Charnley B) and a WOMAC pain score ≤10 (=high level of pain) (Figure 1).

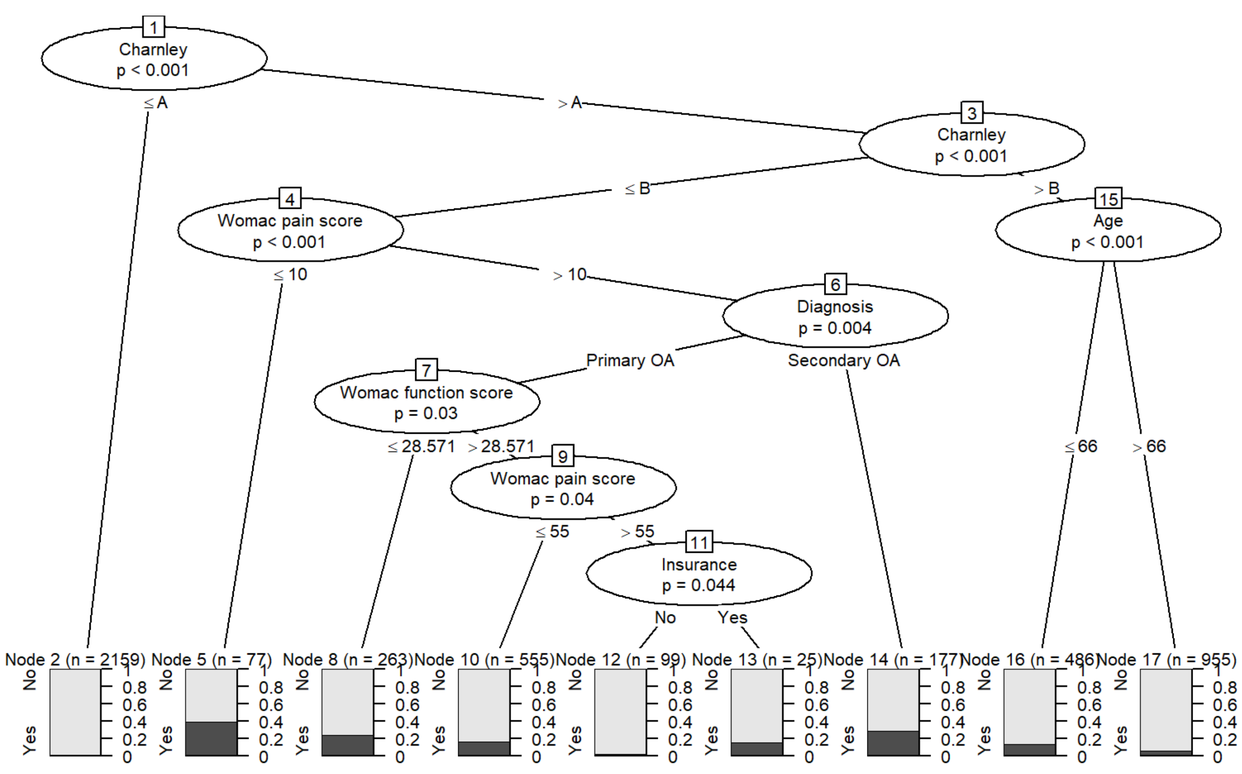

Figure 1: Conditional inference Tree for contralateral at year 1

Patient clusters with homogenous incidence of contralateral THA over 20 years were generated based on baseline Charnley score, number of previous hip surgeries, and age. Survival tree analysis showed that patients with only one hip affected (Charnley A) and with ≥1 prior hip surgeries reported the ‘flatter’ survival curve with the lowest longitudinal incidence of contralateral THA at 6.5% over the 20-year period. Further examination of prior surgery for these patients indicated it was primarily due to site-specific fracture instead of more systemic reasons. Conversely, patients with both hips affected (Charnley B) reported the ‘steepest’ survival curve with 65.6% of them having a contralateral THA at 20 years (Figure 2).

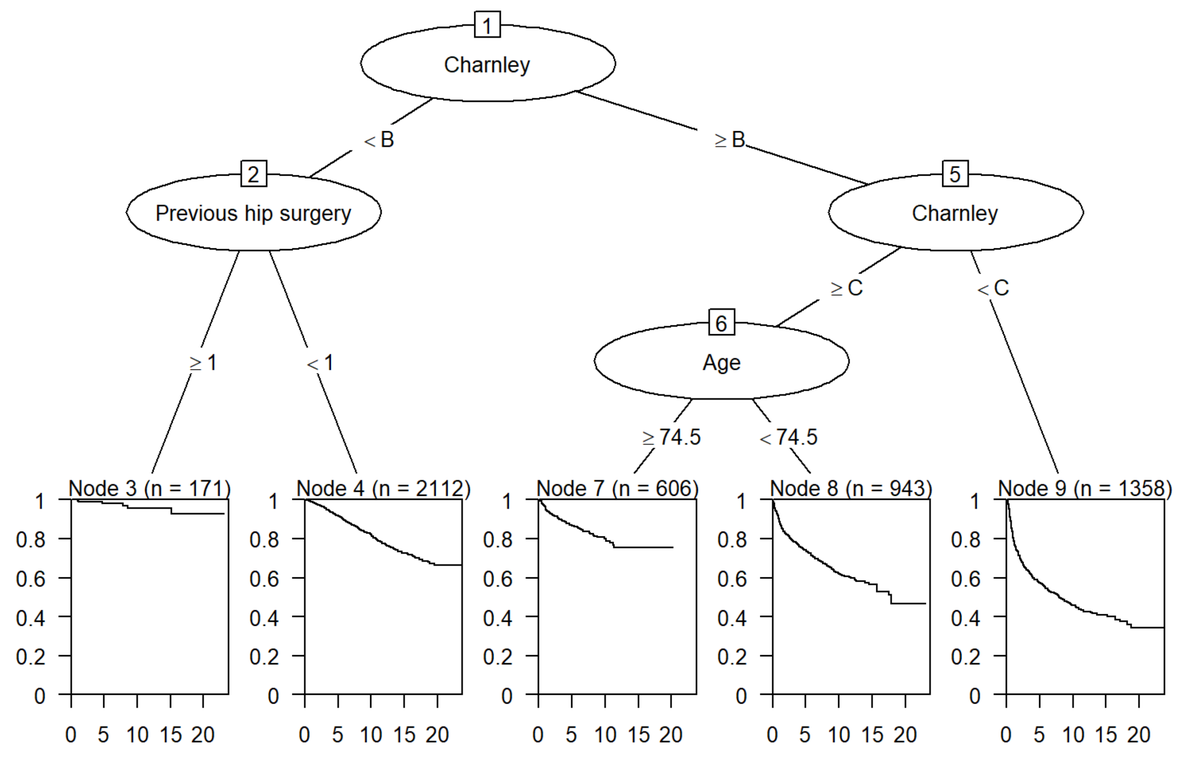

Figure 2: Survival Tree

CONCLUSIONS

A contralateral THA is of great importance to patients and the tool we developed can provide them with valuable cluster-specific short- and long-term incidence of contralateral THA, which varies significantly between patient with different baseline characteristics.

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