AmphiA

Implant survival of total elbow arthroplasty; A study from the Dutch national registry.

Background

Total elbow arthroplasty (TEA) is a relatively rare procedure, and the available evidence relies on few and small studies. Using national data from the Dutch Arthroplasty Registry (LROI), implant survival data can be assessed in a large cohort.

Aim

1: To report the implant survival of total elbow arthroplasty in the Netherlands.
2: To assess the patient and treatment characteristics associated with revision.
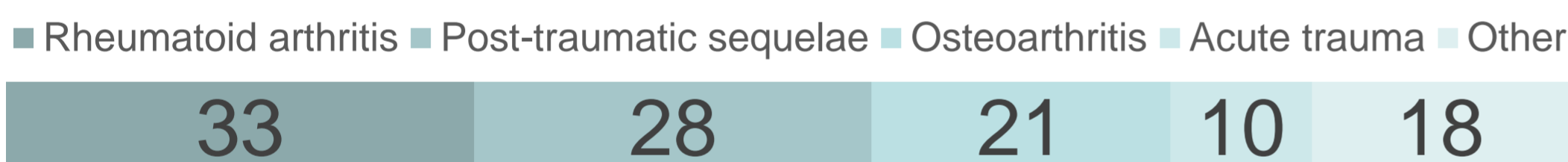
Methods

Data were provided by the Dutch National Arthroplasty Registry, which records elbow arthroplasties since January 2014. A survival analysis was performed using the Kaplan-Meier method. The characteristics associated with revision were assessed with a minimum follow-up of one year, and a Benjamini-Hochberg procedure was performed to correct for multiple testing. Additionally, a logistic regression model was fitted to assess the characteristics independently associated with revision.

Results

In total, 514 patients underwent a TEA between 2014 and 2020, the mean age was 66 and 75% were female.

Indications for primary total elbow arthroplasty (%)

■ Rheumatoid arthritis	■ Post-traumatic sequelae	■ Osteoarthritis	■ Acute trauma	■ Other
33	28	21	10	18

Of the 514 patients, 35 underwent a revision. Median time to revision was 1.5 years (interquartile range: 0.7-2.7 years).The implant survival was 98% after one year, 93% after three years and 91% after five years. After correction of the p-values, none of the characteristics was individually associated with revision surgery. However, the regression model found male sex, body mass index, and previous surgery to be independently associated with revision (p<0.05).

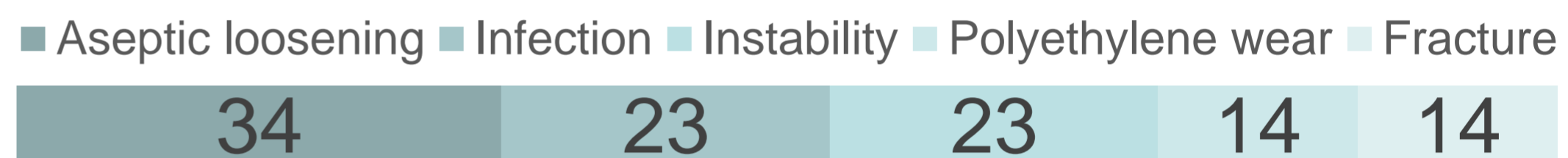Kaplan-Meier plot for implant survival
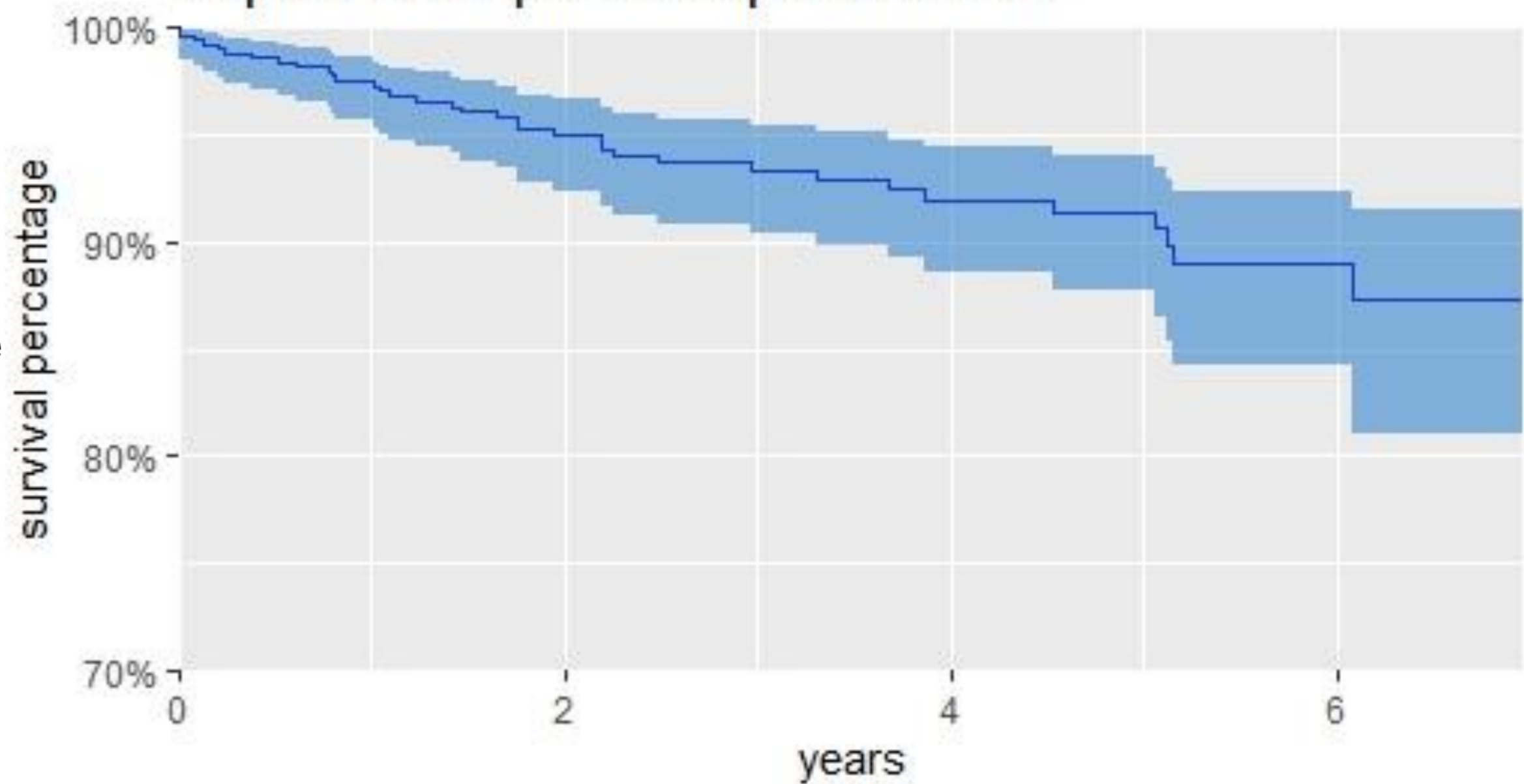
Logistic regression				
Variable	**Coefficient**	**Standard Error**	**Z-value**	**P-value**
Female	-0.814	0.388	-2.100	0.03577
BMI	0.089	0.032	2.810	0.00495
Previous surgery	0.990	0.383	2.582	0.00981
AIC: 222.21, McFadden's pseudo R^2: 0.0781 (p-value: <0.0005)				
BMI: Body mass index, AIC: Akaike information criterion				

Reasons for revision (%)

■ Aseptic loosening	■ Infection	■ Instability	■ Polyethylene wear	■ Fracture
34	23	23	14	14

After the first revision, ten patients (29%) underwent a secondary revision after a median time of 1.4 years (interquartile range: 0.3-2.6).

Conclusions

Using national data, we included a cohort of 514 TEAs, of which 35 were revised. The implant survival was 91% after five years. Male sex, body mass index, and previous surgery were independently associated with a revision. Notably, a large proportion (29%) of patients had to undergo a secondary revision.

Clinical implication

The implant survival data, the high chance of re-revision, and the previously mentioned characteristics associated with revision may influence decision making when considering total elbow arthroplasty and may be quoted by orthopaedic care providers to manage expectations.

Source: LROI-report

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